

PROBLEMS ENCOUNTERED BY SCIENCE TEACHERS IN MODULAR LEARNING MODALITY

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Abstract

The present study aimed to determine the extent of problems encountered by science teachers in the modular learning modality during the School Year 2022-2023. The descriptive research design uses a researcher-made survey questionnaire. The study respondents were the 30 teachers. Carter V. Good and Douglas E. Scates used the evaluation criteria for validating the instrument. Reliability testing was conducted in District 2, which is not part of the actual respondents, with 30 teachers using the Cronbach alpha formula. The analytical schemes used were descriptive and comparative. Data analysis used frequency, percentage, mean, and Mann-Whitney U tests. Based on the foregoing findings, the following conclusions were arrived at: Most science teachers encountered many problems with the modular learning modality in content knowledge. Most of them had difficulty initiating activities to improve learners' progress. Most science teachers experienced many problems while distributing and retrieving modules. Most of them encountered difficulties with implementing schools' safety and health protocols. In addition, most science teachers encounter serious problems when conducting assessments. Most science teachers have faced difficulties preparing assessment activities aligned with the lesson objectives. Further, the degree of problems encountered in the modular learning modality was not influenced by teachers' profile variables such as age, civil status, highest educational attainment, and length of service.

Keywords: *Modular learning modality, science teachers, learning difficulties, content knowledge, assessment challenges, module distribution, descriptive research*

Bio-notes

Jocelyn E. Abiar is a dedicated public school teacher with nearly 9 years of service in the Department of Education, currently serving as Teacher III at Bayog Elementary School. She earned her Bachelor of Elementary Education from Negros Oriental State University – Guihulngan City Campus in 2013 and pursued graduate studies in Early Childhood Education at Central Philippines State University, where she completed 18 academic units. She is currently advancing her academic career by pursuing a Master of Arts in Education, major in Administration and Supervision, at STI West Negros University, demonstrating her strong commitment to professional growth and educational leadership. Her teaching experience spans roles as a kindergarten volunteer teacher, literacy teacher, and substitute teacher before attaining her current permanent position. Known for her strong communication skills, computer literacy, adaptability, and teamwork, she remains committed to fostering a supportive and effective learning environment for her pupils.



Introduction

Rationale

The shift to modular learning modality in the Philippines has brought both opportunities and challenges, particularly in science education, which is widely recognized as a key driver of national development and innovation. Studies have highlighted the effectiveness of modular learning in promoting independent learning; however, persistent issues related to content knowledge, module distribution and retrieval, and assessment practices continue to hinder optimal teaching and learning outcomes (Valencia, 2020; Ali, 2015; Arrieta, 2020). These challenges are further intensified by limited teacher-learner interaction and the complexity of scientific concepts that often require guided instruction. Anchored in the global call for inclusive and equitable quality education under Sustainable Development Goal 4: Quality Education, this study responds to the urgent need to examine the difficulties faced by science teachers in modular learning environments, ensuring that no learner is left behind in acquiring essential scientific competencies.

Moreover, identifying the degree of problems encountered by teachers provides an empirical basis for designing targeted interventions that enhance instructional delivery and student learning outcomes. Prior research suggests that addressing instructional challenges through evidence-based strategies improves both teacher effectiveness and learner achievement (Westminster, 2015; Servito, 2020). This study, therefore, contributes to the existing body of knowledge by systematically analyzing teachers' experiences and aligning their outcomes with sustainable education practices. By doing so, it supports not only institutional improvements but also broader educational reforms geared toward strengthening science education in distance learning contexts, ultimately contributing to sustainable development and lifelong learning opportunities for all.

Literature Review

The existing literature highlights that the modular learning modality, while widely adopted as an alternative delivery approach, presents significant challenges for teachers, particularly in science education. Studies emphasize that although modular instruction promotes self-paced and independent learning, it also requires strong pedagogical content knowledge (PCK) and teacher adaptability. For instance, Kind (2019) underscored that effective science teaching depends on integrating content knowledge and pedagogy, a task that becomes more complex in distance learning contexts. Similarly, Castroverde and Acala (2021) identified that teachers encounter multiple difficulties in modular learning, including lesson preparation, monitoring student progress, and providing timely feedback. These findings suggest that despite its potential benefits, modular learning demands higher levels of teacher competence and innovation to ensure meaningful learning experiences.

Moreover, issues related to the distribution and retrieval of modules, as well as assessment practices, further complicate the implementation of modular learning. Dangle and Sumaoang (2020) found that logistical concerns, limited resources, and a lack of parental support significantly affect the effectiveness of module distribution and retrieval processes. In terms of assessment, Mayasari and Kemal (2020) emphasized that evaluation remains a critical component of the learning process, yet it becomes more challenging in remote settings due to limited interaction and feedback mechanisms. Overall, these studies reveal that while modular learning serves as a viable alternative during educational disruptions, persistent challenges in content delivery, resource management, and assessment must be addressed to improve teaching effectiveness and student learning outcomes.



Theoretical Underpinnings

This study is grounded in the Theory of Problem or Difficulty by Perkins (2016), which emphasizes the importance of identifying learners' and teachers' recurring challenges and analyzing their underlying causes to improve instructional practices. The theory posits that effective teaching goes beyond merely addressing surface-level difficulties; instead, it requires a deeper understanding of why these challenges occur to develop more strategic and responsive teaching approaches. Complementing this is the Theory of Modular Learning by Sahin (2014), which underscores the role of self-paced, problem-based learning in enhancing students' understanding through structured modules. Together, these theories provide a strong foundation for examining the problems faced by science teachers, highlighting the need for adaptive instructional strategies and informed interventions in modular learning environments.

Objectives

This study aimed to determine the extent of problems encountered by science teachers in the modular learning modality in a district of a small-sized division in Central Visayas, Philippines, during School Year 2022-2023. Specifically, this study sought to determine: 1) the degree of problem science teachers encounter in modular learning modality according to content knowledge, distribution and retrieval, and assessment; 2) the degree of problem science teachers encounter in modular learning modality when grouped according to variables; and 3) if a significant difference exists in the degree of problems science teachers encounter in modular modality when grouped and compared according to the variables.

Methodology

The study's methodology-related components, such as the research design, respondents, research instrument, data collection process, and ethical issues, are described in this section.

Research Design

This study adopts a descriptive research design to evaluate the degree of problems encountered by science teachers in the modular learning modality in a district of a small-sized division in Central Visayas, Philippines, for School Year 2022-2023. Descriptive research is a type of research that describes a population, situation, or phenomenon that is being studied. It focuses on answering the how, what, when, and where questions of a research problem rather than the why (Gómez-Masvidal et al., 2020).

Respondents

The respondents for this study comprise 30 public school teachers. The respondents were pretty manageable; total enumeration was employed.

Data-gathering Instrument

The instrument underwent rigorous face and content validation by three experts in research and education to ensure its accuracy in measuring the intended demographics. The validation process yielded



a final validity score of 4.55, indicating excellent validity. Cronbach's Alpha was used to assess the instrument's reliability and internal consistency. The reliability coefficient of 0.857, interpreted as "Good," indicates that the instrument is reliable.

Procedures for Data Collection

This section fully adhered to established research protocols. Upon securing approval from the Schools Division Superintendent, the researcher personally administered the questionnaires to target respondents to ensure a high response rate and data accuracy.

Data Analysis and Statistical Treatment

Objective 1 used a descriptive-analytical scheme and the mean as a statistical tool to determine the degree of the problem encountered by science teachers in modular learning modality in the following areas: content knowledge, distribution and retrieval, and assessments. Objective 2 used the same analytical scheme and statistical tool to determine the extent of the problem encountered by science teachers in the modular learning modality, grouped according to the aforementioned variables. Objective 3 used comparative analytical schemes and Mann-Whitney U tests as statistical tools to determine whether significant differences exist in the degree of problem encountered by science teachers in modular learning modality when grouped and compared according to the aforementioned variables.

Ethical Considerations

The protection of human subjects through the application of appropriate ethical principles is important in all research studies. In a qualitative study, ethical considerations resonate particularly given the in-depth nature of the research process (Arifin, 2018).

Results and Discussion

This section summarizes the study's findings, which come from careful data gathering, in-depth analysis, and thoughtful interpretation. After this, meaningful conclusions were drawn from the initial phase, offering valuable insights.

Degree of Problems Encountered by Science Teachers in Modular Learning Modality According to Content Knowledge, Distribution and Retrieval, and Assessment

Table 1. *Degree of Problems Encountered by Science Teachers in Modular Learning Modality in Content Knowledge*

Areas	Mean	Interpretation
A. Content Knowledge		
As a Science teacher, I encountered problems in...		
1. Using audio-video clips to reinforce lectures.	3.43	Moderate Degree
2. Providing advance reading assignments before the topic discussion	3.53	High Degree
3. giving group dynamics and role-playing to reinforce lectures.	3.30	Moderate Degree
4. Providing science terminologies to feel ease and comfort.	3.73	High Degree
5. allowing groups of students according to association, like friends and classmates.	3.57	High Degree



6. Delegating some tasks to help student learning.	3.70	High Degree
7. Engaging students during lectures by providing easy questions to answer.	3.73	High Degree
8. Asking the students if they have additional questions or queries.	3.70	High Degree
9. Initiating the learners' progress.	3.80	High Degree
10. meeting the students for some technical assistance.	3.57	High Degree
Overall Mean	3.61	High Degree

As presented in Table 1, the respondents reported an overall mean score of 3.61, indicating a "high degree." It only shows that most science teachers had extensive experience with problems in the modular learning modality in content knowledge.

However, when deeper analysis is used, the respondents reported a mean score of 3.80 out of 9, indicating "initiating the learners' progress" and interpreted as "high degree." On the other hand, the lowest mean of 3.30 was on item 3, which states "giving group dynamics and role-playing to reinforce lectures," interpreted as a "moderate degree."

This implies that most science teachers find it difficult to initiate activities to support learners' progress. With the current educational setup, some science teachers are still struggling to cope. As the spearhead of implementing modular learning modality, teachers must be able to condition all instructional components and must have mastered the content knowledge of the Science curriculum.

Meanwhile, this result supports the claim of Castroverde and Acala (2021). They identified that during the implementation of modular learning, the problems encountered by the teachers were content knowledge, learning areas, planning, preparing and distributing modules, monitoring students' learning, checking and evaluating outputs, and providing feedback on students' performance. Furthermore, teachers used various ways to cope with problems encountered in modular distance instruction, such as time management, innovating teaching strategies, adapting to the changes brought by the new normal trend in education, being flexible, providing alternative plans, being optimistic, patient, and equipping oneself with the necessary skills for the new normal ways of education.

Table 2

Degree of Problems Encountered by Science Teachers in Modular Learning Modality in Distribution and Retrieval

Areas	Mean	Interpretation
B. Distribution and Retrieval		
As a Science teacher, I encountered problems in...		
1. Observing health and safety protocol standards during the distribution and learning modality.	4.17	High Degree
2. Reinforcing learning gaps and accomplishing module-related learning activities.	4.07	High Degree
3. Prepare adequate materials that support the retrieval of modules.	4.00	High Degree
4. developing a mechanism that will create an efficient.	3.93	High Degree
5. Encourage learners' level of commitment towards the enhancement of skills and mastery of competencies.	3.87	High Degree
6. making sure that the modules are complete.	4.10	High Degree
7. ensuring that the work activity is included in the retrieval.	4.00	High Degree
8. manifesting good relationships with learners and parents.	4.03	High Degree
9. giving opportunities for their views and opinions.	4.00	High Degree
10. treating the learner fairly.	3.90	High Degree
Overall Mean	4.01	High Degree



The results in Table 2 disclosed that the respondents assessed an overall mean score of 4.01, interpreted as a “high degree.” This shows that most science teachers experienced much trouble distributing and retrieving modules.

If results were investigated further, the respondents perceived a highest mean score of 4.17 on item 1, which states “observing health and safety protocols standards during the distribution and learning modality,” and interpreted as “high degree,” while the lowest mean of 3.87 was on item 5 which states “encouraging learners level commitment towards enhancement of skills and mastery of competencies” and interpreted as “high degree.”

This implies that most science teachers encountered difficulties in observing health and safety protocols when distributing learning modules. Parents and guardians did not observe the school's safety and health protocols. Although announcements about the health safety protocols were posted at the school entrance, some parents and guardians are lazy in complying with the policies. Parents and the school community must adhere to safety protocols to prevent the spread of the virus. School Heads must initiate activities to promote positive hygiene. Information dissemination via regular announcements, posting easy-to-understand visual reminders in conspicuous places, encouraging good hand and respiratory hygiene practices, likewise, and providing information on COVID-19 and the prevention of its transmission.

This result was confirmed by the study of Pratiwi et al. (2020). According to them, adherence to health protocols by schools and communities is key to successfully controlling the spread of COVID-19. The level of school and community awareness influences adherence to implementing health protocols. Hence, the right policy to protect oneself from infection is to follow recommended safety precautions and take utmost care not to be exposed to the virus.

Table 3

Degree of Problems Encountered by Science Teachers in Modular Learning Modality in Assessment of Learning

Areas	Mean	Interpretation
C. Assessment of Learning		
As a Science teacher, I encountered problems in...		
1. Conducting formative and summative tests to monitor learners' progress.	4.10	High Degree
2. providing pointers for the examination,	3.87	High Degree
3. Discussing the results of the test with the learners individually.	3.90	High Degree
4. Using a self-made test with a table of specifications.	4.03	High Degree
5. Activities for further enhancing learning.	4.10	High Degree
6. Using alternative assessments for the learners who are lagging.	3.97	High Degree
7. ensuring that the learners can achieve the lessons' objectives.	4.07	High Degree
8. Preparing criteria for the performance tasks.	4.13	High Degree
9. ensuring that examinations align with the lesson objectives.	4.23	High Degree
10. documenting accurate records of learners' written and performance tests.	4.10	High Degree
Overall Mean	4.05	High Degree

Table 3 revealed that the respondents reported an overall mean score of 4.05, interpreted as a "high degree." It only shows that most science teachers encountered problems during the learning assessment.



However, when examined further, the items in Table 5 showed that respondents gave the highest mean score of 4.23 to item 9, which states "ensuring that examinations align with the lesson objectives," interpreted as a "high degree." The lowest mean of 3.87 was on item 2, which states that "providing pointers for the examination" is interpreted as a "high degree."

This implies that most science teachers experienced difficulties preparing assessment activities that are aligned with lesson objectives and suit the current educational setup. It is always essential for teachers to adjust to the needs of the learners to ensure that they understand their lessons and can perform well. The same applies to preparing assessment activities; they must be well-crafted and aligned with objectives.

The results were confirmed by the Study of Anu (2022). According to her, student assessment is critical to teaching and learning. It enables teachers to address current educational assessment issues and to measure teaching effectiveness through student performance aligned with specific learning objectives. It is essential to assess the performance because it provides feedback on how students successfully meet the course objectives. Many assessment tools are developed to determine the knowledge students have gained in the classroom.

Degree of Problems Encountered by Science Teachers in Modular Learning Modality According to Content Knowledge, Distribution and Retrieval, and Assessment when grouped by Age, Civil Status, and Highest Educational Attainment

Table 4. Degree of Problems Encountered by Science Teachers in Modular Learning Modality in Content Knowledge According to Age

Categories	Younger		Older	
	Mean	Interpretation	Mean	Interpretation
A. Content Knowledge				
As a Science teacher, I encountered problems in...				
1. Using audio-video clips to reinforce lectures.	3.82	High Degree	3.21	Moderate Degree
2. Providing advance reading assignments before the topic discussion	3.55	High Degree	3.53	High Degree
3. giving group dynamics and role-playing to reinforce lectures.	3.36	Moderate Degree	3.26	Moderate Degree
4. Providing science terminologies to feel ease and comfort.	3.64	High Degree	3.79	High Degree
5. allowing groups of students according to association, like friends and classmates.	3.90	High Degree	3.37	Moderate Degree
6. Delegating some tasks to help student learning.	3.91	High Degree	3.58	High Degree
7. Engaging students during lectures by providing easy questions to answer.	3.55	High Degree	3.83	High Degree
8. Asking the students if they have additional questions or queries.	3.55	High Degree	3.79	High Degree
9. Initiating the learners' progress.	3.73	High Degree	3.84	High Degree
10. meeting the students for some technical assistance.	3.64	High Degree	3.53	High Degree
Overall Mean	3.66	High Degree	3.57	High Degree

Table 4 revealed that the degree of problems encountered by science teachers in the modular learning modality in content knowledge was "high" across respondents' ages. It is supported by the responses, in which younger respondents reported an overall mean of 3.66 and older respondents reported 3.57.



However, in a deeper look at each item, younger respondents assessed the highest rating of 3.91 on item 6, which states “delegating some tasks to help student learning,” interpreted as “high degree,” while the lowest mean of 3.36 was on item 3, which states “giving group dynamics and role-playing to reinforce lectures,” interpreted as “moderate degree.”

As for older respondents, they assessed the highest rating of 3.84 on item 9, which states “initiating the learners’ progress,” interpreted as “high,” while the lowest mean of 3.21 was on item 1, which states “using audio-video clips to reinforce lectures,” interpreted as “moderate degree.” This implies that most younger respondents encountered difficulties delegating tasks to improve student learning. In comparison, older respondents had difficulty initiating activities to improve learners’ progress. One must be well-versed and knowledgeable of the lesson content and curriculum to be effective. Teachers must know that the students have different levels of strengths and weaknesses. They can only introduce creative and practical solutions to students’ educational learning needs through their teaching skills.

According to Hindman and Stronge (2016), an effective teacher has organizational skills and knows how to use instructional techniques, such as mastery and cooperative learning. When used appropriately, these strategies can result in student achievement at least one standard deviation higher than that of those taught without a plan. Effective teachers also use the student's prior knowledge as a starting point with hands-on, inquiry-based approaches to facilitate increased levels of learning.

Table 5

Degree of Problems Encountered by Science Teachers in Modular Learning Modality in Distribution and Retrieval According to Age

Categories	Younger		Older	
	Mean	Interpretation	Mean	Interpretation
B. Distribution and Retrieval				
As a Science teacher, I encountered problems in...				
1. Observing health and safety protocol standards during the distribution and learning modality.	3.73	High Degree	4.42	High Degree
2. Reinforcing learning gaps and accomplishing module-related learning activities.	3.82	High Degree	4.21	High Degree
3. Prepare adequate materials that support the retrieval of modules.	3.64	High Degree	4.21	High Degree
4. developing a mechanism that will create an efficient.	3.45	Moderate Degree	4.21	High Degree
5. Encourage learners' level of commitment towards the enhancement of skills and mastery of competencies.	3.55	High Degree	4.05	High Degree
6. making sure that the modules are complete.	4.18	High Degree	4.05	High Degree
7. ensuring that the work activity is included in the retrieval.	3.73	High Degree	4.16	High Degree
8. manifesting good relationships with learners and parents.	3.82	High Degree	4.16	High Degree
9. giving opportunities for their views and opinions.	3.73	High Degree	4.16	High Degree
10. treating the learner fairly.	3.91	High Degree	3.89	High Degree
Overall Mean	3.75	High Degree	4.15	High Degree

Table 5 shows many problems science teachers encounter in the modular learning modality of distribution and retrieval, as perceived by younger and older respondents. Younger respondents assessed an overall mean of 3.75, while older respondents had an overall mean of 4.15. Although they vary in numerical value, both ratings were interpreted as “high degree.”



However, if conducting further analysis, younger respondents assessed the highest rating of 4.18 on item 6, which states “making sure that the modules are complete,” interpreted as a “high degree,” while the lowest mean of 3.45 was on item 4, which states “developing a mechanism that will create an efficient” interpreted as “moderate degree.”

Older respondents assessed the highest rating of 4.42 on item 1, which states “observing health and safety protocols standards during the distribution and learning modality,” interpreted as “high degree,” while the lowest mean of 3.89 was on item 10, which states “treating the learner fairly,” interpreted as “high degree.”

This implies that most of the younger respondents had problems with the modules after they had retrieved them. Some of the modules were torn, wet, and no longer readable, which caused an additional burden for teachers to evaluate and record their performance. Meanwhile, older respondents are facing difficulties in implementing school safety health protocols. Many parents were not observing the school's safety and health protocols while at school and during the distribution of modules.

The results are supported by the study of the findings of Jayani (2021). According to her, problems faced by teachers in the implementation of modular learning are the teacher's heavy workload in the preparation of distance learning materials, distribution and retrieval of distance learning materials, monitoring of assignments, and the difficulty of accounting for students' characteristics.

Table 6. *Degree of Problems Encountered by Science Teachers in Modular Learning Modality in Assessment According to Age*

Categories	Younger		Older	
	Mean	Interpretation	Mean	Interpretation
C. Assessment of Learning				
As a Science teacher, I encountered problems in...				
1. Conducting formative and summative tests to monitor learners' progress.	3.82	High Degree	4.26	High Degree
2. providing pointers for the examination,	3.91	High Degree	3.84	High Degree
3. Discussing the results of the test with the learners individually.	3.73	High Degree	4.00	High Degree
4. Using a self-made test with a table of specifications.	4.00	High Degree	4.05	High Degree
5. Activities for further enhancing learning.	4.18	High Degree	4.05	High Degree
6. Using alternative assessments for the learners who are lagging.	4.00	High Degree	3.95	High Degree
7. ensuring that the learners can achieve the lessons' objectives.	3.82	High Degree	4.21	High Degree
8. Preparing criteria for the performance tasks.	4.18	High Degree	4.11	High Degree
9. ensuring that examinations align with the lesson objectives.	4.27	High Degree	4.21	High Degree
10. documenting accurate records of learners' written and performance tests.	4.18	High Degree	4.05	High Degree
Overall Mean	4.01	High Degree	4.07	High Degree

As depicted in Table 6, younger respondents assessed an overall mean score of 4.01, interpreted as “high degree,” whereas older respondents assessed an overall mean score of 4.07, interpreted as “high degree.” This could mean that the degree of problems science teachers encounter in learning assessment, as perceived by the younger and older teachers, is somewhat the same.

Nevertheless, if the items were analyzed further, younger respondents assessed the highest rating of 4.27 on item 9, which states “ensuring that examinations align with the lesson objectives,” interpreted



as a "high degree," while the lowest mean of 3.73 was on item 3, which states "discussing the results of the test to the learners' individually" interpreted as "high degree."

On the other hand, older respondents also assessed the highest rating of 4.26 on item 1, which states "conducting a formative and summative test to monitor learners' progress," interpreted as "high degree," while the lowest mean of 3.84 was on item 2, which states "providing pointers for the examination," interpreted as "high degree."

This implies that most of the younger respondents have problems ensuring that examinations are aligned with the lesson objectives. In comparison, older respondents have difficulties conducting formative and summative tests to monitor learners' progress. Assessment is an integral part of teaching. Thus, teachers must know the various methods and techniques for assessing students' learning.

According to Paren (2016), taking an assessment is an integral part of the teaching-learning process that makes "teaching worth teaching." The only way the teacher is convinced that his learners have learned is to conduct an assessment. Regardless of what system and instruments he employs, a thorough assessment could discover what is learned, who knew and did not, and which method is suitable. The teacher must be clear with the direction and activities to determine how far or how little the students have progressed and what they may be in the next level of learning.

Table 7

Degree of Problems Encountered by Science Teachers in Modular Learning Modality in Content Knowledge According to Civil Status

Categories	Single		Married	
	Mean	Interpretation	Mean	Interpretation
A. Content Knowledge				
As a Science teacher, I encountered problems in...				
1. Using audio-video clips to reinforce lectures.	4.38	High Degree	3.09	Moderate Degree
2. Providing advance reading assignments before the topic discussion	4.00	High Degree	3.36	Moderate Degree
3. giving group dynamics and role-playing to reinforce lectures.	3.63	High Degree	3.18	Moderate Degree
4. Providing science terminologies to feel ease and comfort.	3.88	High Degree	3.68	High Degree
5. allowing groups of students according to association, like friends and classmates.	4.13	High Degree	3.36	Moderate Degree
6. Delegating some tasks to help student learning.	4.13	High Degree	3.55	High Degree
7. Engaging students during lectures by providing easy questions to answer.	3.88	High Degree	3.68	High Degree
8. Asking the students if they have additional questions or queries.	4.13	High Degree	3.55	High Degree
9. Initiating the learners' progress.	4.13	High Degree	3.69	High Degree
10. meeting the students for some technical assistance.	4.00	High Degree	3.41	Moderate Degree
Overall Mean	4.03	High Degree	3.45	Moderate Degree

The results revealed that the degree of challenges encountered by science teachers in the modular learning modality in content knowledge, as assessed by single responders, was "high." In contrast, married respondents assessed it as "moderate." This is supported by the responses, in which single respondents had an overall mean of 4.03 and married respondents had 3.45.



However, in a deeper look at each item, respondents who are single assessed the highest rating of 4.38 on item 1, which states “using audio-video clips to reinforce lectures,” interpreted as “high degree,” while the lowest mean of 3.63 was on item 3, which states “giving group dynamics and role-playing to reinforce lectures,” interpreted as “high degree.”

As for respondents who are married, they assessed the highest rating of 3.69 on item 9, which states “initiating the learners’ progress,” while the lowest mean of 3.09 was on item 1, which states “using audio-video clips to reinforce lectures,” interpreted as “moderate degree.”

This implies that most younger respondents encountered difficulties using audio-video clips to reinforce lectures. In comparison, older respondents find it difficult to initiate activities to improve learners’ progress. In today’s new standard, teachers must equip themselves with the necessary technological skills and innovative teaching strategies and adapt to the changes brought by the new normal educational system.

The results align with De Vera et al.’s (2020) claim. According to them, teachers must have the skills and competencies. Two indicators focus mainly on upskilling and equipping teachers. In the first domain (Domain 1: Content Knowledge and Pedagogy), the indicator addresses how teachers can incorporate the effective use of ICT to facilitate effective teaching and learning processes through various applications and software. Another metric, based on Domain 4: Curriculum and Planning, indicates that teachers must demonstrate skills in the acquisition, creation, and use of a range of teaching and learning tools, including ICT, to meet learning objectives (De Vera et al., 2020).

Table 8

Degree of Problems Encountered by Science Teachers in Modular Learning Modality in Distribution and Retrieval According to Civil Status

Categories	Single		Married	
	Mean	Interpretation	Mean	Interpretation
B. Distribution and Retrieval				
As a Science teacher, I encountered problems in...				
1. Observing health and safety protocol standards during the distribution and learning modality.	4.25	High Degree	4.14	High Degree
2. Reinforcing learning gaps and accomplishing module-related learning activities.	4.50	Very High Degree	3.91	High Degree
3. Prepare adequate materials that support the retrieval of modules.	4.25	High Degree	3.91	High Degree
4. developing a mechanism that will create an efficient.	4.13	High Degree	3.86	High Degree
5. Encourage learners’ level of commitment towards the enhancement of skills and mastery of competencies.	4.13	High Degree	3.77	High Degree
6. making sure that the modules are complete.	4.38	High Degree	4.00	High Degree
7. ensuring that the work activity is included in the retrieval.	4.25	High Degree	3.91	High Degree
8. manifesting good relationships with learners and parents.	4.00	High Degree	4.05	High Degree
9. giving opportunities for their views and opinions.	4.00	High Degree	4.00	High Degree
10. treating the learner fairly.	3.88	High Degree	3.91	High Degree
Overall Mean	4.18	High Degree	3.95	High Degree

As depicted in Table 8, the results revealed that the degree of problems encountered by science teachers in the modular learning modality in distribution and retrieval, according to civil status, was “high.” This is supported by the responses, in which single respondents had an overall mean of 4.18, and married respondents had a mean of 3.95.

However, in a deeper look at each item, respondents who are single assessed the highest rating of 4.50 on item 2, which states “reinforcing learning gaps and accomplished module-related learning activities” interpreted as “very high degree,” while the lowest mean of 3.88 was on item 10, which states “treating the learner fairly” interpreted as “high degree.”



As for respondents who are married, they assessed the highest rating of 4.14 on item 1, which states “observing health and safety protocols standards during the distribution and learning modality,” while the lowest mean of 3.77 was on item 5, which states “encouraging learners' level commitment towards enhancement of skills and mastery of competencies,” interpreted as “moderate degree.”

This implies that most unmarried respondents have difficulty closing learning gaps and accomplishing module-related activities, while married respondents' concerns are about observing schools' safety and health protocols during distribution and during modular learning modality-related activities.

The results are supported by the study by Dangle and Sumaoang (2020). Their research findings showed that the main problems that emerged were a lack of school funding in the production, distribution, and retrieval of modules, students' struggle with self-studying, and parents' lack of knowledge to academically guide their child/children. Hence, it is evident that there are struggles associated with using modular distance learning.

Table 9. Degree of Problems Encountered by Science Teachers in Modular Learning Modality in Assessment According to Civil Status

Categories	Single		Married	
	Mean	Interpretation	Mean	Interpretation
C. Assessment of Learning				
As a Science teacher, I encountered problems in...				
1. Conducting formative and summative tests to monitor learners' progress.	4.51	Very High Degree	3.95	High Degree
2. providing pointers for the examination,	4.13	High Degree	3.77	High Degree
3. Discussing the results of the test with the learners individually.	4.13	High Degree	3.82	High Degree
4. Using a self-made test with a table of specifications.	4.25	High Degree	3.95	High Degree
5. Activities for further enhancing learning.	4.50	Very High Degree	3.95	High Degree
6. Using alternative assessments for the learners who are lagging.	4.25	High Degree	3.86	High Degree
7. ensuring that the learners can achieve the lessons' objectives.	4.25	High Degree	4.00	High Degree
8. Preparing criteria for the performance tasks.	4.50	Very High Degree	4.00	High Degree
9. ensuring that examinations align with the lesson objectives.	4.50	Very High Degree	4.14	High Degree
10. documenting accurate records of learners' written and performance tests.	4.25	High Degree	4.05	High Degree
Overall Mean	4.33	High Degree	3.95	High Degree

Table 9 shows a high degree of problems encountered by science teachers in the modular learning modality of assessment, as perceived by respondents who are single and married. Single respondents assessed an overall mean of 4.33, while married respondents had an overall mean of 3.95. Although they vary in numerical value, both ratings were interpreted as “high degree.”

But if further analysis is conducted, respondents who are single assessed the highest rating of 4.51 on item 1, which states “conducting a formative and summative test to monitor learners' progress,” while the lowest mean of 4.13 was on item 2, which states “providing pointers for the examination” and item 3 which states “discussing the results of the test to the learners' individually” interpreted as high degree.”



On the other hand, respondents who are married assessed the highest rating of 4.14 on item 9, which states "ensuring that examinations align with the lesson objectives," interpreted as "high degree," while the lowest mean of 3.77 was on item 2, which states "providing pointers for the examination," interpreted as "high degree."

This implies that most unmarried respondents face difficulties conducting formative and summative tests to monitor learners' progress. In contrast, married respondents have difficulty ensuring that examinations align with lesson objectives. Since there is no face-to-face interaction with the learners, teachers struggle to conduct formative and summative assessments to determine learners' performance. The teachers have to report on every child's progress, assessments, and curriculum. With the results, teachers must provide reinforcement activities to those struggling learners.

According to Mayasari and Kemal (2020), assessment is part of the learning process, which as a whole cannot be separated from teaching activities; carrying out evaluations in educational activities has significant meaning because evaluation is a measuring tool or process to determine the level of achievement of success that has been achieved by students on teaching materials or materials that have been delivered so that with the evaluation, the objectives of learning will be seen accurately and convincingly. The teachers still have a role to play in evaluating distance learning.

Table 10. Degree of Problems Encountered by Science Teachers in Modular Learning Modality in Content Knowledge According to Highest Educational Attainment

Categories	Lower		Higher	
	Mean	Interpretation	Mean	Interpretation
A. Content Knowledge				
As a Science teacher, I encountered problems in...				
1. Using audio-video clips to reinforce lectures.	3.33	Moderate Degree	3.53	High Degree
2. providing advance reading assignments before the topic discussion	3.33	Moderate Degree	3.73	High Degree
3. giving group dynamics and role-playing to reinforce lectures.	3.20	Moderate Degree	3.40	Moderate Degree
4. providing science terminologies to feel ease and comfort.	3.47	Moderate Degree	4.00	High Degree
5. allowing groups of students according to association, like friends and classmates.	3.47	Moderate Degree	3.67	High Degree
6. delegating some tasks to help student learning.	3.47	Moderate Degree	3.93	High Degree
7. engaging students during lectures by providing easy questions to answer.	3.53	High Degree	3.93	High Degree
8. asking back the students if they have additional questions or queries.	3.60	High Degree	3.80	High Degree
9. initiating the learners' progress.	3.67	High Degree	3.93	High Degree
10. meeting the students for some technical assistance.	3.47	Moderate Degree	3.67	High Degree
Overall Mean	3.45	Moderate Degree	3.76	High Degree

As divulged in Table 10, respondents with lower educational attainment assessed an overall mean score of 3.45, interpreted as a "moderate degree." In contrast, respondents with higher educational attainment assessed an overall mean score of 3.76, interpreted as a "high degree." This could show that



respondents with higher educational attainment encountered many more difficulties than their counterparts.

However, if examined the items thoroughly, respondents with lower educational attainment assessed the highest rating of 3.67 on item 9, which states “initiating the learners' progress,” interpreted as “moderate degree,” while the lowest mean of 3.20 was on item 3 which states “giving group dynamics and role-playing to reinforce lectures” interpreted as “low degree.”

Respondents with higher educational attainment assessed the highest rating of 4.00 on item 4, which states “providing science terminologies to feel ease and comfort,” interpreted as “high degree,” while the lowest mean of 3.40 was on item 3, which states “giving group dynamics and role-playing to reinforce lectures” interpreted as “moderate degree.”

This implies that most of the respondents with higher education attainment encountered problems initiating the learners' progress. In contrast, those respondents with lower educational attainment experienced difficulties providing the learners with science terminologies. Teachers, as the spearhead of the implementation of modular learning, must be knowledgeable of the learning content of the curriculum. Above all, the teacher must know the curriculum's objectives, standards, teaching skills, interests, appreciation, and ideals.

A teacher must responsively overcome all the problems in modular learning so that the teaching continues to achieve the targets set. According to Poro et al. (2018), to be fully effective in teaching, they can adjust to the changing needs of learners in a world of rapid social, cultural, economic, and technological change. The teacher is the person who facilitates learning; his duty is to take advantage of a variety of teaching methods and techniques to organize learning experiences and assess whether the learners have achieved the desired behavior or not.

Table 11

Degree of Problems Encountered by Science Teachers in Modular Learning Modality in Distribution and Retrieval According to Highest Educational Attainment

Categories	Lower		Higher	
	Mean	Interpretation	Mean	Interpretation
B. Distribution and Retrieval				
As a Science teacher, I encountered problems in...				
1. observing health and safety protocol standards during the distribution and learning modality.	4.01	High Degree	4.33	High Degree
2. reinforcing learning gaps and accomplishing module-related learning activities.	4.00	High Degree	4.13	High Degree
3. preparing adequate materials that support retrieval of modules.	3.73	High Degree	4.27	High Degree
4. developing a mechanism that will create an efficient.	3.73	High Degree	4.13	High Degree
5. encouraging learners' level of commitment towards enhancement of skills and mastery of competencies.	3.72	High Degree	4.00	High Degree
6. making sure that the modules are complete.	3.93	High Degree	4.27	High Degree
7. ensuring that the work activity is included in the retrieval.	3.93	High Degree	4.07	High Degree
8. manifesting good relationships with learners and parents.	3.80	High Degree	4.27	High Degree
9. giving opportunities for their views and opinions.	3.93	High Degree	4.07	High Degree
10. treating the learner fairly.	3.80	High Degree	4.01	High Degree
Overall Mean	3.86	High Degree	4.15	High Degree



Table 11 shows that respondents with lower educational attainment assessed an overall mean score of 3.86 in distribution and retrieval, interpreted as a “high degree.” In contrast, respondents with higher educational attainment assessed an overall mean score of 4.15, interpreted as a “high degree.” This could mean that the degree of problems encountered by science teachers in modular learning modality in distribution and retrieval, regardless of respondents’ educational attainment, was high.

However, if investigated further, respondents with lower educational attainment assessed the highest rating of 4.01 on item 1, which states “observing health and safety protocols standards during the distribution and learning modality,” while the lowest mean of 3.73 was on five (5), which states “encouraging learners level commitment towards enhancement of skills and mastery of competencies” interpreted as “high degree.”

In the same manner, respondents with higher educational attainment assessed the highest rating of 4.33 on item 1, which states “observing health and safety protocols standards during the distribution and learning modality,” interpreted as “high degree, while the lowest mean of 4.00 was on item 5 which states “encouraging learners level commitment towards enhancement of skills and mastery of competencies” interpreted as “high degree.”

This implies that both respondents with higher and lower educational attainment encountered common problems during the distribution and retrieval of modules. The main problem was observing the schools’ safety and health protocols. Some parents and guardians are not following the school’s safety and health protocols even though they are posted in different areas of the school for their awareness.

According to Robert (2020), school authorities must ask for assistance from the surrounding community to enforce the safety of the school. Every school has its way of implementing the program and activities. Issues and problems encountered during implementation must be addressed as soon as possible. Strengthen School Community Partnership and empower Parents-Teachers Relationships while achieving the fundamental goals of this program.

Table 12

Degree of Problems Encountered by Science Teachers in Modular Learning Modality in Assessment According to Highest Educational Attainment

Categories	Lower		Higher	
	Mean	Interpretation	Mean	Interpretation
C. Assessment of Learning				
As a Science teacher, I encountered problems in...				
1. conducting formative and summative tests to monitor learners' progress.	3.80	High Degree	4.40	High Degree
2. providing pointers for the examination,	3.47	Moderate Degree	4.27	High Degree
3. discussing the results of the test with the learners individually.	3.87	High Degree	3.93	High Degree
4. using a self-made test with a table of specifications.	3.80	High Degree	4.27	High Degree
5. activities for further providing enhancement learning.	4.20	High Degree	4.00	High Degree
6. using alternative assessments for the learners who are lagging.	4.07	High Degree	3.87	High Degree
7. ensuring that the learners can achieve the lessons' objectives.	4.00	High Degree	4.13	High Degree
8. preparing criteria for the performance tasks.	4.20	High Degree	4.07	High Degree
9. ensuring that examinations align with the lesson objectives.	4.40	High Degree	4.07	High Degree
10. documenting accurate records of learners' written and performance tests.	4.20	High Degree	4.00	High Degree



Overall Mean	4.00	High Degree	4.10	High Degree
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As presented in Table 12, respondents with lower educational attainment assessed an overall mean score of 4.00, interpreted as “high degree,” in the same manner that respondents with higher educational attainment assessed an overall mean score of 4.10, interpreted as “high degree.” This could mean that regardless of their educational attainment, the degree of problems encountered by science teachers in modular learning modality in assessment was the same.

However, if deeper analysis, respondents with lower educational attainment assessed the highest rating of 4.40 on item 9, which states “ensuring that examinations align with the lesson objectives,” interpreted as “high degree,” while the lowest mean of 3.47 was on item 2 which states “providing pointers for the examination” interpreted as “high degree.”

Respondents with higher educational attainment assessed the highest rating of 4.40 on item 1, which states “conducting a formative and summative test to monitor learners' progress,” interpreted as “high degree,” while the lowest mean of 3.87 was on item 6, which states “using alternative assessment for the learners who are lagging” interpreted as “high degree.”

This implies that most of the respondents with lower educational attainment had encountered problems in preparing examinations that aligned with the lesson objectives. In comparison, respondents with higher educational attainment faced difficulty conducting formative and summative tests to monitor learners' progress. Assessment of learning in the new normal requires schools and teachers to rapidly change their practices, including daily tasks, responsibilities, and accountabilities. Teachers may be asked to develop alternative and varied approaches to monitor children's learning during the COVID crisis.

The teachers must report every child's progress details, assessments, and curriculum. According to Umar (2018), assessment for learning is based on providing instant and specific feedback after each learning step to avoid unnecessary delay in correcting students' errors. For such evaluation to realize its maximum benefit, assessment should not be a once-and-done activity. Instead, it must be a continuous act, guiding the teaching-learning process through timely feedback. It is widely acknowledged that the effect of feedback is enhanced if and only if it is immediate and clearly articulated to guide the learning process and to rectify possible shortcomings.

Comparative Analysis of the Degree of Problems Encountered by Science Teachers in Modular Learning Modality According to Knowledge, Distribution, Retrieval, and Assessment when grouped by Age, Civil Status, and Highest Educational Attainment

Table 13

Difference in the Degree of Problems Encountered by Science Teachers in Modular Learning Modality in Content Knowledge

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	Sig. level	Interpretation
Age	Younger (below 40 years old)	1	16.05	98.500	0.796	0.05	Not Significant
		1					
	Older (40 years old and above)	1	15.18				
		9					
Civil Status	Single	8	19.50	56.000	0.133	0.05	Not Significant
		2					
	Married	2	14.05				
		2					
Highest Educational Attainment	Lower	1	14.13	92.000	0.394		Not Significant
		5					
	Higher	1	16.87				
		5					



As reflected in Table 13, for variable age, the computed U is 98.500 with a p-value of 0.796, which is greater than the 0.05 significance level and is thus interpreted as “not significant.” Therefore, the hypothesis that “there is no significant difference in the degree of problems encountered by science teachers in modular learning modality in content knowledge when grouped and compared according to age” is accepted.

Moreover, regarding variable civil status, the computed U is 56.000 with a p-value of 0.133, which is greater than the 0.05 significance level, thus, interpreted as “not significant.” Therefore, the hypothesis that “there is no significant difference in the degree of problems encountered by science teachers in modular learning modality in content knowledge when grouped and compared according to civil status” is accepted.

On the variable highest educational attainment, the computed U is 92.000 with a p-value of 0.394, which is greater than the 0.05 significance level and, thus, interpreted as “not significant.” Therefore, the hypothesis that “there is no significant difference in the degree of problems encountered by science teachers in modular learning modality in content knowledge when grouped and compared according to highest educational attainment” is accepted.

This implies that the degree of problems science teachers encounter regarding modular learning modality in content knowledge when grouped and compared according to age, civil status, and highest educational attainment do not vary. This is because most of the teachers had experienced the same problem at the onset of the implementation of modular learning regardless of their profile.

Table 14. *Difference in the Degree of Problems Encountered by Science Teachers in Modular Learning Modality in Distribution and Retrieval*

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	Sig. level	Interpretation
Age	Younger (below 40 years old)	1	12.73	74.000	0.187	0.05	Not Significant
	Older (40 years old and above)	1	17.11				
		9					
Civil Status	Single	8	16.63	79.000	0.671	0.05	Not Significant
	Married	2	15.09				
		2					
Highest Educational Attainment	Lower	1	14.30	94.500	0.453	0.05	Not Significant
		5					
	Higher	1	16.70				
		5					

As reflected in Table 14, for variable age, the computed U is 74.000 with a p-value of 0.187, which is greater than the 0.05 level of significance and, thus, interpreted as “not significant.” Therefore, the hypothesis that “there is no significant difference in the degree of problems encountered by science teachers in modular learning modality in distribution and retrieval when grouped and compared according to age” is accepted.

Regarding variable civil status, the computed U is 79.000 with a p-value of 0.671, which is greater than the 0.05 significance level, thus, interpreted as “not significant.” Therefore, the hypothesis that “there is no significant difference in the degree of problems encountered by science teachers in modular learning modality in distribution and retrieval when grouped and compared according to civil status” is accepted.

On the variable highest educational attainment, the computed U is 94.500 with a p-value of 0.453, which is greater than the 0.05 significance level and, thus, interpreted as “not significant.” Therefore, the hypothesis that “there is no significant difference in the degree of problems encountered by science

teachers in modular learning modality in distribution and retrieval when grouped and compared according to highest educational attainment” is accepted.

This implies that the degree of problems science teachers encounter regarding modular learning modality in distributing and retrieving modules when grouped and compared according to age, civil status, and highest educational attainment do not vary. This only shows that most teachers are experiencing the same problems while distributing and retrieving materials and modules. Teachers’ profile variables are not influencing factors that differ in their attitude toward the distribution and retrieval of modules.

Table 15. *Difference in the Degree of Problems Encountered by Science Teachers in Modular Learning Modality in Assessment*

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	Sig. level	Interpretation
Age	Younger (below 40 years old)	1	14.73	96.000	0.713	0.05	Not Significant
		1					
	Older (40 years old and above)	1	15.95				
Civil Status	Single	8	18.13	67.000	0.323	0.05	Not Significant
		2					
	Married	2	14.55				
Highest Educational Attainment	Lower	1	15.40	111.000	0.950	0.05	Not Significant
		5					
	Higher	1	15.60				
		5					

As depicted in Table 15, for variable age, the computed U is 96.000 with a p-value of 0.713, which is greater than the 0.05 significance level and is thus interpreted as “not significant.” Therefore, the hypothesis that “there is no significant difference in the degree of problems encountered by science teachers in modular learning modality in assessment when grouped and compared according to age” is accepted.

On the variable civil status, the computed U is 67.000 with a p-value of 0.323, which is greater than the 0.05 significance level and, thus, interpreted as “not significant.” Therefore, the hypothesis that “there is no significant difference in the degree of problems encountered by science teachers in modular learning modality in assessment when grouped and compared according to civil status” is accepted.

Moreover, on the variable highest educational attainment, the computed U is 111.000 with a p-value of 0.950, which is greater than the 0.05 significance level and, thus, interpreted as “not significant.” Therefore, the hypothesis that “there is no significant difference in the degree of problems encountered by science teachers in modular learning modality in assessment when grouped and compared according to highest educational attainment” is accepted.

This implies that the degree of problems science teachers encounters regarding modular learning modality in the assessment area when grouped and compared according to age, civil status, and highest educational attainment do not vary. Most science teachers experience the same degree of problems concerning assessment. Regardless of their age, civil status, and educational attainment, they encountered the same issues when conducting assessment activities for the learners.

Conclusion

The findings of the study revealed that science teachers encountered a consistently high degree of problems across the key areas of modular learning modality, namely content knowledge, distribution and retrieval of modules, and assessment practices. This indicates that despite their professional



qualifications and experience, teachers experienced considerable difficulty in effectively delivering instruction, managing learning materials, and implementing appropriate assessment strategies in a distance learning environment. Furthermore, the results showed that these challenges were not significantly influenced by profile variables such as age, civil status, and highest educational attainment, suggesting that the difficulties are systemic rather than individual. Overall, the study concludes that modular learning, while a practical alternative during educational disruptions, presents inherent challenges that require comprehensive institutional support.

In light of these findings, it is recommended that schools and educational authorities implement targeted professional development programs to strengthen teachers' content knowledge and instructional strategies in modular settings. Additionally, there is a need to establish more efficient and organized systems for the distribution and retrieval of modules through stronger collaboration with parents and community stakeholders. Training on flexible and aligned assessment practices should also be prioritized to ensure accurate evaluation of learners' progress. These measures will help address the identified challenges and enhance the overall effectiveness of modular learning delivery.

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Conflict of Interest

The researcher declares that there is no conflict of interest in the conduct of this study. The research was carried out with full transparency, and all data were collected, analyzed, and presented objectively without any financial, personal, or professional influence that could have affected the results. Any affiliations or involvement with the respondents or institutions did not compromise the integrity and credibility of the study.

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