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Digital Module (Digi-Mod) in Multimedia Science Learning

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Abstract*—This study investigated the effectiveness of the Digital Module (Digi-Mod) in enhancing students' conceptual understanding and academic performance in science. Grounded on the Cognitive Theory of Multimedia Learning and Constructivism, the research aimed to determine how to measure the level of assessment on the components and features of Digital Module. Also, it sought to measure the level of students' conceptual understanding and performance in science. Furthermore, the significance difference on the performance of students. Lastly to find if there is a significant relationship between components and features of Digi-Mod on students' conceptual understanding and its effect on their performance. The study employed a descriptive-experimental research design and involved Grade 10 students from Liceo de Pila during the 2025–2026 school year. The experimental group was exposed to the Digi-Mod, and data were collected through researcher-developed diagnostic and summative tests, as well as validated questionnaires evaluating the module's components and features. Data were analyzed using statistical tools, including mean, standard deviation, t-test, Pearson Product Moment Correlation Coefficient, and regression analysis. The findings revealed that the Digi-Mod components and features were rated very high across all dimensions. Students also demonstrated very high levels of conceptual understanding and achieved very satisfactory performance. Furthermore, there was a significant improvement in academic performance, as evidenced by the difference between diagnostic and summative test scores. Statistical analysis confirmed a significant relationship between the use of the Digi-Mod and students' conceptual understanding, as well as a significant effect on performance before and after its implementation. Based on the findings the Digi-Mod is an effective instructional intervention, as evidenced by the significant improvement between diagnostic and summative test scores, and the null hypothesis was rejected. Most components and features of the Digi-Mod demonstrated a statistically significant relationship with students' conceptual understanding and higher-order thinking skills, including analyzing, application, problem-solving, and critiquing, and the null hypothesis was rejected. However, regarding the overall effect on students' academic performance, some components such as the lesson guide, enrichment activities, and assessment showed significant effects, while others did not, and the null hypothesis was accepted. As indicated by the findings, it is recommended that teachers integrate the Digi-Mod into science instruction to enhance students' engagement, conceptual understanding, and academic performance. Future researchers are encouraged to explore the use of similar multimedia modules in other subjects and grade levels, as well as investigate the long-term effects on learning retention and critical thinking skills.*

***Keywords*—** *Digital Module (Digi-Mod), multimedia learning, conceptual understanding, academic performance, science education.*

I. INTRODUCTION

Science education is essential for helping students acquire higher-order thinking abilities in the twenty-first century, such as critical thinking, analysis, problem-solving, and application. However, because scientific concepts are abstract and traditional, teacher-centered teaching methods continue to be used, many students still struggle to understand them. These difficulties frequently lead to misunderstandings and poor academic achievement, underscoring the need for more efficient and captivating teaching techniques.

The use of Digital Modules (Digi-Mod) in multimedia science education is one cutting-edge strategy. These modules provide information in a more engaging and interactive manner by combining text, graphics, animations, music, and video. According to recent advances in multimedia learning theory, students who actively process material through both verbal and visual channels get a deeper understanding. Richard E. Mayer (2021, 2024) asserts that meaningful learning happens when students choose pertinent material, arrange it into logical patterns, and incorporate it with what they already know.

Additionally, recent studies on multimedia and video-based learning have demonstrated that incorporating interactive components and different material representations improves learning efficacy and engagement (Vahdat et al., 2022). These results lend credence to the notion that abstract scientific ideas might be made more tangible and comprehensible through multimedia environments.

Furthermore, contemporary constructivist viewpoints stress that students actively create knowledge by engagement, investigation, and introspection (David H. Jonassen, 2017). According to recent research, interactive multimedia environments motivate students to participate in active learning processes, which enhance their critical thinking and conceptual comprehension.

In order to improve students' conceptual comprehension and academic performance in science, this study employs the Digital Module (Digi-Mod) as an instructional intervention. It specifically aims to improve higher-order thinking abilities like application, analysis, critical thinking, problem-solving, and critiquing.

1.1 Statement of the Problem

Problem/s which were addressed by the research

This study is about the technology-enhanced teaching and learning methods by providing evidence-based approaches for

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improving students' conceptual comprehension and students' academic performance through the use of digital modules.

The research is designed to answer the following specific questions and objectives:

1. What is the level of assessment on the components of the Digi-Mod in terms of:
   1.1 Objectives;
   1.2 Lesson Guide;
   1.3 Enrichment;
   1.4 Assessment; and
   1.5. Summary?
2. What is the level of assessment on the feature of Digi-Mod in terms of:
   2.1. Design;
   2.2 Usability;
   2.3 Functionality; and
   2. 4 User friendly?
3. What is the level of the Students' conceptual understanding in learning science in terms of:
   3.1 Critical thinking;
   3.2. Analyzing;
   3.3 Application;
   3.4 Problem Solving; and
   3.5 Critiquing?
4. What is the level of Students' performance in Science in terms of:
   4.1. Diagnostic Test; and
   4.2 Summative Test?
5. Is there any significant difference on the performance of the students in Science?
6. Is there a significant relationship between the component and features of Digi-Mod on students conceptual understanding?
7. Is there a significant effect on the component and features of Digi-Mod on student performance in Summative test?

II. Methodology

The study employed a descriptive-experimental research design and involved Grade 10 students from Liceo de Pila during the 2025–2026 school year. The experimental group was exposed to the Digi-Mod, and data were collected through researcher-developed diagnostic and summative tests, as well as validated questionnaires evaluating the module's components and features. Data were analyzed using statistical tools, including mean, standard deviation, t-test, Pearson Product Moment Correlation Coefficient, and regression analysis..

III. Results and Discussion

This part presents a comprehensive discussion of the data gathered in the study. It focuses on the presentation, analysis, and interpretation of the information collected to address the specific sub-problems in relation to the main problem of the research. The findings are organized and examined systematically to provide a clear understanding of the results.

This portion not only offers the unprocessed information but also deciphers its significance by emphasizing the patterns, trends, and relationships that appeared during the course of the research. Through this analysis, the chapter aims to provide meaningful insights that respond directly to the research questions, allowing for a deeper understanding of the phenomena under investigation. In addition, visual aids such as tables, graphs, and charts are utilized where appropriate to enhance clarity and facilitate easier comprehension of the results.

Level of Digital Module (Digi-Mod) in Multimedia Science Learning in terms of Components

In this study, the level of Digital Module (Digi-Mod) in Multimedia Science Learning in terms of Components refers to Objectives; Lesson Guide; Enrichment; Assessment; and Summary. The level of Digital Module (Digi-Mod) in Multimedia Science Learning in terms of Components is revealed in the following table, which shows the statement, mean, standard deviation, remarks, and verbal interpretation.

The level of the Digital Module (Digi-Mod) in Multimedia Science Learning with respect to its objectives is shown in Table 1. "Strongly Agree" ratings were given to every item, including motivating value, clarity of objectives, alignment with courses, and guiding toward important concepts.

These findings suggest that the Digi-Mod successfully focuses students' attention on key science topics and promotes active participation in learning activities in addition to clearly communicating what is required of them. Students are therefore more likely to meet the desired learning objectives, proving that a well-designed digital module can greatly improve understanding, motivation, and general performance in science study.

Table 1. Level of Digital Module (Digi-Mod) in Multimedia Science Learning in terms of Components with regards to Objectives

Statement The objectives of the Digital Module….	Mean	SD	Remarks
1. are clearly stated and easy for me to understand.	4.33	0.81	Strongly Agree
2. help me identify what knowledge and skills I am expected to learn in each topic.	4.53	0.72	Strongly Agree
3. guide my attention toward the most important science concepts and learning outcomes.	4.62	0.58	Strongly Agree
4. are well-aligned with the lessons, activities, and assessments included in the module.	4.61	0.59	Strongly Agree
5. motivate and encourage me to complete the tasks and activities in every lesson.	4.50	0.77	Strongly Agree
Weighted Mean	4.52		
SD	0.71		
Verbal Interpretation	Very High		

This suggests that the respondents believe the digital module's goals are highly beneficial to their learning. In particular, every indication received mean values between 4.33 and 4.62, all of which were classified as Strongly Agree, indicating a continuously favorable assessment.

With a standard deviation of 0.71 and an overall weighted mean of 4.52, the results are verbally evaluated as Very High. The strong ratings show that the Digi-Mod's well-defined and aligned objectives improve students' comprehension of learning expectations, concentrate attention on important science concepts, and encourage motivation.

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This implies that well-crafted objectives are essential for directing students toward desired results and enhancing their general involvement and performance in science.

In relation to the lesson guide, Table 2 shows the level of the Digital Module (Digi-Mod) in Multimedia Science Learning. It focuses on how the lesson plan facilitates students' comprehension, content organization, autonomous learning, and application of ideas to real-world scenarios.

Table 2. Level of Digital Module (Digi-Mod) in Multimedia Science Learning in terms of Components with regards to Lesson Guide

Statement The lesson guide of the Digital Module….	Mean	SD	Remarks
1. explains the science topics in a clear, organized, and easy-to-follow manner.	4.50	0.70	Strongly Agree
2. helps me understand the discussion, sequence and flow of the lesson .	4.61	0.62	Strongly Agree
3. makes the science concepts easier for me to understand by providing examples, illustrations and explanations.	4.59	0.63	Strongly Agree
4. enables me to study and learn independently without needing constant assistance.	4.58	0.60	Strongly Agree
5. supports me connect the science lessons to real-life applications and everyday experiences.	4.62	0.65	Strongly Agree
Weighted Mean	4.58		
SD	0.64		
Verbal Interpretation	Very High		

According to the statistics, every indicator under the lesson guide component received a rating of "Strongly Agree," suggesting that respondents had a very favorable opinion. The statement "supports me to connect the science lessons to real-life applications and everyday experiences" received the highest mean of 4.62 (SD = 0.65) among the items, indicating that the Digi-Mod is very successful in making learning relevant and meaningful. "Helps me understand the discussion, sequence, and flow of the lesson" came in second with a mean of 4.61 (SD = 0.62), suggesting that the module is easy to follow and well-structured. Additionally, the phrases "enables me to study and learn independently without needing constant assistance" and "makes the science concepts easier for me to understand by providing examples, illustrations, and explanations" had averages of 4.59 (SD = 0.63) and 4.58 (SD = 0.60), respectively.

These findings suggest that the Digi-Mod successfully improves understanding and encourages independent learning. Despite being the lowest of the characteristics, "explains the science topics in a clear, organized, and easy-to-follow manner" obtained a mean score of 4.50 (SD = 0.70), indicating a fairly positive assessment.

The lesson guide component received an overall weighted mean of 4.58 with a standard deviation of 0.64, which is considered "Very High." This suggests that the Digital Module is widely used and successful in providing organized, understandable, and captivating science instruction.

The level of the Multimedia Science Learning Digital Module (Digi-Mod) in terms of its components with regard to enrichment activities is shown in Table 3. It explores how these activities improve student engagement, encourage inquiry, foster motivation, and deepen their understanding of science.

Table 3. Level of Digital Module (Digi-Mod) in Multimedia Science Learning in terms of Components with regards to Enrichment

Statement The enrichment activities of the Digital Module….	Mean	SD	Remarks
1. help strengthen and deepen my understanding of the science concepts discussed in the lesson.	4.40	0.78	Strongly Agree
2. encourage me to explore the topic further and learn beyond the basic lesson content.	4.49	0.70	Strongly Agree
3. are enjoyable, creative, and thought-provoking, which makes learning more engaging.	4.44	0.71	Strongly Agree
4. help me apply the science concepts I have learned to real-life situations and practical experiences.	4.51	0.69	Strongly Agree
5. increases my interest and motivation to learn more about science.	4.55	0.70	Strongly Agree
Weighted Mean	4.48		
SD	0.71		
Verbal Interpretation	Very High		

The findings demonstrate that the respondents gave all enrichment-related indicators a "Strongly Agree" rating, indicating a very favorable opinion. "Increases my interest and motivation to learn more about science" had the highest mean of 4.55 (SD = 0.70) among the indicators, suggesting that the enrichment activities are very successful in igniting students' passion for learning. With a mean of 4.51 (SD = 0.69), "help me apply the science concepts I have learned to real-life situations and practical experiences" comes next, indicating that the activities effectively connect theoretical understanding with practical application.

The module's capacity to foster curiosity and extended learning is further demonstrated by the mean score of 4.49 (SD = 0.70) for "encourage me to explore the topic further and learn beyond the basic lesson content." With a mean score of 4.44 (SD = 0.71) for the statement "are enjoyable, creative, and thought-provoking, which makes learning more engaging," the activities successfully hold students' attention. In contrast, "help strengthen and deepen my understanding of the science concepts discussed in the lesson" received the lowest mean of 4.40 (SD = 0.78), although it is still within the "Strongly Agree" interpretation, indicating a fairly positive assessment.

In summary, the enrichment component received a weighted mean of 4.48 with a standard deviation of 0.71, which is considered "Very High." This indicates that the Digital Module's enrichment activities are widely used and successful in improving students' educational experiences.

The level of the Multimedia Science Learning Digital Module (Digi-Mod) in terms of its components with regard to assessment is shown in Table 4. It emphasizes how the module's evaluation features gauge students' comprehension, offer precise instructions, match goals, and assist students in tracking their development.

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Table 4. Level of Digital Module (Digi-Mod) in Multimedia Science Learning in terms of Components with regards to Assessment

Statement The assessment of the Digital Module ….	Mean	SD	Remarks
1. accurately measure how well I have understood the lesson content.	4.57	0.67	Strongly Agree
2. provides a clear instructions that are, easy to understand, and simple to follow.	4.65	0.62	Strongly Agree
3. allows me to demonstrate my learning in a variety of ways, such as answering, analyzing, or applying concepts.	4.65	0.59	Strongly Agree
4. is aligned with the lesson objectives and reflect the key concepts taught.	4.69	0.53	Strongly Agree
5. helps me recognize my strengths and identify areas where I need to improve my learning.	4.67	0.63	Strongly Agree
Weighted Mean	4.65		
SD	0.61		
Verbal Interpretation	Very high		

All assessment-related variables were scored "Strongly Agree," according to the data, indicating a very positive appraisal from the respondents. With the highest mean of 4.69 (SD = 0.53) among the indicators, "is aligned with the lesson objectives and reflects the key concepts taught" suggests that the assessments are very compatible with the intended learning results. With a mean score of 4.67 (SD = 0.63), "helps me recognize my strengths and identify areas where I need to improve my learning" comes next, suggesting that the tests successfully encourage self-evaluation and development.

Moreover, the statements "allows me to demonstrate my learning in a variety of ways, such as answering, analyzing, or applying concepts" and "provides clear instructions that are easy to understand and simple to follow" both received a mean of 4.65 with standard deviations of 0.59 and 0.62, respectively. These results suggest that the Digi-Mod provides versatile, well-structured evaluation techniques that address various learning facets.

The lowest mean of 4.57 (SD = 0.67) was obtained for "accurately measure how well I have understood the lesson content," yet it still comes inside the "Strongly Agree" interpretation, suggesting a very favorable opinion.

In general, the assessment component received a weighted mean of 4.65 with a standard deviation of 0.61, which is considered "Very High." This indicates that the Digital Module offers highly dependable and efficient evaluation methods for studying multimedia science.

In terms of summary, Table 5 shows the level of the Digital Module (Digi-Mod) in Multimedia Science Learning. It looks at how the summary part helps students remember important ideas, arrange data, strengthen comprehension, and get ready for assignments.

Based on the findings, every signal pertaining to the summary component was evaluated as "Strongly Agree," indicating a very favorable opinion among the participants. The item that received the highest mean score of 4.63 (SD = 0.56) was "provides clear, concise, and organized information for every topic covered in the module," indicating that the summaries are well-structured and successful in providing crucial information. With a mean score of 4.60 (SD = 0.63), "helps me prepare effectively for tests, quizzes, and class discussions" comes next, suggesting that the summary is crucial to students' academic preparedness.

Table 5. Level of Digital Module (Digi-Mod) in Multimedia Science Learning in terms of Components with regards to Summary

Statement The summary of the Digital Module….	Mean	SD	Remarks
1. highlights the most important points of each lesson, making it easier for me to focus on key concepts.	4.49	0.70	Strongly Agree
2. guides me recall and review the ideas and information I have learned.	4.58	0.66	Strongly Agree
3. provides clear, concise, and organized information for every topic covered in the module.	4.63	0.56	Strongly Agree
4. helps me prepare effectively for tests, quizzes, and class discussions.	4.60	0.63	Strongly Agree
5. reinforces my overall understanding of the lesson and supports my learning process.	4.56	0.69	Strongly Agree
Weighted Mean	4.57		
SD	0.65		
Verbal Interpretation	Very High		

In addition, "reinforces my overall understanding of the lesson and supports my learning process" had a mean of 4.56 (SD = 0.69), while "guides me to recall and review the ideas and information I have learned" received a mean of 4.58 (SD = 0.66).

These results suggest that the summary part successfully improves science topic retention and comprehension. In contrast, "highlights the most important points of each lesson, making it easier for me to focus on key concepts" had the lowest mean of 4.49 (SD = 0.70), although it is still in the "Strongly Agree" group, suggesting a consistently positive assessment.

As a whole, the summary component had a weighted mean of 4.57 with a standard deviation of 0.65, which is considered "Very High." This indicates that the Digital Module's summary part is heavily utilized and successful in assisting students' learning.

The level of the Multimedia Science Learning Digital Module (Digi-Mod) in terms of its design elements is shown in Table 6. It focuses on how the module's structural and visual components enhance students' comprehension, engagement, and overall learning process.

Table 6. Level of Digital Module (Digi-Mod) in Multimedia Science Learning in terms of Features with regards to Design

Statement The design of the Digital Module….	Mean	SD	Remarks
1. provides visually appealing, attractive, and engaging for me as a learner.	4.44	0.76	Strongly Agree
2. has colors, images, and layout that make the content more interesting and easier to follow.	4.61	0.61	Strongly Agree
3. increases my attention and makes learning more enjoyable.	4.65	0.55	Strongly Agree
4. has visuals and graphics provided in the module support my understanding of science concepts.	4.67	0.52	Strongly Agree
5. motivates me to stay focused and actively participate in learning activities.	4.64	0.65	Strongly Agree
Weighted Mean	4.60		
SD	0.63		
Verbal Interpretation	Very High		

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The results show that every indication under the design component received a rating of "Strongly Agree," suggesting a very favorable assessment from the respondents. The indication "has visuals and graphics provided in the module support my understanding of science concepts" had the highest mean of 4.67 (SD = 0.52), indicating that the visual components greatly improve understanding of scientific topics. With a mean score of 4.65 (SD = 0.55), "increases my attention and makes learning more enjoyable" comes next, suggesting that the design successfully piques students' interest and encourages participation.

Likewise, "has colors, images, and layout that make the content more interesting and easier to follow" scored a mean of 4.61 (SD = 0.61), while "motivates me to stay focused and actively participate in learning activities" received a mean of 4.64 (SD = 0.65).

These findings suggest that the Digi-Mod's overall design and visual presentation are orderly and educational. Although it still falls within the "Strongly Agree" interpretation, "provides visually appealing, attractive, and engaging for me as a learner" received the lowest mean of 4.44 (SD = 0.76), indicating a consistently positive opinion. The design component's overall weighted mean was 4.60 with a standard deviation of 0.63, which is considered "Very High." This suggests that the Digital Module design features are highly effective and well-received by the learners.

The usability level of the Digital Module (Digi-Mod) in Multimedia Science Learning is shown in Table 7. It draws attention to the ways in which the module enhances user experience, system performance, accessibility, ease of navigation, and instruction clarity.

Table 7. Level of Digital Module (Digi-Mod) in Multimedia Science Learning in terms of Features with regards to Usability\

Statement The usability of the Digital Module……	Mean	SD	Remarks
1. is easy for me to navigate and operate independently.	4.36	0.77	Strongly Agree
2. has instructions for using the materials which are straightforward, clear, and easy to follow.	4.53	0.70	Strongly Agree
3. functions smoothly and loads without technical issues or delays.	4.54	0.64	Strongly Agree
4. can access the lessons anytime I need to review or study them.	4.62	0.54	Strongly Agree
5. provides structure and organization of the module that allows me to move easily and efficiently from one lesson to another.	4.54	0.72	Strongly Agree
Weighted Mean	4.52		
SD	0.68		
Verbal Interpretation	Very High		

All usability-related factors were scored "Strongly Agree," according to the results, indicating a very positive perception among the respondents. "Can access the lessons anytime I need to review or study them" had the highest mean of 4.62 (SD = 0.54) among the metrics, indicating that the Digi-Mod is very accessible and facilitates flexible learning.

With a mean of 4.54 and standard deviations of 0.64 and 0.72, respectively, "functions smoothly and loads without technical issues or delays" and "provides structure and organization of the module that allows me to move easily and efficiently from one lesson to another" come next.

These results suggest that the module functions effectively and is structured for smooth operation. Besides, learners can readily comprehend how to use the module, as evidenced by the mean score of 4.53 (SD = 0.70) for "has instructions for using the materials which are straightforward, clear, and easy to follow." The statement "is easy for me to navigate and operate independently" received the lowest mean of 4.36 (SD = 0.77), but it still falls within the interpretation of "Strongly Agree," indicating a consistently favorable assessment.

The Digital Module is very useful and user-friendly for students, as seen by the overall usability component's weighted mean of 4.52 with a standard deviation of 0.68, which is read as "Very High."

The level of the Digital Module (Digi-Mod) in Multimedia Science Learning is shown in Table 8 in terms of its functional aspects. It focuses on how well the module's interactive and technical components function and enhance students' educational experiences.

Table 8. Level of Digital Module (Digi-Mod) in Multimedia Science Learning in terms of Features with regards to Functionality

Statement The functionality of the Digital Module....	Mean	SD	Remarks
1 features , such as videos and audio work properly and support my learning.	4.48	0.73	Strongly Agree
2 operates buttons, icons, and navigation tools function correctly and are easy for me to use.	4.69	0.52	Strongly Agree
3. is compatible with the device I use and runs without technical problems.	4.61	0.61	Strongly Agree
4. allows me to participate actively in the learning process through its interactive features.	4.66	0.60	Strongly Agree
5. enhance my overall learning experience and make lessons more engaging and effective.	4.63	0.70	Strongly Agree
Weighted Mean	4.61		
SD	0.64		
Verbal Interpretation	Highly Effective		

The findings show that respondents gave all functionality-related indicators a "Strongly Agree" rating, indicating a very favorable assessment. "Operates buttons, icons, and navigation tools function correctly and are easy for me to use" received the highest mean of 4.69 (SD = 0.52) among the indications, indicating that the module's interface is very responsive and user-friendly. With a mean score of 4.66 (SD = 0.60), "allows me to participate actively in the learning process through its interactive features" comes next, suggesting that the Digi-Mod successfully encourages active involvement among students.

Additionally, the mean score for "improve my overall learning experience and make lessons more engaging and effective" was 4.63 (SD = 0.70), whilst the mean score for "is compatible with the device I use and runs without technical problems" was 4.61 (SD = 0.61).

These results suggest that the module enhances learning and functions well on various devices. In contrast, "features, such as videos and audio work properly and support my learning" received the lowest mean of 4.48 (SD = 0.73), but it

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is still classified as "Strongly Agree," suggesting a consistently positive evaluation.

Generally speaking, the functionality component received a weighted mean of 4.61 with a standard deviation of 0.64, which is considered "Highly Effective." This indicates that the functional aspects of the Digital Module are dependable, effective, and helpful for studying multimedia science.

The degree of user-friendliness of the Digital Module (Digi-Mod) in Multimedia Science Learning is shown in Table 9. It looks at how students' autonomous learning and engagement are supported by the module's interface, accessibility, teaching clarity, and general ease of use.

The findings show that all user-friendliness-related factors were scored "Strongly Agree," indicating a very favorable opinion among the respondents.

Table 9. Level of Digital Module (Digi-Mod) in Multimedia Science Learning in terms of Features with regards to User-friendly.

Statement The Digital module is a user-friendly for it ….	Mean	SD	Remarks
1. is providing a clear and organized interface, making it easy for me to navigate through lessons, understand instructions, and study independently.	4.48	0.74	Strongly Agree
2. is easy to use and accessible, with features and instructions that help me engage with the content effectively and connect it to my learning.	4.63	0.58	Strongly Agree
3. has intuitive and well-structured, allowing me to explore the lessons, follow directions, and comprehend science concepts without much difficulty.	4.58	0.65	Strongly Agree
4. is convenient and learner-friendly, as it enables me to navigate the materials smoothly, understand the content clearly, and complete activities independently.	4.58	0.64	Strongly Agree
5. has clear instructions that support my understanding of science concepts and promote independent learning.	4.61	0.72	Strongly Agree
Weighted Mean	4.58		
SD	0.67		
Verbal Interpretation	Very High		

With the highest mean of 4.63 (SD = 0.58) among the indications, "is easy to use and accessible, with features and instructions that help me engage with the content effectively and connect it to my learning" indicates that the Digi-Mod is very accessible and promotes meaningful learning. With a mean score of 4.61 (SD = 0.72), "has clear instructions that support my understanding of science concepts and promote independent learning" comes next, suggesting that learners' comprehension is significantly impacted by clear instructions.

Collectively, the statements "is convenient and learner-friendly, as it enables me to navigate the materials smoothly, understand the content clearly, and complete activities independently" and "has intuitive and well-structured [design], allowing me to explore the lessons, follow directions, and comprehend science concepts without much difficulty" both received a mean of 4.58, with standard deviations of 0.65 and 0.64, respectively.

These results suggest that the module is well-structured and facilitates autonomous use and easy navigation. Despite having the lowest mean of 4.48 (SD = 0.74), "provides a clear and organized interface, making it easy for me to navigate through lessons, understand instructions, and study independently" still falls within the "Strongly Agree" interpretation, indicating a consistently positive assessment.

Overall, the user-friendliness component received a weighted mean of 4.58 with a standard deviation of 0.67, which is considered "Very High." This suggests that the Digital Module is very user-friendly and successful in promoting autonomous and interesting learning experiences.

Table 10 shows how the adoption of the Digital Module (Digi-Mod) has affected students' conceptual grasp of science in terms of critical thinking. It emphasizes how the module helps students challenge, examine, assess, and think critically about scientific ideas.

The findings demonstrate a very high degree of conceptual comprehension among the respondents, as all indicators under critical thinking were scored "Strongly Agree." "Think carefully and critically before accepting any scientific explanation, considering the evidence and reasoning behind it" had the highest mean of 4.72 (SD = 0.46) among the indicators, indicating that the Digi-Mod successfully fosters students' capacity for critical information evaluation.

The next question, "identify whether a statement in science is a fact, an opinion, or a hypothesis," had a mean score of 4.71 (SD = 0.52), which shows that students can distinguish between various kinds of scientific knowledge.

Table 10. Level of Students' Conceptual Understanding in Learning Science in terms of Critical Thinking.

Statement As a learner, I am able to use digital module to ….	Mean	SD	Remarks
1. become more curious and motivated to ask meaningful questions about science topics, exploring beyond the lessons to satisfy my curiosity.	4.69	0.54	Strongly Agree
2. think carefully and critically before accepting any scientific explanation, considering the evidence and reasoning behind it.	4.72	0.46	Strongly Agree
3. analyze information and data thoroughly to ensure that it is supported by reliable evidence and logical reasoning.	4.66	0.54	Strongly Agree
4. identify whether a statement in science is a fact, an opinion, or a hypothesis, which helps me evaluate information accurately.	4.71	0.52	Strongly Agree
5. reflect on my own thoughts, ideas, and learning strategies to improve my understanding of science topics and solve problems more effectively.	4.67	0.59	Strongly Agree
Weighted Mean	4.69		
SD	0.53		
Verbal Interpretation	Very High		

Furthermore, learners' enhanced interest and inquiry skills were demonstrated by the mean score of 4.69 (SD = 0.54) for "become more curious and motivated to ask meaningful questions about science topics."

The mean scores for the phrases "reflect on my own thoughts, ideas, and learning strategies to improve my understanding" and "analyze information and data thoroughly to ensure that it is supported by reliable evidence and logical reasoning" were 4.67 (SD = 0.59) and 4.66 (SD = 0.54), respectively. These results suggest that the Digi-Mod

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encourages pupils to think critically and reflect on themselves.

Despite having the lowest mean, "analyze information and data thoroughly..." still remains within the "Strongly Agree" interpretation, showing a consistently high evaluation.

When using the Digital Module to learn science, students exhibit a very high level of critical thinking skills, as seen by the critical thinking component's overall weighted mean of 4.69 with a standard deviation of 0.53, which is read as "Very High."

Table 11 shows how the adoption of the Digital Module (Digi-Mod) has affected students' conceptual understanding of science in terms of analysis.

It emphasizes on students' capacity to deconstruct complicated ideas, analyze data, make conceptual comparisons, and draw connections between scientific ideas. The findings show that every indicator under analysis received a "Strongly Agree" rating, indicating that respondents had a very high degree of conceptual understanding. "Compare and contrast different scientific ideas to identify similarities, differences, and relationships between them" had the highest mean of 4.72 (SD = 0.54) among the indicators, indicating that the Digi-Mod successfully improves students' capacity to look at connections between ideas.

Table 11. Level of Students' Conceptual Understanding in Learning Science in terms of Analyzing

Statement As a learner, I am able to use digital module to	Mean	SD	Remarks
1. break down complex science concepts into smaller, simpler parts in order to understand them more clearly and effectively.	4.67	0.60	Strongly Agree
2. compare and contrast different scientific ideas to identify similarities, differences, and relationships between them.	4.72	0.54	Strongly Agree
3. interpret and analyze data presented in graphs, tables, charts, or experiments to support my understanding.	4.63	0.66	Strongly Agree
4. interpret data and information presented in graphs, tables, or experiments.	4.62	0.58	Strongly Agree
5. explain how one scientific idea connects to another and apply this understanding to solve problems or explore new concepts.	4.67	0.60	Strongly Agree
Weighted Mean	4.66		
SD	0.60		
Verbal Interpretation	Very High		

The next statements are "break down complex science concepts into smaller, simpler parts" and "explain how one scientific idea connects to another," both of which have a mean of 4.67 (SD = 0.60), suggesting that students are proficient in connecting and simplifying scientific topics. Also, the mean score for "interpret and analyze data presented in graphs, tables, charts, or experiments" was 4.63 (SD = 0.66), and the mean score for "interpret data and information presented in graphs, tables, or experiments" was 4.62 (SD = 0.58).

These results suggest that the Digi-Mod helps students acquire critical analytical and data interpretation skills. Despite having the lowest mean, the latter is nevertheless classified as "Strongly Agree," suggesting a consistently positive assessment.

When using the Digital Module to learn science, students exhibit a very high level of analytical skills, as seen by the analyzing component's overall weighted mean of 4.66 with a standard deviation of 0.60, which is evaluated as "Very High."

This is consistent with Liljedahl's (2016) emphasis that analysis entails cognitive, metacognitive, and affective processes that allow students to critically assess data and recognize connections between concepts.

Table 12 shows how the adoption of the Digital Module (Digi-Mod) has affected students' conceptual knowledge of science in terms of applicability. It highlights how students can apply scientific knowledge and abilities to practical tasks, real-world scenarios, and problem-solving contexts.

Table 12. Level of Students' Conceptual Understanding in Learning Science in terms of; Application

Statement As a learner, I am able to use digital module to ….	Mean	SD	Remarks
1. apply what I have learned in science lessons to real-life situations and everyday experiences.	4.46	0.76	Strongly Agree
2. use scientific concepts to explain events, problems, or phenomena I encounter in my daily life.	4.60	0.63	Strongly Agree
3. perform science activities, experiments, or hands-on tasks using the knowledge and skills I have learned.	4.63	0.57	Strongly Agree
4. relate classroom lessons and activities to real-world scientific issues and understand their practical relevance.	4.62	0.55	Strongly Agree
5. use my scientific knowledge to make practical and informed decisions in solving problems or addressing challenges.	4.60	0.64	Strongly Agree
Weighted Mean	4.58		
SD	0.63		
Verbal Interpretation	Very High		

The findings demonstrate a very high degree of conceptual understanding among the respondents, as all metrics under application were evaluated as "Strongly Agree." "Perform science activities, experiments, or hands-on tasks using the knowledge and skills I have learned" had the highest mean of 4.63 (SD = 0.57) among the indicators, indicating that the Digi-Mod successfully promotes experiential and hands-on learning. With a mean score of 4.62 (SD = 0.55), this is closely followed by "relate classroom lessons and activities to real-world scientific issues and understand their practical relevance," which shows that students are able to apply theoretical knowledge to practical situations.

In Addition, the statements "use my scientific knowledge to make practical and informed decisions" and "use scientific concepts to explain events, problems, or phenomena in daily life" both had a mean of 4.60, with corresponding standard deviations of 0.63 and 0.64. These results suggest that the Digi-Mod improves students' capacity to apply scientific information in significant and useful ways. "Apply what I have learned in science lessons to real-life situations and everyday experiences" received the lowest mean of 4.46 (SD = 0.76), yet it still falls within the "Strongly Agree" interpretation, indicating a consistently positive assessment

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When using the Digital Module to learn science, students show a very high level of ability to apply scientific concepts, as seen by the application component's overall weighted mean of 4.58 with a standard deviation of 0.63, which is read as "Very High."

Table 13 shows how the adoption of the Digital Module (Digi-Mod) has affected students' conceptual understanding of science as it relates to problem solving. It emphasizes on students' capacity to recognize issues, implement suitable tactics, forecast results, test solutions, and assess outcomes using scientific reasoning.

Table 13. Level of Students' Conceptual Understanding in Learning Science in terms of Problem Solving

Statement As a learner, I am able to use digital module to ….	Mean	SD	Remarks
1. identify and clearly define the problem when faced with a science-related question or situation.	4.63	0.63	Strongly Agree
2. use different strategies, approaches, and methods to find solutions to scientific problems.	4.67	0.49	Strongly Agree
3. predict possible outcomes or results based on scientific principles, prior knowledge, and observations.	4.69	0.49	Strongly Agree
4. test my ideas, solutions, or hypotheses to determine whether they work effectively.	4.77	0.47	Strongly Agree
5. evaluate and select the most effective solution to solve a science problem based on evidence and reasoning.	4.67	0.65	Strongly Agree
Weighted Mean	4.68		
SD	0.55		
Verbal Interpretation	Very High		

The findings show that every indication related to issue solving was scored as "Strongly Agree," indicating a very high degree of conceptual understanding among the participants. "Test my ideas, solutions, or hypotheses to determine whether they work effectively" had the highest mean of 4.77 (SD = 0.47) among the indicators, indicating that the Digi-Mod greatly assists students in validating their ideas through experimentation and critical review. The next question, "predict possible outcomes or results based on scientific principles, prior knowledge, and observations," had a mean of 4.69 (SD = 0.49), suggesting that students are very good at applying scientific reasoning to forecast outcomes. Along with this, the statements "evaluate and select the most effective solution based on evidence and reasoning" and "use different strategies, approaches, and methods to find solutions to scientific problems" both received a mean of 4.67, with corresponding standard deviations of 0.49 and 0.65. These results suggest that the Digi-Mod improves students' capacity to use a variety of approaches and reach well-informed conclusions when resolving issues. The lowest mean of 4.63 (SD = 0.63) was reached by "identify and clearly define the problem when faced with a science-related question or situation," yet it still falls within the "Strongly Agree" interpretation, indicating a consistently positive assessment.

When using the Digital Module to learn science, students exhibit a very high level of problem-solving skills, as seen by the overall weighted mean of 4.68 with a standard deviation of 0.55 for the problem-solving component, which is read as "Very High."

Table 14 shows how the use of the Digital Module (Digi-Mod) has affected students' conceptual understanding of science in terms of critiquing. It focuses on students' capacity to assess scientific concepts, offer criticism, assess the reliability of conclusions, and recommend changes based on logic and supporting data.

Table 14. Level of Students' Conceptual Understanding in Learning Science in terms of Critiquing

Statement As a learner, I am able to use digital module to ….	Mean	SD	Remarks
1. give constructive and specific feedback on scientific explanations, experiments, or presentations to help improve understanding.	4.54	0.70	Strongly Agree
2. identify the strengths and weaknesses in a scientific investigation or experiment.	4.62	0.53	Strongly Agree
3. judge whether the conclusions drawn in an experiment are valid, logical, and supported by evidence.	4.65	0.56	Strongly Agree
4. express my opinions about scientific issues or findings clearly, using evidence and reasoning.	4.63	0.65	Strongly Agree
5. suggest practical ways to improve scientific experiments, investigations, or presentations for better results.	4.62	0.68	Strongly Agree
Weighted Mean	4.61		
SD	0.63		
Verbal Interpretation	Very High		

The findings show that every indicator that was being critiqued had a rating of "Strongly Agree," indicating that the respondents had a very high degree of conceptual understanding.

Judge whether the conclusions drawn in an experiment are valid, logical, and supported by evidence" had the highest mean of 4.65 (SD = 0.56) among the indicators, indicating that the Digi-Mod successfully improves students' capacity to critically assess scientific claims.

The next question, "express my opinions about scientific issues or findings clearly, using evidence and reasoning," has a mean score of 4.63 (SD = 0.65), demonstrating that students can articulate their ideas with logical backing.

Added to this, "identify the strengths and weaknesses in a scientific investigation or experiment" and "suggest practical ways to improve scientific experiments, investigations, or presentations" had mean scores of 4.62 and 0.53 and 0.68, respectively.

These results suggest that the Digi-Mod fosters critical thinking and motivates students to improve scientific methods. In contrast, "give constructive and specific feedback on scientific explanations, experiments, or presentations" had the lowest mean of 4.54 (SD = 0.70), but it was regularly rated as "Strongly Agree." Altogether, the critiquing component received a weighted mean of 4.61 with a standard deviation of 0.63, which is considered "Very High." This suggests that when students use the Digital Module to learn science, they exhibit a very high level of critical skills.

Based on the diagnostic test results, Table 15 displays the pupils' performance level in science. It provides a picture of

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students' prior knowledge and baseline performance by displaying the distribution of students based on their raw scores, matching frequencies, percentages, and verbal interpretations.

Table 15. Level of Students' Performance in Science refers to Diagnostic Test

Raw Score	Frequency (f)	Percentage (%)	Verbal Interpretation
41-50	3	1.92	Outstanding
31-40	20	12.82	Very Satisfactory
21-30	58	37.18	Satisfactory
11 -20	52	33.33	Fair
1-10	23	14.74	Needs Improvement
	156	100	Very Satisfactory

Mean= 21.26 SD=8.32 VI=S

According to the data, 58 students (37.18%) scored between 21 and 30, indicating that the majority of students fall under the "Satisfactory" level. This is followed by 52 students (33.33%) who scored between 11 and 20, which is considered "Fair." In contrast, 23 students (14.74%) were classified as "Needs Improvement," with scores between 1 and 10, suggesting that a significant percentage of the students still need more assistance in comprehending fundamental science concepts. Only three students (1.92%) attained the "Outstanding" level with scores between 41 and 50, and twenty students (12.82%) obtained scores between 31 and 40, which are considered "Very Satisfactory."

These results imply that prior to intervention, very few students exhibit advanced command of the subject.

In summary, the class received a mean score of 21.26 with a standard deviation of 8.32, which is orally evaluated as "Satisfactory." This shows that, although there is some variation in their performance, students generally have a moderate level of prior knowledge in science.

Based on the summative test results, the students' achievement in science is shown in Table 16. Following the deployment of the Digital Module (Digi-Mod), it shows the distribution of students based on their raw scores, including their frequency, percentage, and related verbal interpretation.

According to the data, 84 students (53.85%) scored between 31 and 40, indicating that most pupils attained a "Very Satisfactory" rating. Next, 45 pupils (28.85%) received scores between 21 and 30, which are considered "satisfactory."

Table 16. Students' Performance in Science in terms of Summative Test

Raw Score	Frequency (f)	Percentage (%)	Verbal Interpretation
41-50	16	10.26	Outstanding
31-40	84	53.85	Very Satisfactory
21-30	45	28.85	Satisfactory
11 -20	11	7.05	Fair
1-10	0	0.00	Needs Improvement
	156	100	Very Satisfactory

Mean= 32.90 SD=6.57 VI=VS

To further support this, 16 students (10.26%) scored between 41 and 50, reaching the "Outstanding" level, suggesting a rise in high-achieving kids. However, just 11 kids (7.05%) with scores between 11 and 20 were classified as "Fair," and interestingly, none of the students were classified as "Needs Improvement." When compared to the diagnostic test, this shows that students' performance has generally improved.

"Very Satisfactory" is the verbal interpretation of the class's overall mean score of 32.90 with a standard deviation of 6.57.

According to the Table17, the summative exam had a higher mean score of 32.90 (SD = 6.57) than the diagnostic exam, which had a mean score of 21.76 (SD = 8.22). With a correlation coefficient (r) of 0.769, the computed t-value of -26.42 surpasses the crucial t-value of 1.98 at 155 degrees of freedom.

Table 17. Significant Difference in Students' Performance in Science Between Diagnostic Exam and Summative Exam

Students' Performance in Science	N	Mean	SD	t-cal	t-crit	df	r	Decision
Diagnostic Exam	156	21.76	8.22	-26.42	1.98	155	0.769	Reject
Summative Exam	156	32.90	6.57					

These findings show that there is a substantial difference between students' performance on the diagnostic and summative exams, rejecting the null hypothesis. This implies that using the Digi-Mod greatly enhanced pupils' comprehension and mastery of science ideas.

Significant Relationship between the Digital Module (Digi-Mod) in Multimedia Science Learning and the Students' Conceptual Understanding in Learning Science

In this study, the Digital Module (Digi-Mod) in Multimedia Science Learning in terms of Components refers to Objectives; Lesson Guide; Enrichment; Assessment; and Summary while in terms of Features this refers to Design; Usability; Functionality; and User-friendly.

Meanwhile, the Students' Conceptual Understanding in Learning Science refers to Critical Thinking; Analyzing; Application; Problem Solving; and Critiquing.

The following table, which displays the Multiple Regression Analysis using Pearson Product Moment Correlation Coefficient or Pearson-r, p-value, and number of observations or respondents, reveals the Significant Relationship between the Digital Module (Digi-Mod) in Multimedia Science Learning and the Students' Conceptual Understanding in Learning Science.

The substantial correlation between the students' conceptual grasp of science and the Digital Module (Digi-Mod) in Multimedia Science Learning is shown in Table 18. The table illustrates the relationship between students' abilities in critical thinking, analysis, application, problem solving, and critiquing and the Digi-Mod's objectives, lesson plan, enrichment activities, assessment, summary, design, usability, functionality, and user-friendliness.

The majority of the Digi-Mod's components exhibit statistically significant positive connections with pupils' conceptual knowledge, according to the findings. For example, the lesson guide has a strong correlation with critical thinking, analysis, application, and critiquing, whereas the module's objectives are strongly connected with these skills.

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Numerous aspects of conceptual understanding, especially in higher-order thinking skills like application, analysis, problem solving, and criticism, also exhibit strong positive correlations with enrichment activities, assessment, summary, design, usability, functionality, and user-friendly features.

The largest relationships are found in elements like enrichment, functionality, and user-friendly design, suggesting that participatory, well-organized, and accessible modules have the greatest impact on students' learning outcomes

Table 18. Significant Relationship between the Digital Module (Digi-Mod) in Multimedia Science Learning and the Students' Conceptual Understanding in Learning Science

Digital Module (Digi-Mod) in Multimedia Science Learning		Students' Conceptual Understanding in Learning Science				
		Critical Thinking	Analyzing	Application	Problem Solving	Critiquing
Objectives	Pearson Correlation	0.035	0.477*	0.450*	0.228*	0.348*
	Sig. (2-tailed)	0.660	0.000	0.000	0.004	0.000
	N	156	156	156	156	156
Lesson Guide	Pearson Correlation	0.302*	0.245*	0.382*	0.054	0.289*
	Sig. (2-tailed)	0.000	0.002	0.000	0.501	0.000
	N	156	156	156	156	156
Enrichment	Pearson Correlation	0.193*	0.223*	0.544*	0.102	0.353*
	Sig. (2-tailed)	0.016	0.005	0.000	0.205	0.000
	N	156	156	156	156	156
Assessment	Pearson Correlation	0.364*	0.308*	0.372*	0.095	0.126
	Sig. (2-tailed)	0.000	0.000	0.000	0.236	0.118
	N	156	156	156	156	156
Summary	Pearson Correlation	0.148	0.362*	0.463*	0.343*	0.401*
	Sig. (2-tailed)	0.065	0.000	0.000	0.000	0.000
	N	156	156	156	156	156
Design	Pearson Correlation	0.347*	0.374*	0.287*	0.076	0.283*
	Sig. (2-tailed)	0.000	0.000	0.000	0.347	0.000
	N	156	156	156	156	156
Usability	Pearson Correlation	0.167*	0.273*	0.556*	0.074	0.199*
	Sig. (2-tailed)	0.037	0.001	0.000	0.361	0.013
	N	156	156	156	156	156
Functionality	Pearson Correlation	0.135	0.416*	0.286*	0.446*	0.536*
	Sig. (2-tailed)	0.094	0.000	0.000	0.000	0.000
	N	156	156	156	156	156
User-friendly	Pearson Correlation	0.002	0.487*	0.253*	0.329*	0.418*
	Sig. (2-tailed)	0.976	0.000	0.001	0.000	0.000
	N	156	156	156	156	156

Significant Effect between the Digital Module (Digi-Mod) in Multimedia Science Learning on the Students' Performance

In this study, the Digital Module (Digi-Mod) in Multimedia Science Learning in terms of Components refers to Objectives; Lesson Guide; Enrichment; Assessment; and Summary while the Digital Module (Digi-Mod) in Multimedia Science Learning in terms of Features refers to Design; Usability; Functionality; and User friendly. Meanwhile, the Students' Performance in Science refers to Diagnostic and Summative Test.

The Significant Effect between Using Digital Module (Digi-Mod) in Multimedia Science Learning on the Students' Performance in Science is revealed in the following table, which shows the Multiple Regression Analysis using t-Test, with the computed t-value (t-cal), p-value, number of observations or respondents, and critical t-value (t-crit) or constant. The findings suggest that there are differing degrees of meaningful correlations between the various Digi-Mod components and students' conceptual knowledge. As shown by p-values less than 0.05, the majority of components generally show strong positive connections with the dimensions of analyzing, application, and critiquing. This implies that students' conceptual grasp in these areas improves together with the efficacy of the digital module components.

In particular, the aims component is significantly correlated with issue solving ($r = 0.228$), application ($r = 0.450$), analyzing ($r = 0.477$), and critiquing ($r = 0.348$), but not with critical thinking ($r = 0.035$, $p > 0.05$). This suggests that while well-defined goals may not immediately improve higher-order critical thinking abilities, they do help students concentrate on comprehending, applying, and assessing concepts.

Critical thinking ($r = 0.302$), analysis ($r = 0.245$), application ($r = 0.382$), and critiquing ($r = 0.289$) are all significantly correlated with the lesson guide, while problem solving is not. This suggests that while structured instruction promotes understanding and reasoning, it can also call for further techniques to improve problem-solving skills.

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Analyzing, application, critical thinking, and critiquing are all significantly correlated with enrichment activities, with application showing the largest link (r = 0.544). Nevertheless, there was no discernible connection with problem solving

This shows that while enrichment activities are useful for promoting knowledge application and strengthening comprehension, they might need to be improved in order to foster problem-solving abilities.

Critical thinking, analysis, and application are significantly correlated with the assessment component, although problem solving and criticism are not. This suggests that while tests are useful for gauging and strengthening comprehension, they might not adequately capture or foster higher-level assessment and problem-solving abilities.

The substantial impact of the Digital Module (Digi-Mod) in Multimedia Science Learning on students' science proficiency, as determined by the summative test, is shown in Table 19.

Table 19. Significant Effect between the Digital Module (Digi-Mod) in Multimedia Science Learning on the Students' Performance in Science

Digital Module (Digi-Mod) in Multimedia Science Learning		Students' Performance in Science Summative Test
Components		
Objectives;	t-value	1.179
	Sig. (2-tailed)	0.240
	N	156
Lesson Guide;	t-value	2.224
	Sig. (2-tailed)	0.028
	N	156
Enrichment;	t-value	2.028*
	Sig. (2-tailed)	0.044
	N	156
Assessment	t-value	2.028
	Sig. (2-tailed)	0.044
	N	156
Summary	t-value	1.945
	Sig. (2-tailed)	0.054
	N	156
Features		
Design	t-value	1.040
	Sig. (2-tailed)	0.300
	N	156
Usability	t-value	0.983
	Sig. (2-tailed)	0.327
	N	156
Functionality	t-value	1.701
	Sig. (2-tailed)	0.091
	N	156
User-friendly	t-value	0.726
	Sig. (2-tailed)	0.469
	N	156

The table looks at how various Digi-Mod elements and functionalities affect student performance. The findings show that the lesson guide (t = 2.224, p = 0.028), enrichment activities (t = 2.028, p = 0.044), and assessment (t = 2.028, p = 0.044) have a statistically significant impact on students' performance, indicating that these module components significantly contribute to learning outcomes

However, other elements like aims (t = 1.179, p = 0.240) and summary (t = 1.945, p = 0.054) did not have a significant impact, although summary came close to significance. None of the module's features design, usability, functionality, and user-friendliness showed a statistically significant impact on performance, with p-values greater than 0.05.

Overall, these results show that while the Digi-Mod's structured instructional components and interactive content, especially lesson guides, enrichment, and assessment, greatly improve student performance, other design and usability elements aid in learning but do not by themselves result in discernible variations in summative test results.

IV. Conclusion and Recommendations

Based on the findings of the study, as evidence by the difference between Diagnostic and Summative test scores, the hypothesis is rejected. This implies that the Digi-Mod is an effective instructional intervention that facilitates meaningful learning, promotes knowledge retention, and enhances students' ability to apply scientific concepts, thereby leading to improved academic performance.

However, the hypothesis stating that there is no significant relationship between Digi-Mod components and features and students' conceptual understanding is rejected, as the results revealed that most components and features have statistically significant relationships with students' higher-order thinking skills such as analyzing, application, problem solving, and critiquing. This indicates that well-structured instructional elements and interactive features contribute significantly to meaningful learning.

Furthermore, in terms of the effect of Digi-Mod on students' performance, the hypothesis stating that there is no significant effect is accepted, since some components such as lesson guide, enrichment, and assessment showed significant effects, while others did not. This implies that specific elements of the module play a more critical role in improving learning outcomes.

Based on the conclusions drawn from the study, the following recommendations are proposed:

Educational technologists are encouraged to design and enhance digital learning modules like Digi-Mod by incorporating interactive multimedia elements, clear objectives, and structured activities that promote higher-order thinking skills.

School administrators may support the integration of digital modules in science instruction by providing necessary technological resources, training programs, and institutional support for teachers.

Teachers are encouraged to utilize Digi-Mod and similar multimedia tools in their teaching strategies to improve students' engagement, conceptual understanding, and academic performance. They may also focus on facilitating activities that develop critical thinking and problem-solving skills.

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Students are encouraged to actively engage with digital modules and maximize their features to enhance their learning experience, develop independent learning skills, and improve their academic performance.

Future researchers may conduct further studies on Digi-Mod by exploring other variables such as motivation, learning styles, and long-term retention. They may also replicate the study in different subject areas, grade levels, and educational settings to validate and expand the findings.

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