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ACCEPTABILITY OF DIGITAL ASSESSMENT IN SCIENCE

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ABSTRACT

This study investigated the acceptability of digital assessment in Science among Grade 8 and Grade 9 learners in a low-connectivity setting. Specifically, it examined learners' pretest and post-test scores, the level of acceptability of an offline digital assessment tool based on Technology Acceptance Model (TAM) variables, and learners' perceived benefits and challenges. It also tested the hypothesis that there is no significant difference between the pretest and post-test scores of the control and experimental groups. A mixed-method research design was employed, combining quantitative and qualitative approaches. A quasi-experimental method compared the performance of learners in the control (traditional) and experimental (digital) groups. A TAM-based survey measured perceived usefulness, ease of use, attitude, and intention to use, while open-ended responses provided additional insights. Findings revealed that learners exposed to digital assessment showed significant improvement in academic performance, with higher post-test scores than the control group. Results also indicated a high level of acceptability, with learners perceiving the tool as useful, easy to use, and engaging. Qualitative findings highlighted increased motivation and understanding, although some challenges related to familiarity were noted. The study concludes that offline digital assessment tools can enhance learning outcomes and support positive learner attitudes in resource-limited environments.

Keywords: *digital assessment; science education; technology acceptance model (tam); offline learning tools; academic performance; science literacy; formative assessment; learner acceptability; educational technology; low-connectivity environments*

INTRODUCTION

The use of technology in education has gradually reshaped how teaching and learning take place, particularly in the way students are assessed. In science education, where learners are expected to analyze data, think critically, and understand complex concepts, assessment plays a crucial role in guiding learning. With the increasing integration of technology in classrooms, digital assessment has emerged as a practical approach to make evaluation more interactive, efficient, and responsive to learners' needs (Kurniawan et al., 2024; Alonzo et al., 2023). In the Philippines, efforts to improve assessment practices have been emphasized in recent education reforms. The EDCOM II (2023) report highlights the need to strengthen assessment systems so that learning data can be used more effectively in improving instruction and addressing learning gaps. At the same time, the performance of Filipino learners in international assessments such as PISA 2022 continues to raise concerns, particularly in science, where results remain below the global average (OECD, 2023). These realities point to the need for more effective and engaging classroom assessment strategies that can support deeper learning. In response, the Department of Education has encouraged the use of technology-enhanced teaching and assessment practices. At the local level, the Division of Bohol has issued memoranda supporting the integration of digital tools to improve learner engagement and classroom practices. These initiatives highlight the importance of adopting assessment approaches that are not only effective but also accessible, especially in schools where internet connectivity remains limited.

To address this need, this study utilized a pre-developed digital assessment tool designed to function even in offline settings. This feature makes it suitable for schools like Aguining National High School, where access to stable internet is a challenge. Through this tool, teachers can administer assessments more efficiently, while learners can engage with the material in a more structured and interactive way.

However, the success of digital assessment does not depend only on its availability. Learners' acceptance of the tool is equally important. Factors such as perceived usefulness, ease of use, attitude toward technology, and intention to use influence whether students are willing to adopt and continuously use digital assessment in their learning process. If these factors are not addressed, even well-designed tools may not be fully utilized in the classroom.

This study is anchored on two key theoretical perspectives. The Formative Assessment Theory of Black and Wiliam (1998) explains that assessment should provide timely feedback that supports learning improvement. Digital assessment aligns with this by offering immediate feedback that helps learners reflect on their understanding. On the other hand, the Technology Acceptance Model (TAM) of Davis (1989) explains how users accept and use technology based on perceived usefulness and ease of use, which in turn influence their attitude and intention to use the system.

Previous studies have shown that digital assessment can enhance learner engagement and understanding when effectively implemented. One key factor is the provision of immediate feedback, which helps learners correct misconceptions and improve their responses (Epstein et al., 2002). In addition, interactive and technology-supported tools have been found to increase student engagement and academic achievement, as they make learning more dynamic and participatory (Uzorka & Odebiyi,

2025). Recent developments in digital learning environments also highlight how emerging technologies can support more meaningful and responsive assessment practices when designed appropriately (Okulu & Muslu, 2024). However, in the Philippine context, several challenges remain. Learners often face difficulties related to limited digital skills, infrastructure constraints, and varying levels of readiness, which can affect the effective use of digital tools in classroom settings (Rogayan et al., 2021).

These findings suggest that while digital assessment offers clear benefits, its success depends on proper implementation, accessibility, and the readiness of learners to engage with technology.

Given these conditions, there is a need to examine how learners actually perceive digital assessment, particularly in contexts where resources are limited. This study focuses on determining the acceptability of digital assessment among Grade 8 and Grade 9 learners in Science at Aguining National High School. By examining learners' perceptions in terms of usefulness, ease of use, attitude, and intention to use, the study aims to provide evidence that can guide the development and implementation of more accessible and learner-centered assessment tools. Ultimately, this research hoped to contribute to improving classroom assessment practices by ensuring that digital tools are not only functional but also acceptable and meaningful to learners, especially in schools facing connectivity and resource limitations.

Research Questions

This study aimed to determine the acceptability level of digital assessments in science among Grade 8 and 9 students at Aguining National High School during the School Year 2025–2026. Specifically, it sought to answer the following questions.

1. What is the pretest and post-test scores of Grades 8 and 9 learners in science in the control and experimental groups?
2. Is there a significant difference between the pretest and post-test scores of learners in the control and experimental groups?
3. What is the acceptability level of the digital assessment application as perceived by the learners, in terms of the following technology Acceptance Model (TAM) variables:
    a. Perceived Usefulness,
    b. Perceived Ease of Use,
    c. Attitude Toward using Technology and;
    d. Intention to Use?
4. What are the perceived challenges and benefits experienced by the learners in using the digital assessment application?
5. What recommendations can be proposed based on the result of the study.

METHODOLOGY

Research Design

This study employed a mixed-method research design to examine the acceptability of digital assessment in science among Grade 8 and Grade 9 learners at Aguining National High School. A quasi-experimental approach was used to analyze pretest and post-test scores of the control and experimental groups to determine the effectiveness of the intervention. In addition, a descriptive-survey design based on the Technology Acceptance Model (TAM) assessed learners' acceptability in terms of perceived usefulness, perceived ease of use, attitude toward using technology, and intention to use, using frequency, percentage, and weighted mean. Qualitative data from open-ended responses on learners' experiences, challenges, and benefits were analyzed using thematic analysis (Braun & Clarke, 2026) to provide supporting insights.

Research Environment

The study was conducted at Aguining National High School, a public secondary school in Barangay Aguining, President Carlos P. Garcia, Bohol. The school offers a complete secondary curriculum and serves as one of the key educational institutions in the area. It utilizes both traditional and digital approaches in instruction and has access to basic technological resources, making the implementation of digital assessment feasible. The school is also part of the Schools Division of Bohol, which implements the Digital Synergetic Assessment of Learning and Evaluation (DSALE) initiative. This program promotes the use of digital tools to enhance assessment practices and support data-driven decision-making, providing a relevant context for the present study.

Research Participants

The participants of this study were Grade 8 and Grade 9 learners enrolled at Aguining National High School during the School Year 2025–2026. A complete enumeration sampling technique was used, including all learners from the identified grade levels. A total of 118 learners participated, with 59 assigned to the experimental group and 59 to the control group, distributed across both Grade 8 and Grade 9 levels. The inclusion of both grade levels allowed the study to capture learners under different curriculum frameworks. Participation was voluntary, and informed consent was secured from learners and their parents or guardians. Confidentiality and anonymity were strictly maintained, and all data were used solely for research purposes.

Distributions of Respondents

Group	Grade 8	Grade 9	Total
Experimental	30	29	59
Control	30	29	59
Total	60	58	118

Research Instrument

This study utilized both quantitative and qualitative instruments to assess the acceptability of the digital assessment tool in science. A 40-item Science Literacy Test was used as both pretest and post-test to measure learners' understanding. The test was based on the MATATAG Curriculum for Grade 8 and the MELCs for Grade 9, and was validated through a Table of Specification (TOS). Content validation was conducted by experts, and pilot testing with non-participants was performed to ensure validity and reliability through item analysis. A survey questionnaire anchored on the Technology Acceptance Model (TAM) was used to measure learners' acceptability in terms of perceived usefulness, perceived ease of use, attitude toward technology, and intention to use. The instrument used a five-point Likert scale and obtained a Cronbach's Alpha of 0.902, indicating high reliability. The digital assessment tool used was an offline JavaScript-based application that provided immediate feedback and automated scoring. The experimental group used this tool, while the control group used traditional paper-based assessments covering the same competencies. An open-ended questionnaire was also administered to gather learners' experiences, perceived benefits, and challenges. All instruments underwent expert validation and pilot testing prior to final use.

Research Procedure

Data collection was conducted in three phases: pre-implementation, implementation, and post-implementation. During the pre-implementation stage, ethical clearance was secured, followed by permission from the school principal. A Science Literacy Pre-Test, based on the MATATAG Curriculum and MELCs, was administered to both control and experimental groups to determine baseline performance. The test items were validated by experts to ensure content accuracy and alignment with learning competencies. In the implementation stage, both groups underwent the same instructional content for six weeks. The control group used traditional pen-and-paper formative assessments, while the experimental group utilized an offline digital assessment tool during formative activities. The digital tool provided immediate feedback and was administered periodically to monitor learning progress. In the post-implementation stage, both groups took a post-test to measure learning gains. The experimental group also completed a TAM-based questionnaire assessing perceived usefulness, perceived ease of use, attitude, and intention to use, along with open-ended questions on their experiences. Quantitative data were organized and analyzed using appropriate statistical methods, while qualitative responses were analyzed through thematic analysis following Braun and Clarke (2006). All procedures observed ethical standards, ensuring voluntary participation and confidentiality of responses.

Data Analysis

Descriptive statistics and t-test were used to analyze the pretest and post-test scores of the control and experimental groups to determine if a significant difference existed, thereby assessing the effectiveness of the digital assessment. To determine the level of acceptability, weighted mean was used to analyze responses based on the Technology Acceptance Model variables: perceived usefulness, perceived ease of use,

attitude toward technology, and intention to use. Qualitative data from open-ended responses were analyzed using thematic analysis (Braun & Clarke, 2006). Responses were coded and grouped into themes, with ATLAS.ti used to support data organization and interpretation.

RESULTS

This section presents, analyzes, and interprets the data gathered in the study on the acceptability of digital assessment in science conducted during the fourth quarter of School Year 2025–2026. Data were collected from 118 Grade 8 and Grade 9 learners of Aguining National High School and were organized and statistically analyzed based on the specific research objectives of the study. To examine learners' performance before and after the intervention, the succeeding table presents the pretest and post-test mean scores of the control and experimental groups.

Table 1
Pre-test and Post-test Scores of the Control and Experimental Groups among Grade 8 and 9 Students

Grade Level	Descriptor	Score Range	Scale	Pre-test (Control)		Pre-test (Experimental)		Post-test (Control)		Post-test (Experimental)	
				f	%	f	%	f	%	f	%
Grade 8	Advanced	90-100	36 – 40	-	-	-	-	-	-	2	7%
	Proficient	85-89	34-35	–	-	-	-	-	-	-	-
	Developing	80-84	32 – 33	-	-	1	3%	1	3%	6	20%
	Approaching Proficiency	75-79	24 – 31	-	-	2	7%	-	-	9	30%
	Beginning	<75	0 – 23	30	100%	27	90%	29	97%	9	30%
	Average Score			**68**		**71**		**72**		**79**	
	Description			**Beginning**		**Beginning**		**Beginning**		**Approaching Proficiency**	
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Grade 9	Advanced	90-100	36 – 40	-	-	-	-	-	-	1	3%
		Proficient	85-89	-	-	-	-	-	-	-	-
	Developing	80-84	32 – 33	-	-	-	-	-	-	6	20%
	Approaching Proficiency	75-79	24 – 31	-	-	-	-	-	-	2	7%
	Beginning	<75	0 – 23	29	100%	29	100%	29	100%	10	33%
	Average Score			**66**		**66**		**68**		**79**	
	Description			**Beginning**		**Beginning**		**Beginning**		**Approaching Proficiency**	

Table 1 presents the pre-test and post-test scores of the control and experimental groups among Grade 8 and Grade 9 learners. The pre-test results show that both groups had comparable mean scores. In Grade 8, the control group obtained a mean score of

68, while the experimental group obtained 71. In Grade 9, both groups obtained a mean score of 66. All scores fall under the *Beginning* level, indicating low initial mastery of the science competencies.

In the post-test results, only slight improvements were observed in the control groups. Grade 8 increased from 68 to 72, while Grade 9 increased from 66 to 68, both remaining within the *Beginning* level. In contrast, the experimental groups showed more noticeable gains. Grade 8 increased from 71 to 79, and Grade 9 from 66 to 79, both reaching the *Approaching Proficiency* level.

Overall, while both groups showed improvement, the experimental group demonstrated a greater increase in mean scores and progressed to a higher performance level compared to the control group. This indicates that the intervention contributed to better learning outcomes. The improvement may be attributed to the use of digital assessment, which provides immediate feedback and promotes more engaging learning experiences. Previous studies have shown that timely feedback and technology-based formative assessment enhance learner participation, understanding, and academic performance (Gikandi et al., 2011; Panoy & Agonia, 2022).

Table 2
Difference in the Post-test of the Experimental and Control Group

Groups	Mean	SD	Mean Difference	Computed t-Value at 0.05 level of significance	P-value	Interpretation	Decision
Control	69	5.9	10.0	-6.61	0.0003	Significant	Reject the null hypothesis
Experimental	79	7.8					

Table 2 presents the difference in the post-test scores of the control and experimental groups after the implementation of the digital assessment.

The results show that the control group obtained a mean score of 69 (SD = 5.90), while the experimental group achieved a higher mean score of 79 (SD = 7.80), with a mean difference of 10.0 points. In terms of performance, the control group remained at the *Beginning* level, whereas the experimental group progressed to *Approaching Proficiency*, indicating better understanding of the science concepts.

Statistical analysis revealed a computed t-value of -6.61 and a p-value of 0.0003, which is lower than the 0.05 level of significance. This indicates a significant difference between the two groups, leading to the rejection of the null hypothesis.

The higher performance of the experimental group may be associated with the use of digital assessment, which provides immediate and adaptive feedback while supporting learner engagement. Recent studies highlight that feedback-driven and technology-enhanced assessment systems can optimize learning by personalizing instruction and guiding learners based on their responses (Song et al., 2024). Similarly, AI-supported

feedback mechanisms have been shown to enhance participation and improve learning outcomes by delivering timely and targeted responses to learners' needs (Asrifan et al., 2026). Overall, these findings suggest that digital assessment contributes to improved learner performance in science compared to traditional assessment methods.

Table 3
Learners' Perceived Usefulness on the Digital Assessment

Perceived Usefulness (PU)	SD	Weighted Mean	Description
1. Improve my performance in Science tasks.	0.72	4.22	Strongly Agree
2. Increase my productivity in learning Science.	0.75	4.14	Agree
3. Enhance the quality of my work in Science.	0.74	4.00	Agree
4. Help me understand Science concepts more effectively.	0.84	4.24	Strongly Agree
5. Allow me to complete Science tasks more quickly.	0.74	3.88	Agree
6. Improve the effectiveness of Science assessments.	0.74	4.07	Agree
7. Make Science learning more efficient.	0.75	3.98	Agree
8. Support better achievement of learning/teaching goals.	0.71	4.15	Agree
9. Provide useful feedback that helps me improve in Science.	0.88	4.02	Agree
10. Make overall Science performance better than traditional assessment methods.	0.83	3.71	Agree
Overall	0.77	4.04	Agree

Table 3 presents learners' perceived usefulness of the digital assessment tool. The results show an overall weighted mean of 4.04 (SD = 0.77), interpreted as *Agree*, indicating that learners generally find the digital assessment useful in supporting their learning in science.

Among the indicators, "Help me understand Science concepts more effectively" (WM = 4.24) and "Improve my performance in Science tasks" (WM = 4.22) obtained the highest ratings, both interpreted as *Strongly Agree*. This suggests that learners view the digital assessment as effective in enhancing conceptual understanding and task performance.

Other indicators, including productivity, quality of work, feedback, and achievement of learning goals, were also rated as *Agree*, indicating that the tool supports different aspects of the learning process. Meanwhile, "Allow me to complete tasks more quickly" (WM = 3.88) and "Make overall performance better than traditional methods" (WM = 3.71) received the lowest ratings, though still within the *Agree* range. These findings suggest that learners generally recognize the usefulness of digital assessment, particularly in improving understanding and providing timely feedback, which supports its role as a tool for enhancing science learning and strengthening formative assessment practices (Spector et al., 2016; DeCoito & Estaiteyeh, 2022).

Table 4
Learners' Perceived Ease of Use on the Digital Assessment

Perceived Ease of Use (PEOU)	SD	Weighted Mean	Description
1. Is easy for me to learn.	0.93	3.54	Agree
2. Is simple to operate.	0.82	3.76	Agree
3. Requires little effort to use.	0.98	3.66	Agree
4. Is easy to navigate.	0.87	3.59	Agree
5. Has clear and understandable instructions.	0.82	4.08	Agree
6. Is easy to integrate into Science lessons or tasks.	0.93	3.69	Agree
7.Is user-friendly and uncomplicated.	0.93	3.73	Agree
8.Makes Science assessments easier to manage.	1.04	3.75	Agree
9.Allows me to complete tasks without technical difficulty.	0.93	3.56	Agree
10.Helps me perform Science assessments with minimal support.	0.65	4.05	Agree
Overall	0.89	3.74	Agree

Table 4 presents learners' perceived ease of use of the digital assessment tool. The results show an overall weighted mean of 3.74 (SD = 0.89), interpreted as *Agree*, indicating that learners generally find the digital assessment easy to use. This suggests that the application is user-friendly and manageable for completing science assessment tasks.

The highest-rated indicators were "Has clear and understandable instructions" (WM = 4.08) and "Helps me perform Science assessments with minimal support" (WM = 4.05), both interpreted as *Agree*. These findings indicate that learners were able to understand and use the tool independently.

Other indicators, including simplicity, usability, and ease of integration into tasks, were also rated as *Agree*, suggesting that the system is accessible and does not require excessive effort. Meanwhile, items such as ease of navigation (WM = 3.59), minimal technical difficulty (WM = 3.56), and ease of learning (WM = 3.54) received slightly lower ratings, though still within the *Agree* range. Overall, the findings indicate that learners perceive the digital assessment as easy to use, supporting its acceptability as a practical tool for science assessment. This aligns with studies showing that user-friendly and pedagogically usable digital tools enhance learners' attitudes and engagement in science learning (Bankole & Ayanwale, 2025; Nokelainen, 2006).

Table 5
Learners' Attitude Towards Technology

Attitude Toward Technology (ATT)	SD	Weighted Mean	Description
1.I feel positive about using digital assessments in Science.	0.73	3.76	Agree
2.Using digital assessments is a good idea for Science activities.	0.86	3.95	Agree
3.I enjoy using digital assessments.	0.90	3.76	Agree

4.I believe digital assessments improve the Science learning/teaching experience.	0.71	4.02	Agree
5.I feel comfortable when using digital assessment tools.	0.75	3.69	Agree
6.I feel confident that I can use digital assessments effectively.	0.92	3.68	Agree
7.I prefer digital assessments over traditional paper-based tests.	0.95	3.47	Agree
8.I believe digital assessments make Science learning more engaging.	0.84	3.92	Agree
9.Using digital assessments increases my interest in Science tasks.	0.78	4.10	Agree
10.I have a generally favorable attitude toward technology in Science.	0.78	3.64	Agree
Overall	0.82	3.80	Agree

Table 5 presents learners' attitude toward technology in relation to the digital assessment tool. The results show an overall weighted mean of 3.80 (SD = 0.82), interpreted as *Agree*, indicating that learners generally have a positive attitude toward using digital assessment in science.

The highest-rated indicators were "Using digital assessments increases my interest in Science tasks" (WM = 4.10) and "Digital assessments improve the learning experience" (WM = 4.02), suggesting that the tool supports engagement and enhances learning. Other indicators, such as perceived usefulness, enjoyment, comfort, and confidence, were also rated as *Agree*, reflecting learners' general openness to using technology.

The lowest-rated item, "I prefer digital assessments over traditional paper-based tests" (WM = 3.47), although still interpreted as *Agree*, suggests that some learners still favor traditional methods in certain situations. Overall, the findings indicate that learners demonstrate a generally favorable attitude toward digital assessment, supporting its acceptability and potential integration in science learning. This aligns with studies showing that digital assessment enhances learners' attitudes and engagement, while acceptance may still vary depending on familiarity and access to technology (Bankole & Ayanwale, 2025; Alieto et al., 2024).

Table 6
Learners' Intention to Use Technology

Intention to Use Technology (ITU)	SD	Weighted Mean	Description
1. I intend to use digital assessments in Science regularly.	0.92	3.54	Agree
2. I plan to continue using digital assessments in the future.	0.83	3.71	Agree
3. I expect to increase my use of digital assessments over time.	0.90	3.56	Agree
4. I will choose digital assessments whenever possible.	0.90	3.49	Agree
5. I am willing to try new digital assessment tools.	0.81	4.00	Agree
6. I will rely on digital assessments for most of my Science tasks.	0.88	3.66	Agree

7. I will encourage others to use digital assessments in Science.	1.02	3.58	Agree
8. I am committed to integrating digital assessments into my Science activities.	0.90	3.76	Agree
9. I intend to explore more digital features for Science assessments.	0.84	4.02	Agree
10.I have a generally favorable attitude toward technology in Science.	0.80	3.81	Agree
Overall	0.88	3.71	Agree

Table 6 presents learners' intention to use technology in relation to the digital assessment tool. The results show an overall weighted mean of 3.71 (SD = 0.88), interpreted as *Agree*, indicating that learners generally intend to use digital assessment in their science learning.

The highest-rated indicators were "I intend to explore more digital features for Science assessments" (WM = 4.02) and "I am willing to try new digital assessment tools" (WM = 4.00), suggesting openness to continued use and exploration of technology. Other indicators, such as commitment to use, future use, and reliance on digital assessment, were also rated as *Agree*, reflecting learners' willingness to integrate the tool into their learning activities.

Lower-rated items, including regular use (WM = 3.54) and preference over other methods (WM = 3.49), though still within the *Agree* range, suggest that some learners may still be adjusting to consistent use of digital assessment. Overall, the findings indicate that learners demonstrate a positive intention to use digital assessment, supporting its acceptability and potential for continued integration in science learning. This is consistent with studies emphasizing that intention to use is influenced by perceived usefulness, ease of use, and social support factors within technology adoption frameworks (Alshammari & Alkhwaldi, 2025; Venkatesh & Davis, 2000). To further support these findings, qualitative responses on perceived benefits and challenges were analyzed through thematic analysis to identify common patterns in learners' experiences.

Table 7
Thematic Analysis of Perceived Benefits and Challenges in Using the Digital Assessment

Perceived Benefits			
Significant Statements	**Code**	**Category**	**Theme**
"I somewhat enjoyed it, and at the same time, I also learned something."	Enjoyable & educational	Positive experience	Positive and engaging learning experience
"My experience was so nice and fun, like choosing the answer by just clicking the options and it also sharpened my	Fun & cognitive engagement		

comprehension and mind to think about the answer."			
"I felt happy and enjoyed the digital assessment."	Happiness, enjoyment		
"I felt happy because it's visually appealing and colorful."	Visual appeal, enjoyment		
"It is very good because it can be finished easily/quickly."	Ease of use	Convenience	Ease, convenience, and efficiency
"Answering is no longer troublesome since you can simply click on the answers."	Convenience, simplicity		
"It's multiple choice and quite easy."	Ease, simplicity		
"It's convenient to take the assessment."	Convenience		
"Using the digital assessment is easier for me because it's presented in a modern way, helps me through the screen, and allows me to answer quickly."	Modern interface, guidance		
"I find the digital assessment fast and easy to answer."	Speed, ease		
"I find it effective because it helps me easily understand my Science lessons."	Effectiveness	Learning improvement	Positive and engaging learning experience
"My experience was positive because it helped us gain new knowledge."	Knowledge gain		
"I liked it because it pushes students like me to improve."	Motivation, improvement		
Perceived Challenges			
"I'm still not very familiar with the digital assessment."	Lack of familiarity	Learning curve	Adaptation to digital tools
"I felt anxious, worried that I might not pass the digital Science assessment."	Anxiety, worry	Emotional response	Emotional reactions to digital assessment
"My experience using the digital assessment depends on how it is presented on the screen."	Presentation affects experience	Learning effectiveness	Challenges and difficulties in digital assessment

"I found it very challenging whenever I didn't understand the questions."	Challenge, confusion	Learning difficulty	Challenges and difficulties in digital assessment
"I found it difficult to answer when using the digital assessment."	Difficulty		
"My experience was challenging, yet sometimes doable."	Challenge & manageability		

Table 7 presents the thematic analysis of learners' perceived benefits and challenges in using the digital assessment.

The analysis revealed four major themes: (1) positive engagement and motivation, (2) ease, convenience, and efficiency, (3) challenges and difficulties, and (4) learning improvement.

Positive engagement and motivation. Learners described the digital assessment as enjoyable, interactive, and visually appealing, which increased their interest in science tasks. Responses highlighted that the tool made learning "fun," "engaging," and mentally stimulating. This supports studies showing that interactive digital tools enhance learner motivation and engagement (Uzorka & Odebiyi, 2025).

Ease, convenience, and efficiency. Many learners emphasized that the tool was easy to use, fast, and convenient. The ability to answer by simply clicking options reduced effort and allowed them to complete tasks quickly. This aligns with the Technology Acceptance Model, where perceived ease of use influences technology adoption (Davis, 1989).

Challenges and difficulties. Despite positive experiences, some learners reported initial difficulties, including lack of familiarity, anxiety, and confusion in understanding some questions. These findings suggest that adjustment to digital tools and emotional responses may affect user experience, especially among learners with limited exposure to technology (Rogayan et al., 2021).

Learning improvement. Learners also recognized the role of digital assessment in improving their understanding of science concepts. They reported gaining new knowledge, developing thinking skills, and being motivated to improve. This aligns with studies showing that technology-enhanced learning approaches can strengthen critical thinking, problem-solving skills, and overall learning achievement through interactive and engaging environments (Hussein et al., 2019; Hung et al., 2012).

Overall, the findings indicate that while digital assessment is generally perceived as engaging, efficient, and beneficial for learning, attention must be given to learner readiness and support to address challenges and maximize its effectiveness.

DISCUSSION

This section presents the analysis and interpretation of the findings on the acceptability of digital assessment in science among Grade 8 and Grade 9 learners. It discusses learners' performance based on pretest and post-test results, as well as their perceptions of the digital assessment in terms of perceived usefulness, perceived ease of use, attitude toward technology, and intention to use, guided by the Technology Acceptance Model (TAM).

The discussion is organized according to the key variables of the study, including learners' academic performance, level of acceptability of the digital assessment, and their perceived benefits and challenges. The results are interpreted using appropriate statistical and thematic analyses and are supported by relevant theoretical frameworks and empirical studies.

Findings

Pretest and Post-test Scores. The findings revealed that both the control and experimental groups had comparable pre-test scores, all interpreted at the *Beginning* level, indicating similar baseline knowledge in science. In the post-test, the control group showed only minimal improvement, while the experimental group demonstrated a marked increase, reaching the *Approaching Proficiency* level. This suggests that learners exposed to digital assessment performed better than those who used traditional assessment methods.

Difference in Scores. A significant difference was found between the pre-test and post-test scores of the experimental group, indicating that the use of the digital assessment application significantly improved learners' academic performance.

Acceptability of Digital Assessment (TAM Variables). The results showed that the digital assessment application was generally acceptable to the learners. In terms of *perceived usefulness*, learners found the tool helpful in improving performance, enhancing understanding of science concepts, and supporting the quality of their work. For *perceived ease of use*, the application was considered user-friendly, easy to navigate, and manageable even with minimal support. Learners also demonstrated a positive *attitude toward use*, expressing comfort and appreciation for the digital format. This positive perception translated into a strong *intention to use*, with learners indicating willingness to continue using the tool in future science lessons. Overall, the findings suggest that the digital assessment is both useful and accessible for learners.

Perceived Benefits and Challenges.

Perceived Benefits. Learners reported increased engagement and motivation, describing the digital assessment as interactive and enjoyable. They highlighted its ease, convenience, and efficiency, particularly its fast and paperless nature. The tool also supported better understanding of science concepts, reinforced learning, and encouraged active thinking and participation, thereby enhancing problem-solving skills.

Perceived Challenges. Some learners experienced difficulties related to limited familiarity with the platform, time constraints, and confusion in answering certain items. Despite these challenges, the overall results indicate that the benefits of the digital assessment outweigh the difficulties, making it a valuable tool for enhancing science learning.

Conclusions

Based on the findings, digital assessment is an acceptable tool for assessing Science learning among Grade 8 and Grade 9 learners. Its acceptability is largely influenced by learners' perceptions of its usefulness in supporting understanding and performance, as well as its ease of use through a simple and user-friendly interface. The positive learner responses also highlight the role of digital assessment in promoting engagement, motivation, and active participation in Science learning. Despite some minor challenges, the overall results indicate that the tool provides a practical and effective alternative to traditional assessment methods. Thus, digital assessment may be considered a viable approach to enhancing learner engagement and supporting improved learning outcomes in Science, particularly in contexts with limited technological resources.

Recommendations

Students. Learners are encouraged to actively engage with digital assessment tools to enhance their understanding of Science concepts. Participating in guided orientations and providing feedback on the application may help them maximize its benefits and minimize technical difficulties.

Teachers. Teachers may integrate digital assessment tools into classroom assessment practices to promote engagement and timely feedback. It is recommended that clear instructions and orientation be provided, particularly for first-time users, and that appropriate time allocations be set to reduce learner pressure and confusion.

Future Researchers. Future studies may extend this research to other grade levels and subject areas to determine the consistency of results. Further investigation may also focus on identifying specific features of digital tools that reduce learner anxiety and examining the long-term effects of digital assessment on student engagement and academic performance.

Proposed Work Action Plan

Rationale

The use of digital assessment in Science among Grade 8 and Grade 9 learners has demonstrated positive effects on engagement, motivation, and interaction during assessment activities. Learners generally perceived the tool as useful, easy to use, and engaging, indicating its acceptability in classroom settings.

However, the successful integration of digital assessment largely depends on teachers' competence in using the tool, designing appropriate assessment tasks, and managing its implementation. Strengthening teachers' skills and confidence is therefore essential to ensure meaningful and effective application in the classroom.

In response, a one-day training program is proposed to equip Science teachers with practical knowledge and hands-on experience in using digital assessment tools. This initiative aims to support effective classroom integration and enhance technology-based assessment practices.

Stakeholders	Objectives	Actions	Timeline	Expected Outcomes
Teachers (Participants)	Develop skills in using digital assessment tools in Science instruction	Attend a 1-day hands-on training workshop; explore features of the digital assessment tool; practice creating and administering assessments; participate in simulation and troubleshooting activities; provide feedback on usability	1-day training (INSET or school-based)	Improved competence in using digital tools; increased confidence in integration; ability to design and administer digital assessments; readiness for classroom implementation
Resource Speaker / Trainer	Provide technical and instructional guidance	Demonstrate the use of the digital assessment platform; facilitate hands-on activities; guide assessment creation; assist in troubleshooting	During training day	Clear understanding of tool usage among teachers
School Administration	Support training implementation	Provide venue, materials, and necessary ICT resources; coordinate schedule and logistics	Before and during training	Organized and well-supported training implementation
ICT Support Staff (if available)	Ensure technical support	Assist in device setup and connectivity; provide technical troubleshooting; ensure system functionality	During training day	Smooth and uninterrupted training activities

Compliance with Ethical Standards

The study adhered to established ethical standards in conducting social research. Participation was voluntary, and informed consent was obtained from all respondents after clearly explaining the purpose, procedures, and their rights as participants. They were informed of their right to withdraw from the study at any point without any penalty. Confidentiality and anonymity were strictly maintained, with no personally identifiable information collected. All data were securely stored and used solely for academic and research purposes in accordance with the Philippine Data Privacy Act of 2012 (Republic Act No. 10173). The study posed no risk to the participants, and they were given the option to decline or skip any question they found uncomfortable. The researcher declared no conflict of interest, and no financial incentives or compensation were provided to the participants.

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