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Digital Transformation in Education: Evaluating Teachers' Practices and Strategies to Enhance Access to Quality Learning in a Local Community College

Sydney Jay B. Villarin[1*], Divina Gracia C. Divino[1], Kemski P. Lumahang[1], Lily France J. Echavez[1], Terence Katherine Stephanie R. Gapol[5]

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ABSTRACT

This research focused on the digital transformation practices and strategies undertaken by teachers at Initao College, a local community college located in Misamis Oriental, Philippines, for the betterment and accessibility of quality learning among learners. The purpose of this research is to look into the ways how digital tools are integrated with lesson plans, instructional delivery, assessment, and management of classrooms and to determine perceptual differences between students and teachers on this matter. Using a multiple-methods design, the study employed quantitative surveys (with 200—50 from each academic program: BEED, BSCRIM, BSBA, and BSHM) and qualitative thematic analysis involving 50 faculty members who participated in the study. Findings indicate a high prevalence of digital practices in lesson planning, instructional delivery, assessment, and classroom management. A significant and positive correlation exists between these digital practices and perceived improvements in student engagement, accessibility to learning resources, and learning outcomes. However, notable perceptual differences between students and teachers highlight the need for better alignment of digital strategies with learner experiences. Qualitative perspectives indicate that while some strategies were creative, notable barriers such as technological problems, insufficient infrastructure, and digital illiteracy persist. The study thus recommends putting much more into investments in digital infrastructure, ongoing faculty professional development, and specific interventions at the program level to begin to close the perceptual gap and thereby further enhance the leverage of digital transformation in education.

INTRODUCTION

Digital transformation in higher education, particularly within local community colleges, encompasses the integration of advanced digital technologies into teaching and learning processes, profoundly reshaping traditional educational practices and methodologies (Li, 2023; Seaman & Seaman, 2023). Local community colleges, which typically serve diverse student populations with varied educational backgrounds and limited resources, face unique challenges and opportunities in this transformation process. The adoption of digital technologies in these institutions is crucial, as it significantly enhances the accessibility and quality of education, offering flexible learning solutions tailored to meet students' diverse needs and overcoming barriers related to geographic location, socio-economic status, and traditional educational constraints (OECD, 2021). The drive towards digitalization in education is strongly supported by national educational policies and regulations. In the Philippines, for example, the Commission on Higher Education (CHED) Memorandum Order No. 4, s. 2020 emphasizes the implementation of flexible learning strategies utilizing digital technologies, ensuring educational continuity and accessibility amidst disruptions such as the COVID-19 pandemic. Additionally, Davis' Technology Acceptance Model (TAM, 1989), recently validated by studies like Salloum *et al.* (2019), highlights how perceived usefulness and ease of use significantly influence educators' adoption of digital technologies, further validating the theoretical framework for exploring digital transformation in educational contexts.

Recent empirical studies conducted in higher education institutions reveal critical insights regarding digital transformation practices. For instance, Bond *et al.* (2018) reported that effective digital instructional strategies, such as blended learning, online assessment tools, and digital resource management, significantly enhanced student learning outcomes and engagement. Moreover, studies by Adedoyin and Soykan (2020) and Ferri *et al.* (2020) indicated challenges including inadequate teacher preparedness, limited digital literacy, and inconsistent access to technological resources, highlighting the complexity and contextual nature of digital transformation in education. Despite considerable research, significant gaps remain in evaluating digital transformation practices specific to local community college contexts, particularly within Philippine educational settings. Few studies have comparatively analyzed perceptions of digital practices between students and teachers or explored the relationship between digital practices and perceived quality of education across various academic programs in local colleges. Addressing this gap is crucial as understanding

[1] Research, Development, and Extension Services Office, Initao College, Initao, Misamis Oriental, Philippines
[2] Teacher Education Program, Initao College, Initao, Misamis Oriental, Philippines
[*] Corresponding author's e-mail: sydneyvillarin1733@gmail.com

specific local challenges and opportunities could provide targeted insights for optimizing digital integration in higher education.

This study aims to evaluate the practices and strategies employed by teachers in navigating digital transformation in education to enhance access to quality learning. Specifically, it seeks to answer the following questions:

What are the common digital practices and strategies utilized by teachers in delivering instruction in terms of:

1. Lesson Planning and Preparation;
2. Instructional Delivery;
3. Assessment and Feedback; and
4. Classroom Management?

What is the perceived effectiveness of digital practices and strategies of teachers in enhancing access to quality learning in terms of:

1. Student Engagement;
2. Accessibility to Learning Resources; and
3. Learning Outcomes?

Is there a significant difference in the perception of students and teachers regarding the digital practices and strategies utilized by teachers in delivering instruction?

Is there a significant difference in the perception of students and teachers regarding the perceived effectiveness of digital practices and strategies in enhancing access to quality learning?

Is there a significant difference in the perception of students regarding the digital practices and strategies utilized by teachers in delivering instruction when grouped per program?

Is there a significant difference in the perception of students regarding the perceived effectiveness of digital practices and strategies in enhancing access to quality learning when grouped according to programs?

Is there a significant relationship between teachers' digital practices and the perceived effectiveness of strategies in enhancing access to quality learning?

How do students and teachers describe teachers' practices, strategies, and the challenges they encounter in adapting to and integrating digital transformation in education?

What program can be developed based on the findings?

Thus, the purpose of this study is to comprehensively evaluate digital transformation practices and strategies employed by teachers at Initao College. This research will provide actionable insights for educators, administrators, and policymakers, contributing to strategic decision-making processes aimed at enhancing pedagogical effectiveness, improving access, and ensuring the sustainability and inclusivity of quality education in local community colleges.

LITERATURE REVIEW

The integration of digital tools in teaching has transformed instructional practices even in face-to-face classrooms. As higher education adapts to post-pandemic realities, local community college instructors now blend traditional methods with digital strategies to improve access to quality learning. Effective lesson planning now includes tools such as learning management systems, multimedia, and mobile-accessible content. Faculty digital competence plays a key role in creating tech-enhanced lessons (Sabio & Sabio, 2024; Ormilla & Ongan, 2024). Instructors who previously used online platforms showed greater confidence in transitioning to flexible modes (Adnan & Anwar, 2020). Philippine institutions supported faculty through webinars and peer mentoring, helping them design modular and outcomes-based content (Gallespen, 2021). Streamlining syllabi to focus on essential competencies became a practical strategy in contexts with limited contact time and connectivity (Cahapay, 2020).

Teachers have adopted blended synchronous–asynchronous methods, using live video lectures, recorded materials, and discussion forums to cater to diverse learner needs (Sebastian *et al.,* 2022; Chung *et al.,* 2020). In face-to-face settings, these tools supplement instruction and promote engagement. LMS platforms such as Google Classroom or Moodle are widely used for organizing lessons and uploading materials (Tanguihan, 2021). Video conferencing features like polls, chat, and screen sharing enhance interaction (Røe *et al.,* 2022). Despite these tools, maintaining engagement remains a challenge. Faculty have responded by using small-group presentations, flexible learning tasks, and student-centered approaches to encourage participation (Dayagbil *et al.,* 2021; Paderog, 2023).

Assessment strategies now combine digital quizzes, open-book tests, projects, and multimedia outputs. These formats support both cognitive and practical learning outcomes (Ramos & Castillo, 2024). Concerns about academic integrity led teachers to redesign exams with randomized items, oral assessments, and authentic tasks (Holden *et al.,* 2021). Feedback is more timely and detailed through LMS features and personalized comments. However, this increases workload, prompting use of general feedback videos and peer assessments to manage teacher time (Rapanta *et al.,* 2020). Formative tools like low-stakes quizzes and reflection journals support mastery learning and self-regulation (Barrot *et al.,* 2021; Dhawan, 2020). Flexibility in assessment timing and mode is crucial to accommodate students with limited access (Lapada *et al.,* 2020).

Managing face-to-face classes with digital components introduces new challenges, especially in keeping students engaged and accountable. Passive participation, late submissions, and distractions are frequent issues (Tanguihan, 2021; Pariscal, 2022). Instructors respond by establishing routines, setting online norms, and offering asynchronous alternatives for students with access issues (Dayagbil *et al.,* 2021). Building classroom community remains essential—check-ins, group chats, and digital collaborations foster trust and peer support (Paderog, 2023). Data from LMS tools allow teachers to track progress and tailor interventions. Differentiated strategies help maintain order and ensure no learner is left behind (Lapada *et al.,* 2020). Thus, digital transformation

in education is not confined to online classes—it has redefined practices in face-to-face classrooms. For community colleges, integrating digital tools in planning, instruction, assessment, and classroom management enables more inclusive and flexible learning. Continued professional development, institutional support, and teacher collaboration are key to sustaining quality education in a digitally-enhanced environment.

MATERIALS AND METHODS

Research Design

This study employed multiple methods, combining quantitative and qualitative research designs. The quantitative aspect involved descriptive, comparative, and correlational analyses. The descriptive approach systematically identified common digital practices and strategies. Comparative analysis investigated significant differences between the perceptions of students and teachers and among programs. The correlational approach examined relationships among teachers' digital practices, their effectiveness, and perceived educational quality. The qualitative component involved thematic analysis of open-ended responses to provide deeper insights into teachers' experiences, practices, and challenges.

Research Locale

The study was conducted at Initao College, a public local community college located in Misamis Oriental, Philippines. The institution offers a range of academic programs that include both board courses—Bachelor of Elementary Education (BEED), Bachelor of Science in Criminology (BSCRIM)—and non-board courses such as Bachelor of Science in Hospitality Management (BSHM) and Bachelor of Science in Business Administration (BSBA). As a local college that serves students from rural and low-income backgrounds, Initao College is a relevant site for this study because it provides insight into how digital transformation is implemented in under-resourced and community-based educational contexts.

Research Participants

Participants in this study included students and faculty members from both board and non-board programs: BEED, BSCRIM, BSHM, and BSBA. Stratified sampling was employed to ensure equitable representation from each academic program, following best practices in sample selection as described by Creswell (2014). A total of 50 students per program were selected, resulting in 200 student participants. In addition, 10 faculty members from each program, including general education instructors, were included for a total of 50 faculty respondents.

Research Instrument

The research instrument used in this study is a structured survey questionnaire composed of four parts. Part I collects the demographic profile of participants, including whether they are students or faculty members, their gender, academic program affiliation, and their familiarity with digital tools. Part II focuses on digital practices and strategies in delivering instruction, comprising 20 items rated on a 4-point Likert scale. These items are grouped into four constructs: lesson planning and preparation (5 items, reliability index = .901, excellent), instructional delivery (5 items, reliability index = .891, good), assessment and feedback (5 items, reliability index = .908, excellent), and classroom engagement (5 items, reliability index = .913, excellent). This section has an overall reliability index of .960, indicating excellent consistency. Part III measures the perceived effectiveness of digital practices and strategies through 15 items, also rated on a 4-point Likert scale. These items are categorized into student engagement (5 items, reliability index = .937, excellent), accessibility to learning resources (5 items, reliability index = .932, excellent), and learning outcomes (5 items, reliability index = .930, excellent). The total reliability index for this section is .967, considered excellent. Overall, the entire instrument has a reliability index of .976, signifying excellent internal consistency. Lastly, Part IV includes open-ended questions designed to capture qualitative insights from faculty members regarding their experiences, strategies, and challenges in implementing digital practices. This part was validated by the Vice President for Research and Development.

Data Analysis

Quantitative data was analyzed using descriptive statistics (mean, standard deviation), Mann-Whitney U and Kruskal-Wallis H tests for comparative analyses, and Spearman's rho correlation to explore relationships between variables. Qualitative responses from open-ended questions were analyzed using thematic analysis to identify key themes related to teachers' experiences and challenges.

Data Gathering Procedure and Ethical Considerations

Data collection was conducted systematically, involving distribution and collection of survey questionnaires and conducting follow-up interviews as necessary. Ethical considerations included obtaining informed consent from participants, ensuring confidentiality and anonymity of responses, respecting participants' right to withdraw at any time, and securing collected data to comply with ethical standards and guidelines for educational research.

RESULTS AND DISCUSSION

I: What are the common digital practices and strategies utilized by teachers in delivering instruction in terms of lesson planning and preparation, instructional delivery, assessment and feedback, and classroom management?

Table 1: Common Digital Practices and Strategies Utilized by Teachers in Delivering Instruction in terms of Lesson Planning and Preparation

Statement			Mean	SD	Interpretation
1.	The instructor uses digital tools (e.g., Google Docs, Canva) in lesson planning.	Students	3.24	0.65	Agree
		Teachers	3.59	0.73	Strongly Agree
2.	The instructor accesses online resources to develop learning materials.	Students	3.28	0.62	Strongly Agree
		Teachers	3.91	0.36	Strongly Agree
3.	The instructor creates digital presentations to support lesson delivery.	Students	3.33	0.64	Strongly Agree
		Teachers	3.68	0.56	Strongly Agree
4.	The instructor prepares digital lesson plans aligned with the curriculum.	Students	3.29	0.66	Strongly Agree
		Teachers	3.80	0.41	Strongly Agree
5.	The instructor incorporates interactive digital activities into lesson plans.	Students	3.29	0.59	Strongly Agree
		Teachers	3.52	0.51	Strongly Agree
Grand Mean		**Students**	**3.28**	**0.53**	**Very High**
		Teachers	**3.70**	**0.36**	**Very High**

Legend: 1.00-1.74 = Strongly Disagree; 1.75-2.49 = Disagree; 2.50-3.24 = Agree; 3.25-4.00 = Strongly Agree

The findings of Table 1 reveal that both students and teachers perceive the integration of digital practices in lesson planning and preparation to be very high, with a grand mean of 3.28 for students and 3.70 for teachers. Among the indicators, the highest rated by teachers is the use of online resources to develop learning materials, with a mean of 3.91, indicating strong agreement. Similarly, students rated the creation of digital presentations to support lesson delivery as the most evident practice, with a mean of 3.33. On the other hand, the lowest rated item for students is the use of digital tools such as Google Docs and Canva in lesson planning (mean = 3.24), while teachers gave the lowest rating to the incorporation of interactive digital activities into lesson plans (mean = 3.52), though still interpreted as "strongly agree." These results suggest that teachers are highly engaged in integrating technology into their lesson planning, particularly in developing materials and presentations that support instruction. The slightly lower student rating on the use of digital tools may imply that while such tools are extensively used during the preparation phase, their presence is less visible or tangible from the learners' perspective. It is also possible that students are more attuned to outputs (e.g., presentations and activities) rather than the planning tools used to create them.

The implications of these findings highlight a strong institutional capacity for digital transformation in instructional planning. Teachers at Initao College demonstrate competence in using digital tools, which supports the delivery of relevant and engaging content. However, to maximize the impact of these strategies, there is a need to ensure that digital planning tools not only serve instructional design but also enhance the learner's experience in a more observable and interactive manner. Strengthening the connection between planning and visible classroom application can help bridge

Table 2: Common Digital Practices and Strategies Utilized by Teachers in Delivering Instruction in terms of Instructional Delivery

Statement			Mean	SD	Interpretation
1.	The instructor utilizes Learning Management Systems (e.g., Google Classroom, Moodle).	Students	3.18	0.67	Agree
		Teachers	3.14	0.77	Agree
2.	The instructor uses video conferencing platforms (e.g., Zoom, Google Meet) for virtual classes.	Students	3.04	0.73	Agree
		Teachers	3.14	0.93	Agree
3.	The instructor integrates multimedia tools (e.g., videos, podcasts) in teaching.	Students	3.13	0.68	Agree
		Teachers	3.27	0.79	Strongly Agree
4.	The instructor provides digital learning materials to students.	Students	3.20	0.63	Agree
		Teachers	3.59	0.58	Strongly Agree
5.	The instructor facilitates synchronous and asynchronous discussions using digital platforms.	Students	3.17	0.59	Agree
		Teachers	3.14	0.85	Agree
Grand Mean		**Students**	**3.14**	**0.56**	**High**
		Teachers	**3.25**	**0.59**	**Very High**

Legend: 1.00-1.74 = Strongly Disagree; 1.75-2.49 = Disagree; 2.50-3.24 = Agree; 3.25-4.00 = Strongly Agree

perceptual gaps and further elevate the quality of digital teaching practices. Research studies have demonstrated that systematic digital lesson planning is critical in modern higher education. For instance, Sebastian *et al.* (2022) found that the deliberate integration of online resources substantially enhanced teachers' ability to design effective lessons. Furthermore, Dayagbil *et al.* (2021) observed that during periods of disruption, faculty had to swiftly recalibrate their lesson plans using digital tools, ensuring the continuity and quality of instruction. Together, these studies underscore that a well-structured digital approach to lesson planning facilitates more dynamic and responsive instructional practices.

The results of Table 2 indicate that both students and teachers acknowledge the frequent use of digital practices and strategies in instructional delivery, with students giving an overall mean rating of 3.14 (interpreted as High) and teachers giving a slightly higher mean of 3.25 (interpreted as Very High). Among the indicators, the highest-rated item for teachers is the provision of digital learning materials, with a mean of 3.59, reflecting a strong agreement on the use of digital content to support instruction. For students, this same item also received the highest mean score of 3.20. Conversely, the lowest-rated item for students is the use of video conferencing platforms such as Zoom or Google Meet (mean = 3.04), while for teachers, the lowest-rated item is tied between the use of learning management systems (mean = 3.14) and facilitation of synchronous and asynchronous discussions (mean = 3.14), both interpreted as Agree. These findings suggest that the core digital strategies in instructional delivery—such as using LMS platforms, digital materials, and multimedia tools—are perceived as commonly implemented by teachers. The stronger agreement from teachers in integrating multimedia tools (mean = 3.27) and providing digital learning resources may reflect their intentional efforts to diversify content delivery and ensure accessibility of learning materials. However, students appear slightly less affirming of the visibility and impact of these strategies, which may point to a gap between instructional intent and learner experience.

The implication of this result is that digital transformation in instructional delivery is indeed underway at Initao College, with teachers adopting various platforms and tools to enhance their teaching practices. However, the data also suggest a need to further strengthen student engagement through these platforms. Teachers may consider increasing the interactivity and student-centered features of their digital delivery approaches—such as more engaging use of LMS functions, active participation in video conferencing, and structured asynchronous activities—to ensure that students not only receive content but are actively involved in the learning process. This alignment will further elevate the effectiveness of digital instruction in achieving quality learning outcomes. The literature similarly confirms that digital tools greatly influence instructional delivery. Benitez (2023) noted that faculty in Philippine state universities used a diverse array of multimedia and digital content to enrich their lectures, resulting in enhanced immediacy and interactivity during class sessions. In addition, Petancio *et al.* (2024) reported that the effective use of virtual learning environments bolstered the availability of digital materials, further enhancing teachers' instructional delivery. These complementary studies suggest that incorporating digital methods directly impacts how instruction is delivered and received in higher education settings.

Table 3: Common Digital Practices and Strategies Utilized by Teachers in Delivering Instruction in terms of Assessment and Feedback

Statement			Mean	SD	Interpretation
1.	The instructor uses online quizzes and assessment tools (e.g., Google Forms, Kahoot).	Students	3.01	0.74	Agree
		Teachers	2.75	0.91	Agree
2.	The instructor provides digital feedback through online platforms.	Students	3.02	0.71	Agree
		Teachers	2.91	0.96	Agree
3.	The instructor assesses student outputs through online submission platforms.	Students	3.10	0.65	Agree
		Teachers	2.95	0.91	Agree
4.	The instructor uses plagiarism detection tools (e.g., Turnitin) for evaluating written outputs.	Students	2.93	0.73	Agree
		Teachers	2.80	0.90	Agree
5.	The instructor provides immediate feedback through digital platforms.	Students	3.06	0.67	Agree
		Teachers	2.95	0.83	Agree
Grand Mean		**Students**	**3.02**	**0.58**	**High**
		Teachers	**2.87**	**0.77**	**High**

Legend: 1.00-1.74 = Strongly Disagree; 1.75-2.49 = Disagree; 2.50-3.24 = Agree; 3.25-4.00 = Strongly Agree

The findings presented in Table 3 reveal that both students and teachers perceive the use of digital practices and strategies in assessment and feedback to be consistently applied, though with slightly different levels of agreement. Students provided a grand mean of 3.02, interpreted as High, while teachers gave a slightly lower grand mean of 2.87, also interpreted as High. Among the indicators, students rated the use of online

submission platforms for assessing student outputs the highest (mean = 3.10), while teachers rated it at 2.95. The lowest-rated item from the students' perspective was the use of plagiarism detection tools (mean = 2.93), which was similarly low for teachers (mean = 2.80). This pattern suggests that while digital assessment tools are being used, there may be variability in how consistently and effectively they are integrated across different teachers and subjects. Teachers appear slightly more critical of their own practices, particularly in using advanced tools such as plagiarism detection software, which may indicate limitations in access, training, or institutional support. The relatively modest means, compared to those in lesson planning and instructional delivery, suggest that assessment and feedback via digital means are still areas for further enhancement.

The implication of these findings is that while foundational digital assessment tools (e.g., Google Forms, online submissions) are widely adopted at Initao College, there is an opportunity to strengthen more advanced practices, such as the systematic use of digital feedback mechanisms and academic integrity tools. Faculty development programs could focus on building deeper competency in digital assessment design and effective feedback delivery, including real-time and formative feedback strategies. This could foster a more responsive, transparent, and equitable assessment process that supports student learning more effectively in digital environments. Evidence from the local context also highlights mixed experiences with online assessment tools. Cahapay (2021) identified challenges such as technical hurdles and student anxiety related to digital assessments, which signal the need for simpler, more user-friendly platforms. Simultaneously, Ramos and Castillo (2024) demonstrated that employing varied digital assessment formats—ranging from online quizzes to multimedia projects—can improve both formative feedback and overall student performance. In sum, these studies point to the importance of continually refining assessment tools and offering training, ensuring that digital assessments meaningfully contribute to educational quality.

Table 4: Common Digital Practices and Strategies Utilized by Teachers in Delivering Instruction in terms of Classroom Management

Statement			Mean	SD	Interpretation
1.	The instructor communicates with students using digital platforms (e.g., Messenger, Google Classroom).	Students	3.28	0.62	Strongly Agree
		Teachers	3.70	0.51	Strongly Agree
2.	The instructor monitors student participation through digital tools.	Students	3.10	0.66	Agree
		Teachers	3.11	0.81	Agree
3.	The instructor sets digital rules and guidelines for online learning.	Students	3.17	0.61	Agree
		Teachers	3.05	0.83	Agree
4.	The instructor uses digital tools to manage class schedules and activities.	Students	3.23	0.58	Agree
		Teachers	3.36	0.75	Strongly Agree
5.	The instructor addresses classroom concerns and inquiries through digital platforms.	Students	3.15	0.62	Agree
		Teachers	3.25	0.78	Strongly Agree
Grand Mean		**Students**	**3.18**	**0.52**	**High**
		Teachers	**3.30**	**0.61**	**Very High**

Legend: 1.00-1.74 = Strongly Disagree; 1.75-2.49 = Disagree; 2.50-3.24 = Agree; 3.25-4.00 = Strongly Agree

The findings in Table 4 show that both students and teachers recognize the frequent use of digital practices and strategies in classroom management, with students giving a grand mean of 3.18 (High) and teachers rating it slightly higher at 3.30 (Very High). Among the indicators, the highest-rated item from both groups is the instructor's communication with students through digital platforms, such as Messenger and Google Classroom. This statement received a mean of 3.28 from students and an even higher mean of 3.70 from teachers, both interpreted as Strongly Agree. Meanwhile, the lowest-rated item for students is the monitoring of student participation using digital tools (mean = 3.10), while teachers rated the setting of digital rules and guidelines the lowest (mean = 3.05), though both items still fall under the Agree category. These results suggest that digital platforms are widely used for communication and coordination, which enhances classroom organization and responsiveness. Teachers acknowledge the value of tools that help manage class schedules and address concerns online, indicating their growing reliance on digital methods to maintain order and structure in both face-to-face and virtual settings. The slightly lower ratings on participation monitoring and rule-setting may reflect the challenges of enforcing discipline and engagement digitally, especially when students are learning remotely or asynchronously.

The implication of these findings is that digital classroom management at Initao College is generally effective, particularly in terms of teacher-student communication and schedule coordination. However, there is room for improvement in developing more systematic approaches to monitoring participation and establishing digital behavioral norms. Capacity-building efforts could focus on helping teachers create and enforce digital classroom policies, utilize analytics features of LMS

platforms, and develop proactive strategies to support student accountability and engagement in tech-enhanced learning environments. With respect to classroom management, research studies reveal both strengths and areas for growth. Moralista and Oducado (2020) found that while digital communication tools (such as learning platforms and messaging apps) improved teacher-student interactions, issues like monitoring online behavior continued to challenge educators. In parallel, Amuthenu (2025) reported a similar sentiment: the effective setting of digital rules is essential, yet the implementation remains inconsistent. Together, these findings suggest that although digital platforms serve as valuable tools for classroom coordination, additional support and clearer protocols are required to maximize their impact.

What is the perceived effectiveness of digital practices and strategies of teachers in enhancing access to quality learning in terms of student engagement, accessibility to learning resources, and learning outcomes?

Table 5: Perceived Effectiveness of Digital Practices and Strategies of Teachers in Enhancing Access to Quality Learning in terms of Student Engagement

Statement			Mean	SD	Interpretation
1.	Digital practices help increase student participation.	Students	3.27	0.62	Strongly Agree
		Teachers	3.48	0.59	Strongly Agree
2.	Digital tools encourage collaborative learning.	Students	3.31	0.58	Strongly Agree
		Teachers	3.55	0.55	Strongly Agree
3.	Digital platforms enhance student motivation.	Students	3.27	0.61	Strongly Agree
		Teachers	3.48	0.55	Strongly Agree
4.	Digital tools foster interactive learning.	Students	3.28	0.59	Strongly Agree
		Teachers	3.43	0.55	Strongly Agree
5.	Digital platforms provide opportunities for self-paced learning.	Students	3.31	0.62	Strongly Agree
		Teachers	3.52	0.51	Strongly Agree
Grand Mean		**Students**	**3.29**	**0.54**	**Very High**
		Teachers	**3.49**	**0.45**	**Very High**

Legend: 1.00-1.74 = Strongly Disagree; 1.75-2.49 = Disagree; 2.50-3.24 = Agree; 3.25-4.00 = Strongly Agree

The data presented in Table 5 demonstrate that both students and teachers perceive the digital practices and strategies employed by teachers as highly effective in enhancing student engagement. Students reported a grand mean of 3.29 (Very High), while teachers reported an even higher grand mean of 3.49 (Very High), indicating a shared belief in the positive impact of digital tools on fostering active learning environments. Among the indicators, both groups gave the highest ratings to the role of digital tools in encouraging collaborative learning (students: 3.31; teachers: 3.55), while the lowest ratings—though still high—were given to the statement that digital practices help increase student participation (students: 3.27; teachers: 3.48). These results suggest a strong alignment between student and teacher perceptions regarding the effectiveness of digital practices in promoting engagement. Teachers appear to be slightly more confident than students in the ability of digital platforms to stimulate participation, motivation, and interaction. The consistent "strongly agree" interpretation across all indicators shows that digital transformation is positively influencing the classroom dynamic by making learning more engaging, flexible, and learner-centered. This affirms the adaptability of both teachers and students in utilizing technology to enhance the educational experience.

The implication of these findings is that digital tools are not only being used but are also viewed as highly impactful in promoting student engagement at Initao College. This serves as a validation of the current digital strategies being implemented, and supports their continued use and improvement. Institutional support should focus on sustaining this momentum through further professional development and infrastructure enhancement. In particular, expanding access to tools that support collaborative and self-paced learning could further empower students and make learning more inclusive, personalized, and effective in a community college context. Regarding student engagement, both quantitative and qualitative evidence supports the positive impact of well-implemented digital practices. Aves *et al.* (2023) reported high levels of cognitive, emotional, and behavioral engagement among students participating in digitally enriched classes. In addition, Baloran *et al.* (2021) revealed that strong course satisfaction was closely linked with enhanced engagement during online sessions. These findings collectively illustrate that when digital tools are incorporated thoughtfully, they significantly foster an engaging and interactive learning environment.

The results presented in Table 6 show that both students and teachers strongly agree on the effectiveness of digital practices and strategies in enhancing accessibility to learning resources. Students reported a grand mean of 3.33 (Very High), while teachers gave a higher grand mean of 3.62 (Very High), indicating a shared positive

Table 6: Perceived Effectiveness of Digital Practices and Strategies of Teachers in Enhancing Access to Quality Learning in terms of Accessibility to Learning Resources

Statement			Mean	SD	Interpretation
1.	Digital platforms provide easy access to learning materials.	Students	3.37	0.60	Strongly Agree
		Teachers	3.66	0.48	Strongly Agree
2.	Digital tools help bridge the gap between students and teachers.	Students	3.27	0.61	Strongly Agree
		Teachers	3.50	0.55	Strongly Agree
3.	Online resources make learning more flexible.	Students	3.33	0.61	Strongly Agree
		Teachers	3.61	0.54	Strongly Agree
4.	Digital platforms provide access to a variety of learning resources.	Students	3.35	0.60	Strongly Agree
		Teachers	3.68	0.52	Strongly Agree
5.	Digital tools improve access to supplementary learning materials.	Students	3.33	0.58	Strongly Agree
		Teachers	3.66	0.48	Strongly Agree
Grand Mean		**Students**	**3.33**	**0.53**	**Very High**
		Teachers	**3.62**	**0.44**	**Very High**

Legend: 1.00-1.74 = Strongly Disagree; 1.75-2.49 = Disagree; 2.50-3.24 = Agree; 3.25-4.00 = Strongly Agree

perception regarding how digital tools facilitate access to educational content. Among the indicators, both students and teachers gave the highest ratings to the statement that digital platforms provide access to a variety of learning resources (students: 3.35; teachers: 3.68). The lowest-rated, yet still strongly agreed upon, item for students was digital tools help bridge the gap between students and teachers (mean = 3.27), while for teachers it was digital tools help bridge the gap between students and teachers as well (mean = 3.50). These findings indicate a strong consensus that digital transformation significantly contributes to educational access by offering convenient, flexible, and diverse resources. Teachers, in particular, express high confidence in the ability of digital tools to make a wide range of materials available, suggesting that they recognize the strategic advantage of these platforms in addressing the learning needs of students in a local community college context. The consistent "strongly agree" responses across all items from both groups reflect the effectiveness of technology in supporting inclusive and resource-rich instruction.

The implication is that Initao College has successfully leveraged digital tools to reduce barriers to learning, especially for students who may face challenges accessing physical or traditional learning materials. The high perception of effectiveness supports the continued integration and enhancement of digital resources in teaching practices. Moving forward, efforts should be directed at ensuring equitable access to digital infrastructure and providing training for both teachers and students on how to maximize the use of online platforms and tools. This would help sustain a learning environment where resource accessibility is not a limitation but a strength of the institution's digital transformation journey. Research studies also confirm the role of digital tools in increasing access to educational content. Rodrigo

Table 7: Perceived Effectiveness of Digital Practices and Strategies of Teachers in Enhancing Access to Quality Learning in terms of Learning Outcomes

Statement			Mean	SD	Interpretation
1.	Digital practices improve students' academic performance.	Students	3.33	0.59	Strongly Agree
		Teachers	3.39	0.62	Strongly Agree
2.	Digital tools help achieve learning objectives.	Students	3.29	0.59	Strongly Agree
		Teachers	3.57	0.50	Strongly Agree
3.	Digital platforms promote independent learning.	Students	3.26	0.60	Strongly Agree
		Teachers	3.55	0.59	Strongly Agree
4.	Digital tools enhance the quality of student outputs.	Students	3.29	0.58	Strongly Agree
		Teachers	3.50	0.59	Strongly Agree
5.	Digital platforms facilitate better understanding of lessons.	Students	3.30	0.59	Strongly Agree
		Teachers	3.59	0.54	Strongly Agree
Grand Mean		**Students**	**3.29**	**0.53**	**Very High**
		Teachers	**3.52**	**0.48**	**Very High**

Legend: 1.00-1.74 = Strongly Disagree; 1.75-2.49 = Disagree; 2.50-3.24 = Agree; 3.25-4.00 = Strongly Agree

and Ladrido (2022) demonstrated that initiatives such as open educational resources and online lecture series greatly expanded content accessibility, reaching diverse and international audiences. Furthermore, Petancio *et al.* (2024) emphasized that intuitive virtual learning platforms not only streamline resource distribution but also support collaborative learning. Together, these studies affirm that robust digital infrastructure can dismantle traditional access barriers and foster a more inclusive learning environment.

The data in Table 7 show that both students and teachers strongly agree on the effectiveness of digital practices and strategies in enhancing learning outcomes, with a grand mean of 3.29 from students and 3.52 from teachers, both interpreted as Very High. Among the specific indicators, students gave the highest rating to the statement that digital practices improve students' academic performance (mean = 3.33), while teachers gave the highest rating to digital platforms facilitate better understanding of lessons (mean = 3.59). The lowest-rated item from students was digital platforms promote independent learning (mean = 3.26), although it still reflects strong agreement. For teachers, the lowest rating was given to digital practices improve students' academic performance (mean = 3.39), which likewise remains in the Strongly Agree category. These results suggest that both groups acknowledge the significant impact of digital transformation in improving student learning outcomes. Teachers, in particular, express stronger confidence in the capacity of digital tools to help students achieve learning objectives, understand lessons better, and produce higher-quality outputs. Students, on the other hand, equally recognize these benefits but may be slightly more cautious in their evaluation of how digital strategies directly influence independent learning and academic performance.

The implication of these findings is that digital practices are not only well-implemented but are also perceived as effective in enhancing cognitive and performance-based outcomes at Initao College. This reinforces the importance of integrating digital strategies as a core component of instructional design. To sustain and build upon these positive perceptions, it would be beneficial to continue investing in tools and training that strengthen student autonomy, deepen understanding, and improve academic achievement. Ensuring that digital practices remain aligned with pedagogical goals will further enhance learning effectiveness in both traditional and blended settings. The effectiveness of digital practices in enhancing learning outcomes is similarly substantiated by various research. Amuthenu (2025) reported that when digital tools are integrated appropriately, there is a marked improvement in students' understanding and academic performance. In a related study, findings from initiatives involving curated video lectures and online activities (Rodrigo & Ladrido, 2022) indicate that well-designed digital content can lead to outcomes that rival, or even exceed, those obtained through traditional instruction. Such results emphasize that the strategic use of digital resources fosters effective learning experiences.

Is there a significant difference in the perception of students and teachers regarding the digital practices and strategies utilized by teachers in delivering instruction?

Table 8: Perceived Effectiveness of Digital Practices and Strategies of Teachers in Enhancing Access to Quality Learning in terms of Learning Outcomes

Profile		Teachers' Digital Practices and Strategies		Test Statistic-value	p-value	Remarks
		Mean	QI			
Role	Students	3.16	H	3561	0.047	Significant
	Teachers	3.28	VH			

Note: Results are considered statistically significant at a p-value of ≤ 0.05.

The findings in Table 8 indicate a statistically significant difference in the perception of students and teachers regarding the digital practices and strategies utilized by teachers in delivering instruction, as evidenced by a p-value of 0.047, which is less than the 0.05 significance level. The mean score for students is 3.16, interpreted as High, while teachers reported a higher mean of 3.28, interpreted as Very High. This suggests that teachers have a more favorable view of their digital instructional practices compared to their students. This result implies a perceptual gap between the two groups. Teachers may perceive themselves as effectively integrating digital tools and strategies, possibly because they are directly involved in planning and implementing these practices. Students, on the other hand, may not fully observe or experience the intended effects of these strategies, which may account for their slightly lower ratings. The significant difference underscores the importance of continuously aligning instructional delivery with student expectations and experiences to ensure that digital practices translate into tangible learning benefits.

The implication of this result is that while digital transformation efforts are underway and generally well-received, institutions like Initao College must consider gathering more student-centered feedback to bridge the perception gap. Doing so can help refine instructional strategies to ensure they resonate not only with teachers' intentions but also with learners' actual classroom experiences. Regular formative evaluations and open communication channels between faculty and students could help calibrate digital practices to be more effective and responsive to learner needs. The gap between student

and teacher perceptions regarding digital practices is well documented. Amuthenu (2025) observed that while both groups acknowledged the benefits of digital tools, teachers were generally more critical—often reflecting concerns over the lack of interactive engagement and difficulties in managing online behavior. Likewise, Rotas and Cahapay (2020) highlighted that students tended to focus on the immediacy and ease-of-use of digital learning, whereas instructors were more attuned to issues of academic integrity and pedagogical effectiveness. These disparities reveal a perceptual gap rooted in differing priorities, indicating that a balanced approach that addresses both perspectives is essential.

Is there a significant difference in the perception of students and teachers regarding the perceived effectiveness of digital practices and strategies in enhancing access to quality learning?

Table 9: Difference in the Perception of Students and Teachers regarding the Perceived Effectiveness of Digital Practices and Strategies in Enhancing Access to Quality Learning

Profile		Teachers' Digital Practices and Strategies		Test Statistic-value	p-value	Remarks
		Mean	QI			
Role	Students	3.31	VH	3119	0.002	Significant
	Teachers	3.54	VH			

Note: Results are considered statistically significant at a p-value of ≤ 0.05.

The results in Table 9 reveal a statistically significant difference in the perception of students and teachers regarding the perceived effectiveness of digital practices and strategies in enhancing access to quality learning, with a p-value of 0.002, well below the 0.05 threshold for significance. Students reported a mean of 3.31, while teachers reported a higher mean of 3.54, both interpreted as Very High. This suggests that while both groups strongly agree on the effectiveness of digital strategies, teachers perceive a greater degree of impact compared to students. This significant difference points to a perception gap wherein teachers may feel more confident about the positive outcomes of their digital practices, possibly due to their familiarity with the tools and the intent behind their instructional design. On the other hand, students, though still highly appreciative of these strategies, may have different experiences or expectations, possibly influenced by technical access, learning preferences, or the level of interactivity they encounter.

The implication of this finding is that institutional efforts toward digital transformation should not only focus on teacher training and implementation but also prioritize the learner's perspective. To ensure that digital strategies are not just effective in design but also in actual learner experience, schools like Initao College may consider incorporating regular feedback mechanisms, digital literacy support for students, and co-creation of digital learning environments. This will help narrow the perception gap and ensure that digital innovations are truly inclusive, meaningful, and aligned with the learning realities of both students and teachers. In further exploring the differences in perceived effectiveness, Moralista and Oducado (2020) reported that many faculty members remain cautious about the potential of online teaching to fully replicate traditional academic outcomes. Conversely, Baloran *et al.* (2021) found that students expressed high satisfaction with digital instruction, perceiving it as an effective alternative to face-to-face learning. The contrasting views underscore the need for institutions to bridge the gap between teacher concerns and student experiences, ensuring that digital initiatives are both practical and responsive to classroom realities.

Is there a significant difference in the perception of students regarding the digital practices and strategies utilized by teachers in delivering instruction when grouped per program?

Table 10: Difference in the Perception of Students regarding the Perceived Effectiveness of Digital Practices and Strategies Utilized by Teachers in Delivering Instruction when Grouped per Program

Profile		Teachers' Digital Practices and Strategies		Test Statistic-value	p-value	Remarks
		Mean	QI			
Program	BEED	3.45	VH	26.6	<0.001	Significant
	BSCRIM	3.07	H			
	BSBA	2.95	H			
	BSHM	3.17	H			

Note: Results are considered statistically significant at a p-value of ≤ 0.05.

The findings in Table 10 indicate a statistically significant difference in the perception of students regarding the digital practices and strategies utilized by teachers in delivering instruction, based on their academic program, as shown by a p-value of <0.001. The highest mean score was reported by BEED students (3.45, Very High), while the lowest was from BSBA students (2.95, High). BSCRIM and BSHM students also rated the digital practices as

High, with mean scores of 3.07 and 3.17, respectively. This significant variation implies that students from different programs experience and evaluate the use of digital instructional strategies differently. The particularly high rating from BEED students could be attributed to the stronger emphasis on educational technology and instructional design in teacher education, where digital tools are more deeply embedded in both theory and practice. In contrast, the lower ratings from BSBA and BSCRIM students may indicate that digital strategies in these programs are either less emphasized or less aligned with their learning needs and expectations.

The implication is that while digital practices are implemented across programs at Initao College, their perceived effectiveness and visibility vary by discipline. This highlights the importance of tailoring digital instructional approaches to suit the unique contexts and pedagogical requirements of each academic program. To ensure consistent and equitable digital learning experiences, the institution should consider conducting program-specific evaluations and providing targeted support that enhances digital pedagogy across all departments. Program-specific differences further nuance the overall perception of digital practices. Sebastian *et al.* (2022) found that students' evaluations of digital teaching varied significantly by department, with programs more centered on pedagogy (e.g., education) reporting higher satisfaction levels. Similarly, Arcenas *et al.* (2022) illustrated that while many students acknowledged the benefits of online learning, certain demographic and program-related factors could influence how these practices were perceived. Together, these studies suggest that the nature of one's academic program mediates the overall attitude toward digital instruction, calling for tailored approaches that account for disciplinary nuances.

Is there a significant difference in the perception of students regarding the perceived effectiveness of digital practices and strategies in enhancing access to quality learning when grouped according to programs?

Table 11: Difference in the Perception of Students regarding the Perceived Effectiveness of Digital Practices and Strategies in Enhancing Access to Quality Learning when Grouped According to Programs

Profile		Perceived Effectiveness of Digital Practices and Strategies		Test Statistic-value	p-value	Remarks
		Mean	QI			
Program	BEED	3.50	VH	12.1	0.007	Significant
	BSCRIM	3.25	VH			
	BSBA	3.17	H			
	BSHM	3.30	VH			

Note: Results are considered statistically significant at a p-value of ≤ 0.05.

The results in Table 11 indicate a statistically significant difference in the perception of students regarding the perceived effectiveness of digital practices and strategies in enhancing access to quality learning when grouped according to academic programs, as shown by a p-value of 0.007, which is below the 0.05 level of significance. Among the student groups, BEED students reported the highest mean score of 3.50, interpreted as Very High, followed by BSHM (3.30, Very High), BSCRIM (3.25, Very High), and BSBA with the lowest mean of 3.17 (High). These findings suggest that students from the Bachelor of Elementary Education (BEED) program perceive digital practices to be more effective in supporting quality learning compared to their counterparts in other programs, particularly BSBA. This may be attributed to the nature of the BEED curriculum, which typically integrates educational technology and digital pedagogy more systematically. On the other hand, BSBA students may experience fewer interactive or specialized digital interventions tailored to their field, possibly affecting their overall perception.

The implication is that the effectiveness of digital practices is not perceived uniformly across academic programs at Initao College. This underscores the need for program-specific enhancements in the implementation of digital strategies to ensure that all students experience equally beneficial access to quality learning. Faculty members and academic heads may consider contextualizing digital practices based on disciplinary needs, instructional demands, and learner expectations within each program to promote equity and maximize the impact of digital transformation in education. A study conducted in a private higher education institution in Northern Philippines assessed the effectiveness of teaching and learning practices in an online modality through a descriptive research design. Surveying 403 students from various departments, the findings revealed that effective course design and pedagogical practices were being utilized in the institution's online learning environment. Moreover, the study found significant differences in students' perceptions based on their year level and department, suggesting that learner profiles can influence how online teaching practices are received (Sebastian *et al.,* 2022). These findings suggest that the inherent characteristics of academic programs influence student perceptions, thus emphasizing the need for program-specific digital strategies.

Is there a significant relationship between teachers' digital practices and the perceived effectiveness of strategies in enhancing access to quality learning?

The results in Table 12 reveal a statistically significant and positive relationship between teachers' digital practices and the perceived effectiveness of strategies in enhancing access to quality learning, as all correlation coefficients (rs values) are significant at $p < 0.001$. Specifically, the strongest correlation is observed between overall teachers' digital practices and the overall perceived effectiveness of these strategies, with an rs value of 0.752, indicating a high correlation. When broken down by component, lesson planning and preparation showed strong positive correlations with all three areas: student engagement (rs = 0.688), accessibility to learning resources (rs = 0.657), and learning outcomes (rs = 0.637). Similarly, classroom management also exhibited strong correlations across all areas, particularly with student engagement (rs = 0.641). The other domains—instructional delivery and assessment and feedback—likewise showed statistically significant and moderately strong correlations, with rs values ranging from 0.559 to 0.611 across the measured indicators.

Table 12: Relationship Between Teachers' Digital Practices and the Perceived Effectiveness of Strategies in Enhancing Access to Quality Learning

Variables		rs value	df	p-value	Remarks
Lesson Planning and Preparation	Student Engagement	0.688	198	<0.001	Significant
	Accessibility to Learning Resources	0.657	198	<0.001	Significant
	Learning Outcomes	0.637	198	<0.001	Significant
Instructional Delivery	Student Engagement	0.580	198	<0.001	Significant
	Accessibility to Learning Resources	0.563	198	<0.001	Significant
	Learning Outcomes	0.603	198	<0.001	Significant
Assessment and Feedback	Student Engagement	0.611	198	<0.001	Significant
	Accessibility to Learning Resources	0.559	198	<0.001	Significant
	Learning Outcomes	0.587	198	<0.001	Significant
Classroom Management	Student Engagement	0.641	198	<0.001	Significant
	Accessibility to Learning Resources	0.612	198	<0.001	Significant
	Learning Outcomes	0.607	198	<0.001	Significant
Teachers' Digital Practices and Strategies in Delivering Instruction	Perceived Effectiveness of Digital Practices and Strategies in Enhancing Access to Quality Learning	0.752	198	<0.001	Significant (High Correlation)

Note: Results are considered statistically significant at a p-value of ≤ 0.05.

These findings suggest that the more effectively teachers implement digital practices in their instruction, the more positively these strategies are perceived in terms of improving engagement, accessibility, and academic achievement. The strongest correlations in lesson planning and classroom management imply that these foundational teaching practices are particularly influential in shaping students' learning experiences and perceptions of digital effectiveness. The implication of this result is clear: enhancing teachers' competencies and consistency in digital instructional practices can directly improve the perceived effectiveness of education delivery. Institutions such as Initao College can leverage this insight by investing in targeted professional development, especially in areas of lesson design and digital classroom coordination. Moreover, establishing support systems that enable the sustained integration of effective digital strategies will ensure that improvements in digital instruction translate into meaningful gains in student engagement, equitable resource access, and improved learning outcomes.

The interrelationship between the actual implementation of digital practices and students' perceptions of their effectiveness is robustly supported by various studies. Petancio *et al.* (2024) found that heightened digital engagement and resource accessibility were strongly correlated with improved learning outcomes. Moreover, Baloran *et al.* (2021) and Arcenas *et al.* (2022) reported that increased satisfaction with digital practices corresponded with enhanced academic performance and overall engagement. These converging results indicate that the more effectively digital tools are applied, the greater the perceived and actual educational benefits, thereby reinforcing the critical role of technology in contemporary higher education.

How do students and teachers describe teachers' practices, strategies, and the challenges they encounter in adapting to and integrating digital transformation in education?

In the context of digital transformation in education—specifically at Initao College, a local community college in Misamis Oriental, Philippines—the study aimed to evaluate the practices and strategies employed by teachers

Table 13: Thematic Analysis of Digital Tools, Pedagogical Strategies, and Challenges in Digital Transformation in Education

Main Themes	Sub-themes	Significant Statements	General Description of the Theme
Digital Tools & Platforms for Instruction and Assessment	Learning Management Systems & Educational Platforms	• Student Participant 3: "Mostly they used Google docs, Gmeet, Gdrive and Word app." • Student Participant 52: "Platforms like Moodle, Canvas, and Google Classroom are commonly used..." • Teacher Participant 5: "Utilizing learning management system (LMS) and Google Classroom…" • Teacher Participant 27: "I oftenly use Google Forms, Google Classroom, Docs, GMeet, Canva…"	This sub-theme gathers responses that underscore the reliance on LMS and similar platforms for organizing coursework, hosting materials, and streamlining assessments. It reflects a broad spectrum from basic platforms to more complex institutional systems.
	Video Communication and Conferencing Tools	• Student Participant 9: "Video conferencing platforms like Zoom or Google Meet are frequently used…" • Student Participant 67: "Instructors commonly use tools like Google Classroom, Zoom, and Canva for delivering instruction…" • Teacher Participant 3: "The tools that are commonly used in delivering instruction is Messenger." • Teacher Participant 12: "I use Messenger, Google Drive, MS Word…"	This sub-theme highlights the importance of real-time as well as asynchronous communication. The statements reflect the adoption of video conferencing and messaging platforms to maintain continuous dialogue and engagement between instructors and learners.
	Presentation, Assessment, and Collaboration Tools	• Student Participant 14: "Our instructors use PowerPoint for lectures, Messenger for communication, and Google Classroom for assignments." • Student Participant 29: "Instructors commonly use digital tools like Google Classroom, Google Meet, Google Forms, Plickers…" • Teacher Participant 2: "I use Canva, ChatGPT, and PPT. Student finds it easier to understand." • Teacher Participant 40: "I use Google Slides, Microsoft PowerPoint, and Jamboard for interactive presentations."	This sub-theme brings together the tools that facilitate both content delivery and assessment. It includes digital presentations, interactive quizzes, and collaborative platforms that enhance the learning experience.
Pedagogical Strategies in Digital Transformation	Hybrid & Blended Learning Approaches	• Student Participant 7: "They integrate multimedia resources, online quizzes, and interactive activities to enhance engagement…" • Student Participant 100: "They use online platforms like Google Classroom for assignments and announcements, video conferencing for classes…" • Teacher Participant 6: "I stay updated with the latest educational trends… adapting to the evolving needs of the digital learning environment." • Teacher Participant 35: "I use online platforms like Google Classroom for teaching and quizzes, and I adapt by incorporating interactive tools…"	This sub-theme reflects instructors' efforts to blend traditional face-to-face instruction with digital methods. It emphasizes the creation of a flexible, hybrid learning environment that is both accessible and responsive to current educational trends.

	Interactive and Engaging Digital Practices	• Student Participant 22: "Kahoot is one of my instructor use that make his lesson more interactive and collaborative." • Student Participant 61: "Most of them used Messenger; it is actually a good idea because it makes it easier to relay instructions." • Teacher Participant 8: "It's nice and inspiring. So many ideas can be bumped along the way." • Teacher Participant 23: "The strategies used to adapt to digital transformation are much interactive for learners."	This sub-theme centers on the innovative techniques and digital tools that actively engage students. The responses signal the move from one-way teaching to dynamic learning experiences that foster collaboration, critical thinking, and active participation.
	Traditional vs. Digital Practices and Adaptability	• Student Participant 6: "Using traditional teaching - Spoon feeding instruction." • Student Participant 13: "The majority still rely solely on Google Classroom… it does not create a significant impact on learning." • Teacher Participant 9: "I mainly use PowerPoint to deliver my lessons." • Teacher Participant 11: "Given that we live in the 21st century, it is essential that educators adjust to new developments…"	This sub-theme compares traditional, more static methods with innovative digital practices. It reflects the spectrum of adaptation among instructors—from those who adhere to conventional methods to those who fully embrace digital transformation for enhanced learning outcomes.
Challenges and Variability in Digital Adoption	Technical and Connectivity Issues	• Student Participant 2: "The challenges that my instructor encounter... is the internet connection of the school." • Student Participant 9: "Instructors face challenges like... unreliable internet…" • Student Participant 41: "The poor access of Internet at school…" • Teacher Participant 1: "Connectivity" • Teacher Participant 3: "...limited digital infrastructure and internet connectivity can be weak or no internet at all."	This sub-theme aggregates responses that underline insufficient or unstable internet connections as a major barrier. Both students and teachers note that weak signals, inconsistent network access, and inadequate bandwidth disrupt lesson delivery and hinder the seamless integration of digital tools.
	Inadequate Infrastructure and Resource Limitations	• Student Participant 13: "The only challenges I think exist are when the teacher doesn't have a laptop to use…" • Student Participant 24: "The lack of internet access in school and learning resources like TV." • Student Participant 33: "...the availability of devices is a challenge." • Teacher Participant 9: "Lack of equipment like TV or projector." • Teacher Participant 27: "The common problem in integrating these digital platforms is the equal access and availability of these platforms."	Respondents from both groups emphasize that scarce technological equipment (such as laptops, projectors, and even TVs) significantly limits the effectiveness of digital integration. This sub-theme also touches on the wider digital divide that impedes equal participation.
	Inadequate Digital Literacy and Skill Gaps	• Student Participant 13: "…even if the teacher does have one, they may lack expertise in using digital platforms." • Student Participant 7: "...the varying levels of digital literacy among both teachers and students create obstacles." • Teacher Participant 39: "The main challenge I encountered was that I had limited knowledge about digital platforms…"	This sub-theme captures widespread difficulties in mastering new technologies. Both students and teachers note that insufficient digital skills and a lack of proper expertise obstruct the effective use of digital platforms and impede teaching and learning processes.

		• Teacher Participant 40: "Digital Literacy Gaps. Not all students (or even teachers) are equally proficient in using digital tools." • Teacher Participant 12: "...when students don't have any idea how to use and operate computers and the tools."	
	Insufficient Training and Resistance to Change	• Student Participant 19: "…lack of proper training…" • Student Participant 65: "Instructors have problems using new computer things for teaching… learning new things is challenging." • Student Participant 100: "Not everyone is comfortable with all the different programs…" • Teacher Participant 21: "The very common challenge is the resistance of doing and adapting to change." • Teacher Participant 35: "I encounter... the need for continuous training on new digital tools."	Respondents stress that apart from limited digital literacy, instructors often receive inadequate training or support. Many also face resistance—either personal or institutional—to adopting newer methods, which compounds the challenge of transitioning to a fully digital classroom environment.

to enhance access to quality learning. With a focus on both board and non-board programs and incorporating student and teacher perspectives, the thematic analysis identifies common digital tools, pedagogical strategies, and challenges that educators face while integrating digital platforms into their teaching practices.

Digital Tools & Platforms for Instruction and Assessment

Digital transformation is fundamentally reshaping the way educational content is delivered and assessed. In this theme, both students and teachers highlight the various digital tools and platforms implemented at Initao College to support instruction, collaborative learning, and assessments.

Learning Management Systems & Educational Platforms

In this sub-theme, both students and teachers underscore the centrality of learning management systems (LMS) and similar platforms in daily instructional practices. For example, one student noted, "Mostly they used Google docs, Gmeet, Gdrive and Word app" (Student Participant 3), while another emphasized the comprehensive use of institutional systems when stating, "Platforms like Moodle, Canvas, and Google Classroom are commonly used…" (Student Participant 52). Teachers also confirm this reliance on digital platforms; one teacher remarked, "Utilizing learning management system (LMS) and Google Classroom…" (Teacher Participant 5), and another added, "I oftenly use Google Forms, Google Classroom, Docs, GMeet, Canva…" (Teacher Participant 27).

This sub-theme illustrates that digital transformation in education has led to a heavy reliance on LMS and educational platforms as the backbone of course management. These tools are pivotal for organizing coursework, distributing materials, and facilitating assessments. Their pervasive adoption signals an institutional shift toward digital organization in the learning process, even amid varying levels of digital proficiency among educators.

Research by Punsalan *et al.* (2022) suggested that the effective adoption of learning management systems is fundamental to improving content organization and delivery. In addition, Petancio *et al.* (2024) demonstrated that user-friendly virtual learning environments significantly broaden access to educational resources. Together, these studies confirm that robust LMS platforms form the backbone of digital instructional strategies in Philippine higher education.

Communication and Video Conferencing Tools

Another critical element in digital integration is the use of communication and video conferencing tools. Several students acknowledged that video conferencing remains essential for maintaining real-time interaction; one student expressed, "Video conferencing platforms like Zoom or Google Meet are frequently used…" (Student Participant 9), while another highlighted their routine use in a blended environment: "Instructors commonly use tools like Google Classroom, Zoom, and Canva for delivering instruction…" (Student Participant 67). On the teaching side, one teacher stressed a preference for conversational platforms with, "The tools that are commonly used in delivering instruction is Messenger." (Teacher Participant 3), and another mentioned a mix of tools, saying, "I use Messenger, Google Drive, MS Word…" (Teacher Participant 12).

The reliance on synchronous (video conferencing) and asynchronous (messaging, document sharing) communication tools is a hallmark of digital teaching practices at Initao College. These tools ensure continuous engagement and provide multiple channels for instructors to relay content and facilitate discussions, thereby helping to bridge the gap between traditional and online education.

Previous studies further reveal that communication technologies are indispensable in maintaining educational continuity. Rotas and Cahapay (2020) found that challenges in instructor-student interactions often stem from suboptimal use of communication tools, whereas Benitez (2023) noted that video conferencing facilitates prompt discussions despite occasional disengagement. Moreover, Amuthenu (2025) highlighted that while such tools are widely used, their interactive potential often remains underrealized without proper engagement strategies.

Presentation, Assessment, and Collaboration Tools

In addition to LMS and communication platforms, the effective delivery of content often depends on presentation and collaborative tools. Students reported varied usage such as, "Our instructors use PowerPoint for lectures, Messenger for communication, and Google Classroom for assignments" (Student Participant 14), and another noted, "Instructors commonly use digital tools like Google Classroom, Google Meet, Google Forms, Plickers…" (Student Participant 29). From the teacher perspective, one participant explained, "I use Canva, ChatGPT, and PPT. Student finds it easier to understand." (Teacher Participant 2), and another mentioned, "I use Google Slides, Microsoft PowerPoint, and Jamboard for interactive presentations." (Teacher Participant 40).

This sub-theme shows that a variety of tools aimed at content delivery—ranging from visual presentation software to interactive assessment apps—are strategically deployed to enhance learning outcomes. Such tools not only facilitate clear communication of instructional material but also foster collaborative and interactive learning environments, thereby aligning with the broader objectives of digital transformation.

In terms of presentation and collaborative technologies, Ramos and Castillo (2024) observed that integrating varied digital assessment and collaborative tools enhances engagement and learning personalization. Likewise, Cahapay (2021) pointed to technical difficulties that occasionally compromise these tools' effectiveness, and Petancio *et al.* (2024) confirmed that prompt, interactive feedback is essential for successful digital assessments. These studies collectively suggest that a diversified toolkit is crucial for addressing diverse learning styles and optimizing outcomes.

Pedagogical Strategies in Digital Transformation

Beyond the tools themselves, the way these tools are used to develop teaching strategies is critical. This theme examines how educators at Initao College are rethinking and reshaping pedagogy to meet the evolving demands of a digital educational environment.

Blended Learning & Hybrid Approaches

A core strategy emerging from the responses is the adoption of blended learning models that combine traditional face-to-face teaching with digital methods. One student observed, "They integrate multimedia resources, online quizzes, and interactive activities to enhance engagement…" (Student Participant 7), while another highlighted the structured approach, "They use online platforms like Google Classroom for assignments and announcements, video conferencing for classes…" (Student Participant 100). Teachers also confirm the efficacy of these strategies: one stated, "I stay updated with the latest educational trends… adapting to the evolving needs of the digital learning environment." (Teacher Participant 6), and another added, "I use online platforms like Google Classroom for teaching and quizzes, and I adapt by incorporating interactive tools…" (Teacher Participant 35).

This blended approach illustrates an adaptive strategy where digital tools are employed to complement traditional methods, ensuring that teaching practices remain flexible, accessible, and in tune with modern educational trends. The blend not only caters to different learning styles but also helps mitigate the limitations of purely face-to-face or online modalities.

Blended learning models that combine both face-to-face and digital modalities have been shown to be highly effective. Dayagbil *et al.* (2021) observed that the shift toward flexible, blended environments was essential during crisis situations, while Alagon *et al.* (2024) found that initial resistance from both faculty and students dissipated as stakeholders adapted to hybrid learning practices. Together, these findings underscore that successful educational delivery increasingly depends on combining traditional and digital approaches.

Interactive and Engaging Digital Practices

Interactivity is key in the digital era, and this sub-theme captures the push toward more engaging and participatory methods. One student remarked, "Kahoot is one of my instructor use that make his lesson more interactive and collaborative." (Student Participant 22), while another highlighted the value of simple, effective communication: "Most of them used Messenger; it is actually a good idea because it makes it easier to relay instructions." (Student Participant 61). Correspondingly, teachers report similar sentiments; one teacher stated, "It's nice and inspiring. So many ideas can be bumped along the way." (Teacher Participant 8), and another emphasized, "The strategies used to adapt to digital transformation are much interactive for learners." (Teacher Participant 23).

The emphasis on interactivity and engagement reflects a proactive effort to transform the learning experience from passive content delivery to an active, student-centered process. Innovative practices, such as the use of gamification tools and real-time messaging, are seen as essential for deepening student involvement and fostering a collaborative learning culture that is responsive to digital challenges.

Interactive digital practices are vital for maintaining student engagement in online settings. Aves *et al.* (2023) demonstrated that strategies such as direct questioning,

breakout sessions, and real-time collaborative activities notably increase engagement levels. In addition, Dacillo *et al.* (2022) corroborated that even when online classes induce fatigue, incorporating engaging, varied activities can mitigate such effects. Petancio *et al.* (2024) further asserted that cooperative learning techniques contribute significantly to sustained student interest.

Traditional vs. Digital Practices and Adaptability

A recurrent theme in the responses is the juxtaposition between traditional teaching methods and modern digital practices. One student noted, "Using traditional teaching - Spoon feeding instruction." (Student Participant 6), while another expressed concern over limited digital adaptation, stating, "The majority still rely solely on Google Classroom… it does not create a significant impact on learning." (Student Participant 13). From the teacher side, one participant affirmed the use of conventional digital tools: "I mainly use PowerPoint to deliver my lessons." (Teacher Participant 9), whereas another highlighted the need for ongoing evolution by stating, "Given that we live in the 21st century, it is essential that educators adjust to new developments…" (Teacher Participant 11).

This sub-theme underscores the variability in digital adoption. While some instructors fully embrace digital innovations, others continue to depend on traditional methods. The contrast illustrates an evolving landscape where the balance between conventional and digital approaches is still in flux, indicating a transitional phase in the pedagogical practices at Initao College.

The transition from conventional teaching methods to digital practices often presents challenges. Moralista and Oducado (2020) reported that many educators initially struggled to replicate the spontaneity of traditional classrooms in a digital format. However, Alagon *et al.* (2024) documented that with sufficient support, both faculty and students eventually adapted to digital modalities, thereby enhancing learning outcomes. Likewise, Rotas and Cahapay (2020) noted that students' initial resistance to digital assignments gradually lessened as they adjusted to the new learning demands.

Challenges and Variability in Digital Adoption

Despite significant progress in the adoption of digital tools and innovative teaching strategies, challenges persist. This theme captures the various hurdles that educators face when integrating digital platforms into their teaching practices, impacting the overall effectiveness of digital transformation.

Technical and Connectivity Issues

Technical issues remain a primary challenge for effective digital integration. Multiple students pointed out connectivity problems, with one stating, "The challenges that my instructor encounter... is the internet connection of the school." (Student Participant 2), and another noting, "Instructors face challenges like... unreliable internet…" (Student Participant 9). Further reinforcing this issue, another student commented, "The poor access of Internet at school…" (Student Participant 41), while teachers succinctly summed it up with, "Connectivity" (Teacher Participant 1) and, "...limited digital infrastructure and internet connectivity can be weak or no internet at all." (Teacher Participant 3).

This sub-theme encapsulates the pervasive technical and connectivity issues that impede seamless digital instruction. Unstable internet and poor infrastructure create significant obstacles to the effective use of digital tools, thereby limiting the reach and impact of digital transformation in education.

Technical challenges remain a primary barrier for many students in digital learning environments. Gocotano *et al.* (2021) highlighted that unstable internet connectivity and frequent power interruptions severely hinder the educational process, especially in rural settings. Additionally, Rotas and Cahapay (2020) and Amuthenu (2025) confirmed that persistent connectivity issues continue to disrupt synchronous sessions and delay learning, emphasizing the need for improved technological infrastructure.

Inadequate Infrastructure and Resource Limitations

Another major challenge discussed by both groups is the lack of necessary equipment and resources. One student observed, "The only challenges I think exist are when the teacher doesn't have a laptop to use…" (Student Participant 13), while another highlighted a resource gap: "The lack of internet access in school and learning resources like TV." (Student Participant 24). Additionally, a student mentioned, "...the availability of devices is a challenge." (Student Participant 33). Teachers echoed these sentiments; one commented, "Lack of equipment like TV or projector." (Teacher Participant 9), and another noted, "The common problem in integrating these digital platforms is the equal access and availability of these platforms." (Teacher Participant 27).

The discussion under this sub-theme brings to light the critical shortage of physical resources necessary for digital learning. The scarcity of devices and modern equipment, combined with financial constraints—such as the high cost of premium digital tools—underscores a structural barrier to effective digital transformation, particularly in resource-constrained settings like local community colleges.

The inadequacy of digital infrastructure is another recurrent challenge. Gocotano *et al.* (2021) reported that limited availability of devices and subpar study environments impede students' ability to participate fully in online classes. Dayagbil *et al.* (2021) further stressed that upgrading institutional IT infrastructure is critical for supporting digital education, and Amuthenu (2025) called for comprehensive resource planning to ensure equitable access for all learners.

Inadequate Digital Literacy and Skill Gaps

The findings also reveal significant digital literacy issues among both teachers and students. For instance, one

student remarked, "…even if the teacher does have one, they may lack expertise in using digital platforms." (Student Participant 13), and another noted, "…the varying levels of digital literacy among both teachers and students create obstacles." (Student Participant 7). Teachers concurred with this observation; one stated, "The main challenge I encountered was that I had limited knowledge about digital platforms…" (Teacher Participant 39), while another explained, "Digital Literacy Gaps. Not all students (or even teachers) are equally proficient in using digital tools." (Teacher Participant 40). An additional teacher also commented, "…when students don't have any idea how to use and operate computers and the tools." (Teacher Participant 12).

This sub-theme highlights the hurdles caused by deficient digital literacy, which act as a barrier to maximizing the potential of digital tools in education. Without adequate digital competence and familiarity, both teachers and students struggle to adapt to and fully exploit the available digital resources, thereby constraining the benefits of digital transformation.

A lack of digital literacy among both students and faculty has also been documented. Gocotano *et al.* (2021) and Moralista and Oducado (2020) revealed that insufficient technical skills among university stakeholders frequently compromise the quality of digital learning. Moreover, Amuthenu (2025) advocated for proactive training initiatives to bridge these skill gaps, ensuring that both educators and students are better prepared to navigate digital tools effectively.

Insufficient Training and Resistance to Change

Finally, participants noted that beyond basic digital literacy, there are challenges related to the lack of structured training and a resistance to new technologies. One student observed, "…lack of proper training…" (Student Participant 19), while another explained, "Instructors have problems using new computer things for teaching… learning new things is challenging." (Student Participant 65). This sentiment is echoed by another student, "Not everyone is comfortable with all the different programs…" (Student Participant 100). Teachers, too, highlighted resistance to change; one remarked, "The very common challenge is the resistance of doing and adapting to change." (Teacher Participant 21), while another emphasized the need for ongoing professional development, stating, "I encounter... the need for continuous training on new digital tools." (Teacher Participant 35).

This sub-theme reveals that a lack of systematic training and institutional support, along with a natural resistance to changing established practices, significantly hampers digital integration. The struggle to adapt to new methods underscores the importance of professional development and change management strategies as critical components in the broader digital transformation agenda.

Insufficient training and resistance to change remain pervasive obstacles. Benitez (2023) observed that many instructors were initially unprepared for the rapid transition to online teaching, resulting in ad hoc implementations that fueled resistance. In support of this, Amuthenu (2025) highlighted the importance of comprehensive faculty development programs, while Moralista and Oducado (2020) stressed that systematic training initiatives are essential to build confidence and technical competence. Collectively, these studies advocate that ongoing professional development is imperative to overcoming resistance and ensuring the effective adoption of digital innovations.

Overall Synthesis

The discussion above reflects a comprehensive evaluation of digital transformation practices and challenges as expressed by students and teachers at Initao College. The first theme—Digital Tools & Platforms for Instruction and Assessment—emphasizes the extensive use of LMS, communication, and presentation tools to facilitate a modern learning environment. The second theme—Pedagogical Strategies in Digital Transformation—highlights both the innovative blended learning approaches being adopted and the tension between traditional and digital practices. The final theme—Challenges and Variability in Digital Adoption—focuses on systemic obstacles such as technical issues, inadequate infrastructure, digital literacy gaps, and resistance to change. Together, these insights not only provide actionable evidence for educators, administrators, and policymakers but also highlight areas where targeted support and strategic interventions may enhance pedagogical effectiveness and access to quality education in resource-limited settings.

IX. What program can be developed based on the findings?

Based on the findings of the study, the D.E.L.T.A. Program (Digital Empowerment for Learning Transformation and Access) was conceptualized as a strategic and responsive intervention to address the observed needs and gaps in digital education practices at Initao College. The study revealed that while digital tools are widely integrated into lesson planning, instructional delivery, assessment, and classroom management, disparities exist in perception between students and teachers, particularly regarding effectiveness and engagement. Furthermore, challenges such as limited digital literacy, inadequate infrastructure, and inconsistent access to resources were identified as persistent barriers to meaningful digital transformation.

To address these findings, the DELTA Program aims to empower both teachers and students by:

- Building digital competencies through masterclasses and bootcamps;
- Fostering pedagogical innovation via Tech4Teach labs and peer mentorship;
- Ensuring equitable access through the Access First! campaign and infrastructure upgrades; and
- Promoting evidence-based improvement via digital audits and research grants.

Table 14: D.E.L.T.A. Program (Digital Empowerment for Learning Transformation and Access)

Activities	Objectives	Person/s Involved	Timeframe	Expected Output
Program Launch and Orientation	Introduce the DELTA Program, its goals, timeline, and responsibilities.	RDES Office, Program Coordinators, All Faculty	Month 1	Successful kickoff event; distribution of program brief and calendar.
DigiSkills Masterclass	Train faculty on LMS, video creation, digital quizzes, and collaboration tools.	ICT Experts, Faculty Members	Months 1-2	Faculty trained in at least 3 new digital tools.
Digital Literacy Bootcamps for Students	Equip students with essential digital skills for online learning and research.	Faculty Trainers, Student Affairs, ICT Staff	Months 2-3	At least 90% of students complete bootcamp sessions.
Tech4Teach Innovation Labs	Facilitate workshops on gamification, AI tools like ChatGPT, and multimedia use.	EdTech Experts, Selected Faculty Champions	Month 3	Teachers produce 2-3 innovative lesson plans using digital tools.
Access First! Campaign	Distribute devices, improve connectivity, and expand access to digital libraries.	Admin, Librarian, ICT Office	Months 3-4	Device loan system and internet hubs established.
Peer E-Mentorship Program	Support digital teaching growth through peer mentoring among faculty.	Faculty Mentors, HR Office	Months 3-5	Mentorship logs and improvement reflections submitted by faculty.
DigiAudit (1st Cycle)	Evaluate faculty's digital practices using a rubric aligned with best practices.	QA Team, Program Heads	Month 5	Initial audit report on digital teaching effectiveness.
Midterm Review and Monitoring	Assess progress of activities and identify areas for adjustment.	RDES, Program Coordinators	End of Month 5	Monitoring and Evaluation Report

Each component is aligned with the study's themes—highlighting the need for blended learning, active student engagement, professional development, and inclusive access. Ultimately, the DELTA Program seeks to translate the study's insights into concrete, sustainable action that improves teaching practices, bridges perception gaps, and enhances access to quality learning in a digitally evolving academic landscape.

CONCLUSION

The study highlights that digital transformation within a local community college presents significant opportunities. Teachers are actively incorporating a diverse range of digital tools—including learning management systems, video conferencing platforms, and interactive assessment technologies—into instructional practices. Quantitative data reveal high levels of integration across lesson planning, delivery, assessment, and classroom management. Complementing this, qualitative findings emphasize the growing significance of blended and interactive approaches in enhancing pedagogical effectiveness. However, a notable perceptual disparity exists: teachers tend to evaluate their digital practices more positively than students, indicating a gap between implementation and learner experience. Persistent challenges such as inadequate infrastructure, limited technical support, digital literacy gaps, and resistance to change continue to hinder full-scale integration. While findings support a positive correlation between digital strategies and improved academic outcomes, this underscores the necessity for sustained investments in technological infrastructure and targeted faculty development. Institutions must address digital equity, establish clear implementation policies, and conduct regular evaluations to align teacher and student perceptions. Additionally, seminar-workshops and professional development opportunities are crucial to refining digital competencies among educators. Enhancing students' digital literacy and increasing opportunities for feedback will foster a more participatory and effective digital learning environment, responsive to evolving educational demands.

Recommendations

To support these implications, several recommendations have been proposed at various levels. At the institutional level, there is a critical need to invest in upgrading digital infrastructure—including reliable internet, modern devices, and updated software platforms—to create an uninterrupted digital learning environment. Institutions should also develop comprehensive digital transformation policies that incorporate contingency planning for technical issues, and launch institution-wide digital

literacy initiatives that benefit both students and faculty. For school administration, organizing regular formative evaluations and structured feedback sessions is advised to bridge the gap between teacher intentions and student experiences, along with providing targeted support for under-resourced academic programs to ensure uniform digital access and engagement. Additionally, offering seminar workshops or capability training for faculty members that include innovative approaches and cutting-edge software will further empower educators. Faculty members are recommended to participate in continuous training and professional development workshops to stay abreast of emerging digital tools and pedagogical strategies, and to experiment with innovative digital teaching methods, such as gamification and virtual breakout rooms, to enhance student engagement and interaction. Lastly, students should actively participate in digital literacy and orientation programs while providing constructive feedback on digital teaching practices, thereby collaborating with faculty to co-create more effective learning experiences.

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