Original Article

Integration of Technology in Teaching Araling Panlipunan and Academic Performance among Students

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Abstract

This study aimed to investigate the extent of technology integration in teaching Araling Panlipunan and its association with the academic performance of Junior High School students in the Division of Camiguin during the second quarter of school year 2025-2026. A descriptive-correlational research design was utilized with 42 teachers and 1,353 students. Observance of research protocols and the use of appropriate statistical tools were employed at all times. The findings revealed that teachers integrate technology to a high extent (M=3.58) and students achieve a very satisfactory academic level (M=87.25). However, there was no significant link between the integration of technology and the grades of the students (r_s= 0.266,$p > 0.05$). Kruskal-Wallis test results indicated that the highest educational attainment was a significant factor in the integration of technology (p=0.036). But the respondents' utilization of technology did not vary when grouped by age, tenure of service, and specialization. Despite high teacher confidence, systemic barriers like unstable internet connectivity (M=2.55) and limited technical training continues to exist. These results suggest that while the digital transition is underway, the focus must shift from basic tool availability toward pedagogy-driven instruction to meaningfully enhance student learning outcomes.

Keywords: academic performance, ICT in education, technology integration

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1. Introduction

Currently, the integration of Information and Communication Technology (ICT) has become an instructional necessity in the educational landscape to produce students with 21st-century competencies. This vision is particularly significant in the context of Sustainable Development Goal 4 (SDG 4), which mandates inclusive and equitable quality education through digital competence and enhanced learning environments (Mirasol et al., 2021). While technology offers transformative potential for engagement and collaboration (Voogt et al., 2016), its effective implementation remains a complex global challenge, particularly within the Philippine archipelago.

During the COVID-19 pandemic, digital tools played an indispensable role in sustaining pedagogical processes and ensuring academic resilience (Ahmed & Opoku, 2022; Viona et al., 2025). Despite this finding, the delivery of the lessons of Araling Panlipunan (Social Studies) often remains anchored in traditional approaches. This lecture-based method became boring to digital native learners who demand more nuanced, multi-layered instructional approaches (Wang & Yu, 2024). Although digital platforms and multimedia resources are known to address learning gaps (Win & Hlaing, 2024), many educators face persistent barriers, including infrastructure limitations, insufficient preparedness, and a lack of sustained professional support (Abid, 2022).

Digitalization is now a focus in the Philippine basic education. The Department of Education (DepEd) has formalized this digital transition through policies such as the ALS 2.0 ICT Strategic Plan 2022–2026 and DepEd Order No. 16, s. 2023. This aims to modernize education governance and strengthen teacher digital literacy (DepEd, 2022; Abedi, 2024). However, there is a need to investigate how these top-down mandates translate into classroom practice, specifically within specialized subjects like Araling Panlipunan. This requires teachers to continuously adapt instructional practices to meet the evolving expectations of modern learners, a process heavily influenced by teacher readiness and institutional support (Nurhikmah, 2024).

This study aims to examine the extent of technology integration in teaching Araling Panlipunan and its correlation with students' academic performance. Furthermore, this determines also the variation of the respondent's demographics on the integration of technology, which includes age, years of experience, educational attainment, and specialization. By identifying these variables, this research seeks to provide evidence-based insights to inform sustainable ICT policies and innovative teaching strategies that complement student learning outcomes.

2. Methodology

2.1 Research Design and Locale

This study utilized a quantitative research approach, particularly the descriptive-correlational design, to investigate the association between technology

integration and student achievement. This design aimed to capture a detailed perspective on how Araling Panlipunan teachers incorporate digital tools into their pedagogy (Ghavifekr & Rosdy, 2015). This inquiry was conducted in the school year 2025-2026 in DepEd-Camiguin. This was implemented in the districts of Mambajao, Catarman, and Mahinog. The locale included eight national high schools (Mambajao NHS, Tupsan NHS, Yumbing NHS, Bonbon NHS, Lawigan Bura NHS, Camiguin NHS, Sixto Abao NHS, and Mahinog NHS). Integrated schools were excluded to maintain a focused secondary education context.

2.2 Respondents and Sampling

The respondents were the 42 Junior High School Araling Panlipunan teachers who met the inclusion criteria of at least one year of teaching experience. Total enumeration was applied, considering the small number of teachers handling social studies. Mambajao NHS had the largest respondent group (30.95%), followed by Camiguin NHS (14.29%), while the remaining schools contributed between 7% and 12% of the total population.

2.3 Research Instrumentation and Validity

Data were gathered using a two-part survey questionnaire adapted from the study of Ghavifekr and Rosdy (2015). This was aligned with the technological standards set by the Department of Education (2023) under the DepEd Computerization Program. Part I collected demographic data (age, experience, education, and specialization), while Part II utilized a four-point Likert scale to measure the extent of technology integration. To ensure validity, the instrument was reviewed by five experts from the DepEd-Camiguin Division Office, including an Education Program Supervisor and several Master Teachers. Reliability was established by anchoring the items on a previously validated international framework and ensuring alignment with national policy guidelines (Department of Education, 2023).

2.4 Limitation of the Study

In the Department of Education (DepEd), the ratings of the students are used as the sole measure of performance. As noted, the ratings of the students have a high concentration at the very satisfactory and outstanding performance levels. This suggests a lack of variability, which likely affects the establishment of a strong, significant correlation between the latent variable (integration of technology) and the academic achievement of the students. In this work, this is addressed by getting the average of the students' ratings of every respondent.

2.5 Data Collection and Scoring

The data collection process commenced after obtaining formal approval from the Schools Division Superintendent and the school heads of the target secondary schools. Research protocols and ethical standards were observed seriously during the implementation of this inquiry. The researchers personally administered the surveys. Casual interviews were also conducted with randomly chosen respondents to supplement and provide qualitative context to the quantitative findings. Numerical data for technology integration were interpreted using statistical limits ranging from 1.00 (No Extent) to 4.00 (High Extent), while students' academic performance was categorized based on the standard grading scale defined by DepEd Order No. 8, s. 2015, ranging from "Did Not Meet Expectations" (Below 75) to "Outstanding" (90-100).

2.6 Statistical Treatment

Statistical analysis was performed using appropriate tools aligned with the research objectives. Frequency counts and percentages described the demographic profile and student achievement levels. The extent of technology integration was determined through weighted mean and standard deviation. To explore the relationship between teacher integration and student performance, a correlation analysis was conducted. Finally, the Kruskal-Wallis (H) test was employed to identify significant differences in technology integration when respondents were grouped by demographic variables.

2.7 Ethical Considerations

Ethical integrity was maintained by securing informed consent, ensuring voluntary participation, and guaranteeing the anonymity and confidentiality of all respondent data. The researcher ensured that all participants were fully informed of the study's purpose and their right to withdraw at any point without penalty.

3. Results

Table 1 shows the counts and percentages of the subgroupings of each variable. It indicates a relatively young and evolving teaching workforce in the Division of Camiguin. Nearly half of the respondents (42.86%) fall within the 22-34 age bracket. This is followed by 33.33 percent from the age group of 45-64 (late middle age), and 23.81 percent from the age group of 35-44 (early middle age). The table also showed that almost half of the respondents (42.86%) have served for 6-10 years, and 17 (40.48%) of them have served at least 11 years. Only 7 (16.67%) served for at most 5 years.

In terms of the highest educational attainment, more than half of the respondents (59.52%) have already earned units in a master's degree program in education, while 11 (26.19%) have completed their master's degree course. Only 6 (14.29%) of them have not yet enrolled in the graduate school. This inquiry has critical findings in the field of specialization since 16 (38.09%) of the respondents are Science majors, only 9 (21.43%) of them specialized or majors in Araling Panlipunan. While the rest of the respondents are majors in English (5, 11.91%), Mathematics (4, 9.52%), Values Education (1, 2.38), and Technology and Livelihood Education (TLE: 7, 16.67%). These numbers show that there are teachers handling subjects beyond their specializations.

Table 1. Demographic profile of the respondents (N=42).

Variable	Counts	Percentage (%)
Age (years)		
22-34 (Early adulthood)	18	42.86
35-44 (Early middle age)	10	23.81
45-64 (Late middle age)	14	33.33
Total	**42**	**100.00**
Number of Years in Teaching		
5 and below	7	16.67
6-10	18	42.86
11-15	6	14.28
16 and above	11	26.19
Total	**42**	**100.00**
Highest Educational Attainment		
Bachelor's degree	6	14.29
With Master's units	25	59.52
Master's degree	11	26.19
Total	**42**	**100.00**
Field of Specialization		
English	5	11.91
Mathematics	4	9.52
Values Education	1	2.38
TLE	7	16.67
Araling Panlipunan	9	21.43
Science	16	38.09
Total	**42**	**100.00**

Table 2 shows that the overall mean of 3.58 (High Extent) indicates that technology has become a fundamental component of Araling Panlipunan instruction in Camiguin. However, the data reveal a clear divide between high pedagogical usage and moderate systemic support. In terms of efficiency and content delivery, the highest-rated indicator emphasizes that digital tools like TVs and interactive videos make teaching significantly easier (M=3.98). While indicators related to student confidence and active participation (M=3.90) suggest that technology fosters a more inclusive environment. Moreover, the efficacy and autonomy among teachers were reported with a high level of confidence (M=3.67) and the appreciation of the freedom

to design their own digital strategies (M=3.71). For support and infrastructure gap, the study observed a significant decline in systemic indicators, in which technical support (M=2.93), professional training (M=2.86), and internet stability (M=2.55) all received moderate extent ratings. This infrastructure gap is a well-documented barrier in Philippine rural education.

Table 2. Extent of technology integration in teaching Araling Panlipunan among the respondents.

Indicators	**Mean**	**Qualitative Description**
The integration of learning technologies like TV, PPT, and interactive video lessons makes it easier to teach.	3.98	High Extent
The integration of technology helps improve teaching by providing more updated materials.	3.95	High Extent
The integration of technology in teaching makes learning more effective.	3.93	High Extent
The integration of technology increases students' confidence to participate actively and learn more effectively.	3.9	High Extent
The integration of technology promotes active and engaging lessons for students' best learning experience.	3.9	High Extent
The integration of technology enables students to be more active and engaged in the lesson	3.86	High Extent
The integration of technology in teaching lessons allows students to be more creative and imaginative	3.83	High Extent
The students learn best with the help of ICT.	3.74	High Extent
Teachers are given the freedom to design their own teaching strategies in integrating technology.	3.71	High Extent
Teachers feel confident learning new technological skills and software applications.	3.67	High Extent
Teachers have more time to address students' needs when technology is used in teaching.	3.63	High Extent
Teachers received support from the school's top management, which encouraged integration of technology in class.	3.26	High Extent
Teachers receive technical support when they encounter difficulties integrating technology.	2.93	Moderate Extent
Teachers receive sufficient training and professional development in technology integration.	2.86	Moderate Extent
The school provides a stable internet connection that is accessible to everyone.	2.55	Moderate Extent
Overall Mean	3.58	**High Extent**
Standard Deviation	0.25	

Table 3 shows that the overall performance of the 1353 students was at a very satisfactory level (M=87.25). It can also be seen that the highest counts of the students (609, 45.01%) achieved "Outstanding" performance level, followed by those students (356, 26.31%) with "Very Satisfactory" performance level. Hence, 965 (71.32%) out of 1353 students have ratings which fall into the very satisfactory and outstanding performance levels. This means that the ratings are inflated at the upper two tiers. In

other words, the ratings are positively skewed, giving an impression in contrast to the results in the national and international assessments.

Table 3. Academic performance distribution among the students of the respondents.

Grading Scale	Description	Counts	Percentage (%)
90-100	Outstanding	609	45.01
85-89	Very Satisfactory	356	26.31
80-84	Satisfactory	225	16.63
75-79	Fair/Passing	126	9.31
Below 75	Did Not Meet the Expectations	37	2.74
Total		**1353**	**100.00**
Average Grade =87.25 (Very Satisfactory); SD= 3.29			

Using the appropriate statistical tool, the association of the extent of the integration and the average of the ratings of the students per respondent was assessed as this is the primary objective of this inquiry. Table 4 shows that there was no significant relationship between the extent of technology integration in teaching Araling Panlipunan and students' academic performance ($r(40)=0.266, p = .092$). While the correlation coefficient indicates a low positive relationship, this is likely attributed to the high descriptive means observed in both variables. As shown in Table 3, 71.32 percent of students are clustered in the 'very satisfactory' and 'outstanding' performance levels, while in Table 2, teachers reportedly perceived a 'high extent' of technology integration. Averaging the students' ratings per respondent would also result in similar performance and affect the required variability to determine a strong statistical association. Hence, similar academic performance creates the restriction of range, in which the lack of variance makes it mathematically difficult for Pearson to reach significance between the two variables. On the same vein, the coefficient of determination ($r^2 = 0.0708$) indicates that only 7.08% of the variation in the ratings can be explained by the integration of technology in teaching Araling Panlipunan. This implies that 92.92 percent of the variation of the ratings can be explained by variables not included in this work.

Table 4. Pearson correlation between technology integration and academic performance of students.

Variables	*r*	df	p-value	Statistical Decision	Interpretation
Integration of Technology in Teaching Araling Panlipunan and Academic Performance among Students	0.266	40	0.092	Failed to reject Ho	Not Significant

Finally, the study found a significant difference in technology integration in teaching Araling Panlipunan among respondents when grouped by their highest educational attainment ($H(2) = 6.65, p = 0.036$). This provides sufficient evidence to reject the null hypothesis. This suggests that advanced academic preparation is a

primary driver of technological adoption. However, there were no significant differences in technology integration in teaching Araling Panlipunan among respondents when grouped by age (H(2)=2.38,p = 0.305), teaching experience (H(3)=2.21,p = 0.530), and the field of specialization (H(5)=6.09,p = 0.297). This means the failure to reject the null hypothesis for these explanatory variables.

Table 5. Kruskal-Wallis test for significant differences in technology integration across demographic groups.

Variables	*H*	df	p-value	Decision
Age	2.38	2	0.305	Failed to reject *Ho*
Number of Years in Teaching	2.21	3	0.530	Failed to reject *Ho*
Highest Educational Attainment	6.65	2	0.036	Reject *Ho*
Field of Specialization	6.09	5	0.297	Failed to reject *Ho*

4. Discussion

This study found that DepEd-Camiguin has a relatively young and evolving teaching workforce. This can be attributed to the mass hiring necessitated by the K-12 transition and the increased allocation of teaching items in public schools. These young educators are typically "digital natives" who demonstrate higher levels of technological self-efficacy (Scherer et al., 2019). Locally, this trend is mirrored in the findings of Ancho and Arrieta (2021), who observed high digital readiness among early-career Filipino teachers. For the early middle-aged respondents, their number might have been due to mid-career brain drain, where teachers seek opportunities abroad due to workload or financial pressures (Asio & Jimenez, 2020). The presence of veteran teachers suggests a need for intergenerational mentoring to balance pedagogical wisdom with technical skills. Moreover, most of the respondents have moved past the novice phase and into professional stability. This indicates a tenure ideal for ICT integration, as these teachers have established classroom management skills and can focus on refining digital pedagogy (König et al., 2020).

The study also found that the respondents demonstrate high academic ambition, which is necessary to improve the delivery of lessons and for them to get a promotion. The study of Bordoh et al. (2022) supported this finding, suggesting that advanced education enhances a teacher's TPACK (Technological Pedagogical Content Knowledge), as graduate programs often expose educators to modern research and digital instructional methodologies. But a critical finding revealed that the majority of the respondents are not majors in Araling Panlipunan subject. This high incidence of mismatch teaching requires teachers to be exceptionally resilient and adaptable. Internationally, the idea that out-of-field teaching often challenges instructional confidence, a sentiment echoed locally by Zamora and Zamora (2022), who noted that such teachers require targeted, content-specific ICT training to effectively use social science digital tools, such as GIS maps and historical archives.

The respondents revealed that technology is always integrated in teaching Araling Panlipunan. The respondents use technology to simplify complex social science concepts, such as historical timelines and geographical shifts. This aligns with Haleem et al. (2022), who argue that multimedia resources likely improve conceptual clarity and reduce cognitive load on both teachers and students. Locally, Kalyani (2024) observed that technology-enhanced instruction in the Philippines significantly aids in visualizing abstract historical narratives. In terms of student engagement and active learning, the respondents confirmed that using interactive platforms, the students can freely express their ideas with the guidance of the teachers, aligning with the student-centered mandates under RA 10533. This finding is supported by Mukul and Büyüközkan regarding digital inclusivity, and locally by Mayantao and Tantiado (2024), who noted that digital tools provide diverse avenues for participation, especially for learners who may be hesitant to speak in traditional lecture settings.

On the same vein, the respondents were at high levels of confidence and appreciate the freedom to design their own digital strategies. Accordingly, this autonomy is a key driver of successful ICT adoption. Scherer and Teo (2019) confirmed that teachers with high self-efficacy are more likely to engage in innovative practices. Locally, Abid et al. (2022) found that internal motivation helps Filipino teachers sustain digital practices even when facing external infrastructure gaps. On the other hand, the respondents also revealed that systemic factors in technology are gradually being addressed in schools. This infrastructure gap is a well-documented barrier in Philippine rural education. At the international level, Samane-Cutipa et al. (2022) identify infrastructure as a primary barrier in rural settings, which is locally confirmed by Timotheou et al. (2023), who emphasized that stable connectivity is required for the long-term sustainability of digital instruction in the Philippines.

This study found that the majority of the respondents' students reached at least the very satisfactory performance level. This high concentration of top performers suggested that the high extent of technology integration may have effectively facilitated the visualization of complex social science concepts. Zou et al. (2025) and Macario et al. (2026) noted that digital resources foster higher engagement and improve the delivery of updated content, which directly supports these high achievement levels. However, those students who achieved fairly satisfactory performance may have experienced digital poverty, or due to socioeconomic barriers. Abid et al. (2022) emphasized that these students require targeted remediation and differentiated instructional strategies to ensure equitable learning growth despite technological advancements. The high integration of technology and performance of the respondents' students suggests that both variables may progress independently (Msafiri et al., 2023). However, Bhat (2021) negated that the high achievement levels in this specific context may be more closely tied to other pedagogical variables rather than the digital tools themselves.

Given the high baseline of both student performance and teacher integration, this study found no significant difference. Although the average of the students' ratings per respondent was used, a similar performance would happen, thereby affecting the

required variability to detect a significant association between variables. Therefore, the lack of a strong linear trend is a reflection of data clustering and a ceiling effect rather than a lack of technological impact on achievement. The study of Alruthaya et al. (2025) supported the present finding that the mere presence or use of technology does not automatically guarantee improved learning outcomes. Rather, the effectiveness of ICT depends heavily on how it is pedagogically harnessed to meet specific learning objectives. Locally, Aesaert et al. (2015) emphasized that systemic barriers, such as the moderate levels of technical support and internet stability noted in Table 2, can dilute the potential impact of technology on student achievement. Consequently, while technology serves as a valuable instructional facilitator, its impact on performance remains secondary to traditional pedagogical quality and student-related variables within the division.

Finally, the study found a significant difference in the extent of technology integration in teaching Araling Panlipunan when the respondents were grouped according to educational attainment. This suggests that advanced academic preparation is a primary driver of technological adoption. Respondents with a master's degree have the highest utilization or integration of technology compared to those with units or with no units in a master's degree program. As emphasized by Bordoh (2022), graduate education strengthens a teacher's TPACK (Technological, Pedagogical, Content Knowledge), providing the confidence and theoretical framework necessary to integrate technology more meaningfully rather than just using it as a supplemental tool. Consequently, professional growth through higher education remains the most influential demographic variable for advancing digital instruction in the division. However, no significant differences were observed in terms of age, teaching experience, and field of specialization. This indicates that teachers are now adopting digital tools at a rate comparable to their young counterparts. This aligns with Nurhikmah et al. (2024), who noted that in the post-pandemic landscape, institutional requirements and personal initiative have largely bridged the generational gap in basic ICT usage. Similarly, field specialization among the respondents no longer mattered, as technology can effectively bridge the content gap for those non-majors in social studies.

5. Conclusion

This study showed that Araling Panlipunan teachers in the Division of Camiguin have transitioned into a high level of digital utilization, consistently utilizing multimedia tools and interactive resources. This technology integration is strongly manifested by those with advanced academic degrees, implying the idea that those with a higher educational level significantly become catalysts for technological pedagogical content knowledge (TPACK). The absence of a significant association between technology integration and academic performance of the students indicates that the high extent of technology utilization does not automatically translate into higher student achievement. Some factors may likely dilute the potential effect of

digital tools, such as internet connectivity, limited technical support, and the mismatch between teacher specialization and subject alignment. Success in the Araling Panlipunan classroom depends not just on using technology, but on the quality of the pedagogical strategy accompanying it.

6. Recommendations

Based on the findings, the following recommendations are offered:

- For the Department of Education (DepEd): Give priority to the upgrading of ICT infrastructure in rural schools, specifically in improving the stable internet connectivity and the maintenance of DCP packages. The "Moderate" rating for technical support suggests a need for a consistent backing of ICT coordinators in every district to assist teachers with real-time troubleshooting.
- For School Administrators: Establish "Communities of Practice" or sustain the implementation of Learning Action Cells (LAC) that pair Master's degree holders (who show higher integration levels) with Bachelor's degree holders. This peer-to-peer mentoring can bridge the gap in technological confidence and the sharing of best practices.
- For Araling Panlipunan Teachers: Shift the focus from "technology-led" instruction to "pedagogy-led" integration. Teachers should explore more student-centered digital interventions, which may offer a more direct link to academic performance than passive digital usage.
- For Future Researchers: Conduct a follow-up qualitative or mixed-methods study to explore the "unexplained 93%" variance in student performance. Investigating variables such as student motivation, parental support, and the specific types of software used may provide a clearer picture of what truly drives academic success in an island state college context.

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Conflict of Interest Statement

The authors declare no conflict of interest.

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