

Assessing the Teachers’ Digital Literacy Usage on the Learners’ Academic Performance in Cabiao, Nueva Ecija

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Abstract	Article Info
<p>This study addressed the relationship between the digital literacy of fifth-grade learners and their academic achievement in Cabiao, Nueva Ecija. Guided by Christine Redecker’s definition of Digital Competence Education, the study assessed learners' ability to search for information, think critically, and achieve learning objectives in relation to their digital competence skills. Data were collected from a proportionally selected sample of 196 learners from four public elementary schools using a 5-point Likert scale questionnaire. Pearson correlation analysis revealed that while digital tools such as PowerPoint, Google Classroom, and Quizizz were frequently used and perceived as engaging by learners, there was no statistically significant correlation between teachers’ digital literacy usage and learners’ academic performance across core subjects.</p> <p>The findings suggest that although educational technology can enhance engagement and motivation, its impact on academic outcomes is limited without intentional and structured pedagogical integration. The study highlights the need to equip teachers not only with technological skills but also with instructional strategies that align technology use with specific learning goals.</p>	<p>Keywords: <i>Digital Literacy, Tech-Fluency, EdTech-Fluency, EdTech-Drive, Academic Performance, Public Elementary Education</i></p>

INTRODUCTION

The study titled *Assessing the Teachers' Digital Literacy Usage on the Learners' Academic Performance in Cabiao, Nueva Ecija* focused on exploring how teachers' proficiency in using digital tools affects Grade 5 learners' academic achievement. It was anchored on Christine Redecker's Digital Competence Education Theory, which emphasizes the need for educators to develop and integrate digital skills into teaching. The research examined three main aspects of digital literacy—Tech-Fluency, EdTech-Fluency, and EdTech-Drive—while also considering the academic performance of learners across core and non-core subjects. This study sought to address the gap between frequent use of digital tools in classrooms and their actual impact on measurable learning outcomes.

LITERATURE REVIEW

The literature emphasizes that teachers' digital literacy comprises three interconnected domains: Tech-Fluency (basic ICT and productivity tool skills), EdTech-Fluency (effective integration of educational technology into teaching), and EdTech-Drive (management and sharing of learning resources via cloud platforms). Prior studies (Redecker, 2017; González-Gómez et al., 2016; Hutchison & Woodward, 2018) consistently show that while digital competence enhances engagement, critical thinking, and collaboration, its direct effect on academic performance varies. Gaps remain, particularly among teachers in developing contexts, highlighting the need for structured professional development to align technology use with pedagogy.

METHODOLOGY

The study employed a quantitative, descriptive research design. A 5-point Likert scale questionnaire measured Grade 5 learners' perceptions of their teachers' digital literacy across Tech-Fluency, EdTech-Fluency, and EdTech-Drive. The respondents (n=196) were selected through simple random sampling from four public elementary schools in Cabiao, Nueva Ecija. Data analysis utilized weighted means for perception ratings and Pearson correlation coefficients to determine the relationship between teachers' digital literacy usage and learners' academic performance.

1. Objective Definition

The primary objective of this study was to examine the relationship between teachers' digital literacy usage and learners' academic performance among Grade 5 students in selected public elementary schools in Cabiao, Nueva Ecija. Specifically, it sought to assess the frequency of teachers' digital literacy usage in terms of Tech-Fluency, EdTech-Fluency, and EdTech-Drive; measure learners' academic performance in eight subjects, namely Filipino, English, Mathematics, Science, Araling Panlipunan, Good Manners and Right Conduct (GMRC), Edukasyong Pantahanan at Pangkabuhayan (EPP), and Music, Arts, Physical Education and Health (MAPEH); and determine the correlation between teachers' digital literacy usage and learners' academic performance.

2. Scenario Development

To provide a contextual framework for the study, three scenarios of classroom technology integration were identified. The first was a high-integration environment, where teachers frequently used interactive platforms such as Quizizz, Google Classroom, PowerPoint, and multimedia resources to support instruction. The second was a moderate-integration environment, where teachers occasionally incorporated digital tools but primarily relied on traditional teaching strategies. The third was a low-integration environment, where the use of technology was minimal due to limited resources, insufficient training, or low digital proficiency. These scenarios enabled the researchers to examine variations in student engagement, resource accessibility, and potential impacts on academic performance.

3. Setup and Configuration

The study was conducted in four public elementary schools in Cabiao, Nueva Ecija—San Vicente Elementary School, San Roque Elementary School, Concepcion Elementary School, and Sta. Rita Elementary School. A proportional sample of 196 Grade 5 learners was selected from a total population of 397 using Cochran's formula with a 0.05 margin of error. Data collection was carried out through a validated and reliability-tested 5-point Likert scale questionnaire, administered during regular class hours to maximize participation. Responses were organized using Microsoft Excel and statistically analyzed with Jamovi software, applying Pearson correlation at a 0.05 significance level. Ethical considerations such as informed consent, anonymity, and secure data handling were strictly implemented.

4. Step-by-Step Execution

The execution began with an introduction to the respondents, explaining the study's purpose and emphasizing the importance of accurate and honest answers. This was followed by a feature showcase that demonstrated examples of teachers' digital literacy practices, such as creating interactive PowerPoint slides, managing assignments through Google Classroom, and conducting gamified assessments with Quizizz. Finally, interactive engagement was facilitated, allowing learners to share their perceptions of how these digital tools influenced their participation, comprehension, and overall academic performance.

5. Data Collection

The researchers secured ethical clearance from the University Research Ethics Committee, obtained permissions from the Schools Division Office and school principals, and distributed questionnaires in person. Respondents completed the survey within 5–10 minutes, with clarifications provided as needed. Participation was voluntary, confidential, and supported by informed consent. Third-quarter grades in eight subjects were collected as the basis for academic performance data.

6. Evaluation and Iteration

Survey instruments underwent multiple validation stages: adviser review, expert evaluation, statistical validation, and a reliability test with 30 respondents using Jamovi software. Feedback from validators led to grammatical and structural refinements. During data analysis, findings were cross-checked with theoretical frameworks to ensure coherence and accuracy.

7. Conclusion and Next Steps

The study concluded that while teachers frequently used digital tools and learners generally had high academic performance, no statistically significant correlation existed between teachers' digital literacy usage and learners' academic performance. Future research should explore other mediating factors, use mixed-methods or longitudinal designs, and examine how purposeful integration of technology into pedagogy can more directly impact learning outcomes. Schools are encouraged to invest in continuous teacher training and updated digital infrastructure to strengthen the pedagogical application of technology.

RESULTS & DISCUSSION

The findings revealed that teachers "often" used a variety of digital tools in their teaching, with Quizizz receiving the highest frequency rating. Learners generally performed within the Very Satisfactory to Outstanding range across all subjects, with the highest achievements in GMRC, EPP, and MAPEH. However, Pearson correlation results indicated no statistically significant relationship between teachers' digital literacy usage—across Tech-Fluency, EdTech-Fluency, and EdTech-Drive—and learners' academic performance. This suggests that while technology positively influences engagement and motivation, its impact on measurable academic outcomes remain limited unless it is purposefully aligned with pedagogical strategies and specific learning goals.

CONCLUSION

This study examined the relationship between teachers' digital literacy usage and the academic performance of Grade 5 learners in selected public elementary schools in Cabiao, Nueva Ecija. Findings revealed that while teachers frequently employed digital tools such as PowerPoint, Google Classroom, and Quizizz, these practices did not show a statistically significant correlation with learners' overall academic performance. The results suggest that the mere presence of educational technology in the classroom is not enough to ensure improved learning outcomes; rather, its effectiveness depends on intentional and structured pedagogical integration. Although digital tools were found to enhance learner engagement, motivation, and participation, their impact on measurable academic achievement remains limited without proper alignment to learning objectives. The study underscores the need for continuous professional development programs that focus not only on technological proficiency but also on the integration of digital resources into teaching strategies that directly support curriculum goals and student learning needs.

RECOMMENDATIONS

Based on the findings of this study, it is recommended that teachers receive continuous training programs that go beyond basic digital tool usage and focus on the effective pedagogical integration of technology into the curriculum. School administrators should provide adequate resources, technical support, and opportunities for professional collaboration to ensure that technology use directly supports learning objectives. Policymakers and education stakeholders are encouraged to adopt frameworks such as DigCompEdu to guide digital literacy development among educators. Furthermore, future research should explore approaches to determine the sustained impact of digital literacy practices on student learning outcomes and investigate subject-specific strategies that maximize the benefits of educational technology in improving academic performance.

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