

Teachers' Integration of Digital Tools: Its Impact and Students' Academic Performance

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Abstract

This study investigates the integration of digital tools in teaching and its relationship with student academic performance among elementary educators at Guiwan Elementary School during the 2024–2025 school year. Utilizing a descriptive correlational design, the research explores the frequency, types, and purposes of digital tool use, as well as the challenges teachers face in technology integration. Data were collected from 37 teachers through purposive sampling, focusing on those with experience in digital technology. Results reveal that while the majority of teachers have received training in digital tool integration (64.86%), significant gaps remain, with 35.14% lacking formal preparation. Digital tools are most frequently used for lesson delivery and communication, but less so for feedback and collaboration. The findings also highlight disparities in access, confidence, and device availability, which influence the extent of technology use. The study identifies a positive but varied relationship between teachers' integration of digital tools and students' academic performance, suggesting that effective and consistent use of technology can enhance learning outcomes. However, barriers such as insufficient training, limited resources, and infrastructural challenges persist. The results underscore the need for targeted professional development and equitable access to digital resources to maximize the benefits of educational technology in elementary settings.

Keywords: digital tools; technology integration; academic performance; elementary education; teacher training; Guiwan Elementary School; educational technology; challenges

Introduction

It is clear that digital technology has brought major and quick changes to education. In the last two decades, schools everywhere have added various digital resources to their teaching: multimedia software, educational applications, online courses and numerous ways to communicate. They are not new anymore; in fact, many of today's teaching tasks are supported by these resources.

The use of technology in teaching has long been discussed among scholars as a useful practice. Mishra and Koehler's TPACK framework (2006) points out that a lesson can only be meaningful when its content, teaching methods and technology all fit together. At the same time, it is argued by Ertmer and Ottenbreit-Leftwich (2010) that with the right support, technology improves students' involvement, encourages active learning and boosts their achievements in school. It is difficult to miss the evidence suggesting positive results.

In fact, the situation is more complex in real life. Teachers and classrooms may have very different ways of integrating technology. Certain teachers depend on digital tools for all their teaching and learning tasks. Conversely, some run their operations using mainly the essential resources they have. Shortages of devices, insufficient training, pressures for fast results and unpredictable support from schools still stand in the way of reaching technology's potential.

Strangely, while interest in technology and student performance is increasing, most studies look at secondary and postsecondary education instead. A lot of elementary teachers don't know how digital tools are used or what impact they can have. Most research on education technology only explains the pros and cons of technology without exploring how they may relate to students' performance at school.

In this study, I look at how technology is worked into teaching, the challenges those teachers face and how it influences student performance in school. It works to provide a richer understanding of technology's importance in schools and guides ways to effectively improve its use in class.

1.1 Problem Statement

This study explores how teachers integrate digital tools and how this affects students' academic performance at Guiwan Elementary School in the 2024-2025 school year.

The following will guide the investigation:

1. What is the extent of teachers' integration of Digital tools in teaching?
 - 1.1 Frequency of Digital Tools use in the classroom
 - 1.2 Types of Digital Tools Commonly Used (e.g., educational apps, multimedia tools, online platforms)
 - 1.3 Purpose of Digital Tool use (e.g., content delivery, student assessment, communication, collaboration)
2. What is the student's academic performance?
3. What challenges do teachers encounter in integrating digital tools in teaching to enhance learning?
4. Is there a significant relationship between the extent of teachers' integration of Digital Tools and students' academic performance?

1.2 Scope and Delimitation

The objective of this study is to use digital technology in teaching and its relationship with how students perform academically, reported by teachers in SNED, kindergarten and grades 1 to 6 at Guiwan Elementary School. More specifically, this study looks at how much digital tools are incorporated by teachers based on their beliefs, the tools they access and their training. It additionally attempts to find out what challenges educators have with digital tools and to observe the effect of digital integration on student results.

This study addresses schools, SNED teachers, Kinder grade teachers and students from Grades 1 to 6 participating in the School Year 2024-2025 only. Limited to Guiwan Elementary School, this study only includes teachers from there.

Additionally, the study can only go so far because it depends on surveys and academic records for information. Success of these tools relies on respondents being truthful, dependable and always available. Additionally, factors like family situation, parents' involvement and personal learning capabilities are not taken into account by the study. These restraints mean the study may not cover every detail, but the findings focus on how digital tools can help students and their results in the classroom.

2. Methodology

2.1 Research Design

In simple terms, this study uses a descriptive correlational design, where researchers simply watch how different variables affect one another without trying to control the situation. Experts are only interested in identifying patterns and links as they occur in the real world, rather than aiming to figure out what drives those occurrences (see Creswell, 2014).

It turns out that this is a perfect approach for this research. This helps us explore the relationship between a teacher's use of online resources and how well students do academically, in a real classroom setting. The design does not involve manipulating students, produces results helpful for educational practice, reveals emerging issues and forms the basis for further studies. While it won't clearly prove effects, it allows educators and policymakers to see which parts of digital education work and which can be improved.

2.2 Participants of the Study

Thirty-seven (37) elementary school teachers and a group of students represented by Guiwan Elementary School will participate in this study. Teacher-respondents will be selected to demonstrate a variety of digital tool integration strategies in every elementary grade. You will learn about their views on teaching, involvement in workshops, what online tools they access and the problems they have bringing technology into the classroom.

Besides, a set of students will be chosen according to their grade and whether their academic performance can be accessed. Using the students' academic data will allow researchers to assess if there is a link between teachers' digital tool use and how students learn.

Those taking part in the survey will be picked using purposive sampling, so that those providing digital tools are included. The researchers hope to collect data directly from those involved in teaching and learning at Guiwan Elementary School.

2.3 Sampling Procedure

A purposive sampling strategy which is a non-probability method, will be applied. The selected respondents will have appropriate qualities for contributing to the study's aims.

Using this method, only teachers who truly use digital technology in their teaching will be considered.

The requirements for participants were that they (1) work in SNED, Grades 1 to 6 at Guiwan Elementary, (2) have experience or know how to use technology in teaching and (3) are happy to take part in the study.

By approaching this way, the researcher is able to evaluate the level of digital tool use and its relationship with student academic achievements.

The performance of students under these selected teachers will be examined to find any links between using technology and the outcome of lessons.

2.4 Research Instrument

For this study, the questionnaire acts as the core research vehicle. It was put together by the researcher to record teacher use of technology, their difficulties and student academic results. The first section of the questionnaire is called Demographic Profile. It collects data on teachers' age, gender, kind of education, years of experience, the grade(s) they handle, ICT trainings participated in and the range of digital resources at hand in the school. Here, the review looks at how many digital resources are integrated into the classroom teaching activities. It explains what the tools are used for, main examples being teaching, assessing and communicating. This section focuses on teachers' observations of how well students perform academically during instruction. (4) Difficulties with Using Digital Tools- In this section, common problems teachers face is mentioned, like problems with the internet, having few or no devices and lacking training. (5) Relationship with Technology – Teachers are asked to rate how strongly they believe using digital tech boosts student performance. Answers are given by looking at checklists and assigning a grade of Strongly Disagree to Strongly Agree.

The purpose of this research tool was to examine three aspects: (1) how widely digital tools are used by teachers in their teaching, (2) teachers' judgment of how their students have done academically and (3) what difficulties teachers face when working with these tools. It bases its ideas on models like the TPACK model by Mishra and Koehler (2006) which highlights that teaching with technology works best when you consider tech, teaching methods and the content you teach (Hosseini & Kamal, 2022).

Questionnaire items were also created using findings from Babayeve's (2021) study about schools using ICT. The current instrument is designed to give useful feedback about local education while still being in line with use in broader research studies.

Before collecting data, the instrument will be examined by experts in education and educational technology to confirm it is trustworthy, clearly spelled out and connected to the objectives.

2.5 Data Gathering Procedure

Information for this study will be gained from survey questionnaires and from looking at students' academic records. Various efforts are taken to guarantee that data is collected both thoroughly and orderly. At first, the researcher will organize and confirm the tools, including a survey, so they are reliable and match the purpose of the study. When the process is complete, the researcher must find approval from the proper authorities to start the study and collect the needed data at the chosen university.

Following approval, the selected individuals will be given the survey questionnaires and told how to fill them out correctly and transparently. At the same time, if given consent, staff will check the student's records to gather information about how they are performing academically.

In the process of gathering data, the researcher ensures that confidentiality is maintained, all participation is voluntary and people may drop out whenever they decide to. Collected information will be sorted and brought together for further analysis so the study can be properly evaluated and decisions can be made.

3. Results and Discussion

3.1. Extent of Teachers' Integration of Digital Tools

Responses were rated using a 5-point Likert scale (1 = Never to 5 = Always).

Table 3.2: Frequency of Digital Tool Use in the Classroom

Statement	Mean	Interpretation
Use digital tools to deliver lessons	4.2	Often
Use digital tools to assess students	3.8	Sometimes–Often
Use digital tools to provide feedback	3.5	Sometimes
Use digital tools to communicate	4.0	Often
Use digital tools for collaboration	3.6	Sometimes–Often
Over-all Mean	3.82	Sometimes–Often

Legend: 3.5- 3.9: Sometimes- Often; 4.0 and above: Often

Table 3.2 presents the frequency of digital tool use in the classroom. It can be gleaned how frequently digital tools are used for various classroom activities. The highest use is for lesson delivery (mean = 4.2) and communication (mean = 4.0), while providing feedback (mean = 3.5) and facilitating collaboration (mean = 3.6) received lower scores. This suggests that teachers primarily use digital tools to present content rather than as tools for deeper engagement. Zou et al. (2025) stress the importance of balanced usage—not just for delivering information but also for assessment, feedback, and collaborative learning to support a holistic digital classroom.

Table 3.3: Types of Digital Tools Commonly Used

Tool Type	Mean	Interpretation
Educational apps (e.g. Kahoot)	4.1	Often
Multimedia tools (e.g. Youtube)	4.3	Often
Online Platforms (e.g., Classroom)	3.9	Sometimes-Often
Productivity Tools (e.g. Docs)	4.0	Often
Communication Tools (e.g., Zoom)	4.2	Often
Over-all mean	4.1	Often

Legend: 3.5- 3.9: Sometimes- Often; 4.0- 4.4: Often

Table 3.3 presents the types of digital tools commonly use. It can be gleaned that teachers most often use multimedia tools (mean = 4.3), followed by communication tools (4.2) and educational apps (4.1). Productivity tools and online platforms are also used regularly, with means of 4.0 and 3.9, respectively. This indicates a strong preference for tools that make teaching more interactive and engaging, such as YouTube and Kahoot. As MyRollCall.Pro (2025) suggests, such tools can simplify complex topics and maintain student interest. However, the somewhat lower use of platforms like Google Classroom suggests there may still be opportunities to improve familiarity and access to comprehensive educational platforms.

Table 3.4: Purpose of Digital Tool Use

Purpose	Mean	Interpretation
Deliver Instructional Content	4.4	Often-Always
Assess learning Progress	3.7	Sometimes-Often
Facilitate Communication	4.1	Often
Promote Collaborative Learning	3.8	Sometimes-Often
Support Differentiated Instruction	3.5	Sometimes
Over-all mean	3.9	Often

*Legend: 4.5-5.0: Always; 4.0-4.4: Often; 3.5- 3.9: Sometimes-Often
3.0-3.4: Sometimes; Below 3.0: Seldom/ Never*

Table 3.4 presents the purpose of digital tool use. It can be gleaned that the main reason teachers use digital tools is to deliver instructional content (mean = 4.4), followed by communication (4.1) and collaborative learning (3.8). Other purposes include assessment (3.7) and differentiated instruction (3.5). These results reflect the growing role of digital tools in improving content delivery and interaction. Rivero (2024) highlights how digital tools can personalize learning, but the lower scores for differentiated instruction indicate that teachers may still need more support in using technology to address diverse learning styles effectively.

3.5 Student Academic Performance (Perceived Impact)

Table 3.6: Perceived Impact on Student Performance

Statement	Mean	Interpretation
Digital tools improve student engagement	4.0	Agree
Digital tools enhance understanding	3.9	Agree
Digital tools improve assessment results	3.7	Agree
Digital tools cater to diverse learning	3.8	Agree
Over-all mean	3.85	Agree

Legend: 4.0 and above: Strongly Agree; 3.5-3.99: Agree; 3.0-3.49: Neutral/Somewhat Agree; Below 3.0: Disagree

Table 3.6 presents the perceived impact on student performance. It can be gleaned that teachers agree that digital tools help improve student engagement (mean = 4.0), understanding (3.9), and assessment outcomes (3.7). They also believe that these tools cater to diverse learning needs (3.8). These perceptions align with studies by Wilbrod (2025) and Rafiq et al. (2024), who found that technology can make learning more inclusive and meaningful. The positive feedback from teachers suggests that digital integration is not only being accepted but is also seen as beneficial to students' academic performance and participation.

3.7 Challenges Encountered by Teachers

Table 3.8: Challenges in Digital Tool Integration

Challenge	Mean	Interpretation
Insufficient access to devices	4.2	Agree-Strongly Agree
Internet connectivity issues	4.5	Strongly Agree
Lack of training and support	4.0	Agree
Technical issues	3.9	Agree
Increased workload	3.7	Agree
Managing student behavior	3.5	Neutral-Agree
Lack of clear school policies	3.8	Agree
Over-all mean	3.94	Agree

Legend: Below 4.5 and above: Strongly Agree; 4.0-4.4: Agree-Strongly Agree; 3.5-3.9: Agree; 3.0-3.4: Neutral-Agree

Table 3.8 presents the challenges in digital tool integration. It can be gleaned the key barriers teachers face when using digital tools. The biggest issue is internet connectivity (mean = 4.5), followed by lack of devices (4.2) and insufficient training (4.0). Other concerns include technical problems (3.9), increased workload (3.7), and unclear school policies (3.8). Managing student behavior (3.5) was rated the lowest. These challenges reflect findings from Educator (2023)

and Theodorio et al. (2024), who note that for technology to work in education, basic infrastructure, training, and clear administrative guidelines are essential.

3.9. Relationship Between Digital Tool Integration and Student Academic Performance

Table 3.10: Correlation Analysis (Spearman's Rank Correlation)

Variable	Correlation Coefficient (r)	Interpretation
Frequency of use ↔ Performance	0.65	Moderate-Strong
Types of tools ↔ Performance	0.58	Moderate
Purpose of use ↔ Performance	0.62	Moderate-Strong
Overall Correlation Coefficient (r)	0.62	Moderate-Strong

Legend: 0.60 and above: Moderate Strong; 0.50- 0.59: Moderate

Table 3.10 presents the correlation analysis (Spearman's Rank Correlation). It can be gleaned that there is a positive correlation between the use of digital tools and student performance. The correlation coefficient is highest between the frequency of use and performance ($r = 0.65$), followed by purpose of use ($r = 0.62$), and types of tools used ($r = 0.58$). These results suggest that consistent and meaningful use of digital tools contributes to improved academic outcomes. According to Wilbrod (2025) and Rafiq et al. (2024), purposeful integration of digital technology can lead to better student engagement, enhanced understanding, and higher achievement levels.

4. Conclusion

Based on the findings, the researcher concludes that:

1. A lot of the teachers at Guiwan Elementary School are early to mid-career professionals who provide both new and seasoned perspectives on education.
2. Many teachers are female, just like in schools globally which points to the value of gender-responsive continuing education.
3. Digital tool integration is a familiar topic for most teachers and many apply these tools to their practices in delivering lessons, communication and teamwork.
4. Although good progress has been made, many teachers are not properly trained and rarely rely on digital resources which highlights that more needs to be done.

5. Most teachers view digital resources as helping increase student engagement, improve their learning, boost participation and address many different learning needs.
6. Because so many people lack proper internet, not enough devices and inadequate training, digital integration is still incomplete.
7. Those teachers who make regular, varied use of digital resources tend to notice that their students improve academically.
8. They suggest that equipping both students and teachers with the latest digital tools is not enough; training and support should also be offered to help teachers use them successfully.
9. Focusing on improving internet, increasing access to devices and giving more training is important for both continuing and improving the results of adding technology to education.

5. Recommendation

Based on the conclusion of the study, the researcher recommends the following:

5.1 Develop More Funding

Continually give teachers different kinds of training, particularly guide them in advanced digital teaching methods and help those who are less experienced or confident.

5.2 Improve Infrastructure

Partner with authorities and community members to enhance internet access and to offer students and teachers equal chances to use proper devices.

5.3 Encourage everyone to be included in all activities

Help teachers use technology for individualized instruction in SNED and multi-level settings, since this helps many types of learners.

5.4 Support having a mentor and working together with others

Use the differences in age and background among your teachers by arranging for mentorships that join tech-savvy staff with those who have more experience.

5.6. Regularly watch what happens and see how your results turn out

Check the influence of digital tools on student progress frequently to help you choose the most beneficial investments and measures moving forward.

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