INTERNATIONAL JOURNAL OF ADVANCED MULTIDISCIPLINARY STUDIES
Volume VI, Issue 5 May 2026, eISSN: 2799-0664

Tech and Triumph: Students' Technological Competence, Attitudes, and Academic Success

Mary Donneli C. Alcoser
Ma. Fely M. Magsalay
Alfredo Ii G. Fuentes
Donald T. Matabilas
Adora O. Saragosa
Hedlee C. Romanos

Abstract — This quantitative study examined the relationship between students' demographic profiles, technology-influenced attitudes, and academic success, and proposed a Technology Integration Plan for Colegio de Getafe, Bohol during the second semester of Academic Year 2024–2025. Guided by Davis's Technology Acceptance Model (1989) and Bandura's Social Cognitive Theory (1986), the study employed descriptive-correlational methods with 130 college student-respondents. Data were collected using validated questionnaires measuring attitudes toward learning, school, teachers, peers, and assignments, alongside technological competence indicators. Results show that student age, sex, family income, preferred courses, and home technology access significantly influence technological competence, attitudes toward technology, and academic performance across multiple domains. Teacher characteristics, including experience, qualifications, training, and technology use, also significantly affect student competence and attitudes. Positive attitudes toward technology and higher digital competence strongly correspond to improved academic outcomes. Recommendations include providing equitable access to devices and internet connectivity, intensifying teacher professional development, adopting differentiated instruction, structuring regular technology engagement, and integrating digital literacy into the curriculum. Recommendations include equitable device and internet access, teacher training in digital instruction, parent and community engagement, and alignment of technology tasks with student abilities and preferences. The proposed Technology Integration Plan provides structured guidance for access, instruction, and monitoring to enhance learning outcomes consistently and equitably.

Keywords: Technology in School, Attitudes towards Technology, Technological Competence

I. INTRODUCTION

This chapter offers background information and rationale, literature review, theoretical and conceptual frameworks, and legal bases for the study, as well as context and significance. Educating the reader on current challenges in the field, particularly the technology- learning integration issues, underscores the relevance of the study. Defining research focus as technological competence, student attitudes toward technology, and academic performance and describing the interdependencies of the variables illuminate the research path. This chapter explores the theory and real-world challenges in education and the study.

Background and Rationale

The transition to digital learning environments, including the use of the internet to facilitate learning, as a result of global events like the COVID-19 pandemic, made technology an essential part of education rather than an ancillary tool. Students were needed to technologically proficient, not only by having the ability to use the technology, but by having the ability to access, analyze, and utilize the technology and the digital information available through the technology responsibly. This ushered in an era of expectations of learner digital literacy commensurate with the technological and academic expectations of the contemporary global environment.

Current global evidence shows a strong correlation between technological readiness and academic achievement and persistence. However, access inequity, especially between developed and emerging economies, has resulted in loss of educational opportunities. The case in the Philippines demonstrates how access inequity has a multitude of dimensions, as many learners experienced constraint due to a combination of poor digital literacy, device unavailability, and poor internet access, which shows that access is not enough.

Implementation efforts of initiatives like the Digital Rise program, which aims to integrate ICT in education to facilitate learning, remain to be a challenge, especially in the rural and remote areas. These include poor infrastructure, inadequate training of teachers, and unsteady provision of digital tools. Timely and relevant use of ICT tools and resources provide strong evidence that describe the circumstances and the justification for complementary policy and strategic interventions at practitioner and local contexts to facilitate learning.

There is a positive correlation between students' technological aptitude and technology-related academic performance. More technologically proficient students often have a positive attitude toward technology. This is consistent across existing research. However, existing research fails to adequately capture the nuanced experiences of students, especially in under-resourced environments. More localized studies are needed to capture the nuances of both technological aptitude and attitude in a specific context.

This research analyzes academic performance in relation to technological attitude and competence of students. Specifically, the context involves junior and senior high school students in Getafe, Bohol. While the research has its limitations, especially related to the context and the variables considered, it aims to inform students, teachers, school administrators, policymakers, parents, and other stakeholders.

Review of Literature

Conceptual Literature

Technological competence is believed as a multidimensional construct consisting of various skills and cognitive and metacognitive skills, including evaluation, self-regulation, and strategic learning. Of these, evaluation and metacognitive skills are believed to be the strongest predictors of students' academic performance because of their ability to critically analyze information and modify learning techniques.

In the case of transforming competence into academic results, attitude toward technology significantly mediates such relationship. Accordingly, the Technology Acceptance Model (TAM) states that the perceived usefulness of a digital tool, as well as its perceived ease of use, contibute to students' adoption of the tool and its continuous use. Engagement that is positively associated with attitudes contributes to sustained performance, while a negative attitude prevents even a competent individual from applying a given level of skills.

Digital literacy is considered as a primary contributor to transforming technology use into academic success. Digital literacy is the capability to identify, assess, and ethically use information through synthesis. Students who possess strong digital literacy skills are able to produce quality

academic work with minimal errors attributed to misinformation and demonstrate academic integrity through proper sourcing.

Nonetheless, success cannot stem from only digital aptitude. How successfully students can utilize their digital skills are dependent on elements such as institutional infrastructure, teacher backing, and the operational efficiency of the framework. Other components like socioeconomic status and digital resources also define the scope of support available to students, resulting in unequal access to technology and further emphasizing inequity in digital education.

Self-efficacy and self-regulation serve to further attest to the relation of competence to performance. A student with the belief that they can utilize technology has a much higher likelihood of remaining engaged and active in the associated learning tasks. In the same light, a self-regulated learner is proficient in time-management, progress monitoring, and strategic adaptations, all of which culminate in positive academic performance.

As a result, an integration of literature sources is able to attest to the assertion that the main driving cause of academic performance in digital learning spaces is a motivated attitude that is coupled with competence, supported by a positive institutional framework and favorable contextual setting.

Research Literature

Multiple studies have established a strong link between digital literacy and the ability to perform academically. Students who perform well academically demonstrated, through multiple meta-analyses, that there is a high level of digital literacy. This is because literacy allows students to process and analyze information.

Research has also shown that technology, in and of itself, is not a contributor to positive performance academically. Device overuse, particularly in the forms of smartphones and video games, can result in negative performances academically. This is due to a lack of focus and poor time management. This also emphasizes the role of digital self-regulation and technology use.

Research using the UTAUT and TAM models indicates that students' perceptions of technology and, in particular, the utility and functionality of that technology positively impact

engagement and achievement. Furthermore, support from educational institutions through the provision of user-friendly technology and strong infrastructure has a positive impact on the use and sustained engagement of technology.

Research has also shown that digital self-confidence, motivation, self-regulation, and learning strategies. Consistent engagement with digital tools results in improved performance academically. Additionally, there is a more meaning engagement over digital tools than shallow engagement. More simply put, the amount of time spent using digital technologies does not predict success, engagement does.

In the Philippine context, research highlights difficulties like inadequate internet, insufficient resources, and uneven support from institutions. Many students have fundamental digital competencies, but barriers impede their potential for technology-enhanced learning. Therefore, research recommends comprehensive approaches that encompass digital skills and address contextual barriers for better educational achievement.

Framework of the Study

Theoretical Framework

The study is anchored on four major theories that collectively explain the relationship among technological competence, attitudes, and academic performance.

The **Technology Acceptance Model (TAM)** explains how perceived usefulness and ease of use shape students' attitudes toward technology, influencing their intention and actual usage. It highlights the psychological processes that determine whether students adopt digital tools and how this adoption impacts academic performance.

The **Social Cognitive Theory (SCT)** emphasizes the role of self-efficacy, observational learning, and environmental factors in shaping behavior. It explains how students develop technological competence through modeling, reinforcement, and interaction with their environment, and how confidence influences engagement and academic success.

The **Self-Determination Theory (SDT)** focuses on motivation, particularly the roles of autonomy, competence, and relatedness. It explains how intrinsic motivation and supportive learning environments encourage students to engage with technology, develop skills, and achieve better academic outcomes.

The **Constructivist Learning Theory** views learning as an active, collaborative process where students construct knowledge through experience. It highlights the role of technology in facilitating interactive, student-centered learning environments that promote critical thinking, creativity, and deeper understanding.

Together, these theories provide a comprehensive framework showing that academic performance is influenced by the interaction of competence, attitudes, motivation, and environmental support.

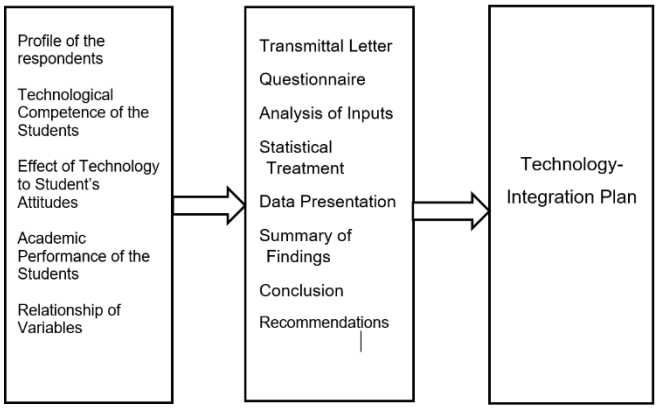
Legal Bases

The study is supported by key Philippine laws that promote equitable, inclusive, and technology-integrated education.

- Republic Act No. 10929 ensures free internet access in public spaces, enabling students to participate in digital learning and reducing the digital divide.
- Republic Act No. 11650 guarantees inclusive education by providing support, accessibility, and resources for learners with disabilities, ensuring equal learning opportunities.
- Republic Act No. 9155 strengthens school-based management and empowers institutions to integrate technology, improve teaching practices, and enhance student learning outcomes.

Overall, these laws collectively support digital access, inclusivity, and institutional effectiveness, which are essential in improving students' technological competence and academic performance.

Conceptual Framework



The study's conceptual framework shows that **technological competence** and **student attitudes toward technology** influence **academic performance**. Students with higher digital skills and more positive attitudes are more likely to engage effectively in learning tasks, leading to better academic outcomes. The framework also highlights that these variables are interconnected, as competence can improve attitudes, and positive attitudes can enhance the use of technology, ultimately supporting improved performance.

Research Problem

This research determined the technological competence and its effects to the attitude and academic performance of Bachelor of Arts in English Language (BAEL) students during the Second Semester of Academic Year 2024-2025 with the end view of proposing a technology-integration plan.

Specifically, this study answered the following questions:

1. What is the profile of the respondents in terms of:

    1.1. Student's

        1.1.1. Age;
        1.1.2. Sex;
        1.1.3. Average Family Monthly Income;
        1.1.4. Preferred Courses;
        1.1.5. Gadgets Available at Home?

1.2. Teacher's

1.2.1. Age;

1.2.2. Sex;

1.2.3. Highest Educational Attainment;

1.2.4. Position/Designation;

1.2.5. Years in Service:

1.2.6. Seminars/Trainings Attended;

1.2.7. Technology Utilized in Teaching?

2. What is the technological competence of the students related to:

2.1 Basic Computer Literacy;

2.2 Internet and Online Research Skills;

2.3 Communication and Collaboration Tools;

2.4 Digital Content Creation;

2.5 Problem-Solving and Critical Thinking using Technology?

3. What is the effect of technology to student's attitudes towards:

3.1. Learning;

3.2. School;

3.3. Teachers;

3.4. Peers;

3.5. Assignment?

4. What is the academic performance of the students during the Second Semester of the Academic Year 2024-2025?
5. Is there a significant relationship between the profile of the respondent groups and the perceived technological competence of the students?
6. Is there a significant relationship between the profile of the respondent groups and the perceived effects of the technology to the student's attitude?
7. Is there a significant relationship between the profile of the student-respondents and their academic performance?

8. Is there a significant relationship between the respondent groups' perceived technological competence of the students, effects of technology to the student's attitude, and academic performance?
9. Based on the findings of the study, what technology-integration plan can be developed?

Null Hypothesis. The null hypothesis was tested in the conduct of the study:

H_{O1}: There is no significant relationship between the profile of the respondent groups and the perceived technological competence of the students.

H_{O2}: There is no significant relationship between the profile of the respondent groups and the perceived effects of the technology to the student's attitude.

H_{O3}: There is no significant relationship between the profile of the student-respondents and their academic performance.

H_{O4}: There is no significant relationship between the respondent groups' perceived technological competence of the students, effects of technology to the student's attitude, and academic performance.

II. METHODOLOGY

This chapter discusses the systematic approach the study used: the research design, respondents, instruments, procedures, methods of data analysis, and ethical considerations. The study examines the relationship between technological competence, student attitudes, and academic performance, and this chapter outlines the systematic, valid, and ethical research processes used.

Research Design

The study employed a quantitative descriptive-analytical research design to assess the impact of technology on students' attitudes and academic performance. The descriptive part involved understanding the current conditions, behaviors, and perceptions of the respondents, while the analytical part focused on the relationships among variables, aiming to identify patterns and make predictions.

This design enabled the researchers to accurately describe the existing conditions and test the relationships among technological competence, attitudes towards technology, and academic achievement. It is ideal for research that aims to both describe a phenomenon and analyze the interrelationship of variables in a given educational setting.

Sample of the Study

The scope of the study is focused on the faculty and student population of the Colegio de Getafe, Bohol, with the research participants of the study population of 231 individuals, of which 30 are faculty members and 211 are students. A total of 140 respondents were randomly selected through simple random sampling and quota sampling, which helps to achieve population representation and reduce bias.

In this study, the sample consisted of 10 teachers (33.33%) and 130 students (61.61%), which reflects the dominant representation of the entire sample population. In the collection of the data, questionnaires were personally administered, and participants volunteered while moral obligations were strictly observed.

Getafe is a rural coastal municipality in Bohol with a lack of basic infrastructure and resources. Colegio de Getafe is the only institution of higher learning in the municipality and is an important educational institution for students who are economically disadvantaged and cannot pursue higher education in the more developed and urbanized areas. This situation is significant as it offers the opportunity to explore the ways in which a technology-enabled education system is of value to students in a resource-constrained setting.

Measures

A structured survey questionnaire was the main data collection tool used to evaluate the level of technological competence, student attitudes, and academic performance. The questionnaire was based on validated scales on attitudes toward technology and modified to include elements of digital competence and academic results.

The survey included four segments:

1. The participant's profile (academic performance, income, technology, age, sex, and teacher-related variables)

2. Technological competence in five areas (computer skills, research, communication, content creation, and problem-solving)

3. The Impact of technology on students' attitudes (toward learning, school, teachers, classmates, and assignments)

4. The Influence of technology on academic performance

The answer options used a Likert-type scale to facilitate measurement and comparison of results. The instrument was content validated by specialists and the pilot study showed a reliability and internal consistency (Cronbach's alpha) score of 0.82. Revision was done for the sake of improving clarity, relevance, and ensuring alignment to the study objectives.

Procedures

The first step in the research process was obtaining the necessary approvals from the Graduate School and the school itself. The researchers worked with school administrators and planned the data collection process according to the availability of the respondents.

To achieve a high response rate and to minimize the concern of participants, questionnaires were distributed and collected personally. Follow-up contacts were made to complete the data collection process within the agreed timeline to minimize incomplete responses. The authors were flexible and made some adjustments to accommodate for the limited availability of the respondents, the need for clarifications, and the scheduling dilemmas.

The mean scores of the responses were determined from the numerical weights assigned to the responses. Weights were also used in the documentary analysis to strengthen the relationship and pattern analysis in the study to enhance the interpretation of the results.

Data Processing

Data have been processed using both descriptive and inferential statistics.

For profile description, frequency and percentage were used. Weighted mean determined levels of technological competence, attitudes, and academic performance. Before proceeding to the appropriate statistical analysis, a normality test was conducted (Shapiro–Wilk test). This was further supported by skewness, kurtosis, and Q–Q plots showing that the data were approximately normally distributed.

For analysis of relationships:

- Pearson correlation was used when the variables were normally distributed

- Spearman's rho was used for ordinal or nonparametric data

These techniques were used to analyze the relationships among respondent profiles, technological competence, attitudes, and academic performance. The combination of these statistical techniques ensured a precise, valid, and thorough analysis of the data.

Ethical Considerations

The study adhered to ethical research regulations regarding human participants. All participants signed informed consent forms along with parental consent for minors. All participants could voluntarily choose to withdraw from the study at any time. The study followed the Data Privacy Act 2012 and ensured participants' confidentiality and anonymity by coding responses and storing data securely.

The researchers remained objective and attempted to eliminate all bias and prejudice for the duration of the study. Risks to participants were as minimal and as limited as the time used to complete the questionnaire. Participants were free to skip questions, and respondents were treated with the highest courtesy and professionalism.

Though participants were not offered direct incentives, their benefit came from the study's results that may contribute to betterment of practices in education and integrated technology. The study actively protected participants' rights, dignity, and welfare throughout the study.

III. RESULTS AND DISCUSSIONS

This chapter presents the analyzed data through tables and interpretations aligned with the research questions. It explains patterns, relationships, and statistical findings regarding students' technological competence, attitudes toward technology, and academic performance. The results provide the basis for conclusions and recommendations.

Profile of the Student-Respondents

Most student respondents are 19 to 21 years of age, showing the level of population of traditional college-age learners who are fairly acquainted with digital devices. At the same time, the enrollment of older learners demonstrates the need to design instruction in a way that considers different degrees of familiarity with technology. Regarding gender, given the predominance of females, conclusions drawn from this sample are largely from a female point perspective, while also constraining gender analysis to the opposite end of the spectrum. With most students coming from low-income families, their access to digital materials apart from course content is evidently limited. This further underscores the critical need for equity in digital access and the affordable, inclusive technology integration Framework. Students overwhelmingly prefer practical, personally relevant topics, like communication and self-related courses, while demonstrating a lack of interest in more abstract or theoretical subjects. Most students also use smartphones as their primary digital access devices, meaning that the institution has highly mobile-dependent learning environments and that accessible digital instruction design is a necessity.

Profile of the Teacher-Respondents

The education of the teacher-respondents suggests that they are highly educated, flexible, and adaptable to technology, due to their graduate education and predominance of females in their mid-career positions. It appears that the respondents are mostly Instructor I, showing that most, if not all, of them are in the initial level of their teaching profession. This means that they are likely to be highly innovative, but do lack support, follow the guidance and support of their trainers and more advanced instructors, and are in need of professional development. It seems that the

respondents are mostly in their initial levels, showing they are likely to be highly innovative and are in need of professional development, and that the limited training opportunities are the resultant imbalance in the professional development. In response to the situation, the teachers utilize basic technology like projectors, learning applications, and laptops, but the level of technology averaging and the lack of modern and interactive technology demonstrates the need for improvement and to embark on advanced digital teaching techniques.

Technological Competence of the Students

Overall, students' levels of technological fluency tend to be rated as good to excellent. In a quick overview of their computer literacy, students show good to very good abilities with their general computer skills and file management. There is room for improvement in their overall software skills and computer troubleshooting. Students also tend to show good research and general internet skills. In terms of evaluating sources, students show good skills, other students show weaknesses in in-citation and in using academic databases. Students show a good ability to communicate and work collaboratively in digital teams. Students abilities for digital participation, particularly for blogging and creating digital graphics, is strong. Avider digital content creation and participation is also present. The vast majority of students demonstrate good to excellent abilities to make important judgements using technologies and demonstrate good skill readiness for further technological advancement.

Effect of Technology to Students' Attitudes

Primary research shows that students have positive feelings across the board when it comes to the implementation of technology in the classroom. Students feel that technology improves clarity and engagement in lessons, especially when learning in a motivated and preferred digital environment. Students feel positively towards school and learning when technology is used to make lessons meaningful and enjoyable, although they could still use encouragement to participate in classroom activities. Students feel that classroom instruction, interaction, and understanding improves when technology is used to make learning activities interactive. Students feel that technology improves communication, collaboration, and connection with their peers, socially and

academically. Students feel positively about assignments that use technology to make activities easier to understand and complete. However, they still have low motivation and preference for technology-related activities.

Academic Performance

Most students are considered high achievers academically, with most ranking in the very satisfactory and outstanding categories. This strongly suggests students have mastery and almost suggests the focus of integrated technology is not of mitigating difficulties in academics, but rather, broadening and deepening educational engagements.

Relationship Between Variables

Apart from the above, the most significant relationships in the results point to the students' age, family income, subject of choice, available gadgets, and their level of technological competence, indicating that socio-demographic variables are significant in determining the level of digital skills. The same applies to the teacher variables, which comprise age, educational level, years of teaching, training, and technology use, and all of which, have significant correlation to the students' level of technological competence, most of which demonstrate the impact of teacher readiness and the need for in-service training. In addition, the variables that define the student's socio-demographic background have a definable influence to a considerable degree on their perception and attitude toward the use of technology, providing the basis to assert that the background characteristics of students determine their interactions with the digital world.

IV. DISCUSSION

According to the study results, students show good to excellent technological proficiency, including problem-solving, and communication, and digital content creation. These abilities mean students are able to function in a technology-integrated education environment. However, rudimentary skills like citation and troubleshooting, as well as advanced research, are areas that

need more focus. This indicates that students have strong foundational skills, but higher-order digital literacy skills are lacking.

The results also reflect that students have mainly positive perceptions about technology, particularly when it comes to making lessons clearer, more engaging, and enhancing the quality of learning. With the aid of technology, students report being able to communicate with teachers more effectively, collaborate with classmates, and complete assignments more easily. However, despite all these positive outcomes, students' motivation to use technology to learn and their preference for this type of learning are only moderately positive. This suggests that the way technology is used for instructional purposes is the critical factor in its success. Meaningful, well-structured interactive instruction with technology is what students desire.

Additionally, the students surveyed for the study achieved high levels of academic success, with the majority of students assessed as very satisfactory or outstanding. This indicates that integration of technology does not only assist students who are academically challenged but also improves the achievement of academically elite students. Therefore, technology can be utilized to either reinforce or enhance the learning process.

There were some significant correlations with students' ages, family income, favorite subjects, and available technology, and these factors correlated to their technology skills. This means that students' digital literacy and learning experience are affected by their socioeconomic and demographic background. Teacher-related factors, such as years of teaching, level of education, training, and use of technology, also correlated with student digital literacy. This study shows that both student background and teacher education affect the outcome of technology use in and outside the classroom.

The study shows that students can use technology and digital learning, but technology integration in the classroom requires fair access to technology, teacher qualifications, and purposeful design in lesson planning. Technology is not the answer by itself to improve learning. It requires a well-designed integration plan to improve student learning.

V. CONCLUSION

Students have high technological competence and can successfully participate in technology-supported learning, meaning they have positive engagements with technology and digital tools for their studies that are imployed in their technology-supported learning.

Students' academic achievement means that learning technology has, at its most positive, an effective role of learning technology in unmotivated and low reliant integration. Learning technology has high, positive, effective roles in clarifying, stimulating, and integrating collaboration in learning activities.

Technology, also, learning and non learning activities, as an enhancement tool, are a high academic achievement and in an effort to support effective learning. Non academically successful students, also, learning activities, and technology as a learning tool, successfully learning activities, and technology as a non acdemically learning activities.

This study concludes that only student readiness, teacher support, and equitable resource access will realize the value of integration technology in education.

VI. RECOMMENDATIONS

Because of the conclusions of this study, the following recommendations are given:

First, educational institutions need to improve their digital literacy initiatives/technology training (to an elevated degree) to include the aforementioned skills involved with doing advanced research, citing, and troubleshooting to strengthen their students' higher-order thinking and technology skills.

Next, teachers need to hypothetically improve their instructional techniques from to increase student excitement and engagement and to better improve the level of motivation and student engagement in their classrooms

Third, the schools + the governance involved should create mobile, flexible, and adaptable technology + learning + educational solutions to learning devices, internet access, and learning solutions for students, especially for low, minimal, and economically disadvantaged students.

Fourth, instructional strategies need to use technology and learning gamification strategies add to their digital and educational resources to initiate and sustain student motivation to use technology in their learning processes better.

Fifth, institutions need to promote the better use of technology in the classrooms to ensure that students improve their learning, instructional, and thinking skills without the use of technology.

Researchers in the future should try to look more closely at other variables like learning styles, teacher-student relationships, and institutional regulations or guidelines to expand the scope of this study and truly promote the study of the influence technology has on education in an ideal way.

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