

Research Article

Reshaping Outcomes for Better Education: Internet Influence on the Academic Outcomes of Primary Students

Robe-Ann S. Calumpang^{1,*} , Randy B. Beringuel² , Ronilo Achmad S. Cuachon² , Reycher L. Mortejo² , Wilson N. Cabillo² , and Eric G. Pardiñan² 

¹ College of Education Graduate School, Cebu Technological University – Main Campus, Philippines

² College of Technology, Cebu Technological University – Main Campus, Philippines

* Correspondence: crobeann@gmail.com

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Abstract: The rapid integration of Internet-based technologies in education has significantly transformed teaching and learning processes, particularly in primary education where foundational skills are developed. This study examines the impact of Internet use on the academic performance of primary learners. Employing a descriptive–correlational research design, data were collected from fifty purposively selected primary students using a structured questionnaire that captured demographic characteristics, patterns of Internet use, and learners’ perceptions of its academic utility. Statistical analyses, including frequency distribution, weighted mean, Chi-square test of independence, and Pearson product–moment correlation, were utilized to determine relationships among variables. Findings revealed that students primarily accessed the Internet through public connectivity and utilized a range of devices for both academic and non-academic purposes. Despite socioeconomic constraints, respondents demonstrated high levels of academic performance, with a significant proportion achieving outstanding grades. Results further indicated statistically significant relationships between academic performance and key dimensions of Internet use, including frequency, purpose, type of connectivity, and device availability. Moreover, learners’ perceptions of Internet usefulness and ease of use exhibited very strong positive correlations with academic outcomes, underscoring the role of motivation, engagement, and digital competence in enhancing learning. The study concludes that Internet use, when guided and purposefully integrated, serves as a critical enabler of academic success by fostering engagement, self-directed learning, and access to diverse educational resources. Additionally, the findings emphasize the importance of instructional support systems, parental involvement, and equitable access to digital resources in maximizing the educational benefits of Internet integration among primary learners.

Keywords: educational technology; ICT integration; instructional strategies; online modality

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1. Introduction

The integration of digital technologies into education has undergone substantial transformation over the past two decades, fundamentally reshaping teaching and learning processes. Early scholarship in the 2000s focused primarily on issues of access, particularly the concept of the digital divide, which emphasized disparities in access to information and communication technologies (ICT) (DiMaggio & Hargittai, 2001). This perspective later evolved into the broader concept of digital inequality, highlighting differences not only in access but also in digital skills, usage patterns, and the ability to derive meaningful educational benefits (Hohlfeld et al., 2008). These foundational challenges remain particularly significant in developing contexts, where socioeconomic constraints continue to shape educational opportunities.

As access to digital technologies expanded in the 2010s, scholarly attention shifted toward how learners engage with digital tools and how such engagement influences academic outcomes. During this period, digital literacy emerged as a critical construct encompassing technical, cognitive, and socio-emotional competencies necessary for navigating digital environments effectively (Ng, 2012). This concept was subsequently broadened into digital

competence frameworks that emphasize critical thinking, problem-solving, and responsible technology use (Falloon, 2020; Van Laar et al., 2017). These developments reflect a shift from viewing technology as a passive instructional resource to recognizing it as an active determinant of learning outcomes.

Empirical research has consistently demonstrated that structured and purposeful engagement with internet-based learning environments can positively influence students' academic performance. Learners who participate in guided online activities tend to exhibit improvements in literacy, numeracy, and higher-order thinking skills (Scherer et al., 2018). More recent studies further emphasize that the impact of internet use is context-dependent. For instance, digital competence has been found to significantly predict academic achievement when students engage in meaningful and task-oriented online activities (Ladrón de Guevara Rodríguez et al., 2022). Conversely, excessive or non-academic internet use may hinder learning outcomes, particularly when it leads to distraction or reduced study time (Kates et al., 2018; Liu et al., 2017). These findings underscore that the educational value of internet use depends largely on the quality, purpose, and regulation of engagement.

The increasing integration of technology in education has also supported the development of 21st-century skills, including communication, collaboration, creativity, and critical thinking (Voogt & Roblin, 2012; OECD, 2021). Digital tools and online platforms facilitate interactive and learner-centered environments that enhance engagement and knowledge construction (Punie, 2017). Recent reviews further confirm that digital technologies, when effectively implemented, can significantly enhance student learning outcomes and engagement across educational levels (Klimova & Pikhart, 2025).

The late 2010s and early 2020s have witnessed rapid advancements in emerging technologies, particularly artificial intelligence (AI) and adaptive learning systems. These innovations enable personalized learning experiences by tailoring instructional content to individual learner needs and learning trajectories (Zawacki-Richter et al., 2019). AI applications in education have been shown to improve learning efficiency, provide real-time feedback, and support predictive analytics for student performance (Chen et al., 2020). Such developments reinforce the role of the internet as a central infrastructure for modern education.

A significant turning point in global education occurred during the COVID-19 pandemic, which necessitated the widespread adoption of online and distance learning modalities. Online learning was widely regarded as a viable solution for ensuring continuity of education during this crisis (Dhawan, 2020). However, the transition also exposed persistent inequalities in access to digital infrastructure, technological readiness, and instructional support (Tria, 2020; Xiong et al., 2020). Subsequent studies highlight that the effectiveness of online learning environments is strongly influenced by institutional support systems, learner readiness, and digital competence (García-Machado et al., 2024). In response, international organizations emphasized the need for inclusive and equitable digital education frameworks that prioritize accessibility, quality, and sustainability (International Commission on the Futures of Education, 2020).

In developing countries such as the Philippines, these challenges are particularly pronounced. National initiatives aimed at ensuring learning continuity have introduced flexible delivery modalities; however, disparities in access to reliable internet connectivity and digital devices continue to affect students' ability to fully engage in online learning (Rotas & Cahapay, 2020). These inequalities highlight the importance of examining how internet access translates into meaningful academic outcomes within localized contexts.

Despite the recognized benefits of internet integration, its impact on academic performance remains complex and multifaceted. Research indicates that academic-oriented use of digital tools enhances learning outcomes, whereas excessive or unregulated use – particularly involving social media and mobile devices – can negatively affect academic performance and attention (Junco, 2011; Kates et al., 2018; Lepp et al., 2015). More recent evidence suggests that internet addiction and poor self-regulation can significantly mediate the relationship between internet use and academic performance (Liang et al., 2021). This highlights the importance of developing students' self-regulatory skills to maximize the benefits of digital technologies.

In addition, growing concerns regarding the cognitive and psychological effects of prolonged digital engagement have gained scholarly attention. Excessive screen time has been associated with cognitive overload, reduced well-being, and diminished academic focus, particularly among younger learners (Przybylski & Weinstein, 2017). These findings emphasize the need for balanced and evidence-based approaches to technology integration

in education.

At the same time, the broader digital transformation of education continues to expand opportunities for innovation. The increasing availability of online platforms, learning management systems, and digital resources has enhanced the accessibility and flexibility of education (Pardiñan & Loremia, 2019; Pardiñan et al., 2021; Raheem & Khan, 2020). These technologies support collaborative, self-directed, and experiential learning, particularly in primary education where engagement is critical for developing foundational skills.

From a longitudinal perspective, the discourse on digital technology in education has evolved from concerns about access to more nuanced analyses of usage patterns, competencies, and learning outcomes (Selwyn, 2016). This progression reflects the maturation of the field and underscores the importance of examining not only whether students have access to the internet but also how they use it and under what conditions it enhances or hinders learning.

Given the rapid expansion of digital technologies in education, the present study is both timely and significant, as it contributes to the growing body of literature examining the influence of internet use on the academic performance of primary learners within the context of ongoing digital transformation. It specifically addresses critical dimensions such as digital literacy, patterns of internet engagement, digital inequality, and the pedagogical conditions that shape learning outcomes. This study seeks to examine the complex relationship between learners' internet use and their academic performance by addressing several interrelated questions. Specifically, it aims to determine how learners' demographic characteristics influence both their access to digital resources and their academic outcomes. It further investigates the patterns of internet use among learners, including the type of connectivity, devices utilized, purposes and activities engaged in, and the amount of time allocated online. In addition, the study explores how these patterns of internet use relate to students' academic performance. More importantly, it examines whether factors such as digital competence, self-regulation, and access-related conditions mediate this relationship, thereby identifying the underlying mechanisms through which internet use impacts learning outcomes.

2. Literature Review

2.1. *Algorithm for Learning Delivery Modalities of the Philippines*

The rapid digitalization of education has significantly reshaped teaching and learning processes across the globe, particularly in the wake of disruptions that necessitated alter-native delivery modalities. As educational systems increasingly integrate technology-mediated instruction, the role of internet access and digital tools has become central to learners' academic experiences and outcomes. However, this transformation has also exposed persistent inequalities, commonly conceptualized as the digital divide, which encompasses disparities not only in access to devices and connectivity but also in the skills and competencies required to effectively utilize digital resources for learning (OECD, 2021). These inequalities are especially pronounced in developing contexts, where variations in socioeconomic status, parental educational background, and geographic location continue to shape students' opportunities to participate in digital learning environments.

Recent studies emphasize that access to technology alone does not automatically translate into improved academic performance. Instead, the quality of engagement with digital tools, the purpose of internet use, and the learner's ability to regulate their own learning play critical roles in determining educational outcomes (UNESCO, 2024). Digital competence – including information literacy, communication skills, and responsible technology use – has emerged as a key determinant of students' success in online and blended learning settings. Similarly, self-regulation, defined as the ability to plan, monitor, and evaluate one's learning processes, has been identified as a significant mediating factor that influences how effectively students can leverage internet resources for academic purposes. Without these competencies, increased screen time may lead to distraction, cognitive overload, or engagement in non-academic activities, thereby diminishing potential learning gains.

Furthermore, the diversification of learning delivery modalities – ranging from synchronous and asynchronous online instruction to modular and homeschooling approaches – reflects attempts by educational institutions to accommodate varying levels of access and readiness among learners. These modalities are often shaped by contextual constraints such as availability of gadgets, stability of internet connectivity, and the presence of a conducive home learning environment. Empirical evidence suggests that students from resource-constrained households are more likely to rely on offline or print-based materials,

which may limit opportunities for interactive and collaborative learning compared to their peers with stable internet access (Reimers et al., 2020). Consequently, understanding how these structural and individual factors intersect is essential for developing inclusive and equitable educational strategies.

Within this context, examining the relationship between internet use and academic performance requires a multidimensional perspective that accounts for demographic characteristics, patterns of digital engagement, and mediating variables such as digital competence and self-regulation. By situating learners within their broader socioeconomic and technological environments, researchers can better identify the mechanisms through which internet use influences educational outcomes. Such an approach not only contributes to the growing body of literature on technology-enhanced learning but also provides a foundation for designing interventions that promote equitable access, foster effective digital practices, and support learners in achieving improved academic performance in an increasingly digital world.

Education in the Philippines has experienced a significant shift toward technology adoption, with digital tools and online platforms becoming essential in modern learning. The Department of Education's (2020a) documents illustrate this transition by providing a structured framework that matches available resources, household contexts, and learner capacities with appropriate modalities. More than an administrative guide, it represents the broader evolution of education into a flexible, technology-enhanced system that values inclusivity and resource adaptability.

At the center of this evolution is the Internet, which has emerged as the backbone of online learning. The algorithm emphasizes the presence of laptops, smartphones, or tablets as the first gateway to online education, but it is the availability and stability of Internet connectivity that ultimately determines how learners engage with resources. With sufficient connectivity, students are guided into synchronous online learning, which replicates face-to-face classroom interactions through platforms such as Google Classroom, Zoom, and Microsoft Teams. These platforms not only facilitate lectures but also enable collaborative learning, online assessments, and instant feedback, enriching the learning experience through digital interaction. For households with inconsistent access, asynchronous online learning is suggested, where learners rely on pre-uploaded materials such as recorded lectures, e-books, and online modules. This flexibility reflects the Internet's role in diversifying access to resources, ensuring that learning continues even outside structured schedules (Department of Education, 2020a; 2020b). The use of the Internet as an educational resource also extends learning beyond teacher-delivered content. It provides access to a vast repository of knowledge – from open educational resources to research databases, interactive simulations, and global learning communities. Such resources enhance self-directed learning, allowing students to supplement their lessons with materials that fit their pace, interest, and level of understanding. Statista Research Department (2025) reports that internet penetration in the Philippines has steadily increased, signaling that greater numbers of learners can benefit from online resources. This integration of Internet-based materials has transformed the role of teachers into facilitators of knowledge, guiding students to critically navigate, evaluate, and apply the wealth of information available online.

However, the algorithm also exposes the persistent and troubling disparities in access to technology, which hinder the promise of equitable education. For households without reliable connectivity, the fallback to Offline Digital Modular Learning underscores how many learners remain excluded from the benefits of online education. In communities where digital tools are entirely absent, dependence on radio, television, and printed modules reflects not innovation but a regression to outdated methods that highlight the gap between technologically empowered learners and those left behind. This reliance on traditional media reveals that the rapid push for digital adoption risks deepening educational inequalities, privileging those with stable internet access while marginalizing those without. Reforms that prioritize digital innovation risk deepening existing inequities, as the digital divide marked by unequal access to and utilization of technology continues to marginalize vulnerable learners and trap them in cycles of limited educational opportunities (Afzal et al., 2023).

Importantly, the framework situates families and learners at the heart of online learning adoption. Parents and guardians play an active role in guiding learners' use of self-learning modules, while students themselves are increasingly expected to exercise autonomy and digital literacy. This reflects the broader shift in pedagogy, where education is no longer confined to the classroom but extends into homes, online platforms, and virtual communities. The Internet, as both a delivery mechanism and a resource repository, has thus redefined the

learning environment by blending formal and informal spaces for knowledge creation and acquisition.

The algorithm for learning delivery modalities underscores how education in the Philippines has evolved into a multi-modal system anchored in the integration of technology and the Internet (Department of Education, 2020). The adoption of online learning resources is not merely a stopgap solution but a transformative force that expands access, supports differentiated instruction, and promotes lifelong learning. By recognizing the Internet as both a tool and a space for learning, education has embraced a future where flexibility, connectivity, and inclusivity drive the pursuit of knowledge.

Figure 1 illustrates a decision-based framework adapted from the Department of Education's guidelines (Department of Education, 2020a; 2020b), showing how learners are systematically categorized into appropriate instructional modalities based on access to digital devices, internet connectivity, and home learning conditions. The algorithm begins by determining the availability of gadgets (e.g., laptops, smartphones, tablets), followed by the presence and stability of internet access, which directs learners toward synchronous or asynchronous online learning. In the absence of reliable connectivity, the framework transitions to offline digital modular learning; where both digital tools and internet access are unavailable, learners are assigned to print-based modular instruction, homeschooling, or alternative media-based delivery such as radio and television. The model underscores the influence of structural and contextual factors on educational access and highlights the role of resource availability in shaping participation in various learning modalities.

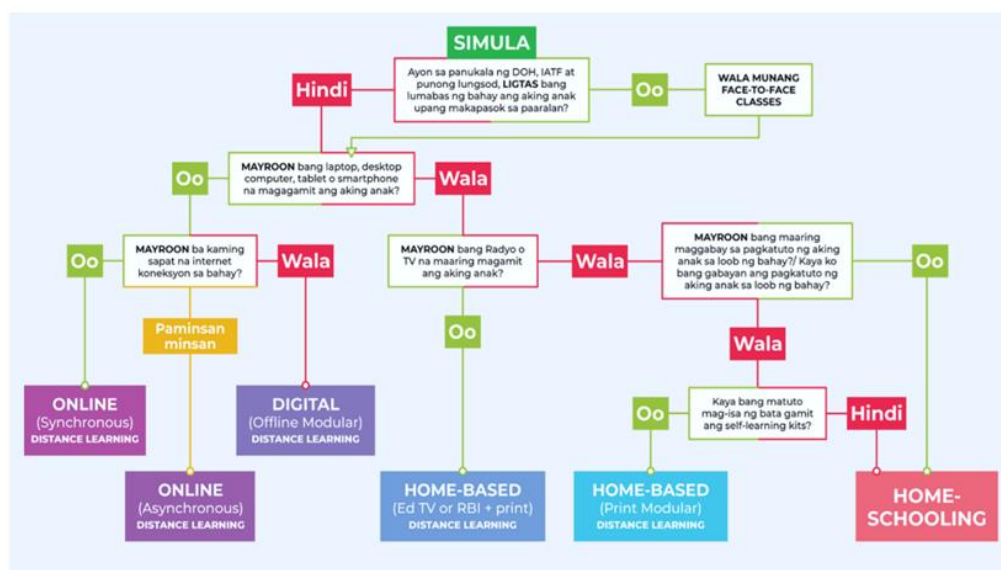


Figure 1. Algorithm for learning delivery modalities.

2.2. Conceptual Framework and Related Theories

Figure 2 presented the following learning theories formed as the basis for the study: pedagogy (Knowles et al., 2014), community of inquiry (Garrison et al., 2009), connectivism (Siemens, 2005), and online collaborative learning (Harasim, 2017). These theories all typically place emphasis on how students learn and employ the associated educational approach with some level of intention as a basis to build significant learning experiences in an online teaching-learning process.

It could be argued that Knowles et al. (2014) first distinguished the difference between andragogy, the art of teaching adults, and pedagogy, which pertains to children. Whether they seek professional enrichment or simply to know more about a topic that interests them, adults learn differently from children. Programs in adult education should be able to utilize the social settings and experiences of their students. Knowle's (2014) remarks are particularly salient for higher education, as competency-based learning, career/professional development, and both traditional and continuing education programs for adult students depend heavily on online technology.

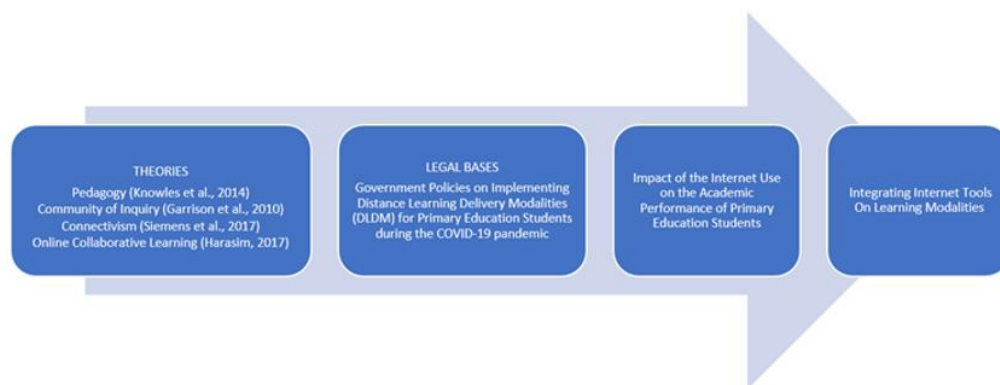


Figure 2. Conceptual framework of the study.

The community of inquiry model for online learning environments developed by Garrison et al. (2009), worked from the premise of three distinct "presences": cognitive, social, and teaching. They suggest further research on each element despite the fact that they recognize the overlap and interrelationship between the three elements. Their model promotes the development of online and blended learning communities in which instructors and students can share knowledge and views to develop active learning communities. The community of inquiry approach has become increasingly popular in the most participatory online and hybrid classes among students and teachers, with mechanisms such as discussion boards, blogs, wikis, and videoconferencing.

Connectivism is a learning paradigm that emphasizes significant shifts in how knowledge and information flow, develop, and morph due to the existence of vast data communications networks. It was developed by Siemens (2005); he is one of the early Massive Open Online Course (MOOC) pioneers. The Internet has transformed learning from isolated, individualistic activities into group, community, and crowd activities. Siemens (2005) went on to describe connectivism to the integration of theories of chaos, network, complexity, and self-organization, where learning is a process that takes place in fading environments and the central components shifts and not fully placed in an individual's complete hand. Learning, in its definition as "actionable knowledge," deals more with the connections being made between very specific information sets. It is more significant than our current state of knowledge because learning may occur outside of oneself, that is, within an organization or database. The author explained that it is information flow dynamics that drive connectivism as an idea. Where the purpose or objective of learning is in generating, producing knowledge and not in communicating, then connectivism efficiently proves effective in extremely high enrolment courses.

The facilities offered by the internet were exploited in online collaborative learning where learning environments that promote collaboration and creation of knowledge were established. Going beyond, it was the learning model highlighting on group projects, creation of knowledge, and the use of the Internet in the re-conceptualization of traditional, non-formal and informal ways of education in the knowledge age. Knowledge Age, because it encourages students to get themselves into discourse in solving problems and treats the teacher as facilitator as much as a part of the learning community, online collaborative learning also has its roots in the social constructivist. The constructivist theories highlight that the instructor is not at all times taken as off from students but one of the many people actively facilitating the construction of knowledge.

With the creation of the internet, distance education has evolved to what are referred to as e-learning, online learning, or any distance education that it is delivered through a web-based system. Here, is how the e-learning is support and guided using information and the relative communication technology. E-learning can bring a spectrum of activities from supported learning and the combination of traditional and e-learning practices called blended learning and lastly learning that is entirely online. Technology and existing instructional technologies can put a visual representation to higher order concepts. Technology also offers the facilities through which students with special needs can interconnect with various other online tools additionally to look further into topics in greater depth than those found in the mainstream curriculum. It personalized instruction to the student's specific learning requirements and where online sites are available – viewing technology as one of the most

powerful educational applications.

Consequently, the technology offers the capacity through that the best pedagogy for that course or topic is practiced by the online teacher (Picciano, 2017). It is the basic challenges of education posed during the pandemic that propel government agencies from the education sector to utilize technologies in responding to this mandate of providing quality education. People who have been raised in a world full of the Internet and other information technologies have their own social relations that lie beyond the borders of their countries, cultures, and languages. Access to technological tools has changed the character of learning (Margaliot & Gorev, 2020). In this context, the ubiquity of digital technologies not only expands learners' access to information and global networks but also necessitates the development of critical digital competencies and self-regulatory skills to navigate increasingly complex learning environments. Consequently, education systems must move beyond mere technological integration and prioritize equitable access, meaningful engagement, and the cultivation of adaptive learning strategies to ensure that the transformative potential of the Internet translates into improved and inclusive academic outcomes.

3. Materials and Methods

This study employed a descriptive-correlational research design to examine the relationship between selected predictors – namely students' internet use patterns and perceptions – and their academic performance in primary education. The descriptive component enabled the systematic characterization of respondents' demographic profiles, access to internet resources, and attitudes toward online learning, while the correlational component determined the strength and direction of relationships among these variables. This design is widely utilized in educational research where variables are observed in their natural setting without manipulation, allowing for the identification of meaningful associations that may inform instructional improvements (Schober et al., 2018). In this study, the approach addressed essential research questions concerning who, what, where, when, and how internet-related factors interact with academic performance, thereby providing a basis for enhancing students' learning outcomes in an online environment.

The study was anchored on a systems framework utilizing the input-process-output model, which provided a structured lens for organizing the research variables and procedures. The input phase included respondents' profile characteristics (age, gender, parents' educational attainment, occupation, family income, and number of siblings), their internet usage patterns (type of connectivity, frequency, purpose, and devices used), and their perceptions regarding the use of the internet in learning. These inputs were selected based on prior studies indicating that socioeconomic status, access to technology, and learner attitudes significantly influence educational outcomes in digital environments (Youssef et al., 2022; Barrot et al., 2021). The process phase involved the development and validation of the research instrument, securing approval from school authorities, obtaining informed consent from parents, administering the questionnaire, retrieving completed instruments, and organizing the data for analysis. Data processing included coding, tabulation, and statistical analysis using appropriate software tools. The output of the study focused on generating enhanced learning activities and pedagogical recommendations aimed at improving the effectiveness of online teaching-learning processes.

The participants of the study consisted of fifty primary learners selected through purposive sampling, a non-probability sampling technique appropriate for studies requiring respondents who meet specific inclusion criteria (Creswell, 2009). The inclusion criteria required that respondents are learners engaged in Internet-assisted learning and possess at least minimal access to Internet. This sampling approach ensured the relevance of the data collected while capturing variability in socioeconomic and educational backgrounds, which are known to influence students' engagement in online learning (Rebeiro et al., 2021).

For data collection, the researcher utilized a structured, self-developed questionnaire consisting primarily of closed-ended items to ensure uniformity and ease of analysis. The instrument was divided into three major sections: (1) demographic profile, (2) internet usage patterns, and (3) perceptions toward internet use in learning. A four-point Likert scale was employed to measure respondents' perceptions, with response options ranging from "Agree" to "Strongly Agree." The Likert scale is widely recognized as an effective tool for measuring attitudes, perceptions, and opinions, as it allows respondents to express varying degrees of agreement while enabling quantitative analysis (Likert, 1932; Boone & Boone, 2012). The instrument captured key constructs such as perceived usefulness, ease of use, engagement,

and academic support derived from internet use. Prior to administration, ethical considerations were observed, including securing informed consent, ensuring confidentiality, and clarifying the voluntary nature of participation.

In terms of data analysis, both descriptive and inferential statistical techniques were employed to align with the study's objectives and the nature of the data. Frequency counts and percentage distributions were used to summarize respondents' demographic characteristics and internet usage patterns, providing a clear overview of trends and distributions. The weighted mean was utilized to determine the level of students' perceptions regarding internet use, with higher mean values indicating stronger agreement and more positive attitudes. This method is appropriate for Likert-scale data as it reflects the central tendency of ordinal responses (Boone & Boone, 2012).

To determine the relationship between categorical variables related to internet use (e.g., type of connectivity, device used, frequency of use) and academic performance, the Chi-square test of independence was applied at a 0.05 level of significance. This non-parametric test is suitable for examining associations between categorical variables and identifying whether observed relationships are statistically significant (McHugh, 2013). Furthermore, the Pearson product-moment correlation coefficient (Pearson r) was employed to assess the strength and direction of the relationship between students' perceptions of internet use and their academic performance. Pearson r is widely used in educational research to quantify linear relationships between continuous variables, with values closer to ± 1 indicating stronger correlations (Schober et al., 2018).

The combined use of these statistical tools enabled a comprehensive analysis of both patterns and relationships within the data. Descriptive statistics provided foundational insights into respondents' characteristics and behaviors, while inferential statistics established significant associations and predictive relationships. This methodological approach ensured that the findings were empirically grounded and aligned with the results presented, particularly the significant relationships identified through Chi-square analysis and the strong positive correlations observed using Pearson r . Ultimately, the methodology supports a robust interpretation of how internet use and learner perceptions function as critical determinants of academic performance in primary education.

3.1. Respondents Personal Profile

This subsection presents the demographic and background characteristics of the respondents, such as gender, age, parents' highest educational attainment, parents' occupation, number of siblings and their combined monthly family income. Examining these factors is important because they often serve as the foundation for understanding students' learning contexts and behaviors. By looking at who the respondents are, the study establishes a clearer baseline for interpreting how internet use interacts with different personal and academic circumstances.

Table 1 indicates the importance of the impact of age and gender on the respondents' academic performance when using the internet. Gender is among the individual factors linked to the differences in the motivational functioning and academic achievement (Meenu, 2016). Nevertheless, other people continued to stress that the majority of the interventions in educational technologies for children of a young age are really effective (Hurwitz & Schmitt, 2020). Besides, early childhood represents a sensitive period for development in which early experiences "shape children's later growth and development in a number of domains".

Table 1. Respondents' personal profiles.

Characteristics	f	%
Gender		
Boys	27	54.0
Girls	23	46.0
Total	50	100.0
Age		
8 years old	33	66.0
9 years old	14	28.0
10 years old	3	6.0
Total	50	100.0
Parent's highest educational attainment		
College graduate	1	2.0

College level	2	4.0
Elementary graduate	6	12.0
Elementary level	20	40.0
High school graduate	16	32.0
High school level	5	10.0
Total	50	100.0
Parent's occupation		
Administrative staff	1	2.0
Baker	1	2.0
Carpenter	2	4.0
Farmer	5	10.0
Laborer	11	22.0
Laborer CEMEX	22	44.0
Marketing staff	6	12.0
Office clerk	1	2.0
Technical staff	1	2.0
Total	50	100.0
Number of siblings		
0	2	4.0
1	2	4.0
2	16	32.0
3	19	38.0
4	9	18.0
5	2	4.0
Total	50	100.0
Combined monthly family income		
₱5000.00	26	52.0
₱10000.00	20	40.0
₱20000.00	1	2.0
₱25000.00	3	6.0
Total	50	100.0

The study indicated that, while around half of the participants had parents with education completion at most elementary school, the presence of the parents is vital for the students to succeed in their learning online. Parent involvement at home proved important and its impact on learning as the students learned. It also exposed that sustained school support for internet access and devices to use in instruction and teacher feedback would be central to strengthening remote learning.

The socioeconomic status of the participants was a big factor to consider because an online course would need a dependable internet and high technological gadgets. One study reported that the low-income student families got disengaged in an education set up where home technology is either missing or undependable while being considered in an online teaching and learning system (Rebeiro et al., 2021). To add, the financial difficulty that the students belonged, either low or middle-income group, is also the same reason that most of the time financial problems dawned from their behavior towards embracing the new modality of teaching-learning or online learning. These students often require more financial resources to access the internet, educational materials, and equipment necessary for online learning. It was also mentioned in the research that sibling size negatively affects educational attainment (Barrot et al., 2021). The outcome could be connected to the socioeconomic aspect of it, if the parents' choices to go to school and achieve financial constraints.

4. Results

In this section, the findings of the study are systematically presented and interpreted to provide a clearer understanding of the role of internet use in students' academic performance. The discussion begins with the personal profiles of the respondents, offering insights into their background characteristics. It then moves to participants' information related to internet use, followed by an exploration of their perceptions regarding the integration of the internet in learning. The respondents' academic performance in relation to their internet use is likewise

examined. Finally, correlation analyses are presented to determine the relationship between internet-related practices and academic outcomes, as well as between students' perceptions of internet use and their performance. Collectively, these discussions aim to provide a holistic view of how internet use influences the academic lives of the students. The succeeding subsections elaborate on each of these areas in detail.

4.1. Participants' Information Related to its Internet Use

This subsection focuses shifts to the respondents' patterns of internet use, including the frequency, duration, accessibility, and purposes for which the internet is utilized. Such information is vital in capturing how embedded the internet has become in their daily routines, particularly for academic tasks. Identifying these patterns also helps reveal whether students primarily rely on the internet for educational purposes or for other forms of engagement, thus setting the stage for evaluating its impact on their academic performance. Internet accessibility is one of the crucial components for a student to participate in online learning (Feng, 2020). A continuous internet connection is necessary for students to engage in online education fully.

Table 2 shows the participants' information related to internet use. It revealed that most participants have only accessed the internet thru a Pesonet Wi-Fi connection (public Wi-Fi internet connection). Due to the student's socioeconomic background, their behavior in embracing the new teaching-learning or online learning paradigm usually resulted in financial difficulties. The types of devices used to access the internet are vital; the reliability of a stable internet connection is somehow affected by the kind of devices used during an online class (Fabito et al., 2021). However, students often access the internet to access worthwhile video streams and tutorials online to facilitate learning and finishing their school-related activities. The participants also revealed that, during weekends, the respondents might use the internet for entertainment or games. The paradigm shift toward internet-based learning could change students' perceptions of this way of teaching and learning (Coman et al., 2020). Additionally, because this style of learning is student-centered and more flexible, the internet in education benefits students greatly. Offering synchronous and asynchronous technologies like email, forums, chats, and video conferencing may help enhance connection with students.

Table 2. Respondents' information related to its Internet use.

Information statement	f	%
Types of Internet connectivity		
Home Wi-Fi	10	20.0
Mobile data	11	22.0
Pesonet	29	58.0
Total	50	100.0
Kinds of devices used		
Personal/Desktop com	18	36.0
Smartphone	17	34.0
Laptop	15	30.0
Total	50	100.0
Purpose of using the Internet		
Entertainment	15	30.0
School work	21	42.0
Communication	14	28.0
Total	50	100.0
Internet activities		
Video streaming	18	36.0
Social networking	14	28.0
School activities	18	36.0
Total	50	100.0
Number of times of using the Internet		
About once a day	20	40.0
Several times a day	15	30.0
Almost constantly	15	30.0
Total	50	100.0

4.2. Level of Participants' Perception about the Use of Internet

This subsection examines the students' perceptions regarding the use of the internet as a tool for learning. It considers how students view the benefits, limitations, and overall effectiveness of integrating internet resources into their academic activities. By understanding these perceptions, the study gains insight into the students' openness, confidence, and potential hesitations toward digital learning. These perspectives are crucial in determining how attitudes toward the internet influence both their learning strategies and academic outcomes

Table 3. Level of participants' perception about the use of Internet.

Statement	f	%	Mean
Internet makes school work easier to complete			
Agree (3)	19	38.0	3.62
Strongly Agree (4)	31	62.0	
Total	50	100.0	
Prefer the use of Internet instead of a textbook to complete school work			
Agree (3)	18	36.0	3.64
Strongly Agree (4)	32	64.0	
Total	50	100.0	
Using the Internet for schoolwork makes school more interesting and fun			
Agree (3)	21	42.0	3.58
Strongly Agree (4)	29	58.0	
Total	50	100.0	
Using the Internet helps the students understand class better			
Agree (3)	22	44.0	3.56
Strongly Agree (4)	28	56.0	
Total	50	100.0	
Having access to the Internet is helpful in regards to schoolwork			
Agree (3)	16	32.0	3.68
Strongly Agree (4)	34	68.0	
Total	50	100.0	

Table 3 emphasized that the level of participants' perception of the internet showed significant results. The participants reiterated that the extensive collection of e-books online, the interactive education videos and apps, and video tutorials help them become better and understand the lesson more manageable for each class. Virtual worlds make online coursework more engaging and personable for students (Pardiñan & Loremia, 2019). The respondents added that interactive videos, online materials, and game-like educational apps help them understand their lessons. Thus, these materials keep them engaged. The online videos help them explore the different lessons assigned to them. The Internet permits students to access various instructional materials that guide them on how to solve different academically related problems and learn to be more interactive and fun (Reimers et al., 2020). As per the findings from the research, the internet was found to influence the level of academic achievements; it helped the students effectively complete their school work.

4.3 Academic Performance of the Respondents when Using the Internet

This part highlights whether and how internet access contributes to their success in coursework, assignments, and overall academic standing. Exploring this dimension provides a clearer understanding of the tangible effects of internet use beyond perception, offering evidence of whether the internet serves as an enabler of achievement or presents challenges that hinder academic progress.

Table 4. Academic performance of the respondents when using the Internet.

Grade of the students	f	%	Mean
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Very Satisfactory (4)	19	38.0	4.62
Outstanding (5)	31	62.0	
Total	50	100.0	

Table 4 revealed that a mean of 4.62 implied that most students could attain an outstanding mark in their academic subjects while using the internet. Technology-based teaching and learning are more effective than traditional classrooms (Ghavifekr & Wan Rosdy, 2015). Furthermore, it was emphasized that using ICT tools and equipment will prepare an active learning environment that is more interesting and effective for teachers and students. They further proved that students learn more effectively using ICT as lessons designed are more engaging and exciting.

4.4 Correlation Analysis on the Related Information about the Use of Internet of the Students and their Academic Performance

This subsection presents a statistical examination of the relationship between students' internet-related practices and their academic performance. By analyzing variables such as frequency and type of use in relation to performance outcomes, the study seeks to determine whether measurable patterns emerge. This analysis contributes to evidence-based insights into the extent to which the internet can be considered a significant factor in academic success.

Table 5. The relationship between the related information about the use of Internet of the students and their academic performance using Chi-square test of independence.

Information about the use of Internet	Chi-square χ^2	df	p value (.05 level of significance)
Type of Internet connectivity	15.300	2	.000
Kinds of devices used	7.208	2	.027
Purpose of using the Internet	11.678	2	.003
Internet activities	7.589	2	.022
Number of times of using the Internet	8.121	2	.017

In the broadest sense, correlation is a measure of an association between variables (Schober et al., 2018). Table 5 shows significant results at a 5% significance level since the p-values are less than .05. The result further suggests rejecting the null hypothesis and concludes a significant relationship between internet use and academic performance. The internet makes it easier for students to obtain the desired information easily and quickly (Shahibi & Aziz, 2017). They further elaborate that the internet motivates students to search for information more often. Thus, the use of the internet will be a factor that will affect students' academic performance.

4.5 Correlation Analysis Between the Level of Students' Perception about the use of Internet and their Academic Performance

This subsection explores the correlation between students' perceptions of the internet and their actual academic performance. It assesses whether positive or negative attitudes toward internet use align with improved or diminished academic outcomes. Understanding this relationship is important in bridging the gap between what students believe about digital learning and how these beliefs translate into real educational results.

The importance of this analysis lies in its ability to uncover whether attitudes toward digital learning resources translate into academic advantage. If a strong positive correlation is found, it suggests that fostering more favorable perceptions of the internet – through awareness, digital literacy, and guided use – may directly contribute to improved learning outcomes.

Table 6. The relationship between the level of students' perception about the use of Internet and their academic performance using person r correlation analysis.

Level of Students' Perception about the use of Internet	Pearson r correlation	p value (.05 level of significance)
Internet makes school work easier to complete	1.000	.000
Prefer the use of Internet instead of a textbook to complete school work	.958	.000
Using the Internet for schoolwork makes school more interesting and fun.	.920	.000
Using the Internet helps the students understand class better.	.883	.000

Having access to the Internet is helpful in regards to schoolwork.	.876	.000
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Correlation is a relationship between variables that tend to change together, showing an association that is unlikely to be due to chance (Akoglu, 2018). Understanding the impact of technology on education requires analyzing how different factors are related.

Table 6 showed some bright prospects concerning the relationship that existed between the level of participants' perception about the internet and its impact on their academic performance. Akoglu (2018) emphasized that a correlation value of 1, .958, .920, .883, and .876 indicated a very strong relationship between the variables. The result further suggests the rejection of the null hypothesis. It concludes that there exists a high relationship between the level of students' perception of internet use and their academic performance. The mixture of technology with education leads to faster and simpler learning, raising the level of knowledge and, implicitly, that of students at a higher quality (Banica et al., 2017). The study affirmed that the internet does help students complete and make schoolwork easier while using the vast information, tutorials, and online materials afforded by the internet. Abundance in e-books, interactive videos, and educational applications resembling games help students understand their courses and keep them interested to do their schoolwork with much less effort. That is, technology-based T&L turns out to be more effective than traditional classrooms.

Further, the use of ICT tools and equipment will provide an active learning environment more interesting and effective for both teachers and students (Pardiñan & Loremia, 2019). These tools, through their potential to hold students' interest, would have resulted in a higher mark, as found in this study. Digital devices are capable of providing students with the basic tool kit that enables them to manage every part of daily life autonomously and competently while using ICT (Navarro-Martinez & Peña-Acuña, 2022).

The Internet is therefore a great tool for students to broaden their educational domain and stay competitive in the fast-evolving world of education. Online educational applications will continue to grow as an interdisciplinary pragmatist field and continue to enrich learning content and process with the infusion of new technologies into online education (Ulum, 2022). The Internet for education thus becomes a very precious mechanism with its resources of e-books, video streaming tutorials, and interactive websites, which keep the student engaged in academic tasks and schoolwork. More important, the advanced digital skills positively influence student performance, which increases the chance of better grading.

5. Discussion

The study substantiates the significant relationship between Internet utilization and the academic performance of primary learners, reinforcing a growing body of contemporary literature that positions digital engagement as a critical determinant of educational outcomes. The findings align with recent meta-analytical and systematic review studies indicating that structured and purposeful use of digital technologies contributes positively to student achievement (Liu et al., 2017; Klimova & Pikhart, 2025). In particular, the strong association observed between frequency, purpose, and type of internet use and academic performance supports the argument that not all forms of digital engagement yield equal benefits; rather, academically oriented and task-driven usage enhances learning outcomes more effectively (Ladrón de Guevara Rodríguez et al., 2022).

Consistent with Youssef et al. (2022), the results demonstrate that access to ICT resources alone is insufficient to guarantee improved academic performance. Instead, the quality of engagement – manifested through meaningful interaction with educational content, video tutorials, and digital learning platforms – plays a pivotal role. The present findings corroborate García-Machado et al. (2024), who emphasized that self-regulation and digital competence significantly mediate the relationship between internet use and academic success. Learners in this study exhibited high levels of perceived usefulness and ease of use, which may explain the strong positive correlations between perception variables and academic outcomes. This supports the technology acceptance model, where perceived usefulness and ease of use are predictive of technology adoption and performance gains (Scherer et al., 2018).

Moreover, the results are congruent with earlier findings by Ghavifekr and Rosdy (2015), who reported that ICT integration fosters more engaging and effective learning environments compared to traditional approaches. The observed high academic performance among respondents suggests that internet-based learning environments can function as pedagogical enhancers, promoting active learning and improving comprehension. This is further

supported by Reimers et al. (2020), who noted that access to diverse online educational resources facilitates deeper understanding and sustained engagement among learners.

However, the study also highlights the persistent issue of digital inequality, particularly in relation to socioeconomic status. The reliance on public internet access (e.g., Pesonet) and shared devices reflects structural limitations that may constrain consistent and equitable participation in online learning. These findings are consistent with Barrot et al. (2021), Rotas and Cahapay (2020), who identified access disparities and technological limitations as major barriers in the Philippine educational context. Similarly, OECD (2021) and UNESCO (2024) emphasize that digital divides extend beyond access to include disparities in digital skills and learning environments, which can significantly influence academic outcomes.

Interestingly, despite these constraints, students in the study still achieved high academic performance, suggesting that internet access may serve as a compensatory mechanism for disadvantaged learners. This supports the argument of Hurwitz and Schmitt (2020), who found that early and guided exposure to digital technologies can positively influence academic development, even among students from less advantaged backgrounds. Nevertheless, this compensatory effect is likely contingent upon external support systems, particularly parental involvement and institutional guidance. Rebeiro et al. (2021) highlighted the critical role of parental engagement in facilitating effective online learning, especially in home-based educational settings.

The study also aligns with recent concerns regarding the dual nature of internet use. While academic-oriented engagement enhances performance, excessive or non-academic use may produce adverse effects. Kates et al. (2018) and Liang et al. (2021) both emphasized that unregulated internet use and digital addiction can negatively impact academic outcomes through reduced focus and self-regulation. Although this study primarily reports positive outcomes, the presence of entertainment-related usage among respondents suggests a potential risk that warrants further monitoring and intervention.

Furthermore, the strong correlation between students' perceptions and their academic performance underscores the importance of attitudinal and motivational factors in digital learning environments. This finding is supported by Ulum (2022), who concluded that positive learner attitudes toward online education significantly enhances academic success. Similarly, Navarro-Martinez and Peña-Acuña (2022) demonstrated that students with higher levels of digital engagement and confidence tend to achieve better academic results. These findings reinforce the need for pedagogical strategies that not only provide access to technology but also cultivate positive learner dispositions and digital competencies.

In summary, the results of this study are consistent with contemporary academic discourse, which views Internet integration as both an opportunity and a challenge in education. While the findings affirm the potential of internet use to enhance academic performance through increased engagement, accessibility, and interactivity, they also highlight the necessity of addressing digital inequalities and promoting responsible usage. The interplay between access, competence, perception, and regulation emerges as a critical framework for understanding how internet use influences learning outcomes. Therefore, maximizing the educational benefits of digital technologies requires a holistic approach that integrates infrastructure development, capacity building, and learner-centered pedagogical design.

6. Conclusions

This study examined the impact of Internet use on primary education students, particularly as a response to the significant challenges encountered in the evolving landscape of education. This paper has its base in examining how internet usage affects the students at elementary education in regard to academic performance.

The findings revealed that e-learning platforms play a vital role in supporting and enriching students' learning experiences by providing access to the vast educational resources available online. The integration of technology into education not only accelerates the learning process but also enhances accessibility, thereby broadening students' knowledge and, ultimately, contributing to their overall development.

At the same time, students engaged in online learning environments are challenged to cultivate important personal traits such as self-discipline and responsibility. With reduced direct supervision from parents and teachers, internet access also opens opportunities for children to engage in other activities beyond their coursework. The study further cautioned that without proper guidance, excessive or unregulated use of the internet may lead to diminished control over its influence. Thus, parental involvement remains crucial in helping

students identify appropriate resources and make meaningful use of the knowledge they encounter online.

Future research may extend this work by involving a larger pool of specialists in online teaching and learning to evaluate the most effective internet-based technologies for education. Moreover, capacity-building programs for instructors should also be considered, aiming to strengthen their competence in implementing technology-enhanced teaching strategies.

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