

Digital Divide and Learners' Academic Productivity

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Abstract. This study, titled “Digital Divide and Learners’ Academic Productivity,” examined the relationship between students’ access to digital resources and their academic productivity at Catalunan Pequeño National High School. Guided by van Dijk’s (2005) Digital Divide Theory, the research explored how differences in digital access, skills, and usage affect learners’ ability to meet academic demands in a technology-driven educational environment. Using a correlational research design, the study involved 244 Senior High School students selected through simple random sampling. A researcher-made questionnaire, validated by experts, served as the primary data-gathering instrument. The Statistical Package for the Social Sciences (SPSS) was utilized to compute the mean, standard deviation, and Pearson’s r correlation. Findings revealed that the overall mean for the digital divide was 3.67, described as High, indicating that most students have adequate access to devices, stable internet connections, and sufficient digital competencies. Similarly, learners’ academic productivity yielded an overall mean of 3.66, also High, suggesting that students are capable of accomplishing academic tasks and effectively utilizing technology for learning. The correlation analysis showed a significant high positive relationship ($r = 0.640$, $p < 0.05$) between the digital divide and academic productivity, indicating that students with better digital access and skills tend to exhibit higher productivity levels. The study concludes that bridging the digital divide is essential for improving learners’ academic outcomes. It recommends enhancing digital infrastructure, strengthening support systems, and promoting inclusive digital literacy programs to ensure equitable learning opportunities for all students.

KEY WORDS

1. Digital divide
2. academic productivity
3. digital competencies
4. academic outcomes

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1. Introduction

Learners’ academic productivity continues to be a serious concern in education, as many students are unable to meet the expected level of learning outcomes, which shows the gap between the goals of the curriculum and the actual results that students are able to demonstrate in school. The decline in academic productivity may not be always observed in their grades but it is seen in their inability to perform tasks on time, stay engaged in lessons, and use their full potential to complete the requirements of each subject. This means that many learners are struggling to keep up with their studies, which results in incomplete outputs and limited progress in their learning. If this problem is not given proper attention, it may affect students’ chances of pursuing higher education and limit their future opportunities for work and career development.

Therefore, there is an urgent need to understand this issue more clearly and to identify the possible reasons that continue to make students less productive in their academic life.

Globally, the issue of academic productivity has been strongly connected to the digital divide, which remains a major problem in education systems across different countries. Unequal access to technology, digital resources, and stable internet connections prevents millions of students from fully taking part in online and blended learning, which are now widely used in schools and universities. For example, Miras, Ruiz Bañuls, Gómez Trigueros, and Mateo Guillen (2023) explained that during the COVID-19 pandemic, learners without reliable internet or access to digital tools participated less in school activities and produced weaker outputs compared to their classmates with complete access to technology. In Jordan, Al Kaabi and Qawasmeh (2020) found that students who lacked proper devices and strong internet access often struggled with their studies, leading to poor academic outcomes and limited readiness for employment in the future. Similarly, Gulzar, Mehmood, and Ahmad (2024) showed in Pakistan that unequal access to technology reduced students' learning participation and overall achievement, proving that digital inequality has a direct and negative effect on academic productivity. These studies prove that the problem is not only limited to one country but is a global issue that affects students' ability to meet the academic standards set for them.

In the Philippines, the problem of academic productivity is also highly visible, especially because the digital divide continues to affect the ability of many students to perform well in school. Access to internet and devices remains unequal, with students from rural and low-income communities being the most disadvantaged. Esteban Jr. and Cruz (2021) reported that teacher education students in Nueva Ecija struggled to sustain their online learning be-

cause of high internet costs and unstable connections, which often forced them to miss classes and fail to submit tasks on time. In addition, the Philippine Institute for Development Studies (2024) noted that only 25% of households in the country own a computer, and internet access is heavily concentrated in urban centers such as Metro Manila, where 33% of households are connected, compared to only 4% in Muslim Mindanao. This unequal distribution of digital resources means that many students in rural provinces cannot meet the same level of productivity as their urban counterparts, creating further gaps in educational opportunities. These challenges highlight the urgent need for policies and interventions that will ensure equal access to digital tools so that learners in the country can improve their productivity and keep up with the fast-changing demands of education.

In Region XI, Acheron (2025) states that the problem of low academic productivity linked to the digital divide is also clearly evident. Many schools in this region continue to experience unstable internet connection, limited availability of digital devices, and low digital literacy among students. Florida (2024) reported in a study conducted at Talisay National High School located at Davao Oriental that students who did not have personal devices were unable to complete school tasks on time and often missed important activities, which directly led to lower academic outcomes compared to classmates with access to proper technology. Meanwhile, the Commission on Higher Education Regional Office XI (2023) noted that although efforts have been made to improve digital readiness in Mindanao, many higher education institutions still face serious challenges in providing students with strong internet connectivity and adequate technological support. These conditions make it difficult for learners to sustain their productivity, as they are forced to work with fewer resources while meeting the same academic requirements as other students across

the country. This situation reveals that despite ongoing efforts, students in Region XI continue to face barriers that limit their academic productivity and overall learning progress.

At Catalunan Pequeño National High School, the problem of learners' academic productivity is also present. Many students cannot complete the required tasks and outputs in their subjects. Meeting academic standards is also a challenge for many students. This shows that

there are still challenges in how students perform in school. One possible cause of this issue is the digital divide, which limits their access to gadgets, internet, and other learning tools. Because of this, some students cannot keep up with the lessons and requirements. With this, there is a need to study the problem closely and find out if the digital divide is one of the main reasons behind low academic productivity in the school.

1.1. Theoretical and Conceptual Framework—This study is guided by the Digital Divide Theory of van Dijk (2005), which explains the gap between people who have access to digital technology and those who do not. Van Dijk describes the digital divide in four stages: access to devices and internet connection, development of digital skills, actual use of digital tools, and the outcomes that result from using technology. These stages show that the digital divide is not only about whether someone owns a device but also about how they learn to use it, how often they use it, and what benefits they gain from it. For example, students who lack devices or a stable internet connection are at the first level of the divide, while those who cannot use digital tools effectively fall into the second stage. Even students with access and skills may

differ in how they use technology, and these differences influence the outcomes they experience in school.

For this study, the Digital Divide Theory is important because it shows how access to devices, digital tools, and online content directly affects the ability of students to do school tasks. Learners who have limited access are more likely to face difficulties in completing assignments, participating in lessons, and keeping up with academic requirements. These challenges can lead to lower levels of academic productivity compared to students who enjoy better access and stronger digital skills. By using this theory, the study highlights that academic performance today is closely connected to the opportunities and challenges created by digital access.

2. Methodology

This study employed a correlational research design. Correlational research design is a type of non-experimental research in which the researcher measures two variables and assesses the statistical relationship between them. This design was considered appropriate because the purpose of the study was to examine the relationship between the digital divide, treated as the independent variable, and learners' academic productivity, treated as the dependent variable, without exerting any form of control or manipu-

lation over the variables.

Research was conducted at Catalunan Pequeño National High School. The respondents of the study were two hundred forty-four (244) Senior High School students of Catalunan Pequeño National High School. The study utilized simple random sampling wherein all Senior High School students had an equal chance to be chosen as research respondents.

The main data-gathering instrument was a researcher-made survey questionnaire. It was

composed of two sections: the first section focused mainly on the items of digital divide, while the second section focused on learners' academic productivity. To establish the validity of the instrument, the questionnaire was subjected to expert evaluation by professionals in the fields of education and research.

Prior to data collection, permission to conduct the study was formally sought from the school head of Catalunan Pequeño National High School. Once approval was secured, the questionnaires were distributed to the identified

respondents. Adequate time was allotted for the completion of the survey, after which the accomplished questionnaires were retrieved, organized, and prepared for analysis.

For the analysis of data, the Statistical Package for the Social Sciences (SPSS) was utilized. The mean was used to determine the levels of the digital divide and academic productivity. Finally, Pearson's r correlation was applied to test whether a significant relationship existed between the digital divide and students' academic productivity.

3. Results and Discussion

Table 1

Table 1. Level of Digital Divide

Statement	Mean	Description
1. I have reliable access to a personal device (e.g., smartphone, laptop, or tablet) for learning purposes.	3.52	High
2. I have a stable internet connection that allows me to complete online learning tasks effectively.	3.65	High
3. I can afford the data load or internet subscription needed for my academic requirements.	3.71	High
4. I am confident in using digital platforms (e.g., Google Classroom, LMS, online libraries) for learning.	3.63	High
5. I find it easy to troubleshoot basic technical problems when using digital tools for schoolwork.	4.04	High
6. I receive adequate support (from teachers, peers, or family) when I encounter difficulties with digital learning tools.	3.47	High
7. The lack of access to digital resources sometimes hinders my ability to perform academically.	3.57	High
8. I believe my access to digital technologies is equal to that of my classmates.	3.73	High
Overall Mean	3.67	High

Looking closely at the results, the statement "I find it easy to troubleshoot basic technical problems when using digital tools for schoolwork" obtained the highest mean (4.04, High). This suggests that students demonstrate a commendable level of digital literacy and problem-solving skills in managing minor technical issues related to digital learning. Similarly, having reliable access to personal devices (3.52, High), stable internet connectivity (3.65, High), and the ability to afford data or internet sub-

scriptions (3.71, High) reflect that many students have the essential tools needed for online academic participation.

On the other hand, the lowest mean was recorded for "I receive adequate support (from teachers, peers, or family) when I encounter difficulties with digital learning tools" with a mean of 3.47 (High). This indicates that while support systems exist, they may not be consistently accessible to all learners. Meanwhile, the statement "I believe my access to digital

technologies is equal to that of my classmates” with a mean of 3.73 (High) shows that although students generally perceive equality in digital access, slight disparities may still persist among peers due to varying financial capacities or household resources.

In general, the findings suggest that while the digital divide among students is minimal,

it still requires attention. Students show high readiness and access to digital tools, yet there remains a need to strengthen support mechanisms and promote equal access to technology for all learners. Ensuring that every student receives adequate technical and emotional support will foster a more inclusive, equitable, and effective digital learning environment.

Table 2

Table 2. Level of Learners’ Academic Productivity

Statement	Mean	Description
1. I am able to complete my academic tasks and assignments on time.	3.53	High
2. I actively participate in online or technology-based class activities.	3.60	High
3. I am able to meet the academic requirements and standards set by my teachers.	3.55	High
4. I can focus on my academic tasks even when using digital platforms at home.	3.75	High
5. I believe technology helps me perform better in my studies.	3.68	High
6. I am able to balance my schoolwork with other responsibilities because of access to digital resources.	4.06	High
7. I achieve good academic performance (e.g., high grades, positive feedback) when I use digital tools effectively.	3.58	High
8. I feel productive and motivated in my studies when I have access to the necessary digital resources.	3.49	High
Overall Mean	3.66	High

Looking closely at the results, the statement “I am able to balance my schoolwork with other responsibilities because of access to digital resources” obtained the highest mean (4.06, High). This suggests that students view technology as a helpful tool in managing their time and responsibilities efficiently. Likewise, the high means in statements such as “I can focus on my academic tasks even when using digital platforms at home” (3.75) and “I believe technology helps me perform better in my studies” (3.68) show that learners recognize the positive impact of technology in enhancing their focus and academic performance.

On the other hand, the lowest mean was noted in the statement “I feel productive and motivated in my studies when I have access to the necessary digital resources” with a mean of

3.49 (High). Although still described as high, this finding suggests that some students may experience fluctuations in motivation or productivity despite having access to digital tools. This could be influenced by factors such as learning environment, workload, or personal study habits.

In general, the findings indicate that learners are academically productive and digitally adaptive, demonstrating the ability to complete tasks, meet standards, and engage in online learning effectively. However, maintaining motivation and consistent productivity levels remains an important aspect to consider. Schools and educators may further support students by enhancing digital learning strategies and promoting balanced workloads and motivational support systems to sustain high levels of academic productivity.

Table 3

Table 3. Significance of Relationship Between Digital Divide and Academic Productivity

Variables	p-value	Pearson's r value	Decision	Interpretation
Digital Divide Learners' Academic Productivity	0.000	0.640	Reject Ho	Significant

The computed Pearson's r value of 0.640 signifies a high positive correlation between the digital divide and academic productivity. This means that as students' access to digital resources and technological competencies improve, their academic productivity also tends to increase. Conversely, students who experience higher levels of digital divide, such as limited access to devices, poor internet connectivity, or lack of digital skills, are more likely to encounter difficulties in meeting academic requirements and maintaining high levels of productivity.

In essence, the results suggest that digital accessibility and competency play a crucial role in enhancing students' academic outcomes. Bridging the digital divide can therefore lead to improved engagement, better performance, and greater academic success among learners.

The findings of the study revealed that students generally experience a high level of digital accessibility and competency, as reflected in the overall mean of 3.67 under the digital divide. This indicates that most learners are well-equipped with personal devices, stable internet connections, and the necessary digital literacy to engage effectively in online or blended learning environments. However, the study also highlighted that support systems from teachers, peers, and family members are not always consistent, signifying the need for stronger and

more inclusive digital support networks.

In terms of academic productivity, the overall mean of 3.66, described as High, suggests that learners are productive, adaptive, and capable of utilizing digital resources to accomplish academic tasks efficiently. Students demonstrated the ability to balance schoolwork with other responsibilities and recognized the positive influence of technology on their academic performance. Nonetheless, maintaining consistent levels of motivation and focus remains a challenge for some learners, despite the availability of technological tools.

Furthermore, the study found a significant and high positive relationship between the digital divide and learners' academic productivity ($p\text{-value} = 0.000 < 0.05$; $r = 0.640$). This implies that improved digital access and competence are directly associated with higher levels of academic performance and engagement. Conversely, limited digital resources and poor connectivity contribute to decreased productivity.

Overall, the results emphasize that bridging the digital divide is essential in fostering academic success. Ensuring equal digital opportunities for all students enhances their learning experience, motivation, and productivity, leading to better educational outcomes in the modern digital learning environment.

4. Summary, Findings and Recommendations

Based on the findings and conclusion of the study, several recommendations are proposed to

address the issues related to the digital divide and its impact on learners' academic productivity.

ity. Schools and administrators are encouraged to strengthen their digital infrastructure by ensuring that all students have access to reliable internet connections and functional digital devices necessary for academic purposes. Establishing support systems such as technical help desks or digital learning assistance programs can help students overcome technological barriers. Moreover, incorporating digital literacy programs into the curriculum will further enhance students' competencies and confidence in using technology for learning.

Teachers, on the other hand, play a vital role in minimizing the effects of the digital divide. They are encouraged to provide continuous guidance and support to students who face challenges in navigating digital platforms. Employing interactive and motivational online teaching strategies can sustain learners' engagement and productivity. Teachers should also promote fairness and inclusivity in classroom activities to ensure that all students, regardless of their digital access level, have equal opportunities to participate and excel in their academic tasks.

Students are likewise encouraged to make full use of digital resources to improve their academic performance and time management skills.

They should take initiative in seeking help from teachers, peers, or online materials whenever they encounter difficulties in using digital tools. Developing self-discipline, focus, and intrinsic motivation is also essential for maintaining consistent academic productivity, especially in independent or online learning settings.

Parents and guardians also play an important role in supporting students' academic success. They are advised to provide both moral and logistical support by creating a conducive home learning environment and encouraging responsible gadget use. Monitoring students' digital learning habits can help them maintain balance between academic responsibilities and leisure activities, thus preventing burnout or distraction.

Finally, it is recommended that future researchers conduct further studies involving a larger and more diverse group of participants to validate and expand upon the current findings. Exploring additional factors such as socioeconomic status, study habits, motivation, and digital engagement may provide a deeper understanding of how the digital divide influences learners' academic productivity in various educational contexts.

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