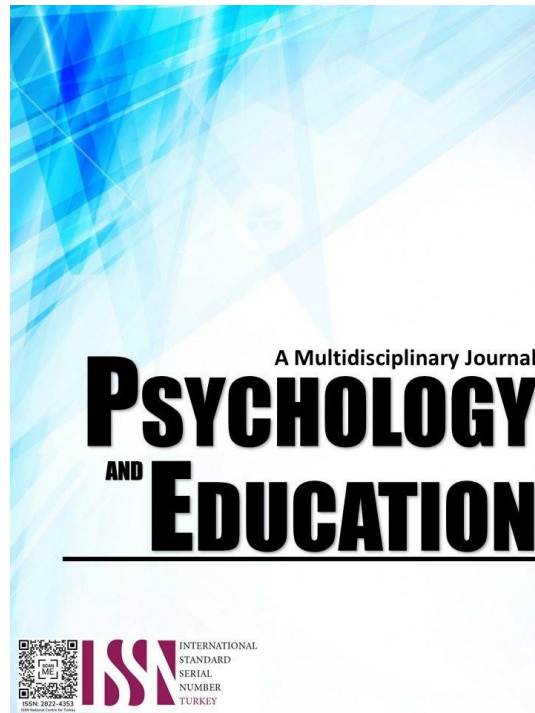


THE INFLUENCE OF DIGITAL TECHNOLOGY ON STUDENTS' PERCEIVED ACADEMIC PERFORMANCE



PSYCHOLOGY AND EDUCATION: A MULTIDISCIPLINARY JOURNAL

Volume: 18

Issue 1

Pages: 100-110

Document ID: 2024PEMJ1645

DOI: 10.5281/zenodo.10849685

Manuscript Accepted: 02-19-2024

The Influence of Digital Technology on Students' Perceived Academic Performance

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Abstract

This study aimed to explore the influence of digital technologies on students' perceived academic performance by examining the learning experiences and challenges faced by education students and their overall learning process. Using a descriptive-correlational design, data were collected through surveys using questionnaires, which calculated the students' proficiency in using digital tools, and their perceptions of how these technologies impact their academic performance. The findings reveal that digital technologies indeed play a significant role in influencing students' perceived academic performance. The results indicate students' proficiency with digital devices and applications enable them to access internet platforms that link them to the infinite library of knowledge and information, and to persons and groups in social media who are willing to share their ideas and opinions and learn through interaction. The study also finds that students' digital skills and capabilities enable them to hurdle the challenges of learning in this digital era for which these new learning experiences subsequently influence their academic performance.

Keywords: *digital technology, academic performance, experiences, challenges, influence*

Introduction

Digital Technology has revolutionized the education system of countries around the world. Colleges and universities keep up with the trend in digitalization by utilizing online learning platforms (Abdulhassna & Yahaya, 2018) and educational softwares as classroom aid. (Zadvinkis, 2020)

Nowadays, college students can easily do research works and other classroom tasks using their smartphones which they prefer among other computer devices. (Anshari et al, 2017) With their phones, students can create graphics and video presentations for class report, thereby enhancing their creative skills (We Vu Blog, 2019). However, digital technology has its downside. Teachers reported that some students cheated during exams administered using digital devices and software. Such actions do not speak well of academic achievement. (Curry et al, 2019; Luo & Murray, 2018)

At the height of COVID-19 restrictions, many schools in the Philippines resorted to Blended Learning and online classes. Web-based platforms like Edmodo, Google Classroom and Schoology provided the link between student and their respective school on a remote learning setup. (Mateo, 2020) Virtual classes were made possible through Zoom apps but the system encountered many challenges. Not all students owned a computer device or at least, a smartphone and those who lived in remote areas had problems with poor internet signal. Students with these predicaments would eventually miss their classes and may affect their academic performance.

In Midsayap, Cotabato, similar problems were encountered by some NDMC students during the pandemic. A respondent reiterated that, "I cannot access Schoology from our home because there is no internet signal in our village. A reason why I sometimes fail to submit my assignment through Schoology." These statements made the researchers pursue this study of why digital technology greatly influence today's learning process.

Online classes were made possible through this platform. But many remote areas of P-PALMA do not have good internet signals. An NDMC student stated, "I sometimes fail to submit my assignments through our Schoology because of the poor internet connection in our barangay, which affects my grades and academic performance." These statements made the researchers pursue this study of why digital technologies greatly influence today's learning process. Hence, this research was conducted.

Research Questions

This study aimed to determine the influence of digital technology on the academic performance of Notre Dame of Midsayap College students. Specifically, this study sought answers to the following questions:

1. What is the demographic profile of respondents in terms of age and sex?
2. What are the digital technologies utilized by the students in the classes in terms of devices and platforms/applications?
3. Do digital technologies significantly influence students' perceived academic performance?
4. Is there a significant difference in the influence of digital technology on the respondents' perceived academic performance when they are grouped according to age and sex?

Literature Review

Haleem et al. (2022) note that digital technology has transformed education and effectively facilitates learning. Digital education has created a paradigm shift within the educational industry by making student life easier, applying learning software and tools, and increasing research interest. Digital technologies make it simple for instructors to teach and collaborate. Digital technology improves

teaching productivity through advanced technological aids, quick assessments, better planning, more resources, and practical learning. Speteri and Rundgren (2020) affirm that effective digital technology in schools focuses on student-centered learning.

Digital Technologies Utilized in the Class

Several studies have found a link between the use of digital tools and the distractions they may cause students in educational settings. Glass and Kang (2018) found that divided attention caused by college students' use of digital devices reduced long-term retention of the classroom lecture, which impaired subsequent unit exam and final exam performance.

Devices

The GlobalWebIndex audience report (2019) found that Gen Z spent an average of 2 hours and 52 minutes daily on social networks and messaging services. Pedotto and Chen (2017) found smartphones dominated digital media time for 18 to 24-year-olds, who spent 2/3rds of their time, more than 3 hours a day, on smartphone apps alone. With multi-networking the norm firmly, they spent their time on various platforms and often multi-tasked while using them for activities such as texting while watching videos.

Teens and young adults have been at the forefront of the rapid adoption of the mobile internet and the always-on lifestyle it has made possible. The most recent nationally representative surveys of the Pew Internet Project show how immersed teens and young adults are in the tech environment and how tied they are to the mobile and social sides of it. Some 95% of teens ages 12–17 are online, 76% use social networking sites and 77% have cell phones. Moreover, 96% of those ages 18–29 are internet users, 84% use social networking sites, and 97% have cell phones. Well over half of those in that age cohort have smartphones, and 23% own tablet computers like iPads (Anderson & Rainie, 2020).

Students at higher education institutions are digital natives who cannot function without their smartphones. They cannot be separated from smartphones (Faimau et al., 2022). Students spend significant time online, and many choose to access the Internet through their smartphones over other devices. They typically carry mobile smartphones to school and lectures (Anshari et al., 2017). Moreover, some students utilize smartphone cameras to take lecture notes or other notes produced or distributed by instructors. It is excellent that they are participating in relevant activities in the classes. However, smartphones may also create great pain in the classroom if students use them for distractions rather than focusing on the lecture (Anshari et al., 2017).

According to Zadvinskis (2020), Laptops enable students to use software programs that serve as valuable classroom aids. Examples include active learning tools, such as video clips and PowerPoint presentations, and statistical analysis programs. Laptops allow students to collaborate with their classmates inside and outside the classroom. They can ask questions, compare notes, and share what they have learned more readily. They can also work together on group projects even if they are not in the same location.

The learners' attitudes toward tablet-assisted learning are not significantly high regarding participation. This is inconsistent with studies in which tablet-assisted learning could increase participation (Soffer & Yaron, 2017). This might be because learners are used to existing technology-assisted learning tools; therefore, their learning experience is identical. Another explanation may be that uncontrollable factors (i.e., technical problems, unstable networks, and bugs) are experienced by learners in the learning process.

Platforms/Application

Abuhassna and Yahaya (2018) claimed that the current technologies in education play an essential role in providing a fully online learning experience close enough to a face-to-face class despite the physical separation of the students from their educator and other students. Online learning platforms lend themselves to a less hierarchical methodology in education, fulfilling the learning desires of individuals who do not approach new information linearly or systematically.

The Messenger application has allowed learners to solve their problems through personal chat or in groups anytime and get feedback from their teachers or classmates either in written or oral form. In this regard, Samani and Noordin (2020) argue that the Messenger application provides many attractive facilities, such as sharing information in chat, audio, videos, and images. Therefore, many teaching and learning activities can be done using this app. Additionally, applications such as Messenger help transform traditional teaching and learning concepts by offering a new, interactive, and innovative space, such as a Messenger group for discussion (Ghimire, 2021). He further states that using social media platforms such as Messenger in the classroom has transformed teaching and learning activities from traditional teacher-centered to student-centered. The students' increased possibilities for participation, interaction, teamwork, and discussion on the Messenger app have helped them improve their language abilities. In this way, modern technology provides students and teachers with a collaborative learning environment inside and outside the classroom.

Furthermore, Sinjali and Laksamba (2020) state that teachers can create a Facebook group where teachers and learners can post information, ideas, teaching and learning content, etc. The learners learn by accessing the virtually available materials and asking questions via Messenger, either orally or in written form. Facebook and Messenger can be used as tools in the teaching and learning of the English language because of their significant features.

Learners can participate in various educational activities within the Zoom environment. For example, communication-related activities include greeting others, classroom lectures, question and answer sessions, and group discussions in breakout rooms (Rahayu 2020). Activities related to materials comprise sharing slides or screens with students or educators, downloading homework assignments, and

uploading answers to questions (Rahayu, 2020). Activities associated with studying include answering polling questions, presenting lessons using slides or the whiteboard, classroom practice using the whiteboard or chat box, and group work in breakout rooms (Rahayu, 2020). Students and educators can also meet individually to discuss the student's work, and these sessions can be recorded for viewing later (McClendon et al., 2017). However, Oktaviani (2021) states that Zoom has some limitations and challenges. Handling Zoom might be difficult at the initial stages, like other applications. While using Zoom, students may also experience an unstable Internet connection, an inadequate microphone or speaker, and a noisy environment. According to Haqien and Rahman (2020), Zoom lectures are less effective for university students in Jakarta and Depok due to network difficulties that negatively affect learning.

Schoology can also be used for lifelong learning since it is accessible anytime and anywhere. The results of this study strengthen other research, based on research conducted by Rinenggo and Murdiono (2020), which states that learning with Schoology improves student learning outcomes. Research by Sari et al. (2020) says that the study's results show that Schoology can effectively increase student engagement and motivation, resulting in improved student performance.

The findings of the reviewed studies illustrated the importance of Google Apps in the process of English language teaching and learning. These apps can be used as online learning tools and are applied quickly to support blended learning practices. Researchers showed that using Google Docs, Google Machine Translation, Google speech recognition systems, and Google Earth significantly improved the English language among learners. The language areas of investigation were writing, reading, speaking, and translation, with a focus on vocabulary acquisition, pronunciation, the accuracy of speech, lexical knowledge, error correction, collaborative writing, engagement in reading classes, using reading strategies, and the quality and accuracy of the translation (Abdel & Amin, 2020).

The Influence of Digital Technologies on Students' Academic Performance

The integration of digital technology into education and learning via the internet and social media is an expanding and rapidly growing toolkit. These tools support student learning in everyday social activities (Johnson et al., 2016). Digital technology allows teachers and students to spend more time together, their interactions become more flexible, and they continue beyond classroom barriers in engagement, content sharing, connectivity, and communication (Pinto & Leite, 2020). More recently, approaches that refer to the impact of gamification with the use of digital technologies on teaching and learning have also been explored. A review by Pan et al. (2022) that examined the role of learning games in fostering mathematics education in K–12 settings reported that gameplay improved students' performance. Integration of digital games in teaching was also a promising pedagogical practice in STEM education that could lead to increased learning gains (Martinez et al., 2022; Wang et al., 2022).

Mansour (2019) also said that using PowerPoint presentations may encourage students and improve their achievement. It may enhance learning by providing a better understanding and comprehension of the subjects and different methods, ways, and techniques within the same slide. This variety of techniques within the same slide, like adding pictures, sounds, colors, and animations, could join all kinds of learners (kinesthetic, auditory, and visual) and give them all the chance to be active learners and raise their interest in learning.

A study by Carstens et al. (2021) found that students took more interest in learning when it involved technology. The teachers stated that students use technology for projects and creations, collaboration with peers or adults, reading, and other applications to enhance learning. Technology provides high student interest, allowing them to engage in their learning at multiple levels. Teachers' and students' motivation to use technology helps enhance their learning. The participants also shared that the students are comfortable using technology in their learning.

According to Schipper and Yocum (2016), engagement is one of the main jobs of a teacher. When a student is well engaged and committed, there is every tendency to learn and retain such information. When using digital technology as a tool for learning, students are more engaged and perform better than hard copies of resource materials. Students also collaborate and interact more when using technology-based lessons. Apart from this, WeVu Blog (2019) found that students can use their phones to make videos and engage more strongly with what they're learning. Students make creative or explanatory videos or just film themselves practicing their learning skills. Students get to practice and demonstrate their grasp of key course concepts, but student-made videos also promote creativity and individuality, eliminating concerns about plagiarism. Videos can be much more than students presenting or explaining the content they should master. They can be vehicles for creativity and learning teamwork and project management, and production will increasingly be an employment-relevant skill.

Technology has been making massive strides in software development, computer programs, and online educational tools for students and educators to utilize in the classroom. Multiple studies have claimed that the classroom environment supports positive outcomes for students and teachers and makes students much more independent and responsible (Higgins & BuShell, 2018). Although this may be true in some circumstances, Higgins and BuShell's (2018) survey of 207 high school students failed to mention the adverse effects of technology implementation in the classroom. For instance, students feel more engaged in their work, which could lead to increased academic success. Still, contrary to what the students reported, teachers had different perceptions about technology. Many teachers reported cheating and distractions from using technology (Curry et al., 2019; Luo & Murray, 2018). This discrepancy in perceptions between students and teachers is an important detail to consider when evaluating whether or not technology is a driving force for academic achievement and student engagement.

According to Harvey et al. (2017), there are no significant gender differences in learning outcomes based on learning styles. There

were also no significant gender differences in the learning satisfaction of online millennial learners. Sai (2019) conducted a study on the effect of digital learning on students and reported no difference in male and female students' achievement. However, the study observed that digital technology motivates and improves students' performance. Also, Dan (2018) conducted a study on the impact of technology on student performance. He reported that students taught with digital technology and those taught without digital technology showed no difference in performance.

The Challenges in Using Digital Technology

This pandemic has caused massive disruption in the educational system, affecting over 1.5 billion students. It has forced the government to cancel national examinations and the schools to temporarily close, cease face-to-face instruction, and strictly observe physical distancing. These events have sparked the digital transformation of higher education and challenged its ability to respond promptly and effectively. Schools adopted relevant technologies, prepared learning and staff resources, set up systems and infrastructure, established new teaching protocols, and adjusted curricula. However, the transition was smooth for some schools but rough for others, particularly those from developing countries with limited infrastructure (Pham & Nguyen, 2020; Simbulan, 2020).

After the "no vaccine, no face-to-face classes" declaration by President Rodrigo Duterte in the Philippines, the Commission on Higher Education (CHED) issued directives to universities to start preparing for distance learning. Thus, universities across the country are forced to close indefinitely. Classes in various universities have opened just these past few months, and remote learning faces multiple challenges (Mateo, 2020), which later became difficult for Filipino university students to handle. Complicating this picture even more, is that not every student can provide for and adapt to the rapid advances of technology in today's digital age (Alvarez, 2020), especially in developing countries like the Philippines, where education was plagued by problems even before the pandemic.

Methodology

Research Design

This study was a descriptive-correlational design because it collected data to describe the variables mentioned in the study and it attempts to determine the relationship between them. This design, according to McBurney & White (2009), aims to provide static pictures of situations and establish the relationship between variables. Descriptive correlational design is appropriate for the aforementioned topic because, in conducting the study, the data gathered by the researchers was used to determine, describe, and analyze the impact of digital devices and online platforms on BEED students and how it correlates to their academic performance.

Instruments

The primary tool used to gather data was a survey questionnaire. Since the instrument is research-made, it underwent a validity and reliability test. The instrument used was divided into three parts. The first part of the questionnaire is designed to determine the demographic profile of the respondents in terms of age and sex. The following parts have drawn the respondents' responses. The second part is a checklist to determine whether a student uses a specific device, platform, or application. In this part, the researcher used a five (5) point Likert scale. The instruction stated that the respondents should put a check item that indicates their answer with the corresponding weight for each scale: 1 - never, 2 - rarely, 3 - sometimes, 4 - often, and 5 - always. The third or the last part of the questionnaire contains statements regarding the influence of digital technology on their perceived academic performance. In this part, the researcher made use of a fused Likert scale. The scale is labeled as 1 - never influential, 2 - barely influential, 3 - somehow influential, 4 - influential, and 5 - very influential.

Procedure

First, after the research problem was identified, the researchers secured the permission of their subject professor through a formal letter submitted to him. The approved letter of permission bearing the signature of the subject professor was attached to another letter delivered to the office of the Dean of the College of Education of Notre Dame of Midsayap College, Midsayap, Cotabato, asking for the letter of the conduct of the study at said school. Secondly, after the approval of the Dean of the College of Education, the researchers distributed the survey questionnaires to the identified respondents who were earlier informed about the goal of the study and how important their contribution would be. The respondents were also informed that their identities would be kept anonymous. Finally, the researchers gathered the data from eighty (80) BEED students at Notre Dame of Midsayap College, Midsayap, Cotabato. There was 100% retrieval of the questionnaire, fully accomplished by the respondents. The data were collected, tabulated, presented, analyzed, and interpreted based on the research questions included in the study.

Statistical Tool and Treatment of Data

The responses to the questionnaire were scored, recorded, and tabulated. The data gathered from the survey questionnaire was analyzed using a statistical program. For problem 1, frequency and percentage distribution were utilized to treat respondents' demographic profiles in terms of age and sex. For problems 2 and 3, the weighted mean and standard deviation for the problem were used to determine the digital technologies the students in the classes utilized in terms of devices and platforms/applications. For problem 4, ANOVA and t-Test were used to determine the significant difference in the influence of digital technologies on students' perceived academic

performance when grouped according to age and sex. The scaling used was in numerals from one (1) to five (5).

Results

This section presents and discusses the results of the study. The data were discussed systematically based on the research problems. It was presented in tabular form, which covers the profile of the respondents, the digital technologies utilized by the respondents in classes in terms of devices and platforms/applications, the influence of digital technology on respondents perceived academic performance, and the difference in the influence of digital technology on the respondents' perceived academic performance when grouped according to age and sex.

Table 1. Demographic Profile of the Respondents

Variable	Frequency	Percentage
Age		
18-20	39	48.75
21-23	37	46.25
24 above	4	5
Total	80	100
Sex		
Male	21	26.25
Female	59	73.75
Total	80	100

It can be gleaned from Table 1 that the majority of the respondents, which consists of 48.75 percent, belong to the age range of 18–20, with a frequency of 39. On the other hand, the minority of the respondents, which consists of 5 percent, belongs to the age range of 24 and above, with a frequency of 4.

Table 2.1 Devices Utilized by the Students in Classes

Devices	SD	Mean	Description
Smartphone	0.35	4.93	Always
Smart TV	1.11	3.48	Sometimes
Laptop	1.34	4.00	Often
Tablet Device	1.53	2.83	Sometimes
Desktop Computer	1.52	2.90	Sometimes
Overall Mean/Standard Deviation	1.17	3.63	Often

Table 2.1 shows that the overall mean is 3.63, described as Often with a Standard Deviation of 1.17. Item 1 Smartphone garnered the highest mean value of 4.93, described as Always with an SD of 0.35. While item 4, Tablet Device, garnered the lowest mean value of 2.83, described as Sometimes with an SD of 0.86.

Table 2.2 shows that the overall mean is 3.31, described as Sometimes with an SD of 0.98. The top 3 platforms/applications that got the highest mean according to the result include Messenger, with a mean value of 4.87 described as Always and an SD of 0.36; Facebook, with a mean value of 4.79 described as Always and an SD of 0.67; and Schoology, with a mean value of 4.58 described as Always and an SD of 0.74. While item 12, Edmodo garnered the lowest mean value of 1.41, described as Never with an SD of 0.77.

Table 2.2 Platforms/Applications Utilized by the Students in Classes

Platforms	SD	Mean	Description
Messenger	0.36	4.87	Always
YouTube	0.88	4.14	Often
Facebook	0.67	4.79	Always
Zoom	0.80	3.15	Sometimes
Google Classroom	1.10	2.66	Sometimes
ClassIn	0.76	3.31	Sometimes
Schoology	0.74	4.58	Always
Canva	1.07	3.15	Sometimes
Instagram	1.42	3.40	Sometimes
Quillbot	1.32	2.94	Sometimes
Google Docs	1.09	2.29	Rarely
Quora	1.10	2.75	Sometimes
Quizlet/Quizizz	1.06	2.51	Sometimes
Grammarly	1.20	2.54	Sometimes
Wikipedia	1.37	3.05	Sometimes
Scribd	1.32	2.73	Sometimes
Google	0.56	4.71	Always
Brainly	1.05	2.86	Sometimes
Overall Mean/Standard Deviation	0.98	3.31	Sometimes

Table 3. *Influence of Digital Technology on Students' Perceived Academic Performance*

Items	SD	Mean	Description
1. I acknowledge the importance of Digital Technology to my academic performance.	0.51	4.70	Very Influential
2. I know how to connect to my Schoology using desktop computer or laptop.	0.99	4.34	Influential
3. I am literate in computer programs like Microsoft Word and PowerPoint.	0.89	4.29	Influential
4. I use online resource pages and websites to answer my tasks and assignments.	0.87	3.89	Influential
5. I can make video presentations using digital apps for my class reports and projects.	0.74	4.55	Very Influential
6. I use writing assistant apps like grammar checkers and paraphrasing tools when I am constructing my sentence.	1.17	3.98	Influential
7. Technology helps me develop fluency and confidence in my speaking skills with the help of online video tutorials.	0.69	4.23	Influential
8. I use digital dictionary to correct and improve my vocabulary.	0.86	4.15	Influential
9. I make sure that I am always connected to my Schoology.	0.74	4.59	Very Influential
10. I find learning more interesting when technology is used.	0.76	4.43	Influential
11. Digital apps help me absorb and understand my lessons more easily.	0.77	4.21	Influential
12. I eagerly participate in discussions and other activities during online classes.	0.84	3.98	Influential
13. I get interested in any topic/lesson if it is presented thru PowerPoint or video.	0.67	4.53	Very Influential
14. I can easily access information, current topics of all subjects using my mobile gadget, laptop or desktop computer.	0.71	4.50	Very Influential
15. Group reports are easily prepared and assigned through Zoom meetings.	0.91	3.31	Somehow Influential
16. My quiz and periodical test scores got better when I use digital technology tools to help me in my study.	0.87	4.00	Influential
17. Digital technology helps me enhance my oral and writing skills.	0.78	4.45	Influential
18. I get better grades during online classes compared to face-to-face classes.	1.07	4.04	Influential
Overall Mean/Standard Deviation	0.83	4.23	Influential

Data in Table 3 show that the overall mean is 4.23, which is described as influential with an SD of 0.83. The top 3 items that yielded the highest mean according to the result include Item 1, which states that I acknowledge the importance of Digital Technology to my academic performance, with a mean value of 4.70 described as Very Influential, and an SD of 0.51; Item 9, which states that I make sure that I am always connected to my Schoology, with a mean value of 4.59 described as Very Influential and an SD of 0.74; and Item 5, which states that I can make video presentations using digital apps for my class reports and projects, with a mean value of 4.55 described as Very Influential and an SD of 0.74. Item 15, which states that Group reports are easily prepared and assigned through Zoom meetings, garnered the lowest mean value of 3.31 and was described as Somehow Influential with an SD of 0.91.

Discussion

This section discusses the study's results, restatement of the problem, implication, summary of findings, conclusion, and recommendations based on the research problems pursued.

Demographic Profile of the Respondents

Age of Respondents

Based on the sample collected through the distribution of questionnaires, 18-20 years-old respondents outnumbered other age groups. This implies that most respondents are in their freshman to junior years. This finding supports the most recent nationally representative surveys of the Pew Internet Project by Anderson & Rainie (2020), which show how immersed teens and young adults are in the tech environment and how tied they are to the mobile and social sides of it. Teens and young adults have been at the forefront of the rapid adoption of the mobile internet and the always-on lifestyle it has made possible.

Sex of Respondents

In terms of sex, the collected data reveals that the female respondents outnumbered the male respondents. This indicates that most of the respondents are female. However, males also numbered significantly. This finding supports the study by Harvey et al. (2017), which found no significant gender differences in learning outcomes based on learning styles. There were also no significant gender differences in the learning satisfaction of online millennial learners.

Digital Technology Utilized by the Students in Classes

Devices

Based on the findings of the study, Smartphones garnered the highest mean, described as Always. This means that almost all students own a smartphone. This mobile device is very handy and easy to use. A smartphone has multiple functions and features. Digital applications like grammar and spelling checkers, paraphrasing tools, digital dictionary, etc. can be downloaded and installed using this device. The respondents depend heavily on their smartphones to search the internet for the information they need. This affirms the study of Anshari et al. (2017) that students spend significant amount of time online using their smartphones over other devices. Study shows that BEED students use their smartphones for their class activities, like editing and creating video clips for classroom presentations of their reports.

Second to the smartphone, based on survey results, is the Laptop device, described as Often. This indicates that some BEED students use laptops more often for encoding their assignments and other course requirements that require documentation. In group reporting, these students share their ideas, concepts, and artistry in making an interesting animated slide show for their assigned topic. This supports the study of Zadvinskis, M. (2020) that laptops enable students to use software programs that serve as valuable classroom aids, like PowerPoint. Laptops allow students to collaborate with their classmates by comparing notes, sharing what they learned, or working together on group projects inside and outside the classroom.

On the other hand, the item Tablet Device garnered the lowest mean value, described as Sometimes. This means that the respondents use tablets occasionally because students find them inconvenient to use at school, and there are no classroom activities at NDMC that require exclusive use of tablets, unlike other schools that use these devices as portable e-books. It implies that, despite the latest technological features of tablets, students still prefer handy smartphones. This is in conformity with the findings of Soffer & Yaron (2017) that learners' attitudes toward tablet-assisted learning are not significantly high in terms of increased participation because students are more comfortable with the existing technology-assisted learning tools.

Platforms/Applications

The findings of the study show that Messenger garnered the highest mean value. Most students use Messenger to interact with their peers, classmates, and teachers to share insights or ask for assistance about a particular lesson, be updated on school activities, and other information. This implies that the Messenger platform helps and motivates students to learn through interaction by exchanging ideas and sharing information with groupmates and other resource persons. This is in conformity with the findings of Samani and Noordin (2020) that the Messenger application supports students in sharing various concepts and information learned in their classes. This application has allowed the learners to solve their problems through personal chat or in groups at any time and get feedback from their teachers or classmates, either in written or oral form. So many teaching and learning activities can be done using this app. This also relates to the study of Ghimire (2021), which found that applications such as Messenger help transform traditional teaching and learning concepts by offering a new, interactive, and innovative space, such as a Messenger group for discussion. He further states that the students' increased possibilities for participation, interaction, teamwork, and discussion on the Messenger app have helped them improve their language abilities. In this way, modern technology provides students and teachers with a collaborative learning environment inside and outside the classroom.

According to the data, Facebook comes in second to Messenger, indicating that students Always use this platform/application. Students use this application daily because they can form groups on Facebook and post their viewpoints, queries and write comments regarding a particular topic. They can share links, such as videos, on the wall of the group page and in personal messages. This implies that students can use Facebook for educational purposes, including collaboration, discussion, and obtaining extra help. This supports the findings of Sinjali and Laksamba (2020), who state that teachers can create a Facebook group where both the teacher and the learners can post information, ideas, teaching and learning content, etc. The learners learn by accessing the virtually available materials and asking questions orally or in writing. Facebook can be used as a tool in the teaching and learning of the English language because of its significant features.

The third platform/application that also garnered a high mean value described as Always was Google, which indicates that students from all age groups connect to this platform to access unlimited data and information from the internet for their assignments and other course requirements. NDMC teachers sometimes allow students to Google search information related to the topic being discussed, analyse it, and share it with the class. This implies that information accessed from the web using Google apps helps broaden the knowledge and understanding of the students with regard to the topic being discussed. This relates to the study of Abdel & Amin (2020), which found that this application can be used as an online learning tool and is applied quickly to support blended learning practices. The research showed that using Google Apps such as Google Docs, Google Earth, Google Machine Translation, and Google Search recognition systems significantly improved the English language skills of learners. Language skills like writing, reading, public speaking, vocabulary, grammar, and composition skills consequently improve through constant usage of Google Apps.

Another platform/application that has accumulated a high mean value and is described as Always is the Schoology. This indicates that the respondents need to connect to Schoology, whether they are at school or at home. Every enrolled student of NDMC needs to login to this platform to access the lessons for the day, including past lessons of all subjects, announcements, class activities, test results, and

posted comments of teachers and students. This implies that Schoology is the Learning Management System of every NDMC classroom, where students can review previous and current lessons on all subjects anytime, anywhere. This is in agreement with the study of Sari et al. (2020), which states that Schoology is a useful and effective tool to increase student engagement and motivation, resulting in improved student performance.

On the other hand, Google Docs got the lowest mean value, described as Rarely. This means BEED students of NDMC rarely use this web-based word processor application for encoding, editing, storing documents, formatting text, inserting images, tables, and visual effects. It implies that most students prefer to use the more popular Microsoft Word because it can be operated offline and installed on a laptop or desktop computer. Google Docs offers the same basic word processing functions that Microsoft Word does. However, Google Docs can only work online by accessing its website, while Microsoft Word can do word processing in offline mode by clicking on the Microsoft Word icon installed on the computer or laptop. The result of the survey cannot support the findings of Abdel and Amin (2020), which state that continued use of Google Docs will enhance students' English language skills in writing, vocabulary, grammar, and composition, which may have a positive influence on students' academic performance.

Influence of Digital Technology on Students' Perceived Academic Performance

The survey results of this study show that the Bachelor of Elementary Education (BEED) students of Notre Dame of Midsayap College (NDMC) consider digital technology as a reliable medium that connects them to the new avenues of learning that bring about new learning experiences. This affirms its relevance to the Theory of

Connectivism by Siemens and Downes (2005), to which the theoretical framework of this study is anchored. Connectivism is a hypothetical structure for understanding the learning process in this era of digitalization. It emphasizes how digital devices and web-based platforms such as Google, YouTube, Zoom, and social media platforms like Facebook and Messenger become new avenues of learning that connect students to new ideas, diversity of opinions, and an unlimited internet library.

This study, which shows the respondents' adeptness with digital devices and platforms that enable them to connect and learn from multiple sources of information on the internet, corresponds with the principles of Connectivism by Siemens and Downes.

This study confirms the validity of that theory through the respondents' manifestation of their ability to connect or blend their digital skills with their classroom activities, performing assigned tasks and doing research works that will make positive influence on their academic performance.

The findings of the study show that I acknowledge the importance of Digital Technology to my academic performance, which garnered the highest mean value and was described as Very Influential. This indicates that the respondents recognize the fact that digital technology can virtually lead them to new avenues of learning and new learning experiences that would help them achieve their academic goals. This implies that students' reliance on their digital skills and ability to connect to the digital world that caters to knowledge and information would bring about positive results in their academic performance. They also rely on digital dictionaries, grammar and spelling checkers, and paraphrasing tools to aid them in writing compositions and documenting their reports. This corresponds to one of the principles of Connectivism which states that learning may reside in non-human appliances (Stephen Downes, 2017). This means that students of this digital era depend heavily on the latest digital devices and applications that enable them to connect to online platforms to access needed information, manipulate it for class reporting, and expect better grades on their class performance.

The item I make sure that I am always connected to my Schoology took the second highest mean value, described as Very Influential. This means every BEED student knows how important it is to log in to Schoology each day to be updated with daily lessons on all subjects, classroom activities, announcements or notifications from subject teachers, newsletters, and homework. This implies that Schoology is a new learning system that effectuate new learning experiences for the respondents. Schoology is an extension of their classroom online. Students can review their lessons anytime, even at home, by logging in to this platform, or they can do their homework and pass it before bedtime via the Schoology app. Students can also ask questions regarding a particular lesson by typing it in the comment box and receiving immediate answers from subject teachers and classmates. This supports the study of Sari et al. (2020), which shows that Schoology can increase student engagement and motivation, resulting in improved student performance. By making sure that they are always connected to Schoology, BEED students clearly manifest their desire to learn and to stay connected with the new avenues of learning. This corresponds with one of the principles of Connectivism (Siemens & Downes, 2005) which states that nurturing and maintaining connections are needed for continued learning.

The item I can make video presentations using digital apps for my class reports and projects got the third highest mean value, described as Very Influential. This means that the respondents are capable of expressing their ideas and concepts using digital apps like Inshot and CapCut on smartphones or Microsoft Movie Maker on laptops and desktop computers and skillfully manipulating images, charts, etcetera to create a video presentation for their assigned topic, which is a clear manifestation of Connectivism learning. This is in conformity with the Connectivism principle by Siemens & Downes (2005), which states that the ability to see connections between fields, ideas, and concepts is a core skill that enhances student academic performance. This also affirms the study by WeVu Blog (2019) that students use their smartphones to make creative or explanatory videos that demonstrate their grasp of key course concepts, which promote creativity and individuality, eliminating concerns of plagiarism.

The item I get interested in any topic/lesson if it is presented thru PowerPoint or video garnered another highest mean value, described as Very Influential. It means that the students are more attentive if PowerPoint and video presentations are used in class because it helps them focus on the lecture. It implies that the visual appeal of video contents and PowerPoint presentations makes it easier to illustrate complex lessons and captivate student attention. This supports the study of Mansour (2019), which found that using PowerPoint enhances student learning by providing a better understanding and comprehension of the subject. NextThought Studios (2023) also stated that videos create a more engaging sensory experience than using print material alone. Learners get to see and hear the concept being taught and can process it in the same way they process their everyday interactions. Videos increase student engagement, which in turn helps boost achievement. This also corresponds to the principles of Connectivism by Stephen Downes, which state that learning happens in many different ways. Learning is a knowledge-creation process. Learning tools and design methodologies should seek to capitalize on this trait of learning.

The item Group reports are easily prepared and assigned through Zoom meetings get the lowest mean value, described as Somehow Influential. This means that student respondents do not consider Zoom to be the appropriate platform for their virtual group meeting in preparing for their group report due to poor internet connection and a restricted amount of time. It implies that about half of BEED student respondents who reside in far-flung areas experience poor internet connections that affect Zoom's overall performance. This supports the study of Oktaviani (2021) that Zoom has limitations and challenges. Oktaviani noted that while using Zoom, students experience an unstable internet connection, an inadequate microphone or speaker, and a noisy environment. According to Haquin and Rahman (2020), Zoom lectures are less effective for university students in Jakarta and Depok due to network difficulties that negatively affect online classes.

For connecting to Zoom with a slower internet connection, there are technological workarounds available, according to MSU Extension's Educational Technology Journal. Connect to the internet router's wired connection option, if it has one. Move the mobile device or laptop in closer proximity to the hotspot or router. If the internet is slow, turn off the camera feed. Only activate it to speak or ask a question. Turn off HD video while in a Zoom meeting. When speaking, mute the microphone. Avoid video streaming (e.g., YouTube, Netflix). Switch to phone audio.

Significant Difference in the Influence of Digital Technologies on Students'

Perceived Academic Performance in Terms of Age and Sex

The survey result shows that there is no significant difference in the influence of digital technologies on students' perceived academic performance when grouped according to age, based on the probability value of 0.223 which is higher than 0.05, this is a valid reason not to reject the null hypothesis stated above.

Likewise, the probability value of 0.575 which is higher than 0.05 is also the basis for not rejecting the other null hypothesis of this study which state that there is no significant difference in the influence of digital technologies on students' perceived academic performance when grouped according to sex.

Hence, based on these results, the study finds that there is indeed no significant difference in terms of age and sex on how digital technology influences the academic performance of students. Both male and female, no matter what age group they belong, equally respond to the influence of digital technology on their studies.

Conclusion

Based on the findings of the study, the following conclusions were drawn: The survey results show that the BEED students of NDMC, irrespective of their age and gender, are proficient in using mobile devices, digital applications, and platforms to access unlimited information from different websites and manipulate that information for classroom presentations. The respondents show competencies in computer software like Microsoft Word and PowerPoint, which are valuable classroom aids, particularly the latter, which is efficient for making animated slide presentations for class reports. This is in agreement with the study of Zadvinskis et al. (2020), who noted that laptops enable students to use computer software programs like Microsoft Office tools to aid them in presenting their reports.

The results of the survey also found BEED students to have an aptitude for creating video presentations using their smartphones. This is in conformity with the study of We Vu Blog (2019), noting students' capabilities in making video presentations that exhibit their creativity, concepts, and ideas to make the presentation of the topic/lesson even more interesting.

The study also shows that students acknowledge the importance of connecting to Schoology, which serves as an extension of their classroom online. By logging in to this platform, they can access the lessons for the day, including previous lessons on all subjects, homework, test results, and notifications from teachers. This corresponds to one of the principles of Connectivism which states that learning is a process of connecting specialized nodes or information sources. A learner can exponentially improve their own learning by plugging into an existing network. The study finds no gender and age disparities with regard to the respondents' capability to adapt to the new learning environment and be productive in the digital age. This is in conformity with the findings of Harvey et al. (2017) that there are no significant gender differences in learning outcomes based on learning styles.

for possible courses of action: (1) There are a few NDMC students who are not literate in Microsoft Word and PowerPoint, which are

reliable aids for presenting reports. The school should identify these students and require them to undergo a workshop on the basic operations of Microsoft Office tools so they can keep up with the demands of digitalization. (2) NDMC has tested the efficiency of Zoom during the pandemic. But classes are now back to the normal face-to-face setup. Perhaps it is possible for students with disabilities to have the option to attend virtual classes through Zoom. This will relieve them of the discomforts they go through every day just to attend in-person classes. (3) In this era of digitalization, educators and school administrators should consider investing in Schoology to ensure an effective Learning Management System for their school and be able to meet the demands and challenges of the digital age. (4) BEED students who will be undergoing internships in public elementary schools should conduct free workshops on how to create interesting video clips and PowerPoint presentations for Grade 6 pupils. This will equip the kids with digital skills that will aid them later in high school.

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