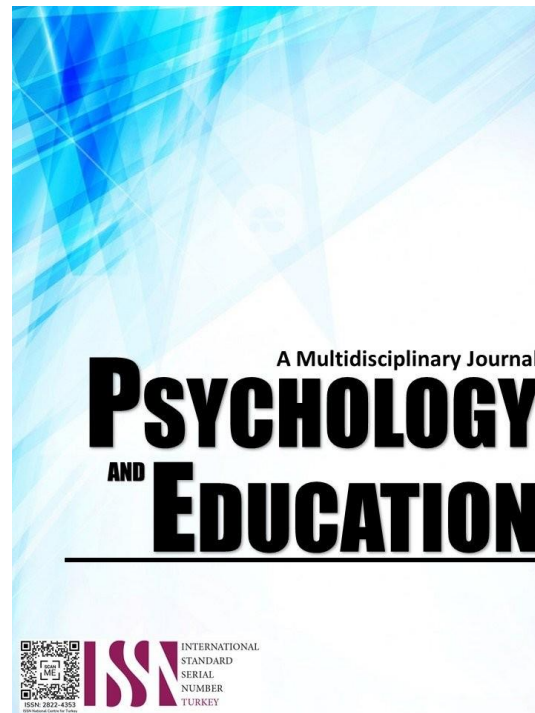


THE ACADEMIC PERFORMANCE OF SHS STUDENTS IN A PRIVATE SCHOOL IN CAVITE USING ONLINE LEARNING AND FACE-TO-FACE LEARNING MODALITIES: A COMPARATIVE STUDY



PSYCHOLOGY AND EDUCATION: A MULTIDISCIPLINARY JOURNAL

Volume: 38

Issue 6

Pages: 646-658

Document ID: 2025PEMJ3693

DOI: 10.70838/pemj.380607

Manuscript Accepted: 04-25-2025

The Academic Performance of SHS Students in a Private School in Cavite Using Online Learning and Face-to-Face Learning Modalities: A Comparative Study

Najera R. Umpar,* Annaliza C. Sinfuego, Dawn Nari S. Condez, Daniel C. Abuton,
Jhon Eric D. Punzalan

For affiliations and correspondence, see the last page.

Abstract

This research assessed the academic achievements of Senior High School students from National University – Dasmariñas (NU Dasmariñas) in relation to online and face-to-face classes. Three hundred thirty-six (336) students took part in the study, and data was obtained from students' academic records which included the Grade 10 grades of the current Grade 11 students, the Grade 11 grades of the current Grade 12 students, as well as Term 1 marks of both grades. The study employed a descriptive correlational research framework and applied several statistical analyses which included t-tests, ANOVA, and regression analysis. The study uncovered that the students' performances differed according to the learning modalities used with $t = 5.295$, $p < 0.001$ indicating that students who participated in face-to-face classes performed better than those who learnt online, especially in Grade 12. Students in the sample had a mean age of 16.54 years. Female students ($n = 209$) also outperformed their male counterparts ($n = 127$) across both learning modes ($F = 2.802$, $p < 0.001$ for online; $F = 1.614$, $p = 0.009$ for face-to-face). Furthermore, the study highlighted performance differences across strands where ABM students performed the highest ($F = 2.171$, $p < 0.001$). Finally, there were no differences across grade levels. This study shed light on the effectiveness of online learning. However, in-person teaching is best for achieving higher academic outcomes—particularly for older students and female students—important for developing educational policy frameworks for the post- COVID-19 period.

Keywords: *academic performance, online learning, face-to-face learning, senior high school, demographic factors, comparative analysis, post-pandemic education*

Introduction

The COVID-19 pandemic revolutionized education, leading to a dramatic and abrupt shift toward digital learning on a global scale (Babbar & Gupta, 2021). This sudden transition brought major challenges to every educational institution, which primarily affected both the teachers and the students, sparking an important discussion about the effectiveness of online learning and face-to-face instruction. While studies suggest that digital learning provides an enriching experience under certain circumstances (Haleem, Javaid, Qadri, & Suman 2022), another challenge remains – the engagement of the students. Many learners struggle to learn and stay focused in virtual settings (Mhlongo, Mbatha, Ramatsetse, & Dlamini, 2023).

Extensive research has explored the outcome of the delivery of online learning across various academic disciplines. According to Mohd Fatzel, et. al, (2021), structured online learning that incorporates collaborative approaches produces positive results, offering features that promote active participation similar to face-to-face instruction. However, the sudden shift to online learning disproportionately affected students who were accustomed to traditional classroom settings. Di Pietro (2023) highlighted that the pandemic caused setbacks in learning, especially due to structural challenges such as limited internet access and reduced teacher-student interaction.

The present study is guided by Vygotsky's Sociocultural Theory, which emphasizes that learning is inherently social and is most effective when learners engage with more knowledgeable others within their Zone of Proximal Development (ZPD). This theory implies that the interactive nature of face-to-face learning environments may provide more effective scaffolding compared to online settings—especially for adolescents who thrive on peer interaction and guided instruction.

In the context of the Philippines, the shift to online and modular learning modalities during the COVID-19 pandemic presented both opportunities and challenges for senior high school (SHS) students. While these modalities offered flexibility, they also introduced significant obstacles that affected students' academic performance. According to Elizarde (2024), in selected secondary schools in Ilocos Sur, the lack of adequate teacher support emerged as a key challenge. The limited interaction between students and teachers in the online learning environment hindered students' ability to receive timely feedback and clarification on difficult concepts. This gap in support contributed to academic disengagement, ultimately affecting students' academic performance.

Despite these challenges, other studies suggest that online learning can lead to improved academic outcomes if implemented effectively. In a study conducted by Cano (2022) at the Notre Dame of Marbel University-Integrated Basic Education Department Senior High School, the academic performance of students in the online learning modality was found to significantly improve compared to those in traditional face-to-face classes. This study highlights that, while teacher support is crucial, well-designed online learning platforms and clear instructional guidance can enhance students' learning experience and academic success.

Considering these findings, this study aimed to examine how Senior High School students at National University-Dasmariñas (NU Dasmariñas) demonstrated academic excellence during the pandemic under two primary and contrasting learning modalities: online

learning and face-to-face instruction. A comparative analysis was conducted to determine whether a statistically significant difference exists in student academic performance between the two modalities. Additionally, this study investigated the influence of demographic factors—such as age, gender, academic strand, and grade level—on the academic success of students within each instructional setting.

Research Questions

This study aimed to compare the academic performance of the NU Dasmariñas SHS students when using online learning and face-to-face learning modalities. Specifically, it sought to answer the following questions:

1. What is the profile of the students in terms of:
 - 1.1. age;
 - 1.2. gender;
 - 1.3. strands; and
 - 1.4. grade level?
2. What is the academic performance of the students using online learning modality?
3. What is the academic performance of the students using face-to-face learning modality?
4. Is there a significant difference between the academic performance of the students when using online learning modality and face-to-face learning modality?
5. Is there a significant difference in the academic performance of the students using online learning modality when grouped according to their profile?
6. Is there a significant difference in the academic performance of the students when using face-to-face learning modality when grouped according to their profile?

Literature Review

Academic Performance in Online Learning

The shift to online learning triggered by the COVID-19 pandemic has significantly transformed educational landscapes, creating both opportunities and challenges that have impacted students' academic performance. While online learning offers potential advantages, particularly in terms of flexibility and access to diverse resources, it also exposes students to substantial obstacles that can hinder their learning outcomes. Beruin (2022) conducted a study on the experiences of Grade 12 STEM students in Laguna, Philippines, during the pandemic. The findings revealed that students' academic performance was severely affected by a combination of technical barriers, lack of institutional support, and an unsupportive learning environment. Many students expressed dissatisfaction with the shift to online education, describing it as leading to "aberrational learning experiences" due to diminished social interaction and negative effects on their well-being. These factors contributed to lower levels of engagement and academic achievement. Beruin's study highlights the urgent need to address technical challenges and create a more supportive online learning environment to foster better academic outcomes.

In rural areas, the challenges of online learning are even more pronounced. Gocotano et. al, (2021) investigated the experiences of 639 students from a satellite campus in southern Cebu, Philippines. The study found that students in rural areas, often living in communities with limited infrastructure, struggled with poor internet connectivity, inadequate digital devices, and insufficient digital literacy skills. Despite the flexibility offered by online learning, these students faced significant barriers that undermined their learning experiences. Economic instability, lack of access to technology, and distractions at home compounded the challenges, resulting in poor academic performance. Furthermore, the absence of conducive learning environments and health-related concerns further hindered students' ability to engage fully in their studies. The study emphasizes the need for alternative learning methods, such as the use of non-digital technologies, to support students in rural areas and enhance their academic performance.

Conocono, Canillo, Aying and Capangpangan (2023) also pointed out that technological issues, including unreliable internet connections and limited access to devices, are significant barriers to academic success. These problems are particularly evident in rural areas, where students are further disadvantaged by their limited resources. The lack of stable internet and digital tools means that many students cannot attend online classes consistently or access necessary learning materials, which ultimately affects their grades and overall academic progress. In this context, the recommendations for adaptive learning systems and government intervention become even more crucial to bridge the digital divide and support students in overcoming these technological barriers to learning.

Academic Performance in Face-to-Face Learning

According to Capinding (2023), students displayed a significant level of readiness for the implementation of face-to-face instruction, with the data suggesting that they are not only academically prepared but also socially and emotionally equipped to engage in classroom-based learning. The study highlights that the eagerness to return to traditional learning environments, where students can interact with their teachers and peers, correlates with their overall preparedness, which includes overcoming the challenges posed by remote learning. These findings suggest that students who are more academically inclined, as well as those who have developed the necessary emotional and social skills, perform better in a face-to-face setting, fostering a more conducive and productive learning experience. However, while student readiness is a crucial factor, the return to face-to-face learning in the Philippines following the

COVID-19 pandemic has also posed considerable challenges that may affect academic outcomes. Tagare (2023) found that Physical Education teachers in basic education observed issues such as student demotivation, misbehavior, and the need to retrofit teaching strategies to meet health and safety protocols. The required use of protective gear was also said to hinder both teaching and learning effectiveness. These findings highlight that academic performance in face-to-face settings is shaped not only by student readiness but also by the broader physical, psychological, and pedagogical conditions of the learning environment.

Parilla (2024) further supports the importance of face-to-face learning, particularly in fostering cognitive, social, and instructional presence, which are crucial for enhancing academic performance. The personal interactions, real-time feedback, and reduced distractions in face-to-face settings contribute to stronger engagement and understanding, which are essential for academic success. Parilla's study reinforces that face-to-face environments provide a more interactive and supportive atmosphere, positively influencing academic performance. In combination, these studies suggest that while students' readiness and the benefits of direct engagement are critical, the broader physical, psychological, and pedagogical challenges must be addressed to optimize academic outcomes in face-to-face learning environments.

Comparing Online Learning and Face-to-Face Learning Modalities

The COVID-19 pandemic triggered a rapid shift from traditional face-to-face classes to online learning, prompting numerous studies to explore the impact of both modalities. While much of the research has focused on higher education (e.g., Onwuegbuzie & Ojo, 2021; Sari & Keser, 2021), studies examining senior high school (SHS) students have also become more prevalent due to the distinct challenges and opportunities they face in this new learning environment.

Obligar, Redondo and Endozo (2021) conducted a phenomenological study to examine the role of internet access in online learning for SHS students. The study highlighted that while the internet is an essential tool for online education, students encountered significant challenges, such as unreliable internet connections, poor service quality, and health risks from prolonged device usage. These obstacles greatly hindered the students' learning experiences, suggesting that online learning, unlike face-to-face education, may not provide an equally effective learning environment. In traditional classrooms, technical issues are typically less disruptive, allowing for more consistent learning experiences.

In a similar study, Bajaro, Cenina, Caritativo, Amorelle and Javier (2021) explored SHS students' experiences with online learning, identifying both challenges and advantages. Common difficulties included unstable Wi-Fi, distractions from noisy home environments, and a lack of parental support. On the other hand, students also experienced benefits, such as more comfortable learning spaces, lower costs, and flexible schedules. These advantages demonstrate that while online learning offers certain perks that face-to-face classes cannot, it also comes with its own set of challenges. The lack of direct interaction and supervision in an online setup contrast sharply with the more structured, supportive environment of face-to-face classrooms, where students typically receive more guidance and immediate feedback.

Hidalgo, Cadavis, Matienzo, Lanzarrote and Rosario (2021) further examined SHS students' online learning experiences, categorizing the challenges they faced into personal, social, technical, and household factors. Issues like academic stress, communication difficulties, poor internet connections, and increased household responsibilities were cited as significant barriers to learning. Despite these obstacles, students used coping strategies such as peer communication, self-management, and time management to overcome challenges. While these strategies helped, they also underscored the immense pressure students faced in an online learning environment. In comparison, face-to-face learning provides more structured support systems, such as immediate teacher guidance and peer interaction, which tend to foster better overall learning outcomes.

Factors Influencing Academic Performance in Online Learning

Since the adoption of online learning during School Year 2020–2021, both the Department of Education (DepEd) and the Commission on Higher Education (CHED) have approved it as a formal mode of delivery (Tria, 2020). Numerous local researchers have explored the impact of this sudden shift on students' academic performance in the Philippines (Alea et al., 2020; Alipio, 2020a; Bajaro et al., 2021; Baticulon et al., 2020; De Guzman & Pastor, 2020; Estira, 2020; Mallillin et al., 2020a). De Guzman and Pastor (2020) revealed that students lacked readiness in terms of access to equipment such as stable internet, mobile devices, and laptops. Similarly, Alipio (2020a) found that learners from low-income and rural areas were especially unprepared for a full transition to online education. Estira (2020) further emphasized the influence of socioeconomic status on students' preparedness, while Baticulon et al. (2020) identified barriers to learning such as technological limitations, household responsibilities, and institutional gaps. Mallillin et al. (2020a) added that weak internet connection, audio issues, and domestic distractions negatively affected students' focus and knowledge retention.

Building on these findings, more recent studies continued to highlight challenges specific to the Philippine context that affect students' academic performance. Elizarde (2024) found that despite the flexibility of online and modular learning in Ilocos Sur, the lack of teacher support significantly contributed to lower performance. Similarly, Rotas and Cahapay (2020) documented issues faced by university students during the pandemic, including unstable connectivity, inadequate learning materials, overloaded lessons, limited teacher guidance, and mental health struggles. The Economic Policy Research Institute (2020) also reported disparities in the time students devoted to studying—ranging from zero to 21 hours weekly—due to parents' limited ability to supervise or provide technological support. In higher education, Rotas and Cahapay (2021) and Baticulon et al. (2021) further observed that students

struggled to balance academic and home responsibilities, navigate learning management systems, and maintain conducive learning spaces. These findings collectively emphasize that in the Philippine setting, online learning performance is shaped by interrelated factors such as teacher presence, technological access, and home-based learning environments.

Technological Innovations and Learning Platforms

In the Philippines, the transition to online learning during the COVID-19 pandemic revealed significant challenges related to digital literacy and access to technology. According to Castillo (2020), the “digital divide” has intensified educational inequalities, particularly in rural and underserved areas, where access to essential devices and stable internet connectivity remains limited. This disparity has hampered students’ ability to fully engage in online learning, consequently affecting their academic performance.

The need for digital literacy skills has thus become more urgent, with many students, as identified by Delima et al. (2022), recognizing the importance of skills such as critical thinking, online safety, and effective communication. However, despite this awareness, a portion of senior high school students still lack the exposure and experience necessary to navigate the evolving digital learning environment effectively.

This growing recognition of the importance of digital literacy is critical for the Philippine educational system, especially in a context where online learning is now a significant modality. The findings of Delima et al. (2022) underscore the role of digital skills in enhancing students’ ability to adapt and succeed in distance learning, highlighting the need for educational institutions to integrate digital literacy training into the curriculum. Strengthening these skills will not only improve academic outcomes but also ensure that students are equipped to thrive in a future where digital proficiency is essential for success in both higher education and the workforce.

Methodology

Research Design

Using a descriptive correlational research design, this study assessed the academic performance of the senior high school students in two different learning environments: online and face-to-face. In this study, the descriptive-comparative aspect focused on comparing the academic performance of NU Dasmariñas SHS students under online learning and face-to-face learning modalities. Statistical methods such as frequency and percentage, mean and standard deviation, t-test, ANOVA, and regression analysis were used to analyze the data and determine significant differences and relationships among variables.

Respondents

This study employed the purposive sampling technique to select participants where predetermined criteria were set. The criteria included submitted Grade 10 report cards for the Grade 11, certificate of grades for the transferees, Grade 11 grades for Grade 12 students, and Term 1 grades for transferees, Grade 11 and Grade 12 students. Applying these criteria resulted in a final sample of 336 qualified participants drawn from three (3) academic strands: Accounting, Business, and Management (ABM); Humanities and Social Science (HUMSS); and Science, Technology, Engineering, and Mathematics (STEM). This sample size of 336 represents 82% of the total population of 410.

The use of purposive sampling ensured that only students with the necessary academic records were included, thereby allowing the research to focus on individuals possessing the relevant data. This targeted selection process, combined with the substantial sample size, is expected to yield reliable and valid conclusions for this study.

Instrument

The study primarily utilized and analyzed the documents available, and this became the main instrument tool. All data was provided by the school registrar following proper protocol. The following were the documents used in the study:

Profile of the Students (age, gender, strand, grade level)

1. Grade 10 grades of Grade 11 students
2. Grade 11 grades of Grade 12 students
3. Term 1 grades of Grade 11 students
4. Term 1 grades of Grade 12 students

Given that the data was collected directly from official academic records maintained by the registrar, the reliability of the instruments can be considered high. The registrar follows strict procedures to ensure that the data is accurate, consistent, and up to date. Therefore, while the study did not involve survey instruments, the use of official records ensures that the data is reliable and trustworthy.

This study excluded a number of student groups and data types to maintain a focused and consistent analysis. Students with incomplete academic records such as those with missing grades, enrollment gaps, or inconsistencies in their academic data—were not included, as these could compromise the accuracy of the findings. Also, the study did not incorporate qualitative data. Factors such as students’ learning behaviors, motivation, emotional or mental health, family background, or socio-economic conditions were excluded, as the study focused solely on quantitative academic records provided by the school registrar. These exclusions were necessary to ensure that

the analysis remained objective, data-driven, and consistent across the sample population.

To describe the Grades of the students, Table 1 was considered, which was adopted from DepEd Memorandum No. 8 series of 2015.

Table 1. *Learners Progress and Achievement*

<i>Descriptors</i>	<i>Grading Scale</i>	<i>Remarks</i>
Outstanding	90 - 100	Passed
Very Satisfactory	85 - 89	Passed
Satisfactory	80 - 84	Passed
Fairly Satisfactory	75 - 79	Passed
Did Not Meet Expectations	Below 75	Failed

Procedure

The research began by obtaining approval from the Registrar's Office of National University- Dasmariñas to access the necessary student records. This helped guarantee that the data collection followed ethical guidelines and institutional regulations. The information was thoroughly examined for accuracy. The reviewed and compiled information was stored in an Excel file. Proper ethical considerations were observed by giving every student a distinct identifier to preserve their anonymity and ensure their information could be simply tracked and processed. Statistical methods were used to analyze the material once the data had been encoded. Mean, standard deviation, and percentage were applied to compile the academic performance and student profiles across learning and face-to-face learning settings. Furthermore, inferential statistics, including t-tests, ANOVA, and regression analysis were used to investigate relationship among variables.

Data Analysis

Using inferential and descriptive statistical methods, the academic results of NU Dasmariñas Senior High School students under online and in-person learning systems were examined. Using SPSS software, the information was analyzed and organized statistically.

The study further explored the connection between independent and dependent variables by using inferential statistics. Researchers in the online and face-to-face classes used t-tests to evaluate student academic performance. The results of the t-test suggest whether there is a statistically important difference between the two approaches. One-way ANOVA was applied to study the disparity in academic performance based on demographic profile: age, gender, strand, and training. This helps one see how these factors have affected students' academic performance in every learning environment. On the other hand, analysis was employed to examine how the student's profile, mode of instruction, and academic performance related.

SPSS was used to analyze the data; its function is to determine means, standard deviations, t-tests results, ANOVA, and regression coefficients. Furthermore, the software allowed the interpretation of f-values and p-values, which were essential for drawing conclusions.

Ethical Considerations

The study strictly adhered to ethical standards set by the institution to ensure the responsible and respectful treatment of participants and their data. Prior to the commencement of the research, formal approval was obtained from the school administration. Informed consent was secured from all the participants, and for those who were minors, written parental or guardian consent was required and collected. Participants were informed of the study's purpose, procedures, voluntary involvement, including the option to withdraw at any stage without any consequences.

All results and academic performance data were treated with utmost confidentiality. Identifiable information was anonymized to protect the identities of participants. Data consisting of sensitive information, such as numerical grades and academic performance, was accessed solely by the researchers. Secure data storage methods were employed to prevent any unauthorized access or information leakage. These measures ensured the ethical handling of data throughout the research process.

Results and Discussion

This section deals with the presentation, analysis, and interpretation of statistically processed data gathered from the respondents. To facilitate the discussion of the results, the data are presented in tabular and textual forms paralleled to the order of questions raised in the statement of the problem.

Profile of the Respondents

The table below shows the distribution of the age of the respondents.

Table 2. *Distribution of the Respondents According to Age*

<i>Age Indicators</i>	<i>f</i>	<i>Percentage</i>	<i>Ranking</i>
15 – 17	294	87.50%	1

18 – 20	41	12.20%	2
21 - 23	1	0.30%	3
Total	336	100	

Mean Score: 16.54

The table shows that 294 students are in the age bracket of 15–17, 41 are in the age bracket of 18–20, and only 1 is in the age bracket of 21–23, with a mean score of 16.54. This means that most students of the SHS Department are classified as minors. It implies that the majority of the SHS students at NU Dasmariñas fall within the 15-17 age bracket (87.50%), which is the typical age range for senior high school students in the Philippines. The mean age of 16.54 further supports this observation, indicating that most respondents are in their mid-teen years. This is consistent with data from the Department of Education, which reported that four years after the implementation of the SHS program, more than half of the Filipino population aged 16 to 18 had enrolled in Grades 11 and 12—solidifying this age group as the primary demographic of SHS learners.

Table 3 shows the distribution of the respondents according to their gender.

Table 3. *Distribution of the Respondents According to Gender*

Gender	<i>f</i>	Percentage	Ranking
Male	127	37.80%	2
Female	209	62.20%	1
Total	336	100	

The table shows that most of the respondents are female, consisting of 209, while there are only 127 male respondents.

Table 4 presents the distribution of the respondents according to their strands. In the SHS Department of NUD, only three (3) academic tracks/strand are being offered: Accounting, Business, and Management (ABM), Humanities and Social Sciences (HUMSS), and Science, Technology, Engineering and Mathematics (STEM).

Table 4. *Distribution of the Respondents According to Strands*

Strands	<i>f</i>	Percentage	Ranking
ABM	294	87.50%	1
HUMSS	41	12.20%	2
STEM	1	0.30%	3
Total	336	100	

It can be gleaned from the table that the majority of the respondents are taking STEM, with 221, followed by ABM, with 72, and the least is HUMSS, with 43 students. This means that the students of NUD are more inclined to the technical discipline.

Table 5 shows the frequency and percentage of the respondents according to Grade Level.

Table 5. *Distribution of the Respondents According to Grade Level*

Grade Level	<i>f</i>	Percentage	Ranking
Grade 11	284	84.52%	1
Grade 12	52	15.48%	2
Total	336	100	

The table shows that most of the respondents are Grade 11, comprising 84.52 % of the respondents, and Grade 12, with 15.48% of the respondents. This explains why most of the respondents are in the age bracket of 15-17 years old.

Table 6 presents the academic performance of the SHS students using the online learning modality. The grades of the students during their Grade 10 for Grade 11 students and Grade 11 grades for Grade 12 students of academic year 2021-2022 were considered since during that academic year, different schools were still using online learning modality.

Table 6. *Academic performance of the students using online learning modality*

Grade Level	Academic Performance	Standard Deviation	Description
Grade 11	90.52	5.12	Outstanding
Grade 12	89.44	5.46	Very Satisfactory
Overall Academic Performance	90.36		Outstanding

The data above shows how SHS students in NU Dasmariñas are performing in the context of online learning, which has contributed to an increase in academic performance. A total rating of 90.36 total ratings belong to the 'outstanding' category, based on the criteria set by the Department of Education (DepEd, 2015), indicating that students are generally exceeding expectations despite the problem posed by online learning. This aligns with the findings of Giray et. al. (2022), which revealed that motivation plays a significant role

in online learning experience. The study highlighted that despite difficulties such as technology and internet connectivity issues, students were motivated to continue studying due to factors such as the fear of being left behind, parental encouragement, and the aspiration to help their families. Similarly, the SHS students of NU Dasmariñas might have been driven by similar intrinsic and extrinsic motivations, contributing to their outstanding academic performance. Motivation to succeed in an online learning setup has been a key factor in overcoming the challenges that come with this form of education.

The level of grade 11 is slightly higher than the grade 12 students (89.44). This was slightly better for grade 11 students, but both groups still reached a high score. Standard deviations (SD=5.12 for 12th graders, and SD=5.12 for 11 graders) indicated an intermediate effectiveness of the evaluation. This means that some students have performed well, but there is a difference in academic achievement. In the context of online education in the Philippines, the success of students is influenced by various elements such as digital access, student participation, and institutional support. Dangle (2020) reinforces this point, identifying key challenges in the implementation of modular distance learning in Philippine secondary public schools. These challenges include inadequate school funding for educational materials, students struggling with self-study, and parents' limited ability to offer academic guidance due to a lack of knowledge. These factors contribute to the differences in academic performance, as seen in the varying results across grade levels. To address these challenges, it is essential to improve resources, enhance preparedness, and strengthen communication between institutions, teachers, students, and parents. By doing so, schools can better support students in overcoming barriers and achieve more consistent and higher academic performance in online learning environments.

Table 7. *Academic performance of the students using face-to-face learning modality*

Grade Level	Academic Performance	Standard Deviation	Description
Grade 11	88.80	4.68	Very Satisfactory
Grade 12	89.54	4.53	Very Satisfactory
Overall Academic Performance	88.92		Very Satisfactory

Table 7 presents the academic performance of students under the face-to-face learning modality across two grade levels—Grade 11 and Grade 12. The results reveal that both groups achieved "Very Satisfactory" marks, with Grade 11 students recording a mean score of 88.80 (SD = 4.68), while Grade 12 students slightly outperformed them with a mean score of 89.54 (SD = 4.53). The overall academic performance across both levels is 88.92, still within the "Very Satisfactory" range.

The relatively low standard deviations in both grade levels suggest consistency in student performance, indicating that the academic outcomes were not widely spread out but closely clustered around the average. This implies that most students performed well and benefited similarly from the face-to-face learning setup.

These results support the study of Potane, Mccary, and Borres (2023) that face-to-face learning fosters better academic outcomes, possibly due to improved engagement with their classmates, real-time feedback from teachers, and increased motivation through peer interaction and classroom structure.

Table 8. *Academic Performance of the Respondents using Online and Face-to-face Learning Modalities*

Variables	t-test	p-value	Interpretation
Grade 10/Grade 11 Grades - Term 1 Grades	5.295	< 0.001	Reject the Null Hypothesis

Table 8 presents the results of the paired sample t-test comparing students' academic performance in online and face-to-face learning modalities. The computed t-value of 5.295 with a p-value of <0.001 is statistically significant, indicating a rejection of the null hypothesis. This implies that there is a significant difference in academic performance between students in the two learning modalities.

These findings suggest that students' performance varied based on the mode of instruction. Specifically, Grade 11 students performed better in the online learning modality, while Grade 12 students performed better in face-to-face learning. This may be attributed to adjustment challenges faced by students transitioning back to in-person classes after an extended period of remote learning. Studies have indicated that students accustomed to online learning may initially struggle with the demands of face-to-face learning (Dhawan, 2020). Conversely, research by Villamor et.al (2023) suggests that the tangible presence in a classroom setting significantly contributes to the academic success, heightened engagement, and overall productivity of students, which could explain the improved performance of Grade 12 students.

Furthermore, the difference in performance may also be influenced by student motivation, instructional quality, and assessment methods used in each modality (Parilla 2024). According to Taja-on and Guy-ab (2023) students' digital literacy contributes positively to their satisfaction with online learning. Learners showed high satisfaction with peer interactions, indicating their ability to navigate and engage in the digital learning environment. This suggests that digital literacy enhances students' capacity to participate meaningfully in online classes, making it a key factor in ensuring the effectiveness of online learning. Since Grade 11 students began

their senior high school journey in an online setup, they may have been more accustomed to this mode of learning, resulting in higher academic performance during that period. On the other hand, Grade 12 students, who were able to return to face-to-face learning, might have benefited from direct teacher interactions and structured classroom settings, leading to better learning outcomes.

These findings reinforce the argument that no single learning modality is universally superior, but rather, student performance is shaped by individual learning preferences, access to resources, and instructional strategies (Cardino & Ortega-Dela Cruz 2020).

Table 9. *Academic Performance of the Students Using Online Learning Modality When Grouped According to their Profile*

Variables	F	p-value	Decision
Age	2.821	<0.001	Reject the Null Hypothesis
Gender	2.802	<0.001	Reject the Null Hypothesis
Strand	0.843	0.689	Accept the Null Hypothesis
Grade Level	1.425	0.086	Accept the Null Hypothesis

Table 9 shows the results of ANOVA comparing students' performance in online learning modality based on various demographic factors, including age, gender, strand, and grade level. The results show a significant difference in academic performance according to age and gender, and no significant differences have been found when students are grouped according to strands and grade levels. This analysis shows a statistically significant difference in academic achievements of academic performance based on age ($F = 2.821$, $p < 0.001$), which results in the rejection of the null hypothesis. In particular, the younger students performed better. This conclusion is aligned with the study of Bilocura, Adlaon and Cuyag (2023). where young students have found that they can show higher adaptability to the online learning environment due to their high digital fluency and ability to interact with technical education. In addition, young students may receive more guidance from their parents, which has a positive impact on academic achievements in remote situations (Bao, 2020). Similarly, gender has a greater influence on students' academic performance than students in online learning ($F = 2.802$, $p < 0.001$), highlighting that female students are performing better than male students. Valladolid and Valladolid (2022) assumes that gender differences, with male students reporting greater self- efficacy, engagement, and course satisfaction. On the contrary, male students often report lower levels of participation in online learning (Bernard et al., 2019).

For academic strand and grade level, the results indicate no statistically significant difference ($p = 0.086$ and $p = 0.689$, respectively), leading to the acceptance of the null hypothesis. This suggests that students' academic performance in online learning is not significantly affected by their strand or grade level. The lack of variation may be attributed to the uniformity of instructional delivery across different strands and levels, where students receive similar levels of support, resources, and assessment strategies (Means et al., 2021).

Table 10. *Academic Performance of the Students Using Face-to-Face Learning Modality When Grouped According to their Profile*

Variables	F	p-value	Decision
Age	1.804	0.002	Reject the Null Hypothesis
Gender	1.614	0.009	Reject the Null Hypothesis
Strand	2.171	<0.001	Reject the Null Hypothesis
Grade Level	0.485	0.999	Accept the Null Hypothesis

Table 10 presents the results of the one-way Analysis of Variance (ANOVA) comparing students' academic performance in a face-to-face learning modality based on their age, gender, strand, and grade level.

The findings indicate significant differences in academic performance when grouped according to age, gender, and strand, while no significant difference was found based on grade level.

Age and Academic Performance

This analysis shows a statistically significant difference in academic efficiency based on age ($F = 1.804$, $p = 0.002$), which leads to rejection of the hypothesis. This data showed that 17-year-old students worked better than young students. This trend may be related to high cognitive maturity and time management technology, which is a study that shows that older students tend to develop the best habits and academic stability for the traditional conditions of the classroom (Zimmerman & Schunk, 2020).

Gender and Academic Performance

Similarly, gender significantly influences academic performance in face-to-face learning ($F = 1.614$, $p = 0.009$), with female students outperforming male students. Prior research suggests that female students generally demonstrate higher levels of classroom engagement, attentiveness, and academic discipline, which contribute to their better performance in structured learning environments (Demalata, Teves, Oreiro, Mariano, Estrellan, Valdez & Valdez, 2024). In contrast, male students often report lower motivation levels and a higher tendency toward distraction in traditional classroom settings (Ajlouni, Rawadieh, Almahaireh & Abu Awwad 2022).

Strand and Academic Performance

The findings also indicate a statistically significant difference in academic performance based on strand ($F = 2.171$, $p < 0.001$), leading to the rejection of the null hypothesis. Specifically, students in the ABM (Accountancy, Business, and Management) strand outperformed those in HUMSS (Humanities and Social Sciences) and STEM (Science, Technology, Engineering, and Mathematics), while HUMSS students performed better than STEM students. This result suggests that the nature of each strand may influence students' adaptability to face-to-face learning (Co, 2024).

Grade Level and Academic Performance

For grade level, the results show no statistically significant difference in academic performance ($F = 0.485$, $p = 0.999$), leading to the acceptance of the null hypothesis. This suggests that students in different grade levels perform similarly in face-to-face learning environments, possibly due to consistent teaching methods, standardized curriculum design, and uniform academic expectations across levels (Means et al., 2021).

Conclusions

The study aimed to compare the academic performance of Senior High School (SHS) students at NUD under two learning modalities, online and face-to-face, and examined the influence of demographic variables on their performance.

The demographic profile of Senior High School (SHS) students at NUD reveals important insights into the composition of the student body. Most students are between the ages of 15-17, with an average age of 16.54, and a notable gender imbalance with a higher proportion of female students (62.2%) compared to male students (37.8%). Most students are enrolled in the STEM strand (65.8%), and a significant portion of them are in Grade 11 (84.52%). This age and strand distribution is consistent with trends in the Philippines' SHS system, where younger students typically populate Grade 11, and the STEM strand is among the most popular. Understanding these demographic details is essential when considering how best to structure instructional strategies and address the specific needs of these diverse learners.

Regarding academic performance, the study found that students in both online and face-to-face learning modalities demonstrated commendable achievements. In online modality, students achieved an overall mean grade of 90.36, with Grade 11 students outperforming Grade 12 students (mean grades of 90.52 and 89.44, respectively). However, variability in performance was observed, suggesting that while online learning has been successful overall, there are differences in how students adapt to this learning modality. The standard deviations of 5.12 for Grade 11 and 5.46 for Grade 12 indicate that some students thrived in the online environment, while others struggled to adjust.

In face-to-face learning, students achieved an average grade of 88.92, categorized as "Very Satisfactory." Grade 12 students had a slight edge over Grade 11 students, suggesting that older students may be better equipped to thrive in a more structured, in-person learning environment. The comparison of performance between the two modalities revealed that Grade 11 students performed better in online learning, likely due to their greater familiarity with digital platforms, while Grade 12 students excelled in the face-to-face setting, potentially due to the increased structure and interaction provided by in-person classes.

When examining the academic performance of students based on their profiles in the online learning modality, age and gender were significant factors. Younger students, particularly those aged 15-17, outperformed older students, possibly due to higher levels of digital fluency and comfort with online tools. Female students also consistently outperformed male students, likely because of better self-regulation, time management, and engagement in the online learning environment. On the other hand, no significant differences were found based on academic strand or grade level, suggesting that the online modality provided a relatively equal learning platform across different groups.

In the face-to-face modality, performance differences were observed according to age, gender, and academic strand. Older students (17 years old) performed better, likely due to cognitive maturity and enhanced ability to focus in a classroom setting. Female students once again outperformed their male counterparts, which could be attributed to greater engagement and participation in face-to-face interactions. Furthermore, students in the ABM strand outperformed those in the HUMSS and STEM strands, indicating that the instructional methods used in ABM may have been more effective in supporting academic success in the traditional classroom environment.

Overall, these findings highlight the importance of tailoring teaching methods to the unique needs of students based on factors such as age, gender, academic strand, and learning modality. The significant differences observed between online and face-to-face learning modalities suggest that educators must carefully consider how to integrate both forms of learning to cater to the varying needs of students. Providing more personalized and adaptive instruction in both modalities, alongside targeted support for groups such as male students, older students, or those in non-ABM strands, could lead to more effective learning outcomes. Additionally, fostering an environment that supports digital fluency, especially for younger learners, and encouraging greater engagement in face-to-face settings, particularly for female students, will further enhance academic performance across the board.

To improve student engagement and academic performance, teachers should adopt differentiated instructional strategies that cater to the unique needs of each academic strand. For example, STEM students can benefit from interactive simulations and hands-on activities in face-to-face settings, while ABM and HUMSS students may find case-based and collaborative learning approaches more effective

in enhancing their performance. In addition, schools should implement targeted support programs for male students, such as mentoring initiatives and workshops on self-regulation and engagement techniques. These programs will help address the specific challenges male students face and foster a more supportive learning environment.

Moreover, recognizing the strengths of both online and in-person learning modalities, schools should consider adopting a blended learning approach. This model would allow Grade 11 students, particularly those transitioning to Senior High School, to benefit from the flexibility of online tools while still engaging in the hands-on experiences of face-to-face classes. To complement this, it is crucial to provide ongoing digital literacy training for both students and teachers. By equipping students with the necessary technological skills and ensuring that educators can effectively use digital platforms, online learning can become more accessible and effective, especially for those struggling with technological adaptation.

Lastly, schools should develop academic support services tailored to the diverse needs of their students. These services, which could include tutoring, study skills workshops, and academic counseling, should be specifically designed to support students who may be disadvantaged by factors such as age, strand, or learning modality. By addressing these areas, schools can create a more inclusive learning environment that promotes student success and provides the necessary resources for academic growth.

References

- Alea, L. A., Fabrea, M. F., Roldan, R., & Farooqi, A. Z. (2020). Teachers' COVID-19 awareness, distance learning education experiences and perceptions towards institutional readiness and challenges. *International Journal of Learning, Teaching and Educational Research*, 19(6), 127–144. <https://doi.org/10.26803/ijlter.19.6.8>
- Alipio, M. M. (2020a). Academic adjustment and performance among Filipino freshmen college students in the health sciences: Does senior high school strand matter? *Journal of Education and Management*. <https://doi.org/10.35542/osf.io/xq4pk>
- Ajlouni, A., Rawadieh, S., Almahaireh, A., & Abu Awwad, F. (2022). Gender differences in the motivational profile of undergraduate students in light of self-determination theory: The case of online learning setting. *Journal of Social Studies Education Research*, 13(1), 75-103.
- Alvarez, A., & Perez, M. (2022). Online learning in the Philippines: Benefits and challenges in senior high school education. *Education and Technology Review*, 29(1), 45–58. <https://doi.org/10.1016/j.etre.2021.10.003>
- Bajaro, J. C., Cenina, P. C., Caritativo, A. M., Amorelle, B., & Javier, D. R. (2021). Online distance learning in Baras-Pinugay: Grade 11 HUMSS & TVL students' challenges and opportunities [Paper presentation]. 3rd De La Salle University Senior High School Research Congress, De La Salle University. <https://doi.org/10.13140/RG.2.2.35474.38084/1>
- Bao, W. (2020). COVID-19 and online teaching in higher education: A case study of Peking University. *Human Behavior and Emerging Technologies*, 2(2), 113–115.
- Barrot, J. S., Llenares, I. I., & del Rosario, L. S. (2021). Students' online learning challenges during the pandemic and how they cope with them: The case of the Philippines. *Education and Information Technologies*, 26, 7321–7338. <https://doi.org/10.1007/s10639-021-10589-x>
- Babbar, M., & Gupta, T. (2021). Response of educational institutions to COVID-19 pandemic: An inter- country comparison. *Policy Futures in Education*, 20(4), 469–491. <https://doi.org/10.1177/14782103211021937>
- Baticulon, R. E., Alberto, N. R., Baron, M. B., Mabulay, R. E., Rizada, L. G., Sy, J. J., ... Reyes, J. C. (2020). Barriers to online learning in the time of COVID-19: A national survey of medical students in the Philippines. *Medical Science Educator*, 31, 615–626. <https://doi.org/10.1101/2020.07.16.20155747>
- Bernard, R. M., Borokhovski, E., Schmid, R. F., Tamim, R. M., & Abrami, P. C. (2019). A meta-analysis of blended learning and technology use in higher education: From the general to the applied. *Journal of Computing in Higher Education*, 31(1), 1–30.
- Bilocura, E.B., Adlaon, M.S., & Cuyag, R.M.O. (2023). E-learning engagements of pre-service education students. *International Journal of Technology in Education and Science (IJTES)*, 7(4), 514-530. <https://doi.org/10.46328/ijtes.513>
- Capinding, A. T. (2023). Student's readiness on the implementation of face-to-face classes: The aftermath of face-to-face class restriction. *International Journal of Educational Methodology*, 9(2), 309–320. <https://doi.org/10.12973/ijem.9.2.309>
- Cano, J. S. (2022). Comparative analysis of senior high school learners' academic performance in traditional face-to-face and online distance learning modalities. *International Journal on Social and Education Sciences (IJonSES)*, 4(4), 541–561. <https://doi.org/10.46328/ijonSES.369>

- Cardino, J. M., Jr., & Ortega-Dela Cruz, R. A. (2020). Understanding of learning styles and teaching strategies towards improving the teaching and learning of mathematics. *LUMAT General Issue*, 8(1), 19–43. <https://doi.org/10.31129/LUMAT.8.1.1348>
- Castillo, P. J. (2021). Education in the time of COVID: Bridging inequalities in access to opportunities. https://animorepository.dlsu.edu.ph/res_aki/99
- Co, S. J. D. L. S. (2025). Student evaluation of blended learning implementation and faculty performance with online components: A comparative analysis across senior high school grade levels and academic strands. *International Journal on Open and Distance e-Learning*, 10(2). <https://doi.org/10.58887/ijodel.v10i2.287>.
- Conocono, A. S., Canillo, J., Aying, F. L. U., & Capangpangan, A. (2023). Filipino students' experiences in online learning: A meta-synthesis. *International Journal for Research in Applied Science and Engineering Technology*, 11(3), 211–220. <https://doi.org/10.22214/ijraset.2023.49511>
- Dangle, Y. R. P. (2020). The implementation of modular distance learning in the Philippine secondary public schools. 3rd International Conference on Advanced Research in Teaching and Education, 2020. <https://doi.org/10.33422/3rd.icate.2020.11.132>
- De Guzman, M. J., & Pastor, C. K. (2020). Business administration students' skills and capability on synchronous and asynchronous alternative delivery of learning. *Asian Journal of Multidisciplinary Studies*, 3(1), 28–34.
- Delima, D. A., Mamaril, R. J., Javier, D. R. C., Dela Peña, M. O., Soriano, R. F., & Ladjammah, K. S. J. (2022). Awareness of senior high school students on digital literacy skills: A qualitative study. *Sinaya: A Philippine Journal for Senior High School Teachers and Students*, 1(3), Article 2. <https://doi.org/10.59588/3027-9283.1048>
- Demalata, J. G., Teves, R. M. C., Oreiro, L. A. A., Mariano, G. F. A., Estrellan, J. C., Valdez, A. G., & Valdez, D. M. (2024). Gender influence on students' interest, classroom participation, academic achievement, and academic performance in science. *ASEAN Journal of Community Service and Education*.
- Department of Education (DepEd). (2015). DepEd Order No. 8, s. 2015: Policy guidelines on classroom assessment for the K to 12 Basic Education Program.
- Di Pietro, G. (2023). The impact of COVID-19 on student achievement: Evidence from a recent meta- analysis. *Educational Research Review*, 39, 100530. <https://doi.org/10.1016/j.edurev.2023.100530>
- Duckworth, A. L., & Seligman, M. E. (2017). Self-discipline outdoes IQ in predicting academic performance of adolescents. *Psychological Science*, 16(12), 939–944.
- Elizarde, A. Q. (2024, November). Teaching mathematics during modular distance learning in selected secondary schools in Ilocos Sur [Article]. *International Journal of Multidisciplinary Research and Analysis*, 7(11). <https://doi.org/10.47191/ijmra/v7-i11-29>
- Espinoza, M., Villar, F., & Parra, D. (2024). Exploring long-term academic outcomes of online vs. face-to-face learning in senior high school students. *Journal of Educational Research*, 59(3), 234–245. <https://doi.org/10.1111/jed.00132>
- Estira, K. L. (2020). Online distance learning readiness of business administration students in one state university in the Philippines. *Journal of Critical Reviews*, 8(8), 826–832. <https://doi.org/10.31838/jcr.07.12.146>
- Fabito, B. S., Trillanes, A. O., & Sarmiento, J. R. (2020). Barriers and challenges of computing students in an online learning environment: Insights from one private university in the Philippines. *International Journal of Computing Sciences Research*, 5(1), 441–458. <https://doi.org/10.25147/ijcsr.2017.001.1.51>
- Giray, L., Gumalin, D., Jacob, J., & Villacort, K. (2022). Exploring the online learning experience of Filipino college students during the COVID-19 pandemic. *Jurnal Ilmiah Peuradeun*, 10(1), 227. <https://doi.org/10.26811/peuradeun.v10i1.691>
- Gocotano, T. E., Jerodiaz, M. A. L., Banggay, J. C. P., & Nasibog, H. B. R. (2021). Higher education students' challenges on flexible online learning implementation in the rural areas: A Philippine case. *International Journal of Learning, Teaching and Educational Research*, 20(7), 262–290. <https://doi.org/10.26803/ijlter.20.7.15>
- Gonzales, K. P. (2020). Rising from COVID-19 private schools readiness and response amidst a global pandemic. *Ioer International Multidisciplinary Research Journal*, 2(2), 81–90.
- Gonzales, L. (2021). Motivation and academic performance in online learning: Evidence from the Philippines. *Philippine Educational Journal*, 16(2), 89–101. <https://doi.org/10.3124/pej.2021.016>
- González-Gómez, F. (2022). Comparative effectiveness of online learning and face-to-face instruction: A meta-analysis of empirical studies. *Journal of Educational Technology Systems*, 51(2), 168–186. <https://doi.org/10.1177/0047239522107497>
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3, 275–285. <https://doi.org/10.1016/j.susoc.2022.05.004>

- Hattie, J. (2018). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.
- Hidalgo, J. L., Cadavis, J. C., Matienzo, A. L., Lanzarrote, K. K., & Rosario, E. M. (2021). A phenomenological study on online learning set-up: Challenges and coping mechanisms of senior high students. *International Journal of Research Publications*, 91(1), 114–123. <https://doi.org/10.47119/IJRP1009111220212580>
- Hill, T. (2023). Demographic disparities in online learning outcomes: Evidence from the COVID-19 transition. *International Journal of Educational Research*, 119, 103–114. <https://doi.org/10.1016/j.ijer.2023.102479>
- Jones, A., & Smith, K. (2021). The relative benefits of online learning and in-person education: A comparative study. *Journal of Educational Psychology*, 113(4), 758–771. <https://doi.org/10.1037/edu0000432>
- Mallillin, L. L., Carag, E. A., Mallillin, J. B., & Laurel, R. D. (2020). Integration of knowledge through online classes in the learning enhancement of students. *European Journal of Open Education and E-learning Studies*, 5(1), 19–34. <https://doi.org/10.5281/zenodo.3890568>
- Mallillin, L. L., Mendoza, L. C., Mallillin, J. B., Felix, R. C., & Lipayon, I. C. (2020b). Implementation and readiness of online learning pedagogy: A transition to COVID-19 pandemic. *European Journal of Open Education and E-learning Studies*, 5(2), 71–90. <https://doi.org/10.46827/ejoe.v5i2.3321>
- Means, B., Bakia, M., & Murphy, R. (2021). *Learning online: What research tells us about whether, when, and how*. Routledge.
- Mhlongo, S., Mbatha, K., Ramatsetse, B., & Dlamini, R. (2023). Challenges, opportunities, and prospects of adopting and using smart digital technologies in learning environments: An iterative review. *Heliyon*, 9(6), e16348. <https://doi.org/10.1016/j.heliyon.2023.e16348>
- Mohd Fatzel, F. H., Mohd Isa, N. S., Omar, N., Ab Rahman, L., & Wan Abdullah, W. R. (2021). A comparison of students' performance during face-to-face vs. open and distance learning – Evidence from Diploma in Accountancy students. *International Journal of Academic Research in Business and Social Sciences*, 11(11). <https://doi.org/10.6007/IJARBSS/v11-i11/11193>
- Obligar, M. P. R., & Doculan, J. A. S. (2021). Self-regulated learning among Filipino senior high school students during COVID-19 pandemic. *International Journal of Education and Research*, 9(7), 121–134. <https://doi.org/10.2345/ijer.2021.09070121>
- Orlanda-Ventayen, C. C., & Ventayen, R. J. M. (2020). Learning modality in the new normal education: Determining students' preference in online learning. *Asian Journal of Education and E-Learning*, 8(4), 23–30. <https://doi.org/10.24203/ajeel.v8i4.6618>
- Padilla, R. M. (2021). Students' preference on learning delivery modalities: A basis for instructional development. *International Journal of Multidisciplinary: Applied Business and Education Research*, 2(4), 309–316. <https://doi.org/10.11594/ijmaber.02.04.04>
- Parilla, E. (2024). Measuring the effectiveness of online and face-to-face classes using the Community of Inquiry framework. *Education and Policy Development*, 2(1). <https://doi.org/10.31098/epd.v2i1.1869>
- Philippine Statistics Authority. (2022). *Functional literacy, education and mass media survey*. <https://psa.gov.ph>
- Pizarro, R. A. (2020). Readiness and perception of senior high school students on online distance learning. *International Journal of Pedagogical Development and Lifelong Learning*, 1(2), 1–9. <https://doi.org/10.30935/ijpdll/8472>
- Potane, J. D., Borres, C. J. C., & Mccary, M. (2023). Students' readiness for the face-to-face classes in junior and senior high school. *International Journal of Advanced Research*, 11(1). <https://doi.org/10.21474/IJAR01/16028>
- Quinones, L. A. B. (2022). Academic motivation and learning strategies of online and face-to-face senior high school students in Tagbilaran City, Bohol. *IOER International Multidisciplinary Research Journal*, 4(2), 89–99.
- Ramos, R. C. (2021). Learning experiences of senior high school students in the online distance learning amidst the COVID-19 pandemic. *Journal of Education and Learning*, 15(1), 44–53.
- Saavedra, J. (2020). Educational challenges and opportunities in the COVID-19 era. *World Bank Blogs*. <https://blogs.worldbank.org/education>
- Salac, R. A., & Kim, Y. S. (2020). A study on the internet connectivity in the Philippines: An exploratory analysis. *International Journal of Advanced Computer Science and Applications*, 11(6), 559–566. <https://doi.org/10.14569/IJACSA.2020.0110670>
- Salayo, M. E. M., & Padilla, D. C. (2021). Learners' engagement and academic performance amidst distance learning. *International Journal of Humanities and Education Development*, 3(1), 10–19. <https://doi.org/10.22161/ijhed.3.1.2>
- Samsudin, N. A., Wahab, S. N. A., & Ahmad, A. (2023). The impact of online learning on students' academic performance: A study among Malaysian university students. *Education and Information Technologies*, 28(1), 345–362. <https://doi.org/10.1007/s10639-022-11100-w>

- San Juan, A. (2020). Education and the COVID-19 pandemic in the Philippines. *Education in Crisis*, 22– 28.
- Selwyn, N. (2016). *Education and technology: Key issues and debates* (2nd ed.). Bloomsbury Publishing.
- Serafica, R. (2021). Addressing digital divide in the Philippine education system. *Philippine Institute for Development Studies Policy Notes*, 2021–04. <https://pids.gov.ph>
- Soliman, M., & Salem, R. (2021). A comparison between online and face-to-face learning: Student motivation and academic performance. *International Journal of Emerging Technologies in Learning*, 16(18), 138–150. <https://doi.org/10.3991/ijet.v16i18.25179>
- Taja-on, E., & Guy-ab, J. M. (2023). Digital literacy: The outcome of online learning satisfaction. <https://doi.org/10.13140/RG.2.2.11779.17445>
- Tang, Y. M., Chen, P. C., Law, K. M. Y., Wu, C. H., Lau, Y. Y., Guan, J., ... & Ho, G. T. S. (2021). Comparative analysis of student performance in online vs. face-to-face instruction during the COVID-19 pandemic. *International Journal of Educational Technology in Higher Education*, 18(1), 1–13. <https://doi.org/10.1186/s41239-021-00282-7>
- Toquero, C. M. (2020). Challenges and opportunities for higher education amid the COVID-19 pandemic: The Philippine context. *Pedagogical Research*, 5(4), 1–5. <https://doi.org/10.29333/pr/7947>
- Tria, J. Z. (2020). The COVID-19 pandemic through the lens of education in the Philippines: The new normal. *International Journal of Pedagogical Development and Lifelong Learning*, 1(1), 2–4. <https://doi.org/10.30935/ijpdll/8311>
- UNESCO. (2021). Education: From disruption to recovery. <https://en.unesco.org/covid19/educationresponse>
- Valladolid, V. C., & Valladolid, R. S. (2022). Students' academic self-efficacy, engagement, satisfaction, and perceived academic performance in online learning.
- Villamor, A. L., Jr., Cabig, L. K. L., Romero, N. E. O., Guevarra, D. T., Pamintuan, J. A., Santos, J. M., Tadeo, A., Aquino, G. T., Montemayor, J. N., & Marcaida, J. L. M. (2023). Measuring the impact of face-to-face learning on HUMSS students' school productivity [Research output]. Zenodo. <https://doi.org/10.5281/zenodo.10983060>
- World Bank. (2020). Remote learning and COVID-19: The use of educational technologies at scale across an education system as a result of the COVID-19 pandemic. <https://www.worldbank.org>
- Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory Into Practice*, 41(2), 64–70.

Affiliations and Corresponding Information

Najera R. Umpar

National University – Philippines

Annaliza C. Sinfuego

National University – Philippines

Dawn Nari S. Condez

National University – Philippines

Daniel C. Abuton

National University – Philippines

Jhon Eric D. Punzalan

National University – Philippines