

# Digital Literacy of NEUST -SIC Education Students

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**Abstract** - In today's digital era, the importance of digital literacy for education students cannot be overstated. This study aims to investigate the digital literacy levels of education students and analyze the impact of various demographic factors on their digital skills. The research delves into the profiles of education students based on gender, course, year level, and age, and explores how these factors influence their digital literacy. The study employs a descriptive research design and utilizes purposive sampling to gather data from 238 education students at Nueva Ecija University of Science and Technology. A survey questionnaire is used to collect data on demographic profiles and digital literacy levels. The results reveal significant insights into the digital literacy landscape of education students.

The findings suggest that education students, regardless of gender, exhibit a high level of digital literacy. Gender appears to have no significant impact on digital literacy levels. However, the study unveils significant differences in digital literacy based on course and year level. Different education programs exhibit varying levels of digital literacy, and as students advance in their education, their digital literacy skills tend to improve. Moreover, age does not have a significant relationship with digital literacy.

The study's implications point toward enhancing digital literacy training within educational programs. Customized training should align with the specific demands of each program, ensuring that students are well-equipped with digital skills relevant to their future careers. Additionally, interdisciplinary collaboration and continuous professional development opportunities are recommended to foster peer learning and keep education students updated with evolving technologies and pedagogical practices.

**Key Words:** education students 1, Digital Literacy 2, Technology 3.

## 1. INTRODUCTION

In today's digital age, the use of technology has become a ubiquitous aspect of daily life. With the increasing prevalence of digital technologies, there is a

growing need for individuals to be digitally literate. Digital literacy does not only focus on knowing how to use the computer. This is particularly important for education students, who are expected to be proficient in using digital tools and technologies to support their teaching and learning practices. According to Maryville University (2023), Digital literacy refers to the capability of utilizing technology to discover information, assess sources, produce content, and interact with others competently. It is a set of skills utilized to maneuver the contemporary technological landscape in which society functions. Being digitally literate is highly advantageous in being a proficient online learner.

The role of digital literacy in education has been widely recognized, with many educators and scholars arguing that it is essential for preparing students for success in the 21st century. However, despite this recognition, there is limited research on the digital literacy of education students. The hazards of the online world are intricate and constantly evolving, with malicious individuals or organizations always exploring and developing new methods to exploit others. While digital literacy cannot completely eliminate the possibility of students encountering safety concerns on the internet, it can equip them with crucial information, techniques, tools, and resources to mitigate the risks and safeguard their privacy and well-being to the greatest extent possible (Lcom Team, 2022). Thus, understanding the digital literacy of education students is crucial as it enables us to design appropriate interventions that will enhance their digital skills and competencies.

This study will provide insights into the digital literacy of education students, which can inform the development of interventions aimed at enhancing their digital skills and competencies. Additionally, the findings of this study will contribute to the growing body of literature on digital literacy in education, which can inform future research in this area.

### 1.1 Objectives :

This study aimed to investigate the digital literacy of education students. Specifically, it aimed to provide significant answers to the following objectives:

1. Identify the profile of the respondents in terms of:
  - 1.1. Gender
  - 1.2. Course
  - 1.3. Year Level
  - 1.4. Age
2. Determine the Digital literacy of the respondents.
3. Determine if there is a significant relationship between the profile of the respondents and their digital literacy
4. Propose an intervention program to enhance the Education students' digital literacy

#### Hypotheses

The following hypotheses were tested:

1. There is no significant differences in respondents' digital literacy across gender
2. There is no significant differences in respondents' digital literacy across year level.

### 1.2 Methodology

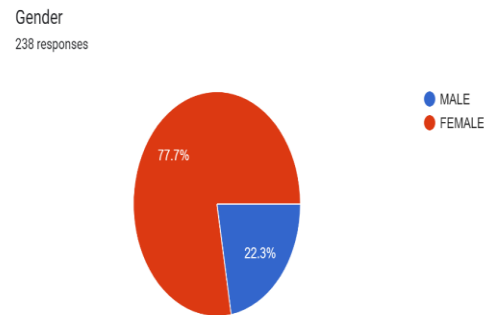
A descriptive research design was used to determine digital literacy of College students at Nueva Ecija University of Science and Technology. Descriptive research focuses on the current state of affairs and provides facts upon which to base scientific judgment. It is valuable for providing essential information about the nature of objects and people and for obtaining a closer look at practices, behavior, procedures, and methods (Calmorin, 2016).

Purposive Sampling was used in this study. According to Calmorin (2016), Purposive sampling is a non-scientific sampling of selecting the individuals' samples according to the purposes of the researcher as his controls. An individual is chosen as part of a sample due to good evidence that he is a representative of the total population. There were two hundred thirty eight (238) college students in NEUST voluntarily participated in the study .

The survey questionnaire consists of two major parts. The first part comprised questions regarding socio-demographic status( Age, Gender, year level, Course )The second part is Digital literacy that consists of 11 questions with a 4-point Likert scale. The gathering of data were done using online Google form as the questionnaire and were sent using the respondent's email or through FB messenger.

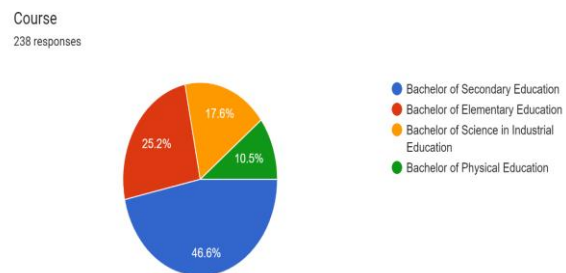
The data from the Google Form were entered in Microsoft Excel and were analyzed using IBM SPSS Statistical program. For the evaluation, the researcher used an independent t-test and variance analysis (ANOVA). Percentage, frequency, average, and standard deviation values were also used.

## 2. RESULTS AND DISCUSSIONS



**Chart -1: Gender**

Figure 1 presents the gender distribution of the respondents. Most of the respondents are females, constituting 77.7%, while only 22.3% are males.



**Chart -2: Course**

In terms of the respondents' course, as shown in Chart 2, the majority of the respondents (46.6%) are enrolled in the Bachelor of Secondary Education program. It is followed by the students taking up Bachelor of Elementary education which constitute 25.2% of the respondents. Next in rank are the students enrolled in the Bachelor of Industrial Education program composed of 17.6% of the total respondents, followed by the respondents from Bachelor of Physical Education which are only 10.5% of 238 participants.

Year level  
238 responses

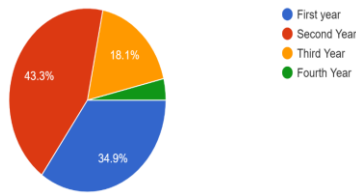


Chart-3: Year Level

As to the year level of the participants, most of them are in their third year, with 43.3% of 238. While 34.9% of the participants were first year, and only 18.1% were in their third year. The data also revealed that only 3.7% of the total participants were in the fourth-year level.

AGE  
238 responses

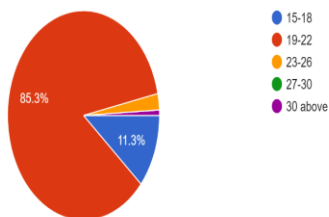


Chart -4: Age

For the age distribution of the respondents, Chart 4 shows that the majority of the respondents are between 19-22 years old which constitutes 85.3% of 238. Only 11.3% are between 15 to 18 years old.

Table -1: Digital Literacy in Terms of Gender.

Gender	Frequency	Percentage	Average	Description
Female	185	77.7 %	3.23	Very Good
Male	53	22.3 %	2.95	Very Good
Total	238	100.00	3.09	Very Good

Table 1 presents the digital literacy of the respondents in terms of their gender. Based on the survey results, the average mean digital literacy score for female education students is 3.23, which falls within the "very good" range

on a scale of 1 to 4. Similarly, the average mean digital literacy score for male education students is 2.95, which is also interpreted as "very good."

It is significant to highlight that digital literacy ratings for both female and male education students are reasonably high, demonstrating an impressive general proficiency in digital skills. This shows that both genders are capable of using digital tools and technologies for educational purposes and have an in-depth knowledge of how to do so.

We can see from a comparison of the average mean scores that female education students had a marginally higher score (3.23) than male education students (2.95). Even though the difference might not be significant, it does indicate that female respondents had a slightly higher degree of digital literacy.

Similar results were obtained by Fraillon et al. (2014) in a study on students' usage of ICT (information and communication technology) both at home and at school. The survey indicated that there were marginal differences in the percentages of male and female computer users at home and at school, with slightly more male users. These variations weren't statistically significant, though.

The survey also discovered that although the difference was minor but substantial, females used computers for educational activities slightly more frequently than males did. This shows that, when compared to males, females may have been more likely to use ICT for academic purposes.

Additionally, the outcome is consistent with the trend found in studies by Gebhardt et al., (2019) Koen Aesaert\*, Johan van Braak (2015), and Punter et al. (2017). Female education students in the current study had somewhat higher digital literacy ratings, which may be at least partially explained by their improved use of digital tools for information evaluation, reflection, and sharing. All studies make sense that female students may have particular advantages when it comes to digital literacy skills of communication, critical thinking, and information evaluation.

**Table -2:** Digital Literacy in Terms of Course

Course	Frequency	Percentage	Average	Description
BEED	60	25.2%	3.178787879	Very Good
BSE	111	46.6%	3.34971335	Very Good
BSIE	42	17.6%	3.084415584	Very Good
BPED	25	10.5%	3.152727273	Very Good
Total	238	100.00	3.185	Very Good

Table 2 presents the Digital literacy of the respondents in terms of their degree courses. Bachelor of Elementary Education (BEED) got the average mean score of 3.178787879, verbally interpreted as "very good." This indicates that students pursuing a Bachelor of Elementary Education have a strong level of digital literacy, demonstrating good proficiency in utilizing digital tools and technologies.

Students enrolled in the Bachelor of Secondary Education (BSE) program also got an impressive average mean of 3.34971335, also verbally interpreted as "very good". As compared to the respondents from the BEED program, students enrolled in the Bachelor of Secondary Education program display a higher average digital literacy score. This suggests that students pursuing a Bachelor of Secondary Education have a slightly stronger level of digital literacy.

Students studying Bachelor of Industrial Education (BSIE) exhibit a good level of digital literacy, although the average score is slightly lower compared to BSE. The BSIE respondent's average mean score is 3.084415584, categorized as "very good" as well.

The Bachelor of Physical Education (BPED) average mean score is 3.152727273, also falling within the "very good" range. This group of BPED students has a similar level of digital literacy as the BEED.

Based on the given data, it can be observed that all the respondents show a high level of digital literacy, with total average mean scores of 3.185 categorized as "very good." However, there are slight variations in the scores among the different education courses.

It is worth noting that the variations in average mean scores could be influenced by several factors, such as the curriculum and focus of each program, the specific digital literacy training provided within the courses, or even the

individual differences among the respondents within each course.

In a study by Baterna, et.al, (2020), focusing on STEM (Science, Technology, Engineering, and Mathematics) students, it becomes evident that digital literacy levels can vary depending on the domain of study. The study indicates that STEM students demonstrate a moderate level of digital literacy in terms of utilizing and managing information. They are capable of using information accurately and creatively to address current scientific issues and problems, displaying an understanding of ethical and legal considerations.

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**Table -3:** Digital Literacy in terms of Year Level

Year Level	Frequency	Percentage	Average	Description
1st Year	83	34.9 %	3.08	Very Good
2nd Year	103	43.3%	3.29	Very Good
3rd Year	43	18.1 %	3.29	Very Good
4th Year	9	3.78%	3.67	Very Good
Total	238	100.00	3.33	Very Good

When grouped according to the respondents' year level, as presented in Table 3, The average mean score for first-year education students is 3.08, which is categorized as "very good." This suggests that students in their first year of education demonstrate a strong level of digital literacy, displaying good proficiency in utilizing digital tools and technologies.

Second-year respondents also fall within the "very good" range, with an average mean score of 3.29. Students in their second year show a higher average digital literacy score compared to those in their first year. This demonstrates how the students' level of digital literacy has grown and improved over time.

Digital literacy among third-year students is comparable to that of second-year students. Third-year respondents also got an average mean score of 3.29, also categorized as "very good." This shows that students in these middle stages of their education have a consistent degree of proficiency in digital skills.

Among the four year levels surveyed, fourth-year students have the highest average score for digital literacy. The average mean score is 3.67, falling within the "very good" range as well. This suggests that students in their last year have advanced to a high level of digital literacy, possibly as a result of their cumulative knowledge and experiences acquired during the course of their studies.

The overall average mean score of 3.33, classified as "very good" indicates that the respondents across all year levels possess a strong level of digital literacy. These findings show that as students develop in their education, their digital literacy advances.

The progressive aspect of digital literacy skills is highlighted by Jackie Marsh (2016) in his study about the digital literacy abilities and skills of preschool-aged children. According to Marsh's study findings, even very young toddlers can pick up a variety of "operational" digital literacy skills. These technical competencies include the capacity to create, publish, distribute, and interact with digital texts as readers or viewers.

Thus, it becomes evident that the development of digital literacy abilities occurs at various educational levels. At a young age, children learn the fundamentals of operation, and as they continue in their education, these abilities are further developed, resulting in more sophisticated digital literacy abilities among education students.

group. This indicates that as respondents progress into their late teens and early adulthood, their digital literacy skills continue to improve.

However, although there are only six respondents in the age group between 23-26, their average digital literacy score remains relatively high with an average mean score of 3.12, verbally interpreted as 'very good' as well. This suggests that respondents between the ages of 23 and 26 possess a good level of digital literacy.

For the age group of 30 and above, although there are only two respondents in this age group, their average digital literacy score is substantially higher than the other age groups, with a mean score of 3.90, which is likewise considered to be "very good." This suggests that individuals who are 30 years of age and older have a particularly high degree of digital literacy.

The overall findings show that respondents in all age groups possessed a good to a very good degree of digital literacy. Younger age groups, like 15–18 and 19–22, typically exhibit significant digital literacy abilities, but later age groups, such as 23–26 and 30 and above, do so as well.

Comparing this result to data from the International Telecommunication Union (ITU) (Dy,2022) website shows that people aged 15 and above have varying levels of digital literacy. The most recent data from 2019 show that just a small portion of people in this age range have basic internet abilities (6%), average digital skills (2%), and less than 1% have advanced digital skills.

**Table- 4:** Digital Literacy in Terms of Age

Year Level	Frequency	Percentage	Average	Description
15-18	27		3.11	Very Good
19-22	203		3.25	Very Good
23-26	6		3.12	Very Good
30-above	2		3.90	Excellent
Total	238	100.00	3.34	Very Good

In terms of age, as shown in Table 4, respondents who are between 15-18 years old have an average mean score of 3.11, which is categorized as "very good." This indicates that respondents between the ages of 15 and 18 exhibit a high level of digital literacy and good skill in using digital tools and technology.

Respondents between the ages of 19 and 22 with an average mean score of 3.25 exhibit a slightly higher average digital literacy score compared to the 15-18 age

**Table-5.:** Differences in Digital Literacy when grouped according to their Profile.

Profile	f-ratio value	p-value	Interpretation
Gender	-0.15143	.880	Not significant
Course	3.32179	.020534	Significant
Year Level	5.18897.	.001731	Significant
Age	.901	.442	Not significant

Table 4 presents the differences in the Digital Literacy of the respondents when grouped according to their profiles. In terms of gender, the t-value is -0.15143. The p-value is .439884. The result is not significant at  $p < .05$ . This shows that there is no significant difference in digital literacy scores between male and female respondents. This

indicates that among the surveyed education students, gender does not significantly influence their level of digital literacy. Regardless of gender, other factors may have a more significant impact on digital literacy, such as personal learning experiences or access to technology.

The finding is comparable to the result of the study conducted by Salma Jan (2018) titled Gender, school and Class wise differences in the Level of Digital Literacy among secondary school students in Pakistan. Both indicate that there is no significant difference in digital literacy scores between male and female participants. In the present study, the t-value and p-value suggest that gender does not significantly influence the level of digital literacy among education students. Similarly, in the study conducted by Salma Jan (2018), the Mann-Whitney U test also demonstrates that there is no significant difference between male and female participants in terms of their digital literacy scores.

In terms of the course of the respondents, the f-ratio value is 3.32179. The p-value is .020534. The result is significant at  $p < .05$ . The data revealed a significant difference in digital literacy scores when respondents are grouped based on their courses. This suggests that the particular education program pursued by the respondents has an influence on their digital literacy levels. For example, respondents pursuing a Bachelor of Secondary Education may have higher digital literacy skills compared to those studying Bachelor of Elementary Education or Bachelor of Industrial Education. The differences in digital literacy levels could be attributed to the curriculum, focus, and specialized digital literacy instruction within each course.

For the year level, the f-ratio value is 5.18897. The p-value is .001731. The result is significant at  $p < .05$ . This result suggests that the respondents' scores on digital literacy varied significantly depending on what year they were in. This shows that students' levels of digital literacy tend to improve as they advance in their education. For instance, fourth-year students might higher level of digital literacy than first-year students. This implies that improved digital literacy skills are a result of accumulated learning and experiences throughout time.

In terms of age, the f-ratio value is .901 The p-value is .442. The result is not significant at  $p < .05$ . This indicates that there is no significant difference in digital literacy scores when respondents are grouped based on

their age. This shows that age does not affect the degree of digital literacy.

Findings revealed that course and year level affected the level of digital literacy among the respondents. Respondents differ in their digital literacy across the two variables. All of these variables could have an impact on how the respondents are exposed to digital tools and technology, on the instruction they receive in each course, and on their individual learning experiences.

The Hypothesis that there are no significant differences in respondents' digital literacy across genders was accepted while there is no significant difference in respondents' digital literacy across year level was, therefore, rejected.

### 3. CONCLUSIONS

1. The majority of the surveyed education students have high levels of digital literacy. The median scores across several profile variables, including gender, course, year level, and age, consistently fall within the "very good" range. This suggests that the respondents have a high level of skill in using digital tools and technologies for educational purposes.
2. The survey's education students' levels of digital literacy are not considerably influenced by their gender. The average mean scores for male and female respondents are comparable, indicating that gender is not the sole determinant of digital literacy.
3. Levels of digital literacy are significantly correlated with the demographics of respondents. different education courses showed differences in average mean scores, reflecting different levels of digital literacy in various programs. Additional investigation may point to certain areas of strength or need for development in each course.
4. Year level of the respondents is significantly related to their digital literacy levels. As students advance through their education, their digital literacy scores tend to improve. This indicates the cumulative impact of learning experiences and exposure to digital tools and technologies over time.
5. Age and digital literacy of the respondents have no significant relationship.

### Recommendations:

1. Enhance digital literacy training: Despite the fact that the education students who participated in the survey typically exhibited excellent levels of digital literacy, it is crucial to keep improving digital literacy training within educational programs. This may entail adding more hands-on activities, workshops, and classes that are specially designed to help students develop their digital abilities for academic purposes.
  2. Create digital literacy training that is in line with the particular demands and specifications of each educational program, taking into account the considerable connection between the course of study and digital literacy levels. By doing this, educators can make sure that students receive specialized instruction in digital skills that directly supports their future careers in the field of teaching.
  3. Encourage interdisciplinary cooperation: Students studying education can more easily share their knowledge and abilities on digital literacy by encouraging collaboration across disciplines. Students from various courses, year levels, and backgrounds can work together on projects and activities that foster collaboration, which can lead to chances for peer learning and the exchange of best practices for using digital technologies in the classroom.
  4. Education students must have access to continuous professional development opportunities in digital literacy because they will be teachers in the future. Educators can stay updated on new technology, pedagogical approaches, and digital tools relevant to their field by attending workshops, seminars, and training.
- [3] Dy, Jeffrey (2022). Improving digital skills in the Philippines. <https://mb.com.ph/2022/08/25/improving-digital-skills-in-the-philippines>
  - [4] Fraillon, J., Ainley, J., Schulz, W., Friedman, T., Gebhardt, E. (2014). Students' Use of and Engagement with ICT at Home and School. In: Preparing for Life in a Digital Age. Springer, Cham. [https://doi.org/10.1007/978-3-319-14222-7\\_6](https://doi.org/10.1007/978-3-319-14222-7_6)
  - [5] Gebhardt, E., Thomson, S., Ainley, J., Hillman, K. (2019). Introduction to Gender Differences in Computer and Information Literacy. In: Gender Differences in Computer and Information Literacy. IEA Research for Education, vol 8. Springer, Cham. [https://doi.org/10.1007/978-3-030-26203-7\\_1](https://doi.org/10.1007/978-3-030-26203-7_1)
  - [6] Jackie Marsh (2016) . THE DIGITAL LITERACY SKILLS AND COMPETENCES OF CHILDREN OF PRE-SCHOOL AGE. Media Education Studies and Research. Retrieved from <https://core.ac.uk/download/pdf/74236398.pdf>
  - [7] Koen Aesaert\* , Johan van Braak (2015). Gender and socioeconomic related differences in performance based ICT competences. Computers & Education,84, 8–25. Retrieved from [www.elsevier.com/locate/compedu](http://www.elsevier.com/locate/compedu)
  - [8] Lcom Team (2022). Why Digital Literacy Skills are Important for Students. Learning.com. [learning.com/blog/reasons-digital-literacy-is-important-for-students/#:~:text=Mastering%20digital%20literacy%20skills%20allows,protecting%20their%20information%20and%20safety.](https://learning.com/blog/reasons-digital-literacy-is-important-for-students/#:~:text=Mastering%20digital%20literacy%20skills%20allows,protecting%20their%20information%20and%20safety.)
  - [9] Salma Jan (2018). Gender, school and class wise differences in level of Digital literacy among secondary school students in Pakistan. DOI:10.2458/azu\_itet\_v6i2\_jan. [file:///C:/Users/63915/Downloads/Gender\\_school\\_and\\_class\\_wise\\_differences\\_in\\_level\\_.pdf](file:///C:/Users/63915/Downloads/Gender_school_and_class_wise_differences_in_level_.pdf)
  - [10] Western University (2023). What is digital literacy?. [https://www.westernsydney.edu.au/studysmart/home/study\\_skills\\_guides/digital\\_literacy/what\\_is\\_digital\\_literacy](https://www.westernsydney.edu.au/studysmart/home/study_skills_guides/digital_literacy/what_is_digital_literacy)

## REFERENCES

- [1] Baterna, H.B., Mina, T.D.G., & Rogayan, D.V. Jr. (2020). Digital literacy of STEM senior high school students: Basis for enhancement program. International Journal of Technology in Education (IJTE), 3(2), 105-117. <https://files.eric.ed.gov/fulltext/EJ1264128.pdf>
- [2] Digital Literacy Questionnaire for Students ([https://docs.google.com/forms/d/e/1FAIpQLSfEFOvdf9Y02Ex\\_ULzmPPZ1LfehzbCQOtGfPpM1472Us5xHwQ/viewform](https://docs.google.com/forms/d/e/1FAIpQLSfEFOvdf9Y02Ex_ULzmPPZ1LfehzbCQOtGfPpM1472Us5xHwQ/viewform))