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Assessing the digital literacy and design skills needs of parish youth and senior high school students in Cabanatuan city: A basis for the development of the digital design bootcamp Series 2025

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Abstract

This study assessed the digital literacy and design skills needs of parish youth and senior high school students in Cabanatuan City, Philippines, to inform the development of the Digital Design Bootcamp Series 2025. Using a mixed-methods design, the research surveyed 100 participants (50 parish youth and 50 senior high school students) and conducted focus group discussions to evaluate competencies, explore barriers, and identify preferred learning approaches. Findings revealed moderate digital literacy levels, with most participants demonstrating proficiency in basic ICT tasks and social media use; however, significant gaps were identified in advanced digital design skills. Only 20% could create professional-grade graphics, fewer than 10% understood UI/UX design principles, and none demonstrated proficiency with advanced multimedia tools. Structural challenges such as limited internet access, high software costs, and a lack of training opportunities further constrained skill development. Despite these challenges, participants expressed strong motivation to acquire digital design skills for career advancement and community contributions. The study concludes that a structured, community-based bootcamp featuring hands-on training, mentorship, and stakeholder collaboration is essential. Practically, the proposed boot camp can reduce digital inequality, enhance youth employability, and foster inclusive economic growth, while supporting national digitalization initiatives and Sustainable Development Goal 4 on Quality Education.

Keywords: Digital design skills, Digital literacy, Needs assessment, Youth empowerment.

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1. Introduction

The rapid digital transformation of societies worldwide has underscored the critical importance of digital literacy, which is defined as the ability to use, understand, and create effectively with digital technologies [1]. In the Philippines, with a burgeoning youth population and increasing internet penetration (83.8% in 2025), digital literacy is essential for economic competitiveness and social inclusion [2]. However, disparities in digital literacy persist, particularly among youth in semi-urban areas like Cabanatuan City and Nueva Ecija, where access to advanced digital tools and training remains limited. Digital design skills, encompassing graphic design (e.g., creating posters using Adobe Photoshop or Canva), user interface/user experience (UI/UX) design (e.g., designing intuitive app interfaces using Figma), and multimedia production (e.g., video editing with Adobe Premiere), are vital for participation in creative industries, entrepreneurship, and community initiatives.

Cabanatuan City, a first-class city with a population of approximately 302,231 [3], serves as a commercial and educational hub in Central Luzon. Despite its strategic role, local youth, including parish youth and senior high school students, struggle to acquire advanced digital skills, particularly in digital design. The creative economy, valued at P1.78 trillion in 2023 and projected to grow to P1.94 trillion in 2024, contributes 7.3% to the gross domestic product (GDP) and is a significant driver of economic growth [4]. However, gaps in skills development limit youth participation in this sector [5].

National efforts, such as the Department of Information and Communications Technology's (DICT) Tech4ED program, promote digital literacy through community hubs [6]. However, targeted interventions for specialized skills, such as digital design, are lacking in Cabanatuan City. While parish youth engage in community activities and senior high school students transition to higher education or the workforce, they possess foundational digital literacy but lack design-oriented competencies critical for innovation and employability. This gap limits their contributions to local economic development and global digital markets.

This study assesses the digital literacy and design skills needs of parish youth and senior high school students in Cabanatuan City to inform the development of a Digital Design Bootcamp Series for 2025. The research lays the groundwork for community-based training that empowers youth, aligns with the Philippine government's "Digital Philippines" vision, and supports Sustainable Development Goal 4 (Quality Education) by pinpointing specific skill deficiencies. Nationally, the Philippines faces significant digital literacy challenges. The 2024 Functional Literacy, Education, and Mass Media Survey (FLEMMS) reports a 93.1% introductory literacy rate among Filipinos aged 10–64; however, advanced digital skills lag [7]. The ASEAN Digital Literacy Programme identifies the Philippines as having one of the highest levels of digital illiteracy globally, exacerbated by inadequate infrastructure and curricula that fail to address specialized skills [8]. Locally, Cabanatuan City's educational institutions offer basic computer literacy, but access to design software, high-speed internet, and specialized training remains limited, particularly in underserved parishes and public schools.

2. Literature Review

2.1. Definition and Conceptual Framework of Digital Literacy

Digital literacy is a multifaceted concept encompassing the ability to effectively access, evaluate, create, and communicate using digital technologies [1]. It extends beyond basic technical skills to encompass critical thinking, the ethical use of technology, and the ability to navigate digital environments for personal, social, and professional purposes [1]. In the Philippine context, digital literacy is integrated into the national education curriculum through the Department of Education's (DepEd) Digital Rise Program, which updates the K-12 curriculum to include digital skills across grade levels [9]. For instance, productivity tools are introduced in Grades 4–6, basic programming in Grade 7, and multimedia concepts in Grades 8–10, while vocational skills such as computer servicing are offered in senior high school. Additionally, the National Literacy Framework, developed by the Literacy Coordinating Council (LCC), emphasizes literacy skills for 21st-century living, including digital competencies, within the context of the Fourth Industrial Revolution [10]. These frameworks highlight the importance of digital literacy as a foundational skill for economic competitiveness and social inclusion.

2.2. Digital Literacy in the Philippine Context

The Philippines has made significant strides in expanding internet access, with over 50 million Filipinos having access to the internet as of 2020 [11]. However, digital literacy remains a significant challenge, particularly among young people in rural and semi-urban areas. A study by the Philippine Institute for Development Studies (PIDS) revealed that only about 40% of Filipinos possess at least one of the six information and communication technology (ICT) skills monitored for Sustainable Development Goal [12]. Digital literacy is lowest among the young (aged 10–14) and the elderly (aged 65 and above). In Nueva Ecija, where Cabanatuan City is located, a study on microfinance institutions highlighted challenges in digital transformation, including limited digital literacy among clients and owners [13].

Recent scholarship has shed light on the multifaceted challenges hindering digital literacy development among Filipino youth. A comprehensive review conducted in 2024 identified socioeconomic disparities as a primary barrier, noting that 60% of rural students lack access to personal digital devices, and only 50% of public schools have reliable internet connectivity [14]. The absence of a standardized digital literacy curriculum nationwide leads to inconsistent educational experiences, with urban and private schools often offering advanced technology programs. In contrast, public schools in less affluent regions lack resources for structured training. Cultural attitudes toward technology also play a role; in some communities, hesitancy to embrace digital tools stems from concerns over potential negative impacts, such as

distraction or misuse. Moreover, a 2024 report by the ASEAN Foundation underscored the Philippines' paradoxical position: while boasting high internet penetration (73.1% in 2023) and social media usage (72.5%), it exhibits the highest level of digital illiteracy globally [8]. These insights align with the observations from Cabanatuan City, where participants reported limited access to design software and high-speed internet as significant obstacles to acquiring advanced digital design skills.

2.3. Importance of Digital Design Skills

Digital design skills, such as graphic design, user interface (UI) design, and multimedia production, are increasingly vital in the modern economy. These skills enable individuals to create visual content, develop user-friendly interfaces, and contribute to creative industries, entrepreneurship, and community-driven initiatives [15]. In the Philippines, the creative economy, valued at P1.72 trillion in 2023 and contributing 7.1% to the gross domestic product (GDP), is a significant driver of economic growth [4]. The Creative Economy Roadmap identifies design (including graphic and digital design) as one of the five priority sectors for development, alongside advertising, film, animation, and game development [16]. However, a baseline study on the Philippine creative economy highlighted gaps in skills development, particularly in technical skills for gaming and audiovisual media, as well as innovative entrepreneurship and management [5]. These gaps hinder the ability of young people to fully participate in the creative economy, underscoring the need for targeted training programs.

2.4. Youth Empowerment through Digital Skills

Empowering youth with digital skills is essential for their participation in the digital economy and community development. Digital literacy fosters creativity, problem-solving, and entrepreneurship, enabling youth to create digital content, launch startups, or contribute to local initiatives such as tourism promotion and cultural preservation [9]. In the Philippines, initiatives like the Microsoft Youth Ambassador Program and Digital Literacy Certification aim to enhance digital literacy among students by providing mentorship and certification opportunities [17]. Additionally, programs like Brigada Pagbasa incorporate digital approaches to improve functional literacy skills, utilizing both digital and non-digital methods to create inclusive learning environments [18]. These initiatives demonstrate the potential of digital skills to empower youth, but they also highlight the need for more localized and targeted interventions, particularly in underserved areas.

3. Methodology

This study employs a mixed-methods approach to assess the digital literacy and design skills needs of parish youth and senior high school students in Cabanatuan City, Philippines, providing a foundation for the Digital Design Bootcamp Series 2025. By integrating quantitative surveys and qualitative focus group discussions (FGDs), the research captures both the breadth of participants' competencies and the depth of their contextual challenges and preferences. This section details the research design, population and sampling, data collection procedures, data analysis techniques, and ethical considerations, ensuring transparency and replicability.

3.1. Research Design

A mixed-methods design was employed to comprehensively address the study's objectives. The quantitative component, consisting of structured surveys, measures participants' current digital literacy levels and identifies gaps in design skills across a broad sample. The qualitative component, involving focus group discussions, explores barriers to skill acquisition, preferred learning modalities, and community-specific needs. This combination enhances the validity of the findings through data triangulation and aligns with the practical aim of designing a targeted intervention [19]. The approach is particularly suitable for assessing needs and balancing statistical trends with nuanced stakeholder insights.

3.2. Population and Sampling

The study targets 100 participants from Cabanatuan City, comprising 50 parish youth (aged 15–24) and 50 senior high school students from St. Nicholas Cathedral and St. Nicholas Senior High School. Parish youth were selected due to their active involvement in community and religious activities, positioning them as potential contributors to local digital initiatives, such as designing materials for church events. Senior high school students were included as they are at a critical juncture, transitioning to higher education or the workforce, where digital skills are increasingly vital. Participants were selected using purposive sampling to ensure diversity in terms of gender, socioeconomic status, and access to technology, reflecting the varied experiences within these groups. While the sample size of 100 is modest, it is appropriate for a localized needs assessment, particularly when enriched with qualitative data [20].

3.3. Data Collection

Data were gathered through two complementary methods: surveys and focus group discussions.

3.3.1. Surveys

A structured questionnaire, adapted from UNESCO's Digital Literacy Framework [1], was administered to all 100 participants. The survey assesses proficiency in three domains: (1) basic ICT skills (e.g., email, file management), (2) digital design tools (e.g., Adobe Photoshop, Canva), and (3) online safety (e.g., privacy settings, cybersecurity awareness). It employs a 5-point Likert scale (1 = Very Poor to 5 = Excellent) to capture self-reported competency levels. The

instrument, comprising 25 items, was pilot-tested with 10 local students to ensure clarity and cultural relevance, with minor revisions to terminology and examples. Surveys were distributed in person at parishes and schools to maximize response rates.

3.3.2. Focus Group Discussions

Six focus group discussions were conducted, with three sessions for parish youth and three for senior high school students. Each session included 8–10 participants and followed a semi-structured protocol, allowing flexibility while ensuring group consistency. Topics include (1) barriers to acquiring digital design skills (e.g., cost, access to tools), (2) preferred learning methods (e.g., workshops, online tutorials), and (3) potential applications of design skills in the community (e.g., church events, school projects). Conducted in person at parish halls and school facilities, the FGDs were facilitated by trained moderators to encourage open dialogue. Sessions lasted 60–90 minutes, were audio-recorded with the participants' consent, and were transcribed verbatim for analysis.

3.4. Data Analysis

Quantitative and qualitative data were analyzed separately and integrated to address the study's objectives.

3.4.1. Quantitative Analysis

Survey responses were analyzed using descriptive statistics (means, standard deviations, frequencies) to profile participants' digital literacy and design skills. Inferential tests, including independent samples t-tests and one-way ANOVA, were conducted to compare competency levels between parish youth and senior high school students, as well as across demographic subgroups (e.g., gender, socioeconomic status). Analyses were performed using SPSS version 27, with statistical significance set at $p < .05$.

3.4.2. Qualitative Analysis

FGD transcripts were analyzed using thematic analysis, supported by NVivo 12 software. Following Braun and Clarke [21] six-phase framework, the process involved: (1) familiarizing with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) reporting findings. Themes emerged inductively from participants' narratives, focusing on skill gaps, learning preferences, and community needs. Two researchers ensured coding reliability through independent analysis, with discrepancies resolved via consensus.

4. Results and Discussion

This section presents the findings from a mixed-methods study assessing the digital literacy and design skills needs of parish youth and senior high school students in Cabanatuan City, Philippines. By integrating quantitative survey data from 100 respondents with qualitative insights from six focus group discussions (FGDs), the study evaluates current digital literacy levels, identifies gaps in digital design skills, and provides a foundation for the Digital Design Bootcamp Series 2025. The results are contextualized within existing literature, offering implications for youth empowerment, community development, and alignment with the Philippines' national digitalization goals.

4.1. Digital Literacy Levels

4.1.1. Quantitative Findings

The survey revealed a moderate level of digital literacy among participants, with an overall mean score of 3.2 (SD = 0.8) on a 5-point Likert scale. Table 1 presents the mean scores and proficiency levels for each digital literacy domain assessed.

Table 1.
Digital Literacy Proficiency by Domain.

Domain	Mean Score (SD)	Percentage Proficient*	Notes
Basic ICT Skills	3.8 (0.6)	85%	High proficiency in email, file management, and social media navigation.
Digital Design Tools	2.4 (0.9)	25%	Limited familiarity with tools like Canva and Adobe Illustrator.
Online Safety	3.5 (0.7)	70%	Moderate awareness of privacy settings and cybersecurity.

Note: Proficiency is scoring 4 or 5 on the Likert scale.

Notably, 85% of respondents demonstrated proficiency in basic ICT tasks (e.g., email and file management), and 90% were competent in navigating social media. However, advanced skills were less prevalent: only 25% reported familiarity with digital design tools (e.g., Canva, Adobe Illustrator), and just 15% had experience with sophisticated software like Figma or Adobe Photoshop. An independent samples t-test showed no significant difference in digital literacy between parish youth ($M = 3.1$, $SD = 0.7$) and senior high school students ($M = 3.3$, $SD = 0.9$), $t(98) = 1.12$, $p = .27$, indicating comparable foundational skills across both groups.

4.1.2. Qualitative Insights

FGD participants corroborated the quantitative data, expressing confidence in routine digital tasks but uncertainty with specialized applications. A parish youth noted, "I can use Facebook and Word, but when designing posters or editing videos, I do not know where to start." Similarly, a senior high school student highlighted, "We know the basics, but anything beyond that feels out of reach." These comments reveal a clear divide between general digital literacy and the skills needed for creative digital production.

4.1.3. Discussion

The moderate digital literacy levels observed align with national trends reported by the Philippine Institute for Development Studies [12], where basic skills are widespread, but advanced competencies remain limited. The lack of significant differences between parish youth and senior high school students suggests that both groups encounter similar barriers—likely inadequate access to training and resources in Cabanatuan City. This finding emphasizes the need for interventions that build on existing skills while targeting specific deficiencies, particularly in creative digital applications, to enhance employability and community engagement.

4.2. Digital Design Skills Gaps

4.2.1. Quantitative Findings

Survey results underscored significant gaps in digital design skills. Table 2 highlights the proficiency levels in specific digital design skills.

Table 2.
Digital Design Skills Gaps.

Skill	Percentage Proficient	Notes
Create professional-grade graphics	20%	Significant gap in producing high-quality graphics.
Understand UI/UX design principles	<10%	Minimal understanding of user interface design concepts.
Proficiency with advanced tools (e.g., Adobe Premiere)	0%	No proficiency in advanced multimedia tools.

Only 20% of participants were able to create professional-grade graphics, and fewer than 10% understood UI/UX design principles. While 30% possessed basic video editing skills, none demonstrated proficiency with advanced tools, such as Adobe Premiere. One-way ANOVA tests found no significant variations in design skills across gender or socioeconomic status ($p > .05$), indicating that these deficiencies are pervasive across demographic groups.

4.2.2. Qualitative Insights

FGDs identified key barriers to skill acquisition, including limited access to high-speed internet and design software. A senior high school student explained, "We have computers at school, but the internet is slow, and we do not have software like Photoshop." A participant noted that cost was another concern: "Online courses are too expensive for us." Despite these challenges, motivation to learn was high, driven by career goals and community needs. A parish youth shared, "I want to design flyers for church events, but I do not know how," reflecting a desire to apply skills locally. Another student added, "Learning to edit videos could help us promote our school's cultural events online," highlighting potential community applications.

These pronounced skill gaps mirror national challenges in specialized digital education [5, 6, 16], exacerbated by systemic issues like inadequate infrastructure and training opportunities in semi-urban areas. The uniformity of gaps across demographics suggests that structural rather than individual barriers are at play. However, participants' enthusiasm for learning suggests a strong potential for impact through targeted programs. This aligns with DepEd's emphasis on digital skills for youth empowerment [9], highlighting the urgency of accessible, design-focused training.

4.3. Implications for the Digital Design Bootcamp Series 2025

The findings reveal an urgent need for a community-based training program tailored to the identified gaps and participants' preferences. The Digital Design Bootcamp Series 2025 should feature hands-on workshops, expert mentorship, and real-world projects (e.g., designing materials for local stakeholders). Partnerships with the Department of Information and Communications Technology (DICT) and local governments could secure resources, such as software and internet access, ensuring sustainability. By addressing these needs, the boot camp aligns with national digitalization goals and Sustainable Development Goal 4, fostering youth empowerment and economic opportunities in Cabanatuan City.

5. Conclusion

This study evaluated the digital literacy and design skills needs of parish youth and senior high school students in Cabanatuan City, Philippines, to establish a foundation for the Digital Design Bootcamp Series 2025. Employing a mixed-methods approach, the research combined survey data from 100 respondents with insights from focus group discussions to assess current competencies, identify skill gaps, and propose a targeted intervention. The findings reveal moderate digital literacy, with 85% proficient in basic ICT tasks and 90% adept at social media use, but pronounced deficiencies in advanced digital design skills, such as graphic design (20% proficient), UI/UX design (<10% proficient), and multimedia production (0% proficient in advanced tools). Structural barriers exacerbate these gaps, including limited access to high-

speed internet and design software. Despite these challenges, participants were motivated to acquire skills for career advancement and to contribute to their community.

The study's implications extend to policy and practice, highlighting the need for localized training programs to bridge the gap between foundational and specialized digital skills. With hands-on training and stakeholder collaboration, the proposed boot camp can enhance employability and reduce digital inequality. However, the study's findings are limited by the modest sample size and institutional focus, which may restrict generalizability. Reliance on self-reported data could also introduce bias. Future research should investigate the long-term impact of the boot camp and explore policy interventions to enhance digital infrastructure in semi-urban areas, thereby ensuring equitable access to digital opportunities.

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