# A Descriptive Study on the Digital Literacy and Technology Utilization of BSIT Students: Basis for Enhancing IT Curriculum and Support Services

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## ABSTRACT

This descriptive study looks at the digital skills and technology use of Bachelor of Science in Information Technology (BSIT) students. The goal is to improve the IT curriculum and support services. The study involved all students in the Bachelor of Science in Information Technology program at a state university in the Philippines. Using a survey design, the research assesses students' self-reported skills in basic digital tasks, essential IT skills, and how often they use different technology tools in academic and personal situations. The findings show that students are quite capable in basic digital tasks and main IT fields like programming, networking, and systems analysis. However, their skills and use of specialized IT tools and industry-standard development platforms are limited. Additionally, students suggest a strong need for curriculum updates. They want the program to include new technologies, increase hands-on learning opportunities, improve lab facilities, and enhance academic support systems. These results highlight the need for thoughtful changes in the curriculum and infrastructure to ensure education keeps up with the fast-changing demands of the IT industry. Overall, this study offers important insights for educators and administrators who aim to create a practical and future-ready IT learning environment.

**Keywords:** Digital literacy; Technology utilization; Descriptive study; Digital platforms; IT competencies; Descriptive research

## INTRODUCTION

### Background of the study

In today's fast-changing digital world, digital literacy and technology use are essential skills for Information Technology (IT) students. According to Peng and Yu (2022), digital literacy involves not just mastering key technical skills but also evaluating and wisely using online information. These skills are crucial for effective learning and reducing technostress. For students working toward a Bachelor's degree in Information Technology (BSIT), being skilled in digital literacy and using various technologies are vital for academic success and will greatly improve their job prospects in a competitive IT industry. The global economy and workforce are becoming more connected because of globalization, which increases the need for graduates who are skilled in digital abilities and can adjust to new technologies (World Economic Forum, 2020). In this situation, educational institutions play an important role in preparing students with the skills they need to succeed. The United Nations' Sustainable Development Goals (SDGs), especially SDG 4 (Quality Education) and SDG 9 (Industry, Innovation, and Infrastructure), highlight the need for inclusive and fair quality education and the support of lifelong learning opportunities, especially in science and technology (United Nations, 2015).

Despite the importance of digital literacy, recent studies have shown gaps in how ready IT students are to use digital tools and platforms effectively (Smith & Caruso, 2019; Lee, 2021). Many BSIT students report difficulties like not having enough hands-on experience with specialized IT tools, limited access to advanced technology, and a disconnect between their academic curriculum and what the industry needs (Garcia et al., 2022). These issues may affect students' readiness to meet the demands of the changing IT sector.

Moreover, with the proliferation of online learning and digital collaboration tools accelerated by the COVID-19 pandemic, there is a heightened need to assess how well students utilize digital technologies in both academic and personal contexts (Johnson et al., 2021). Understanding the current level of digital literacy and technology use among BSIT students is crucial to identifying specific areas of improvement.

This study aimed to address the identified gap by providing a comprehensive analysis of BSIT students' digital literacy levels and their patterns of technology utilization. By examining both the strengths and areas for improvement in students' digital competencies and technological engagement, the research seeks to generate meaningful insights that curriculum developers and academic administrators can use to refine the IT curriculum. It also intends to guide enhancements in support services, such as access to up-to-date software tools, technology laboratories, and digital learning resources.

Specifically, the study sought to answer the following research questions:

1. What is the level of digital literacy among BSIT students in terms of:

- Basic computer operations;
- Internet navigation and online safety;
- Use of productivity tools (e.g., Word, Excel, PowerPoint); and
- Use of specialized IT tools (e.g., programming IDEs, database software)

2. How frequently do BSIT students use specific IT tools and platforms, such as:

- Learning Management Systems (e.g., Moodle, Google Classroom);
- Collaboration tools (e.g., GitHub, Slack, Trello);
- Programming environments (e.g., Visual Studio Code, Eclipse); and
- Online development tools (e.g., cloud services, APIs, frameworks)

3. What is the self-assessed proficiency level of BSIT students in key IT competencies, including:

- Programming;
- Networking;
- Cybersecurity;
- Database management; and
- Systems analysis and design?

4. What suggestions do BSIT students have for improving the IT curriculum, facilities, and support services?

Aligned with the Sustainable Development Goals (SDG 4: Quality Education and SDG 9: Industry, Innovation, and Infrastructure) and the demands of globalization, this study contributes to the broader mission of higher education—to produce competent, digitally literate graduates capable of innovation and sustainable development in the field of information technology. Ultimately, the findings aim to inform continuous

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improvements in the BSIT program, ensuring its relevance, responsiveness, and effectiveness in preparing students for both local and global IT industries.

### Theoretical Framework

The present study on the digital literacy and technology utilization of BSIT students is anchored in a combination of established theories that collectively explain how learners acquire digital competencies, adopt technologies, and engage in technology-enhanced learning environments. These theories provide a strong foundation for understanding student behavior, assessing digital skills, and identifying ways to enhance the IT curriculum and institutional support services.

At the core of this study is Digital Literacy Theory, introduced by Gilster (1997), which defines digital literacy as the ability to access, understand, and use information in various digital formats. Gilster emphasized that digital literacy goes beyond technical know-how—it involves critical thinking in navigating digital environments. Ng (2012) later expanded this concept by incorporating three essential dimensions: technical (how to use digital tools), cognitive (how to interpret and evaluate information), and socio-emotional (how to behave responsibly online). This theory guides the assessment of BSIT students' digital competencies across basic operations, internet safety, productivity tools, and specialized IT software. It serves as a basis for identifying skill gaps and areas that need curricular enhancement.

To further understand how students actually use digital tools, the study draws on the Technology Acceptance Model (TAM) developed by Davis (1989). TAM posits that two main factors—perceived usefulness and perceived ease of use—influence a person's intention to use a particular technology. This model is particularly relevant for examining how BSIT students engage with platforms such as learning management systems (e.g., Google Classroom), collaborative tools (e.g., GitHub), and online development environments. Understanding the extent to which students accept and use these tools can help educators tailor instruction and technical support to encourage better engagement.

The third theoretical foundation is the Constructivist Learning Theory, primarily shaped by the work of Piaget (1950) and Vygotsky (1978). This theory posits that learners build their knowledge actively through experiences, interaction, and reflection. In the context of IT education, digital tools are not merely instruments—they are environments for active learning, collaboration, experimentation, and problem-solving. This perspective supports the idea that integrating technology into the curriculum should not be limited to teaching tool usage, but should focus on creating meaningful, learner-centered experiences that develop real-world competencies.

Furthermore, Constructivist Learning Theory serves as the pedagogical lens through which the study links findings to curriculum enhancement. It emphasizes the need for hands-on, experiential learning environments that reflect the tools and challenges of the modern IT workplace.

Together, these three theories provide a comprehensive and coherent framework for analyzing the digital literacy and technology usage behaviors of BSIT students. By understanding how students acquire and interact with digital tools, and how they perceive and use these technologies for academic and personal growth, the study aims to produce evidence-based recommendations. These insights will guide curriculum developers and institutional leaders in improving IT education and support services, ultimately aligning with global standards for quality, equity, and innovation in higher education.

## METHODOLOGY

### Research Design

This study utilized a descriptive-survey research design, which is appropriate for gathering quantifiable information from a specific population to describe the status of variables under investigation. According to Creswell (2014), a descriptive design allows researchers to collect data that can be used to describe characteristics of a population or phenomenon being studied. The survey method was chosen because it is efficient for collecting standardized data from a large group of respondents, especially when assessing self-reported knowledge, behaviors, and experiences such as digital literacy and technology utilization.

**Participants and Inclusion Criteria**

The participants of this study were officially enrolled Bachelor of Science in Information Technology (BSIT) students at West Visayas State University – Himamaylan City Campus (WVSU-HCC) during the first semester of Academic Year 2025–2026. All year levels, from first to fourth year, were included to ensure comprehensive representation. The inclusion criteria were as follows:

- Must be officially enrolled in the BSIT program
- Must be actively attending classes during the first semester A.Y. 2025–2026
- Must voluntarily consent to participate in the study

**Sampling Technique and Sample Size**

The study employed a stratified random sampling technique to ensure that each year level (first year to fourth year) was proportionally represented. Stratified sampling is ideal when the population is divided into subgroups or strata (Etikan, Musa, & Alkassim, 2016), in this case, year levels. This technique enhances the representativeness of the sample and increases the precision of the results across each academic level.

The sample size was determined using Slovin's Formula, which is suitable when the population size is known and the margin of error is specified.

The final computed sample size was then equally distributed among the fourth year levels to maintain balance and fairness in the representation.

**Data Collection Instrument**

The researchers used a structured survey questionnaire consisting of four parts:

- Part I: Demographic Profile – This section gathered basic background information (e.g., year level, gender, device used, internet access).
- Part II: Digital Literacy Assessment – Assessed students' self-rated digital literacy in areas such as basic computer operations, internet safety, productivity tools, and specialized IT tools.
- Part III: Usage of Digital Technologies and Platforms – Identified the types of platforms used by students for academic and personal purposes.
- Part IV: Frequency of Use of IT Tools and Platforms – Measured how frequently students use specific tools such as LMS, collaboration tools, programming environments, and online development tools.

All items used a Likert scale to quantify responses, making the data suitable for descriptive and inferential statistical analysis.

**Validity and Reliability of the Data**

To ensure the quality of the instrument, the questionnaire underwent expert validation by IT educators and educational researchers to confirm the relevance, clarity, and alignment of items with the research objectives. Reliability testing was also conducted using Cronbach's Alpha, a statistical measure of internal consistency:

- Part II: Digital Literacy Assessment – Reliability coefficient = 0.933
- Part III: Usage of Digital Technologies and Platforms – Reliability coefficient = 0.965

- Part IV: Frequency of Use of IT Tools and Platforms – Reliability coefficient = 0.955

According to George & Mallery (2003), a Cronbach's Alpha of 0.9 and above indicates excellent reliability, meaning the items consistently measure what they intend to assess.

**Data Analysis Procedure**

The collected data were organized, coded, and analyzed using descriptive statistics, including frequency, percentage, mean, and standard deviation. These were used to interpret students' digital literacy levels and technology usage patterns.

- Mean scores were used to determine the level of proficiency and frequency of use.
- Cross-tabulations were used to explore differences across year levels.
- Open-ended responses were analyzed using thematic analysis to identify common suggestions regarding curriculum, facilities, and support services.

**Ethical Considerations**

The study strictly adhered to ethical research standards to protect the rights and welfare of the participants. The following principles were observed:

- Informed Consent: All participants were provided with a consent form detailing the purpose of the study, voluntary participation, anonymity, and the right to withdraw at any time without consequence.
- Confidentiality: No personally identifiable information was collected. Data were handled confidentially and used only for research purposes.
- Data Protection: All data were securely stored and only accessible to the researcher.
- Approval: Prior to data collection, the study received approval from the WVSU-HCC Research Ethics Committee.

These measures ensured that the research process was ethical, responsible, and respectful of participants' rights and dignity, in accordance with the principles outlined by the National Ethical Guidelines for Health and Health-Related Research (Philippines, 2022).

## RESULTS AND DISCUSSIONS

This chapter presents and interprets the findings of the study on the digital literacy and technology utilization of Bachelor of Science in Information Technology (BSIT) students. The results are organized according to the specific problems and objectives outlined in the study and are presented through tables with corresponding descriptive analyses.

The purpose of this chapter is to examine how BSIT students assess their proficiency in digital competencies and their frequency of using key technological tools and platforms, both in academic and personal contexts. Additionally, the chapter explores student suggestions for enhancing the IT curriculum, improving facilities, and strengthening support services. The discussion integrates relevant literature to contextualize the findings and to highlight their implications for curriculum development and institutional planning.

By identifying patterns in students' self-assessed skills and usage behaviors, the study aims to provide empirical evidence that will serve as a basis for refining the IT curriculum and implementing targeted support services. This chapter also emphasizes areas of strength and potential improvement, ensuring that the academic program remains aligned with industry standards and the evolving demands of the digital landscape.

Table 1. Level of Digital Literacy Among BSIT Students

| Digital Literacy | *n* | Mean | Verbal Description | *SD* |
|---|---|---|---|---|
| Basic Computer Operations | 140 | 3.84 | Proficient | .98 |
| Internet Navigation and Online Safety | 140 | 4.15 | Proficient | .80 |
| Use of Productivity Tools | 140 | 3.90 | Proficient | .93 |
| Use of Specialized IT Tools | 140 | 3.22 | Basic | 1.11 |

Note: 4.51-5.00 Excellent; 3.51-4.50 Proficient; 2.51-3.50 Basic; 1.51-2.50 Limited; 1.00-1.50 Very Limited

Table 1 presents the level of digital literacy among BSIT students across four key areas: basic computer operations, internet navigation and online safety, use of productivity tools, and use of specialized IT tools.

The findings indicate that BSIT students generally perceive themselves as proficient in basic computer operations, obtaining a mean score of 3.84 (SD = 0.98). This reflects a strong level of confidence in tasks such as file management, system navigation, and basic troubleshooting. The students' competence in this area underscores the notion of "digital natives" who have developed fluency through early and sustained exposure to computers in both academic and personal contexts. This foundational digital literacy appears to be an embedded skill set, especially for students in technology-oriented programs.

Students demonstrated the highest proficiency in internet navigation and online safety, with a mean score of 4.15 (SD = 0.80). This suggests they are highly adept at using search engines, accessing academic resources, and practicing online safety, such as avoiding phishing attacks and managing secure passwords. These skills are increasingly critical in both academic work and daily digital life, highlighting the embedded nature of digital fluency in their routine practices. The strong performance may be attributed to a combination of formal instruction and informal, real-world necessity.

In terms of productivity tools, students reported a mean of 3.90 (SD = 0.93), indicating a similarly high level of confidence in using applications such as Microsoft Word, Excel, and PowerPoint. These tools are frequently used across multiple courses and academic tasks, reinforcing both familiarity and application. The repeated exposure and academic requirements likely contribute to this proficiency, showing that the integration of productivity software in higher education positively influences digital competence.

A notable finding emerges in the area of specialized IT tools, where students rated themselves significantly lower, with a mean score of 3.22 (SD = 1.11). These tools include programming environments, database management systems, and version control platforms—all of which are essential in IT-related careers. The decline in self-reported proficiency suggests a disconnect between theoretical coursework and practical, hands-on experience.

This gap can be further understood through the lens of the Technology Acceptance Model (TAM), which emphasizes two critical factors influencing technology adoption: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Students may not yet perceive specialized IT tools as immediately useful within the academic setting, especially if their application is limited to isolated assignments or theoretical discussions. Likewise, if students find these tools difficult to use, particularly due to limited training or outdated equipment, their motivation to engage with them diminishes.

Thus, the lower ratings in specialized tool proficiency may not only reflect a skills gap but also a motivational and perceptual barrier, as predicted by TAM. This highlights the importance of integrating specialized IT tools more meaningfully into coursework, with clear demonstrations of their relevance to real-world IT roles. Providing students with better access to modern equipment, collaborative platforms, and more consistent exposure could increase both perceived usefulness and ease of use, potentially raising adoption and confidence levels.

Table 2. BSIT Students' Frequency of Usage of Specific IT Tools and Platforms

| Specific IT Tools and Platforms | | *n* | Mean | Verbal Description | *SD* |
|---|---|---|---|---|---|
| Learning Management System | Academic | 140 | 3.59 | Frequent | .89 |
| | Personal | 140 | 3.57 | Frequent | .95 |
| Collaboration and Communication Tools | Academic | 140 | 3.09 | Occasional | 1.06 |
| | Personal | 140 | 3.03 | Occasional | 1.13 |
| Programing and Development Platforms | Academic | 140 | 2.71 | Occasional | 1.197 |
| | Personal | 140 | 2.69 | Occasional | 1.22 |
| Cloud Storage and File Sharing | Academic | 140 | 3.30 | Occasional | .98 |
| | Personal | 140 | 3.31 | Occasional | .98 |
| Social Media Platforms | Academic | 140 | 3.36 | Occasional | .98 |
| | Personal | 140 | 3.41 | Occasional | .95 |

Note: 4.51-5.00 Very Frequent; 3.51-4.50 Frequent; 2.51-3.50 Occasional; 1.51-2.50 Rare; 1.00-1.50 Never

The frequency of usage of IT tools and platforms among BSIT students highlights the role of digital resources in both academic and personal contexts. The study evaluated their engagement with learning management systems (LMS), communication platforms, development environments, cloud storage services, and social media platforms**.** These tools collectively shape digital literacy, enhance technical competence, and prepare students for the demands of higher education and professional IT careers. While some platforms are deeply integrated into their learning routines, others remain underutilized, suggesting areas where curricular and institutional support could be strengthened.

Learning Management Systems (LMS) emerged as the most consistently used platforms, with students reporting frequent engagement for both academic **(**M = 3.59**)** and personal **(**M = 3.57**)** purposes. This reflects the centrality of platforms like Moodle, Google Classroom, and Canvas in managing coursework, assignments, and instructor communication. Their prominence indicates that students have adapted to the digital learning ecosystem, a trend reinforced by the post-pandemic normalization of online learning systems. LMS platforms not only streamline academic processes but also foster self-directed learning, accountability, and access to diverse instructional resources.

By contrast, collaboration and communication tools such as Microsoft Teams, Slack**,** and Zoom were only occasionally used for academic **(**M = 3.09**)** and personal **(**M = 3.03**)** tasks. Despite their potential to enhance group productivity, digital teamwork, and project-based learning, the findings suggest limited curricular integration. This underutilization can be examined through the lens of the Technology Acceptance Model (TAM), which posits that two primary factors influence technology adoption: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU)**.**

Students may perceive these platforms as less useful or more difficult to use in the context of their coursework—especially if instructors do not require or model their use in collaborative tasks. If the institutional environment does not emphasize or incentivize the use of these tools, students are less likely to see them as essential. Furthermore, if past interactions with such tools were confusing, time-consuming, or unsupported, their PEOU decreases, leading to lower usage. In short, the underutilization is not simply a matter of access or exposure but also a reflection of how students perceive the relevance and ease of these platforms—a core insight offered by TAM.

Similarly, programming and development platforms—essential for IT programs—were among the least utilized, with mean scores of 2.71 (academic) and 2.69 (personal)**.** This underutilization is concerning, given the necessity of tools like Visual Studio, GitHub, and Eclipse in both academic and industry contexts. Again, TAM offers an explanation: students may not fully understand how these tools contribute to their immediate academic success, leading to low PU. In addition, if learning environments lack structured support, such as guided labs or mentoring, the complexity of these platforms can reduce PEOU, discouraging regular use.

Cloud storage platforms such as Google Drive and OneDrive were used occasionally for academic **(**M = 3.30**)** and personal **(**M = 3.31**)** tasks. These services are increasingly indispensable for digital collaboration, resource organization, and flexible file access. Their moderate usage indicates that while students recognize their value, there is still untapped potential in leveraging these tools for collaborative projects and digital portfolio development. Applying TAM, it is likely that while the perceived usefulness of cloud storage is relatively high, the lack of intentional integration into team-based or creative assignments may prevent more frequent and skillful use.

Social media platforms**,** though traditionally associated with personal networking, were also occasionally used for academic purposes **(**M = 3.36; personal, M = 3.41**).** Beyond entertainment, they play a role in peer support, professional networking, and academic resource sharing—particularly platforms like LinkedIn**,** which provide opportunities for building a professional presence and staying informed about IT trends. These findings suggest an emerging awareness of the academic and professional utility of social media, albeit not yet fully realized or harnessed.

Taken together, the findings show that BSIT students rely heavily on LMS for academic success but fall short in maximizing collaboration, development, and cloud-based tools**.** This imbalance suggests a gap between foundational digital practices and industry-relevant IT competencies**.** Applying the Technology Acceptance Model provides a critical lens for understanding this gap—not merely as a lack of exposure, but as a result of students' perceptions regarding the usefulness and usability of these tools. To bridge this divide, institutions must go beyond tool availability and focus on designing learning experiences that enhance both PU and PEOU**.**

Strategies may include embedding real-world platforms like GitHub and Slack into course activities, using project-based learning to show real utility, and offering targeted workshops to increase ease of use and reduce anxiety. When students understand not only how to use these tools, but also why they matter, they are more likely to adopt them and carry those competencies into professional practice. In doing so, institutions can ensure readiness not just for academic achievement but also for global employability in the 21st-century digital workforce**.**

Table 3. Self-assessed Proficiency Level of BSIT Students in Key IT Competencies

| Key IT Competencies | *n* | Mean | Verbal Description | *SD* |
|---|---|---|---|---|
| Programming | 140 | 3.79 | Advanced | .75 |
| Networking | 140 | 3.83 | Advanced | .68 |
| Cybersecurity | 140 | 3.69 | Advanced | .95 |
| Data Base Management | 140 | 3.79 | Advanced | .76 |
| Systems Analysis and Design | 140 | 3.79 | Advanced | .77 |

Note: 4.51-5.00 Expert; 3.51-4.50 Advanced; 2.51-3.50 Intermediate; 1.51-2.50 Beginner; 1.00-1.50 No Knowledge

The results of the study reveal that BSIT students generally perceive themselves as advanced across five key IT competencies: programming, networking, cybersecurity, database management, and systems analysis and design. Among these, networking received the highest self-assessed proficiency (M = 3.83, SD = 0.68), while cybersecurity received the lowest—though still advanced—rating (M = 3.69, SD = 0.95).

These consistently high ratings suggest that students feel confident in their technical training, particularly in areas that are frequently reinforced through lectures, laboratory activities, and hands-on assessments. The findings highlight the effectiveness of the BSIT curriculum in cultivating core digital skills aligned with the program's intended learning outcomes (ILOs).

However, the slightly lower rating in cybersecurity raises an important concern. As digital threats and cyberattacks continue to increase globally, it is no longer sufficient for students to understand security principles in theory—they must also demonstrate practical competence in implementing defenses and responding to real-world security incidents.

To enhance analytical rigor, this study applies the Technology Acceptance Model (TAM) and insights from constructivist learning theory to interpret the findings more meaningfully.

According to TAM, students are more likely to engage deeply with a technical skill if they perceive it as:

- Useful (i.e., instrumental in achieving goals such as employability or academic success), and
- Easy to use (i.e., accessible or understandable with their current skill set).

In this context, the lower self-assessment in cybersecurity may be partially explained by:

- A lack of perceived immediate usefulness—if cybersecurity is not presented as central to current coursework or job opportunities, students may undervalue it.
- A lack of ease of use or exposure—if students have limited hands-on experience with security tools (e.g., firewalls, penetration testing software), they may feel less confident in their abilities.

From a constructivist perspective, meaningful learning occurs when students actively construct knowledge through authentic, context-rich experiences. Thus, the gap in cybersecurity proficiency suggests that learning activities in this area may still be too abstract or theoretical, lacking sufficient problem-based or experiential learning opportunities.

Although the overall high scores are encouraging, the findings must be interpreted with caution. Prior research emphasizes that self-assessment is inherently subjective and prone to inflation, especially when students are evaluating areas heavily emphasized in their coursework. Students may equate familiarity with mastery, leading to overestimation of actual competence.

To address this issue, it is recommended that objective measures—such as performance-based assessments, industry-recognized certifications, or practical simulations—be used alongside self-assessment tools. These methods can help verify student confidence and provide valid evidence of industry readiness, ensuring alignment between perceived and actual skill levels.

**BSIT Students' Recommendations for Improving Curriculum, Infrastructure, and Academic Support**

Understanding the perspectives of students is vital in ensuring that the BSIT curriculum, facilities, and support services remain relevant, effective, and responsive to current industry demands. As the primary beneficiaries of the educational system, BSIT students are in a unique position to identify gaps in academic instruction, infrastructure, and institutional support. Their insights provide valuable guidance for enhancing not only what is taught, but also how learning is delivered and supported. The following section presents the students' suggestions for improving the IT curriculum, laboratory facilities, classrooms, and academic support services, with the aim of promoting a more engaging, practical, and future-ready learning environment.

A. IT Curriculum Improvements:

1. *Integrate Emerging Technologies and Industry Certifications*. Students suggest updating the BSIT curriculum to include hands-on courses in cloud computing, artificial intelligence, data analytics, and cybersecurity. Incorporating industry-recognized certifications (e.g., AWS, Cisco, CompTIA) will enhance employability and align academic learning with professional standards.
2. *Increase Project-Based and Experiential Learning*. There is a strong call for more project-based learning and real-world simulations to bridge theory and practice. Capstone projects, case studies, and coding bootcamps can help build problem-solving and teamwork skills relevant to today's IT industry.
3. *Strengthen Internship and Industry Linkages*. A mandatory, structured internship program with industry partners should be established to give students first-hand experience with real-world tools, professional environments, and collaborative workflows. Career readiness can be further supported through mentorship programs.

B. Facilities and Classroom Enhancements:

4. *Modernize IT Laboratories*. Students request high-performance computers with updated specifications that can handle development environments, virtualization, and intensive computing tasks. Licensed software used in the industry (e.g., Visual Studio, MySQL, Adobe Creative Suite) should also be installed.

5. *Improve Network Infrastructure*. Stable, high-speed internet is essential for research, cloud access, and collaborative work. Students suggest installing redundant or backup internet systems to avoid disruptions during class or laboratory activities.

6. *Expand Physical Space and Access to Equipment*. Additional computer units, classrooms, and laboratories should be provided to avoid overcrowding and reduce the need for equipment sharing. This ensures equitable access to hands-on learning opportunities.

7. *Enhance Classroom Comfort and Interactivity*. Students propose better ventilation, air conditioning, and seating, along with interactive learning technologies like smart boards, projectors, and audio-visual systems, to create an engaging and conducive environment for learning.

8. *Add Specialized Equipment for IT Practice*. Laboratories should also include networking tools, servers, IoT kits (e.g., Arduino, Raspberry Pi), and cloud simulation environments for hands-on practice in systems administration, hardware-software integration, and DevOps.

C. Support Services Enhancements:

9. *Provide Academic Tutoring and Peer Assistance*. Many students recommend the establishment of subject-specific tutorial programs, especially for difficult courses like data structures, programming, and networking. Peer-assisted learning sessions can reinforce understanding in a less formal setting.

10. *Establish Stronger Career Guidance and Mentorship*. Institutions should provide career counseling services that help students choose appropriate specializations and prepare for future employment. This includes guidance on resume building, interview skills, and job market trends.

11. *Offer IT Seminars, Tech Talks, and Workshops*. To bridge academic learning with industry expectations, students suggest organizing regular seminars, webinars, coding competitions, and workshops led by professionals. These can foster industry awareness, upskilling, and innovation.

12. *Ensure Technical Assistance and Lab Support*. Students recommend having on-site lab assistants or technical staff who can provide immediate support during lab sessions or project development. This reduces downtime and improves productivity.

BSIT students envision a curriculum and learning environment that is industry-responsive, technologically advanced, and holistically supportive. Their recommendations call for modernized facilities, enriched learning experiences, and accessible support services to better prepare them for careers in a rapidly evolving IT landscape.

## CONCLUSIONS

The findings of this study offer a comprehensive view of the digital literacy and technology utilization patterns among Bachelor of Science in Information Technology (BSIT) students, providing meaningful insights into their perceived competencies, technological behaviors, and institutional needs. The results reveal that students generally possess high levels of proficiency in foundational digital skills—such as basic computer operations, internet navigation, and productivity tool usage—and demonstrate advanced self-assessed competence in key IT domains including programming, networking, and systems analysis.

These outcomes suggest that the current BSIT curriculum has been successful in delivering core IT knowledge and cultivating foundational digital fluency. However, the relatively lower proficiency in the use of specialized

IT tools and platforms, along with the only occasional use of programming environments, collaboration tools, and cloud-based systems, signals a significant gap in the development of applied technical skills. This gap may be attributed to several factors: perhaps limited curricular emphasis on hands-on tool integration, restricted access to modern lab equipment, or a lack of structured, project-based learning opportunities that simulate real-world IT workflows.

Moreover, the modest utilization of platforms such as GitHub, Slack, and cloud services may indicate a disconnect between what is taught in the classroom and the tools used in contemporary professional settings. This misalignment is especially critical in a field as dynamic and practice-driven as information technology, where proficiency with current platforms and technologies is essential for workplace readiness. It is probable that students' occasional use of these tools reflects both a curricular oversight and resource limitations at the institutional level.

Importantly, the students' suggestions for curricular reform and infrastructure enhancement reinforce these observations. Their recommendations—ranging from the inclusion of emerging technologies and industry certifications to improved laboratory facilities and enhanced academic support—highlight a collective aspiration for a more practice-oriented, responsive, and future-ready IT education. This demonstrates a clear understanding among students of the competencies and conditions required to thrive in the evolving digital landscape.

Therefore, the study underscores the need for a strategic realignment of academic offerings and institutional support services with industry standards and technological trends**.** Curriculum developers should consider embedding experiential learning components that mandate the use of industry-standard tools in both individual and collaborative tasks. Faculty training, updated laboratory resources, and the integration of professional certification pathways can further bridge the gap between theoretical instruction and practical application.

In conclusion, this research affirms that while BSIT students exhibit confidence in their foundational IT knowledge, there is a compelling need to deepen their engagement with specialized tools, foster applied learning environments, and strengthen institutional support systems. Addressing these areas will not only enhance the quality of the IT program but also ensure that graduates are not merely knowledgeable, but are also technically skilled, adaptive, and prepared to contribute meaningfully to the digital workforce of the future.

## RECOMMENDATIONS

Based on the comprehensive findings of this study on the digital literacy and technology utilization of Bachelor of Science in Information Technology (BSIT) students, the following actionable recommendations are proposed. These suggestions aim to address existing gaps in curriculum design, instructional delivery, infrastructure, and industry alignment, thereby enhancing student preparedness for the IT workforce.

**Curriculum Enhancement and Integration of Emerging Technologies.** It is recommended that academic institutions regularly review and revise the BSIT curriculum to integrate emerging and in-demand technologies. Specific actions include:

- Introducing dedicated modules on cloud computing platforms such as Amazon Web Services (AWS) and Microsoft Azure by the third year, with accompanying laboratory exercises.
- Embedding elective or required courses in artificial intelligence (AI) and data analytics by the fourth year of study.
- Expanding cybersecurity content in core courses, incorporating hands-on use of real-world security tools and case scenarios.
- Incorporating industry-recognized certifications—such as AWS Certified Cloud Practitioner, Cisco Certified Network Associate (CCNA), and CompTIA Security+—as either integrated assessments or optional micro-credentials.

**Incorporation of Experiential and Project-Based Learning.** To strengthen applied learning, institutions should implement project-based instructional models. Recommendations include:

- Requiring the use of collaborative platforms such as GitHub starting in second-year programming and systems design courses, to develop students' competencies in version control and collaborative development workflows.
- Including capstone projects that address real-world challenges sourced from partner IT firms or local industries.
- Integrating coding bootcamps, scenario-based simulations, and peer-reviewed coding exercises to reinforce practical skills.

**Increased Emphasis on Industry-Standard Tools and Platforms.** Coursework should incorporate routine use of industry-standard tools to simulate professional environments. Recommendations include:

- Embedding tools such as Visual Studio Code, Slack, GitHub, Trello, and cloud-based integrated development environments (IDEs) into courses beginning in the second year, with increasing complexity over time.
- Providing faculty with curated instructional toolkits and training materials to support the meaningful integration of these platforms into lectures, labs, and assessments.

**Upgrading Laboratory Facilities and Infrastructure.** To facilitate hands-on learning and technical exploration, institutions must prioritize infrastructure upgrades. Specific recommendations are:

- Equipping laboratories with high-performance hardware capable of supporting virtualization, machine learning, and cloud-based applications.
- Ensuring that licensed and up-to-date software for programming, network simulation, database management, and cybersecurity is readily available to students and instructors.
- Enhancing internet connectivity by installing redundant connections and establishing dedicated Wi-Fi zones with prioritized bandwidth for academic use.

**Expansion of Academic Support and Technical Assistance Services.** Institutions are encouraged to implement comprehensive academic support mechanisms, including:

- Establishing on-campus tutoring centers or virtual help desks for IT-related subjects, staffed by trained peer mentors or technical assistants.
- Developing structured peer-assisted learning programs in which high-achieving students provide support in areas such as coding, systems analysis, or cybersecurity.
- Providing on-demand technical support during lab hours or project execution phases, to assist with troubleshooting and software/tool setup.

**Strengthening Industry Linkages and Internship Programs.** To bridge the gap between academic learning and industry practice, the following initiatives are recommended:

- Establishing formal partnerships with IT companies to provide access to contemporary tools and platforms, as well as internship opportunities, guest lectures, and industry-led training sessions.
- Designing dual-benefit internship programs where students earn academic credit while contributing meaningful work to host companies.
- Encouraging the incorporation of real client-based problems into coursework and capstone projects to mirror authentic workplace scenarios.

**Faculty Development and Training.** Continuous professional development (CPD) for IT faculty is essential to maintain instructional relevance and technological currency. Recommended strategies include:

- Institutionalizing CPD programs that focus on current programming languages and frameworks (e.g., Python, React, TensorFlow);
- Offering pedagogical training on hybrid, flipped, and experiential learning strategies;
- Hosting workshops focused on emerging platforms and tools such as GitHub, AWS, and cybersecurity suites;
- Supporting faculty immersion in industry settings during breaks or sabbaticals to foster real-world expertise and alignment with evolving industry standards.

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