International Journal of Multidisciplinary Research and Publications
ISSN (Online): 2581-6187

Challenges On Information Communication and Technology Literacy to TVL Students' Digital Knowledge and Skills

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Abstract*—This research was entitled "Challenges on Information Communication and Technology Literacy to Students' Digital Knowledge and Skills." The study aimed to determine the relationship of Challenges on Information Communication and Technology Literacy to TVL Students. Specifically, the researcher attempted to determine the level of challenges encountered by the TVL students. It also determined the level of TVL students' digital knowledge and students' digital skills. Lastly, it also identified the significant relationship between the challenges on ICT Literacy by the students on knowledge and digital skills. Lastly, the researcher established the significant relationship between the challenges encountered by the students and the level of digital skills. An experimental quantitative research design was employed by the researcher to obtain the necessary data. The research respondents were two hundred (200) TVL students from Magdalena Integrated National High School and Buenavista Integrated National High School in Magdalena, Laguna. Random sampling was utilized in selecting the respondents. The research instrument used in this study was a self-made questionnaire designed to suit the problems investigated. Salient findings revealed that the level of challenges encountered by the TVL students in terms of adaptation to evolving technology, literacy barrier, skills gap, and limited support was very high. Similarly, the level of TVL students' digital knowledge in terms of digital context, information sharing, digital responsiveness, ethical behavior online, and retention was outstanding, which implies that respondents performed very well in their digital knowledge. Moreover, the level of TVL students' digital skills in terms of digital collaboration, digital management, software proficiency, and web navigation also obtained an interpretation of outstanding. On the other hand, the results revealed that there is a significant relationship between the challenges encountered by TVL students in ICT literacy on digital knowledge and digital skills. ICT Literacy challenges show a significant relationship on students' digital knowledge and digital skills. Thus, both of the hypotheses are rejected Therefore it is concluded that experiencing difficulties in ICT literacy, the students were still able to acquire knowledge and develop digital competencies, indicating their resilience and adaptability. This concludes that the more challenges students experience in ICT literacy, the more likely their digital competence will be affected. Limited access to technology, insufficient training, inadequate institutional support, and weak instructional integration contribute to lower levels of digital competency among students. It is recommended that ICT integration and support in education be improved. Schools should provide better resources and technical support, while teachers should actively incorporate ICT-based activities and guide students in developing digital skills. Students are encouraged to enhance their competencies through independent learning and responsible use of technology.*

***Keywords*—** *ICT Literacy, Digital Knowledge, Digital Skills, Challenges, TVL Students*

I. INTRODUCTION

As technology advances to this extent in rapid succession, it is obvious that students also learn digital competencies, in particular those getting into the classroom of Technology and Livelihood Education, where practicing would be much required for advancement. However, in Magdalena Integrated National High School, The students, though, are facing tremendous difficulty in procuring the fundamental digital competencies to support themselves for education purposes and prospects. These might be due to inadequate resources, outdated equipment, or a lack of support for the proper integration of technology in the learning environment.

Digitalization is crucial for students' academic and career success. However, developing digital knowledge and skills is a challenge for educational institutions. Limited access to resources, lack of training, outdated curricula, and varying digital literacy levels among students and educators hinder the development of basic digital skills necessary for the 21st century.

Hatlevik and Hatlevik (2018) found that students' ICT self-efficacy was only moderately aligned with their actual digital skills, indicating that many learners believe they are more capable in digital tasks than they truly are. This overconfidence can lead to weaker engagement in skill development because students may not recognize their learning gaps. Hatlevik and Christophersen (2018) found that students' ICT literacy is significantly associated with both access to digital resources and the quality of instructional support they receive consistent practice opportunities tend to demonstrate higher levels of digital competence compared to those with limited exposure.

For this reason, the researcher-initiated work on establishing a foundational framework for the development of a program aimed at improving digital competencies, particularly at Magdalena Integrated National High School, where there is significant potential to enhance digital knowledge and skills. This study seeks to identify the challenges in information and communication technology (ICT) literacy that affect the digital knowledge and skills of Technical-Vocational-Livelihood (TVL) track students at Magdalena Integrated National High School.

Donna Belle Garin Mercado, "Challenges on Information Communication and Technology Literacy to TVL Students' Digital Knowledge and Skills," *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, Volume 9, Issue 2, pp. 274-281, July 2026.

1.1 Statement of the Problem

Problem/s which were addressed by the research

The main purpose of this study is to identify the challenges on information communication and technology literacy to students' digital knowledge and skills.

Specifically, it sought to answer the following questions:

1. What is the level of challenges on ICT Literacy by the TVL students in terms of:
   1.1. Adaptation to evolving technology;
   1.2. Literacy barrier;
   1.3. Skills Gap; and
   1.4. Limited Support?
2. What is the level of TVL student digital knowledge in terms of:
   2.1. Digital context;
   2.2. Information sharing;
   2.3. Digital responsiveness;
   2.4. Ethical behavior online; and
   2.5. Retention?
3. What is the level of TVL students' digital skill in terms of:
   3.1. Digital collaboration;
   3.2. Data management;
   3.3. Software proficiency; and
   3.4. Web navigation?
4. Is there a significant relationship between the challenges on ICT Literacy and the TVL students' digital knowledge?
5. Is there a significant relationship between the challenges on ICT Literacy and the TVL students' digital skills?

II. Methodology

An experimental quantitative research design was employed by the researcher to obtain the necessary data. The research respondents were two hundred (200) TVL students from Magdalena Integrated National High School and Buenavista Integrated National High School in Magdalena, Laguna. Random sampling was utilized in selecting the respondents. The research instrument used in this study was a self-made questionnaire designed to suit the problems investigated.

III. Results and Discussion

This part discusses the results that were yielded from the treatment of the data that was gathered in this study. The following tabular presentations and discussions identify the challenges on information communication and technology literacy and its relationship to students' digital knowledge and skills.

Level of Challenges on ICT Literacy by the TVL Students

In this study, the level of challenges on ICT Literacy by the TVL students was described in terms of adaptation to evolving technology, literacy barrier, skills gap and limited support and was determined through mean and standard deviation are supported by existing literature. Students often have trouble adapting to rapidly changing technologies, particularly when they are not regularly exposed to updated digital tools and platforms.

Table 1 presents the level of challenges on ICT Literacy by the TVL students in terms of adaptation to evolving technology.

Table 1. Level of Challenges on ICT Literacy of TVL Students in terms of Adaptation to Evolving Technology

Statements The students…	Mean	SD	Remarks
... often feel overwhelmed by how frequently the school introduces new software or online learning platforms.	3.54	1.06	Agree
... able to transfer the technology skills learned in one class to a different subject or device.	3.44	1.08	Agree
... find that the technology skills they learned in earlier grades are already updated for their current coursework.	3.56	1.24	Agree
... have easy to understand and safely using emerging technologies (like AI tools or virtual reality) when they appear in assignments.	3.50	1.23	Agree
... rarely seek out tutorials or resources on their own to learn how to use a technology they are unfamiliar with.	3.54	1.11	Agree
Weighted Mean	3.52		
SD	1.15		
Verbal Interpretation	Low		

As reflected, students agree that they often feel overwhelmed by how frequently the school introduces new software or online learning platforms yet were able to transfer the technology skills learned in one class to a different subject or device. Students also find that the technology skills they learned in earlier grades are already updated for their current coursework which enables them to easily understand and safely use emerging technologies (like AI tools or virtual reality) when they appear in assignments. Besides, they rarely seek out tutorials or resources on their own to learn how to use a technology they are unfamiliar with.

The level of challenges on ICT Literacy by the TVL students in terms of adaptation to evolving technology gained the overall weighted mean of 3.52 with a standard deviation of 1.15, verbally interpreted as Low. This indicates that students were able to adapt and understand the changes in technology which also enables them to acquire and apply technological skills.

In summary, the results indicate that TVL students are relatively competent and flexible in adjusting to technological advancements, even if they do not often seek additional learning resources independently.

The study by Janine Mae Galve and Ronniel Labio (2023) examined the ICT skills and digital literacy of 246 senior high school students using a descriptive-correlational survey design. Results showed that students generally had high levels of ICT skills and digital literacy, though they were weakest in data processing and content creation, with significant differences across tracks and strands but none in terms of sex. Furthermore, a moderate positive correlation ($r = .599$) indicated that improved ICT skills are associated with higher digital literacy.

Table 2 presents the level of challenges on ICT Literacy by the TVL students in terms of literacy barriers. As reflected, students agree that they have the basic technical skills needed to navigate complex educational software and can understand

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advanced features of productivity tools such as Excel and PDF functions. They are also capable of distinguishing credible academic sources from unreliable online content and effectively using search filters to find specific research data. However, students show slightly lower confidence in troubleshooting simple hardware or software issues independently.

Table 2. Level of Challenges on ICT Literacy of TVL Students in terms of Literacy Barrier

Statements The students…	Mean	SD	Remarks
... have the basic technical skills required to navigate complex educational software.	3.66	1.14	Agree
... can troubleshoot simple hardware or software issues independently.	3.42	1.09	Agree
... understand how to use advanced features of productivity tools (e.g., Excel formulas, PDF indexing).	3.63	1.13	Agree
... can distinguish between credible academic sources and unreliable online content.	3.63	1.12	Agree
... possess the skills to effectively use search filters to find specific research data.	3.68	1.18	Agree
Weighted Mean	3.60		
SD	1.13		
Verbal Interpretation	Low		

The level of challenges on ICT Literacy by the TVL students in terms of literacy barriers obtained an overall weighted mean of 3.60 with a standard deviation of 1.13, verbally interpreted as Low. This indicates that students experience minimal difficulty in literacy-related ICT skills and are generally competent in performing tasks that require digital understanding and information evaluation.

In summary, the findings suggest that TVL students possess adequate literacy skills in ICT, enabling them to efficiently navigate, evaluate, and utilize digital tools, although some may still need support in developing independent troubleshooting skills.

Table 3. Level of Challenges on ICT Literacy of TVL Students in terms of Skill Gap

Statements The students…	Mean	SD	Remarks
... can navigate advanced features of word processing software (e.g., table of contents, mail merge).	3.63	1.02	Agree
... can use spreadsheet software to organize or calculate basic data sets.	3.62	1.05	Agree
... can convert files between different formats (e.g., Doc to PDF, JPG to PNG) correctly.	3.72	1.10	Agree
... have the ability to use keyboard shortcuts, leading to inefficient digital workflows.	3.68	1.12	Agree
... can manage digital storage, resulting in lost files or disorganized folders.	3.58	1.11	Agree
Weighted Mean	3.64		
SD	1.08		
Verbal Interpretation	Low		

Table 3 presents the level of challenges on ICT Literacy by the TVL students in terms of skill gap. As reflected, students agree that they can navigate advanced features of word processing and spreadsheet software, as well as convert files between different formats correctly. They also demonstrate the ability to use keyboard shortcuts and manage digital storage; however, some inefficiencies are still observed in their workflows and file organization.

The level of challenges on ICT Literacy by the TVL students in terms of skill gap obtained an overall weighted mean of 3.64 with a standard deviation of 1.08, verbally interpreted as Low. This indicates that students experience minimal difficulty in terms of technical skills and are generally capable of performing essential digital tasks.

In summary, the findings suggest that TVL students possess adequate ICT skills, enabling them to efficiently use various digital tools, although there is still room for improvement in optimizing workflows and organizing digital files effectively.

Table 4. Level of Challenges on ICT Literacy of TVL Students in terms of Limited Support

Statements The students…	Mean	SD	Remarks
... receive timely technical assistance when digital learning platforms fail.	3.67	1.05	Agree
... receive clear tutorials or manuals on how to navigate new digital curricula.	3.75	1.10	Agree
... get sufficient orientation on how to use school-mandated digital communication tools.	3.70	1.02	Agree
... have access to licensed software versions, forcing them to use limited "trial" tools.	3.60	1.11	Agree
... have reliable on-campus internet connectivity to support their digital tasks.	3.73	1.12	Agree
Weighted Mean	3.69		
SD	1.08		
Verbal Interpretation	Low		

Table 4 presents the level of challenges on ICT Literacy by the TVL students in terms of limited support. As reflected, students agree that they receive timely technical assistance when digital platforms fail and are provided with clear tutorials or manuals for navigating new digital curricula. They also report having sufficient orientation on school-mandated communication tools and reliable internet connectivity, although some still experience limitations in accessing fully licensed software.

The level of challenges on ICT Literacy by the TVL students in terms of limited support obtained an overall weighted mean of 3.69 with a standard deviation of 1.08, verbally interpreted as Low. This indicates that students generally receive adequate institutional and technical support, resulting in minimal challenges in this area.

In summary, the findings suggest that TVL students benefit from sufficient support systems in their digital learning environment, enabling them to effectively carry out ICT-related tasks despite minor limitations in resources such as software access.

Level of TVL Students' Digital Knowledge

In this study, the level of TVL student digital knowledge in terms of Digital context, Information sharing, Digital responsiveness, Ethical behavior online, and Retention and was determined through mean and standard deviation are supported by existing literature.

Table 5 presents the level of TVL students' digital knowledge in terms of digital context. As reflected, students

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agree that they understand the difference between cloud storage and local storage and can explain what happens to their personal data when shared online. They also demonstrate readiness in using digital tools for future academic or professional tasks, have knowledge of intellectual property and copyright, and can evaluate the security of website connections.

Table 5. Level of TVL Students' Digital Knowledge in terms of Digital Context

Statements The students…	Mean	SD	Remarks
... understand the basic difference between cloud storage and local device storage.	4.00	0.89	Agree
... can explain what happens to their personal data (photos, posts, etc.) once it is shared on social media or other online platforms.	4.07	0.87	Agree
... prepare to use digital tools for tasks they will need in a future job or university setting (e.g., professional digital communication). (	4.00	0.88	Agree
... can explain what "intellectual property" or "copyright" means when using digital content like images or music.	3.97	0.93	Agree
... know how to evaluate whether a website connection is secure (e.g., checking for 'https' or the lock symbol).	4.01	0.98	Agree
Weighted Mean	4.01		
SD	0.91		
Verbal Interpretation	High		

The level of TVL students' digital knowledge in terms of digital context obtained an overall weighted mean of 4.01 with a standard deviation of 0.96, verbally interpreted as High. This indicates that students possess a strong understanding of how digital environments function and how Information is managed and protected online.

In summary, the findings reveal that TVL students are knowledgeable in digital context, enabling them to responsibly and effectively navigate online platforms, manage digital information, and prepare for future digital demands.

Table 6 presents the level of TVL students' digital knowledge in terms of information sharing. As reflected, students agree that they can effectively use collaboration tools such as shared documents or group work and know how to securely send large files to teachers or classmates. They are also capable of managing notifications across multiple platforms, properly citing and referencing digital sources, and organizing files for easy sharing and retrieval.

The level of TVL students' digital knowledge in terms of information sharing obtained an overall weighted mean of 4.05 with a standard deviation of 0.90, verbally interpreted as High. This indicates that students have a strong ability to share, manage, and communicate digital information efficiently and responsibly.

Table 7 presents the level of TVL students' digital knowledge in terms of digital responsiveness. As reflected, students agree that they know the appropriate steps to take when a device crashes and can respond properly to potential security threats such as viruses. They are also able to quickly learn how to use new applications, adjust device settings when needed, and communicate technical problems clearly to teachers or technicians, although slightly lower confidence is observed in describing technical issues.

Table 6. Level of TVL Students' Digital Knowledge in terms of Information Sharing

Statements The students…	Mean	SD	Remarks
... can use collaboration tools (like shared documents or group drives) to work effectively with classmates on group projects.	4.09	0.89	Agree
... know the best way to securely send large files or documents to a teacher or classmate.	4.08	0.89	Agree
... can manage notification settings and communication streams when using multiple digital platforms for different classes.	4.00	0.89	Agree
... know about the rules for properly citing and referencing digital information (like images or online text) used in their reports.	4.01	0.89	Agree
... can organize and label digital files in a way that makes them easy to share and retrieve later.	4.08	0.92	Agree
Weighted Mean	4.05		
SD	0.90		
Verbal Interpretation	High		

The level of TVL students' digital knowledge in terms of digital responsiveness obtained an overall weighted mean of 4.00 with a standard deviation of 0.97, verbally interpreted as High. This indicates that students can respond effectively and efficiently to various digital situations and challenges.

In summary, the findings reveal that TVL students are highly responsive in digital environments, enabling them to adapt quickly, troubleshoot issues, and manage technological tasks with confidence and competence.

Table 7. Level of TVL Students' Digital Knowledge in terms of Digital Responsiveness

Statements The students…	Mean	SD	Remarks
... know the correct steps to take immediately when a computer or device crashes during an assignment.	4.03	1.14	Agree
... quickly learn how to use a new website or application without explicit, step-by-step instructions.	3.96	0.90	Agree
... know what to do when they receive a warning about a potential virus or security threat on their device.	3.99	0.90	Agree
... can quickly summarize and clearly describe a technical problem to a teacher or technician for help.	3.92	0.99	Agree
... are enabled to quickly adjust a device's settings (e.g., sound, display, accessibility features) when needed for a class activity.	4.09	0.91	Agree
Weighted Mean	4.00		
SD	0.97		
Verbal Interpretation	High		

Table 8 presents the level of TVL students' digital knowledge in terms of ethical behavior online. As reflected, students agree that they understand what constitutes plagiarism and are aware of the consequences of sharing private or sensitive information without consent. They also demonstrate knowledge of intellectual property, can identify cyberbullying behaviors, and are able to distinguish between factual information and misinformation, with the highest

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agreement observed in recognizing accurate and misleading content online.

Table 8. Level of TVL Students' Digital Knowledge in terms of Ethical Behavior Online

Statements The students…	Mean	SD	Remarks
... know what constitutes plagiarism when using online sources for school assignments.	4.27	0.84	Agree
... are aware of the potential consequences (e.g., legal, social) of sharing private or sensitive information about others online without their consent.	4.12	0.91	Agree
... understand the concept of intellectual property and how it applies to downloading and sharing digital media (music, movies, software).	4.16	0.97	Agree
... can identify online behaviors that are considered cyberbullying or harassment.	4.14	0.95	Agree
... know the difference between factual information and misinformation/disinformation shared on social media and news sites.	4.21	0.85	Strongly Agree
Weighted Mean	4.18		
SD	0.91		
Verbal Interpretation	High		

The level of TVL students' digital knowledge in terms of ethical behavior online obtained an overall weighted mean of 4.18 with a standard deviation of 0.91, verbally interpreted as High. This indicates that students possess a strong awareness of ethical standards and responsible behavior in digital environments.

In summary, the findings reveal that TVL students are highly knowledgeable in practicing ethical behavior online, enabling them to use digital platforms responsibly, respect others' rights, and critically evaluate information shared across online spaces.

Table 9. Level of TVL Students' Digital Knowledge in terms of Retention

Statements The students…	Mean	SD	Remarks
... retains technical workflows (e.g., editing a video or formatting a spreadsheet) even after weeks of non-use.	3.96	0.93	Agree
... accurately recalls digital safety protocols and password management rules without being reminded.	4.11	0.82	Agree
... quickly remembers the function of various software tools after a single introductory session.	3.93	0.87	Agree
... maintains a high level of digital proficiency following long academic breaks.	3.96	0.94	Agree
... shows confidence in explaining how a digital tool works to a peer, indicating deep-rooted understanding.	4.00	0.87	Agree
Weighted Mean	3.99		
SD	0.89		
Verbal Interpretation	High		

Table 9 presents the level of TVL students' digital knowledge in terms of retention. As reflected, students agree that they can retain technical workflows such as video editing and spreadsheet formatting even after periods of non-use. They also demonstrate the ability to recall digital safety protocols and password management rules without reminders, quickly remember software functions after brief instruction, maintain digital proficiency after academic breaks, and confidently explain how digital tools work to peers. The level of TVL students' digital knowledge in terms of retention obtained an overall weighted mean of 3.99 with a standard deviation of 0.89, verbally interpreted as High. This indicates that students have strong retention of digital skills and knowledge, allowing them to consistently apply ICT competencies over time.

In summary, the findings suggest that TVL students are highly capable of retaining and recalling digital skills, enabling them to maintain proficiency and effectively use technology even after periods of non-use or limited practice.

Level of TVL Students' Digital Skills

In this study, the level of TVL students' digital skill in terms of Digital collaboration, Data management, Software proficiency and Web navigation and was determined through mean and standard deviation are supported by existing literature.

Table 10 presents the level of TVL students' digital skills in terms of digital collaboration. As reflected, students agree that they can effectively use cloud-based documents for co-editing group projects and are capable of organizing shared folders to ensure access to necessary files among team members. They also demonstrate the ability to use digital communication platforms to maintain teamwork, participate in virtual meetings, and utilize project management tools to assign tasks and monitor progress, with the highest mean observed in organizing shared digital resources.

Table 10. Level of TVL Students' Digital Skills in terms of Digital Collaboration

Statements The students…	Mean	SD	Remarks
... can effectively use shared cloud-based documents (e.g., Google Docs, Office 365) to co-edit and manage versions of a group project simultaneously.	4.05	0.93	Agree
... are skilled at utilizing video conferencing tools (e.g., Zoom, Meet) to schedule, host, and participate in productive virtual team meetings.	3.96	0.87	Agree
... efficiently use digital communication platforms (e.g., Slack, Teams, group chat) to ask questions, share quick updates, and maintain continuous team communication.	4.02	0.90	Agree
... can create and organize shared digital folders and files, ensuring all team members have access to necessary resources and information.	4.10	0.89	Agree
... demonstrate the skill to use project management or task-tracking software (e.g., Trello, Asana) to assign tasks, set deadlines, and monitor team progress.	3.98	0.89	Agree
Weighted Mean	4.02		
SD	0.90		
Verbal Interpretation	High		

The level of TVL students' digital skills in terms of digital collaboration obtained an overall weighted mean of 4.02 with a standard deviation of 0.90, verbally interpreted as High. This indicates that students possess strong collaborative digital skills, enabling them to work efficiently and effectively in online and technology-mediated group environments.

In summary, the findings suggest that TVL students are highly competent in digital collaboration, allowing them to

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communicate, coordinate, and manage group tasks effectively through various digital platforms.

Table 11 presents the level of TVL students' digital skills in terms of data management. As reflected, students agree that they are skilled in backing up digital files to cloud services or external drives and can effectively organize and name files for easy retrieval. They also demonstrate the ability to use password managers and two-factor authentication for account security, manage academic tasks using digital tools, and independently install and update software, with the highest mean observed in software installation and management.

Table 11. Level of TVL Students' Digital Skills in terms of Data Management

Statements The students…	Mean	SD	Remarks
... are skilled at backing up their important digital files and data to cloud services or external drives to prevent loss.	4.01	0.85	Agree
... effectively use password managers and two-factor authentication to secure their multiple online accounts.	4.06	0.94	Agree
... can efficiently organize and name digital files and folders (e.g., in a hierarchy) to retrieve information quickly.	4.04	0.86	Agree
... can select and use appropriate tools (e.g., calendars, reminders, project boards) to manage their academic tasks and deadlines.	4.01	0.87	Agree
... are capable of installing, updating, and managing software and applications on their devices independently.	4.14	0.87	Agree
Weighted Mean	4.05		
SD	0.88		
Verbal Interpretation	High		

The level of TVL students' digital skills in terms of data management obtained an overall weighted mean of 4.05 with a standard deviation of 0.88, verbally interpreted as High. This indicates that students possess strong data management skills, allowing them to efficiently organize, secure, and maintain their digital resources and applications.

In summary, the findings suggest that TVL students are highly capable in managing digital tools and information, enabling them to maintain organized, secure, and well-managed digital environments that support their academic tasks and responsibilities.

Table 12 presents the level of TVL students' digital skills in terms of software proficiency. As reflected, students agree that they can efficiently use word processing software for document formatting and layout, as well as perform basic to intermediate functions in spreadsheet applications such as formulas, sorting data, and chart creation. They also demonstrate the ability to create professional presentations, install and troubleshoot common applications, and quickly learn the core features of new software, with the highest mean observed in spreadsheet-related tasks.

The level of TVL students' digital skills in terms of software proficiency obtained an overall weighted mean of 4.05 with a standard deviation of 0.87, verbally interpreted as High. This indicates that students possess strong proficiency in using various software applications necessary for academic and technical tasks.

Table 12. Level of TVL Students' Digital Skills in terms of Software Proficiency

Statements The students…	Mean	SD	Remarks
... can efficiently use standard word processing software (e.g., MS Word, Google Docs) to format documents, insert tables, and manage page layouts.	4.09	0.87	Agree
... are capable of performing basic and intermediate functions in spreadsheet software (e.g., Excel, Google Sheets), such as using formulas, sorting data, and creating charts.	4.10	0.83	Agree
... can create compelling and professional presentations using software like PowerPoint or Google Slides, including adding media and using design templates.	3.99	0.85	Agree
... can effectively install, customize, and troubleshoot common desktop or mobile applications without external assistance.	4.06	0.89	Agree
... demonstrate the ability to learn and use the core features of new, unfamiliar software (e.g., editing, saving, navigation) quickly.	4.00	0.89	Agree
Weighted Mean	4.05		
SD	0.87		
Verbal Interpretation	High		

In summary, the findings suggest that TVL students are highly skilled in software use, enabling them to efficiently perform document creation, data processing, presentation development, and basic troubleshooting across different digital platforms.

Table 13 presents the level of TVL students' digital skills in terms of web navigation. As reflected, students agree that they are skilled in using advanced search operators to refine search results and can effectively manage browser features such as bookmarks, history, and multiple tabs for organized web research. They also demonstrate the ability to evaluate the credibility and bias of online sources, distinguish advertisements from genuine content, and complete complex online forms while troubleshooting common errors, with the highest mean observed in the use of advanced search techniques.

Table 13. Level of TVL Students' Digital Skills in terms of Web Navigation

Statements The students…	Mean	SD	Remarks
... are skilled at using advanced search operators (e.g., quotation marks, site: command) to refine search engine results.	4.11	0.85	Agree
... can effectively manage and use browser features such as bookmarks, history, and multiple tabs to organize their web research.	4.02	0.87	Agree
... can reliably evaluate the credibility and bias of a website's domain, author, and content to determine its trustworthiness.	4.03	1.00	Agree
... can easily distinguish between advertisements, sponsored content, and genuine information on a typical web page.	3.98	0.91	Agree
... can successfully fill out complex online forms (e.g., applications, surveys) and troubleshoot common submission errors.	4.06	0.91	Agree
Weighted Mean	4.04		
SD	0.91		
Verbal Interpretation	High		

The level of TVL students' digital skills in terms of web navigation obtained an overall weighted mean of 4.04 with a

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standard deviation of 0.91, verbally interpreted as High. This indicates that students possess strong web navigation skills, enabling them to efficiently search, evaluate, and interact with online information and platforms.

In summary, the findings suggest that TVL students are highly competent in navigating the web, allowing them to effectively access reliable information, manage online tools, and perform digital tasks with accuracy and confidence.

Significant Relationship Between the Challenges on ICT Literacy by the Students and the Level of Digital Knowledge

In this study, the significant relationship between the challenges on ICT Literacy by the students and the level of digital knowledge were analyzed applying Pearson Correlation Coefficient using Minitab 14.

Table 14 presents the correlation between the challenges on ICT Literacy by students and their level of digital knowledge. The results include Pearson correlation coefficients (r-values), p-values, and sample size (N=200) for each relationship.

As shown, a statistically significant relationship between the challenges on ICT Literacy by students and their level of digital knowledge in all aspects was manifested. Accessibility issues, literacy barrier, skills gap, and limited support obtained (p=0.000) and r-value range from 0.328 to 0.502, indicating moderate positive relationships. This means that as the level of challenges on ICT Literacy by students increases, their level of digital knowledge in terms of digital context, information sharing, digital responsiveness, ethical behavior online, and retention/adaptation to evolving technology also tends to increase.

Table 14. Significant Relationship Between the Challenges on ICT Literacy by the Students and the Level of Digital Knowledge

Challenges on ICT Literacy by the Students		Digital Context	Information Sharing	Digital Responsiveness	Ethical Behavior Online	Retention
Adaptation to Evolving Technology	Pearson Correlation	0.409*	0.348*	0.350*	0.376*	0.328*
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	200	200	200	200	200
Literacy Barrier	Pearson Correlation	0.496*	0.444*	0.422*	0.462*	0.397*
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	200	200	200	200	200
Skills Gap	Pearson Correlation	0.465*	0.471*	0.429*	0.400*	0.424*
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	200	200	200	200	200
Limited Support	Pearson Correlation	0.502*	0.418*	0.432*	0.407*	0.424*
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	200	200	200	200	200

Note *p < .05

Overall, the null hypothesis stating that there is no significant relationship between the challenges on ICT Literacy by the students and their level of digital knowledge is rejected.

Significant Relationship Between the Challenges on ICT Literacy by the Students and the Level of Digital Skills

In this study, the significant relationship between the challenges on ICT Literacy by the students and the level of digital skills were analyzed applying Pearson Correlation Coefficient using Minitab 14.

Table 15 presents the correlation between the challenges on ICT Literacy by students and their level of digital skills. The results include Pearson correlation coefficients (r-values), p-values, and a sample size of N=200 for each relationship.

As shown, there is a statistically significant relationship between the challenges on ICT Literacy by students and their level of digital skills across all aspects. Adaptation to evolving technology, literacy barriers, skills gap, and limited support obtained (p = 0.000) with r-values ranging from 0.308 to 0.458, indicating moderate positive relationships. This means that as the level of challenges increases, students' digital skills in terms of digital collaboration, data management, software proficiency, and web navigation also tend to increase.

Overall, the null hypothesis stating that there is no significant relationship between the challenges on ICT Literacy by the students and their level of digital skills is rejected.

Table 15. Significant Relationship Between the Challenges on ICT Literacy by the Students and the Level of Digital Skills

Challenges on ICT Literacy by the Students		Digital Collaboration	Data management	Software proficiency	Web Navigation
Adaptation to Evolving Technology	Pearson Correlation	0.308*	0.373*	0.313*	0.370*
	Sig. (2-tailed)	.000	.000	.000	.000
	N	200	200	200	200
Literacy Barrier	Pearson Correlation	0.402*	0.458*	0.410*	0.429*
	Sig. (2-tailed)	.000	.000	.000	.000
	N	200	200	200	200
Skills Gap	Pearson Correlation	0.387*	0.410*	0.364*	0.403*
	Sig. (2-tailed)	.000	.000	.000	.000
	N	200	200	200	200
Limited Support	Pearson Correlation	0.395*	0.439*	0.370*	0.421*
	Sig. (2-tailed)	.000	.000	.000	.000
	N	200	200	200	200

Note *p < .05

IV. Conclusion and Recommendations

The study further revealed ICT Challenges shows significant relationship on digital knowledge leads to rejection of hypotheses.

The findings revealed a significant relationship between the challenges on ICT Literacy by TVL students in ICT

Donna Belle Garin Mercado, "Challenges on Information Communication and Technology Literacy to TVL Students' Digital Knowledge and Skills," *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, Volume 9, Issue 2, pp. 274-281, July 2026.

literacy and their level of digital skills and also leads to the rejection of hypotheses.

The essential competencies needed by students in today's technology-driven society. However, despite students' familiarity with digital devices and social media platforms, gaps still exist in areas such as software proficiency, digital collaboration, data management, and responsible online behavior. This promotes readiness for higher education and participation in modern digital environments.

In view of the findings and conclusions of the study, the following recommendations are proposed:

School administrators should prioritize strengthening ICT infrastructure, provide adequate digital resources and improve technical support systems.

Since students experience very high ICT literacy challenges, addressing these concerns enhance learning efficiency and digital knowledge.

Teachers are encouraged to integrate ICT-based and experiential learning strategies that allow students to engage with real-world digital tasks. Since the findings revealed significant relationships between ICT challenges and digital competencies, teachers should design learning activities that help students navigate challenges while developing critical thinking, problem-solving, and technical skills. Continuous professional development is also recommended to keep educators updated with emerging technologies and instructional strategies.

The community is encouraged to support initiatives that promote digital inclusion and literacy development. Since ICT challenges were found to be positively associated with digital competence, strengthening access to digital tools and learning opportunities can help individuals develop essential ICT skills. This also supports innovation, entrepreneurship, and economic development within the community.

TVL students are encouraged to continuously develop their digital literacy skills to maximize their academic and technical performance. Since the study revealed that ICT challenges are significantly related to digital knowledge and skills, students should view these challenges as opportunities for learning and improvement. Strengthening digital competencies enhance their readiness for employment in technology-driven industries such as information technology, technical services, and digital communication.

Local industries and employers are encouraged to collaborate with educational institutions in providing practical training opportunities for students.

Since ICT challenges were found to contribute to digital skill development, exposure to real-world environments further enhance students' readiness for employment. This collaboration may also help bridge the gap between education and industry requirements.

Future researchers are encouraged to explore additional variables that may influence digital knowledge and skills, such as motivation, learning environment, and instructional strategies. Further studies may also examine how ICT challenges can be transformed into structured learning interventions that enhance digital literacy outcomes in technical-vocational education.

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