Microsoft 365 Applications and Teachers' Challenges on Information and Communication Technology Tools

[1]**Lhyndee Fe S. Cubillan**, [2]**Gina F. Labitad**

[1]Teacher I, [2]Education Program Supervisor – DepEd Region 10
[1]Department of Education
[1]Vicente N. Chaves Memorial Central School, Villanueva Misamis Oriental, Philippines

Abstract: This study evaluates the ICT competency level of public-school teachers in Villanueva North District, Division of Misamis Oriental, specifically emphasizing their proficiency in utilizing Microsoft Office 365 applications and identifying challenges in ICT tool integration. This study aimed to determine the respondents' ICT competency using Microsoft Office 365 Applications and the teacher's challenges with ICT tools. The study's respondents comprised the total enumeration of all public school teachers of Villanueva North District, Division of Misamis Oriental. A two-part online survey questionnaire was delivered to 218 teaching personnel. An adapted research instrument from the National Standards for ICT Competency – Basic and for Teachers and the Teaching and Learning with ICT Tools: Issues and Challenges was used. The research methodology utilized a descriptive-correlational approach and Pearson-r moment of coefficient to interpret the two variables of the study. The findings revealed that teachers' competence levels across all Microsoft Office 365 tools were highly competent in utilizing these tools. Meanwhile, the level of challenges faced by teachers in using ICT tools showed significant challenges present. Further, a correlation between teachers' ICT competency in using Microsoft 365 and their challenges with ICT tools in public schools, including both elementary and secondary levels, indicated a weak and insignificant relationship between the two variables. The study emphasizes the significance of continual assistance and professional development for teachers to improve ICT competencies and successfully address issues. Targeted training in Microsoft Office 365 programs is recommended, as is prioritizing improvements in internet connectivity and ICT infrastructure in schools and resolving organizational concerns to ensure successful technology integration.

Keywords **- Microsoft Office 365, Information Communication Technology tools, ICT challenges**

I. INTRODUCTION

The Philippine Educational System has faced numerous difficulties over the years in various areas. The teacher's use of information and communication technology is one of these difficulties. Teachers are, therefore, more likely urged to stay updated with the demands of the quick-paced changes that technology has brought to the field of education. As observed, many teachers need help using and integrating Information and Communication Technology into the teaching-learning process. The Villanueva North District is making every effort to offer and address solutions to teachers' difficulties using ICT to deliver its educational system. Technology is advancing quickly, making work easier to handle. Given their adaptability, teachers can use these technologies to meet the demands of their jobs, including those related to teaching competence, learner development, community engagement, and personal and professional improvement.

The importance of Microsoft Office 365 Applications in the Department of Education has increased significantly. It must be possible for employees and teachers to access their resources from anywhere, whether at home or school. Microsoft 365 Education is an all-in-one, cost-effective solution designed with education in mind. It gives them the tools to foster creativity, encourage teamwork, and keep things easy and secure. The DepEd Order No. 23, s.2004 articulated the guidelines on integrating ICT in teaching and learning in implementing the 2002 Basic Education Curriculum (BEC). These guidelines were issued to efficiently and effectively manage the school's technology environment. By the Memorandum from the office of the Undersecretary for Administration OUA-OUT-011023-010, Regional Memorandum 26, s. 2023 and Division Memorandum 054, s. 2023 on MICROSOFT 365 ADOPTION. The Department of Education provides tools and services to its staff, teachers, and students that increase collaboration and communication while also improving task performance. The Department of Education acquired these resources and services for educational and public service purposes. In this regard, all DepEd employees and officials are reminded that these accounts should only be utilized for academic purposes or to carry out official activities and responsibilities. The Department is responsible for all accounts and any data, materials, and other data received, conveyed, saved, or otherwise handled through the service.

Moreover, the Department of Education is dedicated to improving quality education standards by automating key processes and raising educational standards by integrating ICT into classroom instruction. Accordingly, DepEd has created the Digital Rise program. This comprehensive framework will address the infrastructure, software, and capacity-building needs in four major components (i.e., the delivery of digital literacy skills, ICT-assisted teaching, ICT-assisted learning, and automation of financial

and administrative processes). Microsoft is a key partner in implementing its Digital Rise Program. In April 2018, the department secured one of the largest volume licensing agreements in the world with Microsoft, an integral part of DepEd's *Sulong Edukalidad*.

The purpose of this study is to assess the level of ICT competency of teachers in using Microsoft Office 365 applications and determine the teacher's challenges with ICT tools when incorporating new technology into their teaching strategies that are not within their control. These challenges include limited accessibility and network connection, schools with limited ICT facilities, lack of effective training, limited time, and lack of teachers' competency.

Thus, this study provides insights into teachers' ICT competency level using Microsoft Office 365 Applications and Teachers' Challenges with ICT Tools, which can help craft an effective ICT program and training that improves instructions.

II. RESEARCH METHODOLOGY

This study used the descriptive survey approach because it offers a comprehensive and precise interpretation of the data, frequently with minimal or no requirement for statistical analysis. In descriptive research, information regarding current events, practices, trends, and cause-and-effect linkages are methodically gathered, examined, categorized, and recorded. This method can provide general features of the group being studied in either qualitative or quantitative terms, or both, by establishing facts about the group. The descriptive-correlational method is appropriate since this study aims to describe the links between two or more variables. A descriptive-correlational design is used in studies that provide a comprehensive picture of the circumstances and determine the links between various components.

2.1 Population and Sample

The study consisted of two hundred eightyteen218 public school teachers, both elementary and secondary teachers, in Villanueva North District, Division of Misamis Oriental, during the School Year 2023 - 2024. The selection of the respondents is based on the complete enumeration survey method, in which every teacher in the district is selected for data collection.

2.2 Data and Sources of Data

A two-part online survey questionnaire was the research tool used in this study. The researcher used the following tools to collect the required data from the participants. Google Forms was distributed to all Villanueva North District public elementary and secondary teachers. An adapted research instrument from the National Standards for ICT Competency – Basic and for Teachers (NICS-T, 2010) served as the foundation for the first section of the online survey questionnaire. The researcher made modifications to specify the needs of the respondents' level for a greater grasp of each question. The second part was the Teacher's challenges with ICT tools. This was also an adapted questionnaire about Teaching and Learning with ICT Tools: Issues and Challenges Kaur (2023).

The instrument's reliability indicated that the questionnaire consistently measures the same construct across different items and demonstrates strong internal consistency based on Cronbach's alpha values, which range from 0.913 to 0.996. The high alpha values suggested the instrument was dependable and trustworthy for assessing teachers' skills and factors related to ICT implementation in schools. Additionally, the instrument's reliability was confirmed through testing on a separate group of 30 teachers who were not part of the main study, further supporting its reliability.

2.3 Theoretical framework

The Technology Acceptance Model (TAM) serves as a framework for this study. It is a theory of "action relating to reasons." TAM's main goal was to provide insights into the mechanisms that support technology adoption to forecast technological behavior and offer a theoretical justification for its effective use. In the study of Marikyan (2023), TAM's practical goal was to educate professionals about potential actions they may take before putting systems in place. Framing methods for mediating the relationship between external factors and actual system use started the process of developing the model of technology acceptance.
In this study, the researcher concentrates on teachers' ICT competency using Microsoft Office 365 and their challenges with ICT tools.

2.4 Statistical tools and econometric models

The independent and dependent variables used the descriptive-correlational research approach since it described, analyzed, and interpreted data about the level of ICT competencies among the respondents. The descriptive study focuses on the description of data on frequencies, percentages, and mean scores derived from analyzing the survey data. Pearson-r Moment Coefficient was used to interpret the significant relationship between the two variables. Descriptive-correlational research studies were created to gather accurate information about the current situation of phenomena, make general conclusions from the data gathered, and draw valid and general conclusions from the facts discovered.

2.4.1 Descriptive Statistics

Descriptive statistics were used to characterize the basic traits of the data in both the independent and dependent variables of the study. There were straightforward explanations of the sample and the measurements. They were the basis of practically all quantitative data research. The standard deviation was used to determine the data distribution, and the mean was utilized to indicate the central tendency of responses, particularly those related to the statement of problems. Further, the significance of the relationship between teachers' ICT competency in using Microsoft Office 365 applications and teachers' challenges with ICT tools was evaluated using the Pearson-r moment coefficient.

III. RESULTS AND DISCUSSION

3.1 Table 1: Respondents' Level of Teachers' ICT Competency in Microsoft Office 365 Applications

Variables	Mean	SD	Interpretation
MS Word	4.21	1.10	Outstanding
MS Excel	3.87	1.27	Very Satisfactory
MS PowerPoint	4.03	1.22	Very Satisfactory
MS Outlook	3.34	1.36	Satisfactory
MS One Drive	3.48	1.39	Very Satisfactory
Overall	**3.79**	**1.27**	**Very Satisfactory**

Table 1 summarizes teachers' ICT Competency in Microsoft Office 365 among public school teachers with an overall mean of 3.79 (SD=1.27), interpreted as **Very Satisfactory** in utilizing these tools. This indicates that most teachers had a basic grasp and skill with Microsoft Office 365 apps, which was useful for incorporating technology into their teaching practices. Teachers' proficiency in using Microsoft 365 products in the classroom is evidenced by their ability to use familiar and adaptable tools, allow collaboration and communication, and give smooth access to instructional content. Teachers who include Microsoft 365 in their teaching techniques increase engagement, foster collaboration, and prepare students for success in today's technological world. Teaching and learning can be greatly improved by highly proficient teachers utilizing Microsoft Office 365, especially in schools with minimal ICT resources. Microsoft Office 365 is a great resource for teachers since it provides several tools to support various educational activities, increase productivity, and promote collaboration. First of all, teachers who are proficient with Office 365 can produce lesson plans that are more dynamic and interesting. Teachers can create visually appealing and well-organized materials that grab students' attention and improve their comprehension using Word and PowerPoint. PowerPoint presentations can incorporate multimedia components, like animations, graphics, and videos, to help viewers understand difficult ideas.

Notably, the significant support study conducted by Aziizah et al. (2020) highlighted how Microsoft Office 365's various features in one application make it easier for teachers to use Microsoft Office 365 because teachers may distribute instructional materials in both text and video format by utilizing a variety of office-provided tools and resources. Furthermore, teachers can use the chat feature to monitor their students' activity and provide projects as evaluation materials to determine student's understanding.

The highest mean was observed in **MS Word**, with a mean of 4.21 (SD=1.10) interpreted as **Outstanding**. This outstanding performance in MS Word implies that teachers excelled in word processing tasks, which may have been crucial for creating documents and instructional materials. It suggests that teachers were skilled at exploiting MS Word's features, which might improve their teaching practices and administrative responsibilities. Microsoft Word is commonly considered an extremely user-friendly word editing software owing to its straightforward design and readily available functions. Its design, which features a familiar ribbon menu structure, makes it easy for users to navigate, with commands and functions logically organized for efficient operation.

Teachers have become specialists given Microsoft Word's variety and importance in everyday tasks. This program is essential for producing various instructional resources, including lesson plans, worksheets, assignments, and tests necessary for efficient instruction. With its easy-to-use interface and extensive formatting and editing features, teachers can effortlessly create papers that look polished. Further, Microsoft Word is a comprehensive option for various educational purposes because it supports multimedia embedding and combines easily with other Microsoft Office applications. Word is widely used in academic institutions, and it guarantees that instructors obtain proper training and professional growth, allowing them to hone their skills continuously. Teachers may now save time and concentrate more on student engagement and learning outcomes because of their high proficiency in Word, which has organically developed from their regular use of the program for various administrative and instructional activities.

Microsoft Word's user-friendly design, extensive capabilities, and seamless integration make it a highly accessible and efficient tool for writing, editing, and formatting documents, suitable for users of all skill levels. Furthermore, findings from a similar study by Aires et al. (2021) emphasized the necessity of teachers being familiar with the platform they use to properly explore content with students, especially in an inclusive and collaborative learning era.

In contrast, the lowest mean was found in **MS Outlook**, with a mean of 3.34 (SD=1.36), interpreted as **Satisfactory**. While this indicated satisfactory competence, teachers may have required further training or support in using MS Outlook for communication and organization tasks. It suggests that there may have been room for growth in fully utilizing MS Outlook's features for efficient communication and collaboration among teachers, students, and parents. Microsoft Outlook training may assist corporations, educational institutions, non-profit organizations, and a wide range of other industries perform critical workplace duties more efficiently. With several issues that can make using Microsoft Outlook in an educational setting more difficult, teachers frequently encounter difficulties with the program. MS Outlook might be intimidating, especially to individuals who are not very tech-savvy. The range of functions, including contact management, calendar scheduling, task lists, and email management, necessitates a certain degree of experience and comfort with complicated software. Furthermore, teachers already have full obligations outside the classroom, including lesson planning, grading, and administrative work, which leaves little time for them to experiment with and become proficient with new tools.

Furthermore, as stated by Aires et al. (2021), teachers must understand the full potential of platforms such as Microsoft 365 to properly explore content with students, particularly in inclusive and collaborative learning experiences. Microsoft Outlook has several sophisticated features for communication, scheduling, and collaboration. Yet, teachers may struggle to excel with the platform because of its complexity, lack of training and support, desire for alternative tools, and worries about privacy and security. Efforts to provide extensive training, simplify the user interface, solve privacy and security concerns, and seamlessly incorporate Outlook.

3.2 Table 2: Respondents' Level of Challenges on ICT Tools

Variables	Mean	SD	Interpretation
Limited Accessibility and Network Connection	4.22	0.81	Very High
Schools with limited ICT Facilities	4.09	0.94	High
Lack of Effective Training	3.97	0.88	High
Limited time	4.17	0.83	High
Lack of Teacher's Competency	3.55	1.08	High
Overall	**4.00**	**0.91**	**High**

Table 12 summarizes the challenges public school teachers face in Villanueva North District, Division of Misamis Oriental, during the School Year 2023-2024 regarding using ICT tools at both elementary and secondary levels. It has an overall mean score of 4.00 (SD=0.91), interpreted as **High**. This suggests that significant barriers hinder the effective use of technology in teaching and learning processes within the district. It implies a need for targeted interventions to address these challenges and enhance ICT integration in education.

When incorporating ICT resources into their teaching techniques, teachers encounter numerous obstacles. One of the main obstacles is that many teachers, especially those who did not grow up with modern technologies, lack digital literacy. This may cause someone to feel intimidated and reluctant to use new tools. The lack of possibilities for teachers to get professional development and training exacerbates this problem by depriving them of the skills needed to integrate ICT into the classroom. A digital divide is also brought about by differences in access to resources and technology, as some institutions cannot offer students modern technology and dependable internet connections. Without the right technology help, troubleshooting difficulties independently can be challenging and time-consuming for teachers.

Overcoming these challenges requires investment in ongoing professional development, equitable access to resources, and a supportive school culture that encourages experimentation and innovation with ICT tools. By addressing these barriers Sahito (2021), teachers can better leverage technology to enhance student learning and engagement in the classroom. It cannot be disputed that people in different places do not have internet access, nor can they use any software or applications that require it. Experts have determined a number of causes for poor internet connectivity and restricted accessibility.

The highest mean is the variable **limited accessibility and network connection,** with a mean of 4.22 (SD=0.81) interpreted as **Very High**. This implies that inadequate access to ICT resources and unreliable network connections are major obstacles faced by teachers. It highlights the urgent need for infrastructure improvements and better connectivity solutions to support effective school ICT utilization. Lack of access to resources, particularly internet connectivity, is another complex problem preventing teachers from using modern technologies in the classroom.

Incorporating ICT tools into classrooms can be difficult for teachers due to limited accessibility and unstable network connections. These restrictions make it more difficult for teachers to use digital resources and tools in their lesson preparations. A lesson's flow might be upset by unstable network connections, which can frustrate teachers and students and lessen the impact of technology-enhanced learning activities. Because of unreliable internet access, teachers cannot fully utilize multimedia content, online learning platforms, and collaborative technologies that can improve student engagement and learning results.

Further, teachers may find it more difficult to incorporate ICT into their lessons due to these technological limitations, which can also increase their workload. Teachers may need to develop alternate methods of delivering content and handling technical issues. Therefore, to allow instructors to fully utilize ICT tools in the classroom, concerns related to accessibility and network stability must be addressed.

Research by Sahito (2021) on limited accessibility and network connection reinforced this consensus, underlining the numerous challenges instructors encounter due to limited accessibility and network connectivity concerns, which prohibit them from completing their work on time. Not all teachers are good at overcoming these issues; despite their experience, internet issues hinder them from fully utilizing it.

The variable **Lack of Teacher's Competency** got the lowest mean of 3.55 (SD=1.08), interpreted as **High**. This suggests that while competency issues exist, they might not be as pervasive as other challenges. However, it still implies a need for teacher training and professional development programs to enhance ICT skills and confidence among teachers, ultimately improving technology integration in teaching practices.

Contrary to popular belief, many educational settings find that the challenge of teachers lacking ICT competency is less of a problem. Over the years, there has been a strong emphasis on training initiatives and professional development for teachers to improve their digital literacy. These days, many teachers have access to a range of tools that enhance their development of digital confidence and competency, such as online courses, workshops, and peer support networks. Additionally, teachers are more familiar with digital technologies than ever due to the widespread use of technology in daily life. As a result, even though a teacher's initial lack of digital competency may have been a major obstacle, professional development initiatives and the rise in digital literacy have lessened this difficulty and allowed teachers to incorporate technology into their teaching strategies more easily.

In addition, Vilppola et al. (2022) stressed the necessity of a technological and instrumental component of teachers' ICT capabilities, claiming that teachers must learn ICT handling skills, including hardware and software. Because learning and teaching occur in informal contexts outside traditional educational settings such as classrooms and workplaces, teachers must also be adept in ICT technology.

3.2 Table 3: Correlation Between Teachers' ICT Competency in Using Microsoft 365 and the Challenges of ICT Tools

Correlation	Challenges in ICT Tools					Overall
ICT Competency	Limited Access and Internet Connection	School with Limited ICT Facilities	Lack of Effective Training	Limited Time	Lack of Teachers' Competency	
	r-value p-value	r-value p-value	r-value p-value	r-value p-value	r-value p-value	
MS Word	0.157	0.152	-0.012	0.038	-0.098	0.048
	0.109	0.119	0.903	0.698	0.317	0.629
	NS	NS	NS	NS	NS	NS
MS Excel	0.148	0.179	-0.013	-0.017	-0.167	0.019
	0.13	0.066	0.892	0.859	0.087	0.850
	NS	NS	NS	NS	NS	NS
MS PowerPoint	0.143	0.177	0.061	0.041	-0.116	0.065
	0.144	0.069	0.533	0.679	0.236	0509
	NS	NS	NS	NS	NS	NS
MS Outlook	0.105	0.099	0.037	-0.013	-0.047	0.040
	0.286	0.313	0.71	0.896	0.634	0.684
	NS	NS	NS	NS	NS	NS
MS OneDrive	0.148	0.197*	0.105	0.033	<0.001	0.116
	0.13	0.043	0.283	0.739	0.996	0.235
	NS	S	NS	NS	NS	NS

Table 3 summarizes the relationship between teachers' skills in using Microsoft 365 and their challenges with ICT tools in public schools, both at elementary and secondary levels. The findings suggest that there was generally a very weak and insignificant relationship between teachers' ICT competency and the challenges they encountered. Looking at specific challenges like limited access to the internet, schools with limited ICT facilities, lack of effective training, limited time, or lack of teachers' competency, the correlation was very weak, indicating that one did not significantly affect the other.

This showed that even if instructors were adept at using Microsoft 365 technologies, it did not necessarily alleviate their issues with ICT tools in the classroom. For example, having high abilities in MS OneDrive or MS Excel did not appear to be associated with overcoming hurdles such as restricted access to ICT facilities or inadequate training. This revealed that simply enhancing teachers' ICT abilities may not have addressed bigger concerns surrounding ICT integration in education.

Further, the highest overall correlation was found with MS OneDrive. Still, it remained very weak and significant, suggesting that even though there might have been a slight tendency for teachers who were more competent with OneDrive to face fewer challenges, this relationship was not strong enough to be meaningful. Multiple reasons exist for the slightly significant correlation between Microsoft OneDrive and schools with limited ICT facilities. As a platform for online storage and collaboration, OneDrive provides many advantages that are well-suited to educational institutions with limited ICT resources. This offers an affordable option for file management and storage. Schools with little access to ICT frequently have problems with their local storage infrastructure. Schools can avoid upgrading to more costly physical storage by using OneDrive instead. It makes it possible for learners and teachers to save, retrieve, and share information without being restricted by the capabilities of their local hardware.

Also, teachers may find OneDrive difficult to use despite its many advantages for file storage, collaboration, and accessibility. These challenges can include a lack of experience with the platform, usability problems, worries about data security, and internet connectivity constraints. It is necessary to provide them with thorough training, accessible interfaces, strong data protection measures, and dependable internet connectivity.

On the contrary, the lowest overall correlation was with MS Excel, indicating no relationship between teachers' competency in using Excel and the challenges they encountered with ICT tools. This suggests that proficiency in a specific Microsoft tool like Excel did not necessarily translate into overcoming broader challenges related to ICT integration in teaching.

To sum up, having competency with Microsoft Office 365 applications might be helpful for teachers. It could not always be a guarantee of overcoming any challenges related to ICT integration in the classroom. It takes a multidisciplinary strategy to address these issues, considering institutional support, teaching tactics, technical proficiency, and larger contextual considerations.

These findings highlighted the challenges of resolving issues with ICT deployment in education, hinting that solutions may have required more than just improving teachers' technical skills. This reflected the support study undertaken by Aziizah et al. (2020), which emphasized the importance of teachers' expertise and confidence with technical equipment and the need for effective support systems when dealing with ICT difficulties in education.

III. ACKNOWLEDGMENT

REFERENCES

[1] Aires, A. P. et. al. (2021). Microsoft 365: a teaching and learning resource during the pandemic. In L. Gómez Chova, A. López Martínez, I. Candel Torres (Eds), INTED2021 Proceedings, 15th International Technology, Education and Development Conference (pp. 3647-3652). 8th-9th of March. IATED. https://doi.org/10.21125/inted.2021.0755

[2] Aziizah, A., et. al. (2020). PENGARUH PEMBELAJARAN DARING MATA PELAJARAN SEJARAH MELALUI MICROSOFT OFFICE 365. Keraton: Journal of History Education and Culture.

[4] DepEd Order No. 23, s.2004 - Guidelines on integrating ICT in teaching and learning in implementing the 2002 Basic Education Curriculum (BEC).

[5] Kaur, K. (2023) 'Teaching and learning with ICT Tools: Issues and challenges,' International Journal on Cybernetics & Informatics, 12(3), pp. 15–22. doi:10.5121/ijci.2023.120302.

[6] Marikyan, D. & Papagiannidis, S. (2023) Technology Acceptance Model: A review. In S. Papagiannidis (Ed), TheoryHub Book. Available at https://open.ncl.ac.uk / ISBN: 9781739604400

[7] National ICT Competency Standard (NICS) for Teachers (2010) https://documents.pub/document/national-ict-competency-standards-for-teachers.html?page=13

[8] National ICT Competency Standards (NICS) – Basic. https://www.academia.edu/12626024/NATIONAL_ICT_COMPETENCY_STANDARD_NICS_BASIC

[9] Office of the Undersecretary for Administration. OUAD00 – 0921-0022– Digitally Rising in 2020 and Beyond – Message from Alain Del B. Pascua to Microsoft's Public Sector Cloud Summit 2020

[10] OUA-OUT-011023-010, Regional Memorandum 26, s. 2023 and Division Memorandum 054, s. 2023 on MICROSOFT 365 ADOPTION

[11] Sahito, Z.H. (2021). Teachers' Perception about Learning with Information and Communication Technologies: Usage & Challenges. *Sukkur IBA Journal of Educational Sciences and Technologies*.

[12] Vilppola, J. et al. (2022) 'Teacher trainees' experiences of the components of ICT competencies and key factors in ICT competence development in work-based vocational teacher training in Finland,' International Journal for Research in Vocational Education and Training, 9(2), pp. 146–166. doi:10.13152/ijrvet.9.2.1.