
Digital Competence and ICT Tools Utilization Of Public Elementary School Teachers

Erlinda N. Magallanes, Ed.D.

Faculty Member, Graduate School, Medina College, Ozamiz City

ABSTRACT

This research intended to determine the digital competence, attitudes towards technology and ICT tools utilization of public school teachers in the District of Bonifacio during the school year 2022-2023. The quantitative research design was used with the questionnaire checklist as the main data gathering instrument. The study was conducted among 70 public elementary school teachers in the District of Bonifacio. The data were analyzed and interpreted using the weighted average mean, and Spearman rho correlation. SPSS were used in the data analysis. This research identified that teachers are less digitally competent than expected, and that further digital-related competencies should be promoted as part of continuous professional development (CPD). Massive Open Online Courses (MOOCs) are one way to support teachers' digital competence and encourage their unlimited participation on the web. Academic institutions should offer teachers and teacher educators access to technological tools, provide sufficient training, knowledge and skills, and promote the positive role of transformation, creativity, innovation and sharing of resources. Further research should investigate teachers' digital competence qualitatively.

KEYWORDS: *Digital Competence, ICT Tools Utilization, Public Elementary School Teachers*

INTRODUCTION

The disciplines of information and communication and digital competencies are attracting more researchers from throughout the world (ICT). Digital competence's fundamental principles relate to the concepts of information, communication, and technology (ICT). Nevertheless, the latter requires that individuals be able to retrieve, analyze, store, display, and exchange information and communication while collaborating and communicating online via social networking technologies and the Internet. Digital competence is the ability to use the wealth of new opportunities provided by digital technology and to solve any difficulties they may present. It also denotes meaningful participation in the twenty-first century's expanding knowledge society.

It is undeniable that the various technologies, such as computers, interactive whiteboards, and apps, that are having an impact on users and consumers all over the world may be helpful for the teaching and learning processes because they may increase access to more educational resources and reveal wider opportunities for collaboration and problem-solving.

Standardizing many emerging technologies, including social networking tools, is more crucial than ever. One of the primary drivers of the adoption of digital skills and ICT,

according to Sysoyev and Evstigneev [1], is that teachers' professional competencies involve being skilled in the use of information and communication technology.

The five basic competencies of information processing, communication, content creation, issue solving, and safety make up a framework for the development of digital competence. The primary research issues covered in this study revolve around the use of ICT technologies, digital competences, and attitudes.

Statement of the Problem

This research intended to determine the digital competence, attitudes towards technology and ICT tools utilization of public school teachers in the District of Bonifacio during the school year 2022-2023.

METHODOLOGY

The quantitative research design was used with the questionnaire checklist as the main data gathering instrument. The study was conducted among 70 public elementary school teachers in the District of Bonifacio. The data were analyzed and interpreted using the weighted average mean, and Spearman rho correlation. SPSS were used in the data analysis.

RESULTS AND DISCUSSIONS

The outcomes of the current research revealed that the majority of teachers are not adequately digitally competent to the level and standards required to enable them to be good digital teachers of the twenty-first century. Digital competence is associated with three knowledge areas which must be integrated: technology proficiency, pedagogical compatibility and social awareness (Zhao et al.) [2]. Instefjord and Munthe [3] confirm that teachers' digital competence is based on the knowledge areas suggested by Zhao et al. [2].

In view of that, technology proficiency depends on teachers' technical competence and confidence in terms of employing technology. In addition, pedagogical compatibility relates to teachers' understanding of how technology can help in practice in the classroom and contribute to achieving the curriculum's goals. Finally, social awareness refers to teachers' ability to deal with various social aspects of the school or class culture (Instefjord & Munthe) [3]. Therefore, it was not surprising that a number of teachers were found not to be advanced in terms of their digital competence due to 'inexperience, lack of training, lack of prior knowledge, or just being poor performing individuals' (Maderick et al.) [4]. There was a deficiency in didactic ICT skills, multifaceted digital leaning strategies and digital building.

Table 1. *Digital Competence of the Participants*

Statements	Weighted Average Mean	Interpretation
Information Processing		
1. Search for information online using a search engine.	2.19	Less Competent
2. Use different search engines to find information.	1.92	Less Competent
3. Use advanced search strategies to find reliable	2.18	Less Competent

information on the internet such as using web feeds.		
4. Assess the validity and credibility of information using a range of criteria.	2.47	Less Competent
5. Use some filters when searching to compare and assess the reliability of the information I find.	1.98	Less Competent
Overall Mean	2.15	Less Competent
Communication		
1. I actively use a wide range of communication tools (e-mails, SMS, instant messaging, blogs, social networks) for online communication.	2.36	Less Competent
2. I can create and manage content with collaboration tools such as online spreadsheets.	2.15	Less Competent
3. I actively participate in online spaces and use several online services (e-banking, online shopping).	1.66	Least Competent
4. I am aware of social networking sites and online collaboration tools.	1.97	Less Competent
5. I pass on or share knowledge with others online.	1.87	Less Competent
6. I use advance features of communication tools (video conferencing, application sharing).	1.61	Least Competent
Overall Mean	1.94	Less Competent
Content Creation		
1. I can produce simple digital content (tables, images, audio files) in at least one format using digital tools.	1.86	Less Competent
2. I can create multimedia content in different formats.	1.95	Less Competent
3. I can apply formatting functions of different tools (merging documents of different formats)	2.10	Less Competent
4. I know how to reference and reuse content covered by copyright.	1.99	Less Competent
Overall Mean	1.98	Less Competent
Safety		
1. I check the security configuration and systems of my devices and/or of the applications I use on a regular basis to access the Internet.	1.90	Less Competent
2. I am aware that my credentials can be stolen.	2.00	Less Competent
3. I use different passwords to access equipment, devices and digital services.	1.95	Less Competent
4. I know how to react if my computer is infected by a virus.	1.84	Less Competent
5. I know that using digital technology extensively	2.38	Less Competent

can affect my health.		
6. I can make use of information and communication technology to avoid health problems.	2.45	Less Competent
Overall Mean	2.09	Less Competent
Problem Solving		
1. I can solve problems that arise when using digital technology.	2.15	Less Competent
2. I choose the right tool, device, application, software or service to solve non-technical problems.	1.95	Less Competent
3. I am aware of problem-solving category.	1.92	Less Competent
4. I can solve technological problems by exploring the settings and options to programs or tools.	1.86	Less Competent
5. I update my digital skills to decrease my limits and increase my digital knowledge.	1.97	Less Competent
Overall Mean	1.97	Less Competent

Legend:

4.21 – 5.00 Very Competent (VC) 3.41 – 4.20 Competent (C) 2.61 – 3.40 Fairly Competent (FC)
 1.81 – 2.60 Less Competent (LC) 1.00 – 1.80 Least Competent (LeC)

The teachers were very positive at using computers and smartphones most especially in their teaching as they considered their use as very important. Generally, the teachers have positive attitudes towards technology utilization as shown by the overall mean of 4.06.

Teachers are key players in the integration of ICT into classrooms, and it has been found that teacher attitudes are crucial predictors of technology use. One important aspect of the effectiveness of ICT use in schools is teachers' views about its use for instructional reasons. Scholars from several fields feel that teachers' attitudes about technology influence how well ICT technologies are used in education (Teo) [5]. The degree to which technology is incorporated into the teaching and learning process depends on how teachers feel about ICTs. An individual's salient ideas about the effects of continuing use and his assessment of these effects are what drive their attitudes about using computers.

The findings showed that most instructors had positive or good views regarding using ICT in the classroom. This result is consistent with earlier studies (Abdullah et al) [6]; (Abu-Samak) [7], which highlight the significance of instructors' attitudes as a key element in ICT use. The usefulness of ICT in the sphere of education may have the effect of encouraging instructors to employ it for instructional reasons. So, in order to increase the use of ICT for educational purposes, instructors should use it more frequently, for a variety of educational activities, and they should think that ICT improves both the education and the quality of their students' work.

Table 2. *Attitudes Towards Technology Utilization*

Statements	Weighted Average Mean	Interpretation
1. Using a computer for teaching is very important to me.	4.45	Very Positive
2. Using a smartphone for teaching is very helpful for me.	4.32	Very Positive
3. Using ICT tools for teaching makes me effective in my teaching.	4.10	Positive
4. Using ICT tools for teaching is interesting and more engaging.	3.88	Positive
5. I save time if I use computer tools in the preparation of my instructional materials.	3.79	Positive
6. I feel very comfortable and fulfilling if I utilize ICT tools to prepare my multimedia instructional materials.	3.90	Positive
7. I consider effective utilization of ICT tools very beneficial in my pupils learning processes.	4.00	Positive
8. I consider myself very effective in my teaching with the use of ICT tools.	4.03	Positive
9. I observe that a better atmosphere in the classroom is created with ICT tools.	4.11	Positive
10. I give guidance and instruction to my pupils on the use of ICT tools for their learning tasks which are to be completed at home.	4.01	Positive
Overall Mean	4.06	Positive

Legend:

4.21 – 5.00 Very Good (VG) 3.41 – 4.20 Good (G) 2.61 – 3.40 Fair (F)

1.81 – 2.60 Poor (P) 1.00 – 1.80 Very Poor (VP)

The overall mean for the ICT tools utilization is 2.97 suggesting that ICT tools are used at average level for educational purposes by the teachers. The findings revealed that the level of ICT use varies by the research participants, and the majority of participants had average level of ICT tools utilization. Mostly, teachers tended to use ICT tools or applications and resources such as the audio/video chat, e-mails, social media such as the Facebook, translation software like google translate, Internet browsers, search engines such as google and presentations such as powerpoint. Teachers are most likely to incorporate ICT use in their classroom if they see its relevance to their instruction and are convinced that the design of education software is compatible with educational goals and the individual learning needs of students (Williams, Boone & Kinsley) [8].

Table 3. ICT Tools Utilization

Statements	Weighted Average Mean	Interpretation
1. Databases	2.90	Average
2. Blogs	2.02	Low
3. Audio/video chat	3.51	High
4. E-books	2.35	Low
5. E-libraries	2.47	Average
6. E-mails	3.45	High
7. Encyclopedias (Wikipedia)	3.65	High
8. Online dictionaries	3.06	Average
9. Excel	2.33	Low
10. Social media	3.82	High
11. Translation software (Google translate)	3.41	High
12. Spellcheck	3.04	Average
13. Internet browsers	3.43	High
14. Photo editing	2.22	Low
15. Search engines (Google, Bing)	3.25	Average
16. Podcast	2.04	Low
17. Online educational materials	3.20	Average
18. Online storage (Google drive, dropbox)	3.18	Average
19. Presentations (Powerpoint, Prezi)	3.43	High
20. Simulations	2.67	Average
Overall Mean	2.97	Average

Legend:

4.21 – 5.00 Always (A) – Very High (VH)	3.41 – 4.20 Often (O) – High (H)
2.61 – 3.40 Sometimes (S) – Average (A)	1.81 – 2.60 Rarely (R) – Low (L)
1.00 – 1.80 Never (N) – Very Low (VL)	

Table 4. Tests for Significant Relationship Between the Teachers' Digital Competence, Attitudes and ICT Tools Utilization

Variables	<i>Spearman rho</i> Correlation Coefficient	t- value of r	CV	Decision
Teachers' Digital Competence and Attitudes Towards Technology Utilization	0.452	4.178	2.00	Significant
Teachers' Digital Competence and ICT Tools Utilization	0.417	3.788	2.00	Significant
Attitudes Towards Technology and ICT Tools Utilization	0.424	3.588	2.00	Significant

The correlation coefficients of 0.452, 0.417 and 0.424 yielded t-values of 4.178, 3.788 and 3.588 which are all greater than the critical value of 2.00 at the 0.05 probability level. This suggests that the values are significant. Hence, there is a significant relationship between the teachers' digital competence and attitudes and ICT tools utilization among the teachers.

CONCLUSIONS AND RECOMMENDATIONS

The teachers who took part in this research were identified as less digitally competent as they are expected to be. Further digital-related competencies should be promoted to teachers as part of continuous professional development (CPD). Such competencies also need to be incorporated into different teacher education programs. Massive Open Online Courses (MOOCs) are just one way to support individuals' digital competence and encourage their unlimited participation on the web.

The relevant departments should offer teachers and teacher educators as well as learners access to various technological tools, along with the provision of sufficient training, knowledge and skills. In addition, in their strategic plans and policies academic institutions must promote the positive role of transformation, creativity, innovation and sharing of resources.

Further research should be carried out to investigate teachers' digital competence qualitatively to get further answers regarding the challenges that hinder and demotivate in-service teachers from integrating technology in classes in schools and other educational institutions. It would also be interesting to ask such teachers how they can become more digitally competent and better ICT users. The current research focused on determining the teachers' digital competence as individuals, rather than in groups or during social interaction. Thus, measuring and assessing teachers in those situations could be considered in other studies.

REFERENCES

- i. Sysoyev, P. V., Evstigneeva, I. A., & Evstigneev, M. N. (2015). The Development of Students' Discourse Skills via Modern Information and Communication Technologies. *Procedia-Social and Behavioral Sciences*, 200, 114-121. <https://doi.org/10.1016/j.sbspro.2015.08.028>
- ii. Zhao et al., (2002) Zhao, Y., Pugh, K., Sheldon, S., & Byers, J. L. (2002). Conditions for classroom technology innovations. *Teachers college record*, 104(3), 482-515. <https://doi.org/10.1111/1467-9620.00170>
- iii. Instefjord, Elen and Munthe, Elaine. (2016). Preparing pre-service teachers to integrate technology: an analysis of the emphasis on digital competence in teacher education curricula. *European Journal of Teacher Education*, v39 n1 p77-93 2016. <https://eric.ed.gov/?id=EJ1090203>

-
- iv. Maderick, J. A., Zhang, S., Hartley, K., & Marchand, G. (2016). Preservice teachers and self-assessing digital competence. *Journal of Educational Computing Research*, 54(3), 326-351. <https://doi.org/10.1177/07356331156204>
 - v. Teo, T. (2008). Assessing the computer attitudes of students: An Asian perspective. *Journal of Computers in Human Behavior*, 24, 1634-1642.
 - vi. Abdullah, N., Zainol Abidin, M., Luan, W., Majid, O. & Atan, H. (2006). The attitude and motivation of English language teachers towards the use of computers. *Malaysian Online Journal of Instructional Technology*, 3(1), pp 57-67.
 - vii. Abu-samak, Z. (2006). An exploration of Jordanian English language teachers' attitudes, skills, and access as indicator of ICT integration in Jordan. Amman Jordan.
 - viii. Williams, Boone & Kinsley, 2004. Williams, D.L., Boone, R. & Kingsley, K.V. (2004). Teacher beliefs about education software. *Journal of Research on Technology in Education*, 36(3), 213-230.

www.ijmas.com