
A Study on Relationship between Technological Competence and Digital Citizenship among Secondary School Teachers

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ABSTRACT

Digital technologies are essential for instruction and professional development in the continually changing education scene. Today's teachers must integrate technology into their lessons and exhibit ethical, responsible digital activity. In modern teaching environments, especially secondary schools where students are increasingly engaged in technology, technological competence and digital citizenship are crucial. This study examines relationship between secondary school teachers' technological competence and digital citizenship. Technological competence is a teacher's capacity to use, adapt, and integrate digital technologies into education. It includes knowledge of digital technologies, educational software, and online communication platforms, which provide dynamic and effective learning settings. Conversely, digital citizenship involves ethical and responsible online behavior. Digital literacy, rights, duties, communication, and online safety are included. Moreover, teachers should exhibit digital citizenship to enable children to develop positive digital identity and technology ethics. Secondary schools are embracing digital technology, and there is a need to ensure that teachers are tech-savvy and responsible role models. This is important because the classroom is



changing, and teachers in secondary schools should be equipped for blended and online learning. This information could be useful to policymakers, teacher educators, and administrators in recommending appropriate professional development programs. This study adopted a correlational descriptive survey design. The survey included all secondary school teachers employed in both government and private school throughout Delhi. Purposive sampling helped 60 secondary school teachers to be chosen from this demographic. The information was gathered through the use of a Google Form questionnaire. A systematic questionnaire included demographic information (Gender, Years of teaching experience, Age, Time spent on the internet and Seniority level), both Technological Competence Scale, and Digital Citizenship Scale were self-made. The study revealed that technological competence did not differ significantly between male and female secondary school teachers, while digital citizenship did, with females scoring higher. Moreover, teachers spending more time on the internet exhibited significantly higher technological competence and digital citizenship. Seniority significantly affected technological competence but not digital citizenship. The positive correlation between technological competence and digital citizenship. This suggests that enhancing technological competence may lead to stronger digital citizenship in educational environments, promoting safer and informed technology use. Professional development programs should cover digital expertise and ethical, legal, and social issues. This integrated strategy is necessary to train technologically savvy educators and student role models. Finally, technology affects schooling, thus digital citizenship and Technological Competence are essential. Secondary school teachers must be empowered to teach online safety, ethics, and productivity.

Introduction:

The Internet has made the world a global village where people learn everything at the same time by eliminating geographical boundaries in communication (Bayzan, 2025). In the digital age, where the lines



between online and offline are becoming less clear because of how quickly information and communication technologies are changing, the idea of citizenship should no longer be limited to that of conventional citizenship (Kim & Choi, 2018). While the traditional approaches for citizenship which emphasize rights and responsibilities as citizens are valid, additional efforts to review and redefine what are the appropriate concepts of citizenship matching to the 21st internet age have been made continuously (Bennett et al., 2009). Internet use has positively affected the welfare of the individual by changing time use patterns, creating new activities, facilitating access to information and being a powerful communication tool (Castellacci & Tveito, 2018). The introduction of the Internet into every aspect of our lives has brought many opportunities and risks. The opportunities brought by the Internet have made individuals' lives easier, while the risks have led to the emergence of new responsibilities and concerns (Grigutyte Neringa et al., 2021). In this context, it has become important to be a conscious citizen, not only in real life but also online. While risks and threats used to occur only in physical environments, they now threaten individuals through online platforms (Stevens et al., 2021). Therefore, it is not enough to be a good and conscious citizen solely in real life and it is necessary to be a good and conscious digital citizen online. Just as individuals need to have certain skills to protect themselves from the risks and threats in the physical world, it has become a necessity to acquire digital skills against possible risks and threats from digital platforms (Jackman et al., 2021). Thus, the idea of digital citizenship has become even more important for individuals to learn how to use technology responsibly and with purpose in the face of the dangers that they may face online.

The definition of digital citizenship is behavioral norms that have been developed to use technology correctly, appropriately, and responsibly (S. Ribble & D. Bailey, 2004). Digital citizenship is a multidimensional concept that promotes equality and equal participation in the online society regardless of race, gender and ethnicity (Isman & Canan Gungoren, 2014; Sadiku et al., 2018). With the impact of globalization, digital citizenship gains a new meaning and content in the digital environment and transforms the traditional concept of citizenship (Iksanov, 2023). (Ribble & Bailey, 2007) evaluates digital citizenship under nine headings: digital access; digital commerce; digital communication; digital literacy; digital ethics; digital law; digital rights and responsibilities; digital health; and digital security. A digital citizen is a person who knows how to use technology and digital tools that enter the life of an individual with technology correctly, respects ethical rules and personal rights on the digital platform, and uses these tools with a sense of security and responsibility (Çubukçu A. & Bayzan Ş., 2013). Digital citizens are people who use technology to assist the world and themselves by providing themselves with the tools they need to efficiently use the technology to their advantage (Condruz-Bacescu, 2023). Digital



citizens are trying to safeguard their online privacy on digital platforms and in real life. One of the most important human rights is online privacy, which involves keeping people's personal information safe from unauthorized access (Popovych, 2021). Data on the use of technology show that individuals use many digital platforms on the Internet and share their personal data through these platforms (Tuik, 2022). With the Internet and social media making it easy to get information rapidly and leaving digital footprints when using digital platforms and apps, it is getting more difficult to keep privacy safe, this is a threat to online privacy (Merkezi & Akademik, 2023). The most important protective and preventive solution in terms of reducing these concerns, preventing victimization and coping with internet-related problems is for individuals to become digital citizens who are aware of the opportunities, risks and threats of the Internet (Çubukçu A. & Bayzan Ş., 2013). At this point, teachers' perceptions of digital privacy are of critical importance in protecting both their own and their students' online privacy. Therefore, teachers, as digital citizens, should have knowledge on issues such as information security, data privacy, online rights and responsibilities, and online ethics on online platforms, and should be able to guide their students on these issues (YILMAZ & DOGUSOY, 2020).

Technology in the classroom has required the teacher to have a variety of skills. Ball and Cohen (1999) say that the views of teachers on knowledge and learning have also changed significantly over the last few decades. Therefore, they also have very different views on what should be taught in the classroom and how they should teach the students (Orakova et al., 2024). What knowledge do teachers, researchers, and educators need to have in order to teach effectively? Besides having basic knowledge and skills concerning the teaching profession, it is important that teachers also have knowledge concerning how to use technology appropriately (Herro et al., 2021). What knowledge should teachers, researchers, and educators be expected to have to be able to effectively perform their duties of teaching effectively? Besides having basic knowledge and skills concerning the teaching profession, it is important that teachers also have knowledge concerning how to use technology appropriately (Záhorcová et al., 2012). Teachers' technological competence with regards to the teaching-learning process ranges from simple technologies, such as the use of pens and papers, to more sophisticated technologies, including the Internet, digital videos, whiteboards, and other software applications (Schmidt et al., 2009). However, not only should teachers be able to impart their subject matter effectively, they should also demonstrate the goal-oriented behaviors they want to instill in their students, and they should be able to do so with the help of technology. The manner in which teachers accept and accommodate technology in their teaching is influenced by several factors, including their professional self-efficacy, their age, their educational background, and their perception of the technology itself (Orakova et al., 2024). Teachers, being



proficient in the skills mentioned earlier, not only know how to use technology but also ensure that the technology being used is correct and purposeful. Technology needs to be infused in every area of teaching and learning, including assessing students. As Raja and Nagasubmarani (2018) mentioned, computers, projectors, cameras, 3D modeling, educational software, PowerPoint presentations, and other technologies made possible by advancements in technology are not only being used by teachers but also aid students in readily understanding concepts. It has, therefore, become part of a teacher's job to continually upgrade themselves in this area and improve themselves to be able to bring this to the educational setting.

Review of Related Literature:

Bayzan (2025) revealed that female teachers exhibited higher levels of digital citizenship than male teachers, and those who spent more time on the Internet demonstrated higher digital citizenship levels. Similarly, Orakova et al. (2024) found that while primary school teachers possessed high pedagogical competencies, their digital literacy and technological competencies were moderate; moreover, gender and professional seniority significantly influenced these competencies, with males showing higher technological competence and digital literacy, and females excelling in pedagogical competence. Levels of digital citizenship of teachers were found to be moderate, with a tendency to vary with age but not with levels of educational institutions, according to Naci (2020). Moreover, there was a positive and significant relationship between digital citizenship and information literacy, as well as internet/computer self-efficacy. For higher education, Arkorful (2024) found that digital citizenship was positively affected by competence in problem-solving, communication and collaboration, and digital content creation, but safety competence was not significant.

Need of the study:

The study is needed to examine how technological competence and digital citizenship vary among secondary school teachers based on gender, time spent on the internet, and seniority. Understanding these differences will help develop targeted training programs to enhance teachers' digital skills, ethical online behavior, and effective technology integration in education.

Purpose of the Research:

The aim of this research is to study the comparison of technological competency and digital citizenship of secondary school teachers working at different levels in based on gender, time spent on internet and seniority and to reveal the relationship between technological competency and digital citizenship and.



this context, test to the following hypotheses were sought.

Objectives:

- To assess the technological competence of secondary school teachers
- To assess the digital citizenship of secondary school teachers
- To find out the relationship between technological competence and digital citizenship of secondary school teachers

Hypotheses:

Ho1: There is no significant difference in mean scores of technological competence of secondary school teachers in terms of gender, amount of time they spend daily on the internet and level of seniority

Ho2: There is no significant difference in mean scores of digital citizenship of secondary school teachers in terms of gender, amount of time they spend daily on the internet and level of seniority

Ho3: There is no significant relationship between technological competence and digital citizenship of secondary school teachers

Research Methodology:

The design of research is an outline of the plan, structure, and approach to a particular investigation, created to answer a research question while controlling variance (Kerlinger). For this research, a descriptive-correlational survey design was used because this research aimed to examine the current state of secondary school teachers' technological competency and digital citizenship. The target population of this research was secondary school teachers who are currently taking teacher education. The sampling used was a convenience sampling approach, which resulted in 60 teachers. The researcher-made questionnaire was used to assess teachers' technological competency and digital citizenship. The researcher-made instrument used was composed of 25 questions. The respondents answered each question using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The researcher sent out Google Forms to teachers through email and WhatsApp. Since it was a self-paced survey, all 60 teachers answered it without any time constraint. The statistical tools used were independent-samples t-test, One-Way ANOVA, and Pearson Product Moment correlation.

**Result:**

The hypothesis was to study the technological competency and digital citizenship of secondary school teachers in terms of gender, daily time spend on the internet and seniority. The data were analysed with the help of a *t-test* (Independent sample t-test) and a *one-way ANOVA*, and Pearson product-moment correlation, results are given below in table.

Table 1: A comparison of secondary school teachers' technological competency in terms of gender

Gender	Mean	S.D	df	N	t-value	Sig.
Male	81.61	24.796	58	36	0.139	At 0.05
Female	82.46	32.838		24		Level

From the table 1, It can be seen that the t-value is 0.139 which is less than the table value at 0.05 (1.98) level of significant with $df = 58$. The data indicates that there is no significant difference in the average scores of male and female secondary school teachers. Therefore, the null hypothesis can be accepted, meaning that there is no significant difference in technological competence between male and female teachers. However, in terms of digital citizenship, male teachers have an average of 87.81, while their female counterparts have an average of 90.54. It seems that male and female university students did not have the same belief to the same extent.

Table 2: Summary of one Way ANOVA of Technological Competency in terms of DTSI

Source of variance	df	SS	MSS	F-value	Sig.
DTSI	2	4977.195	2488.598	5.214	0.05**
Error	57	2284.655	400.801		
Total	59	27882.850			

From the table 2, it can be seen that the F-Value of 5.214 is significant at 0.005 level with $df = 2/57$. It shows that mean scores of technological Competency of secondary school teachers based on the **amount of time they spend daily on the internet** differ significant. Thus, the null hypotheses *there is no significant difference in the Technological Competency of secondary school teachers based on their amount of time spent daily on the internet* is **rejected**.

Table 3: Summary of one Way ANOVA of Technological Competency in terms of Seniority

Source of variance	df	SS	MSS	F-value	Sig.
Seniority	2	7368.919	3684.460		
Error	57	38953.930	683.406	4.779	0.05**
Total	59	46322.850			

From the table 3, it can be seen that the F-Value of 4.779 is significant at 0.005 level with $df = 2/57$. It shows that mean scores of technological Competency of secondary school teachers based on their **seniority** differ significant. Thus, the null hypotheses *there is no significant difference in the Technological Competency of secondary school teachers based on their seniority* is **rejected**.

Table 4: A comparison of secondary school teachers' digital citizenship in terms of gender

Gender	Mean	S.D	df	N	t-value	Sig.
Male	87.81	27.479	58	36	2.089	At 0.05
Female	90.54	36.516		24		Level

From the table 4, It can be seen that the t-value is 2.089 which is more than the table value at 0.05 (1.98) level of significant with $df = 58$. It shows that the mean scores of male and female Secondary school teachers differ significantly. Thus, the null hypothesis that *there is no significant difference in mean scores of digital citizenship of male and female Secondary school teachers* is rejected. Further the mean scores of digital citizenship of male Secondary school teachers is 87.81 which is significantly lower than those of female Secondary school teachers whose mean scores of digital citizenship is 90.54. It may, therefore, be said that male and female university students were not found to believe to the same extent.

Table 5: Summary of one Way ANOVA of digital citizenship in terms of DTSI

Source of variance	df	SS	MSS	F-value	Sig.
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DTSI	2	1226.430	613.215		
Error	57	55876.969	980.297	4.625	0.05**
Total	59	57103.400			

From the table 5, it can be seen that the F-Value of 4.625 is significant at 0.005 level with $df = 2/57$. It shows that mean scores of digital citizenship of secondary school teachers based on the **amount of time they spend daily on the internet** differ significant. Thus, the null hypotheses *there is no significant difference in the digital citizenship of secondary school teachers based on their amount of time spent daily on the internet*” is **rejected**.

Table 6: Summary of one Way ANOVA of digital citizenship in terms of Seniority

Source of variance	df	SS	MSS	F-value	Sig.
Seniority	2	2653.447	1326.723		
Error	57	54449.952	955.262	1.388	0.05**
Total	59	57103.400			

From the table 6, it can be seen that the F-Value of 1.388 is not significant at 0.05 level with $df = 2/57$. It shows that mean scores of digital citizenship of secondary school teachers based on the **seniority did not** differ significant. Thus, the null hypotheses *there is no significant difference in the digital citizenship of secondary school teachers based on their seniority*” is **accepted**.

Table 7: Correlation Coefficient between Technology Competency and Digital Citizenship of Secondary School Teachers

Variable	Technological Competency	Sig.
Digital Citizenship	0.698	0.000

As depicted in Table 7 above, it is evident that there is a correlation coefficient of 0.698 that exists between technological competency and digital citizenship. The fact that it is positive tells us that it is



statistically significant at 0.05 levels with 60 degrees of freedom. We reject the null hypothesis that there is no significant relationship that exists between technological competency and digital citizenship for secondary school teachers.

Discussion:

The findings revealed that male and female secondary school teachers do not differ much in their technological competence. However, there was a gap in digital citizenship, with females performing better. This was in line with Bayzan (2025), as she also revealed that female teachers were slightly ahead in terms of digital citizenship. Moreover, there was a positive relationship between the amount of internet usage and technological competence as well as digital citizenship. This was in line with Bayzan (2025) and Ciftci (2018), as they revealed that there was a positive relationship between internet usage and digital citizenship. Seniority was significant in technological competence but not in digital citizenship. This was not entirely in line with Orakova et al. (2024), as they revealed significant differences in technological competence and digital citizenship with regard to professional seniority. There was a positive relationship between technological competence and digital citizenship. This was in line with Naci (2020), as she revealed that there was a meaningful relationship between digital citizenship and technological competence. It was also in line with Xu (2025), as she revealed that ICT competence was a mediator for digital citizenship. The findings were not in line with Demirezen (2023), as she revealed that there were no significant differences in terms of gender or internet usage in digital citizenship. The findings revealed that there was a positive relationship between technological competence and digital citizenship. This was in line with the fact that these two variables reinforce each other. The findings also revealed the role of gender and internet usage in digital citizenship. The implication of the findings was to encourage further research in the area of professional development in terms of digital literacy, ethical internet behavior, and the effective utilization of technology in the classroom.

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