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Research Article

An investigation of primary school teachers' self-assessments of technological competence in terms of various variable[1]

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Abstract

This study aims to examine the technological competency levels of primary school teachers working in the province of Siirt and how these competencies vary according to demographic variables. The increasing importance of technology in education has made it essential for teachers to use technological tools effectively in fulfilling their professional responsibilities. The research was conducted using a quantitative survey model, and data were collected from 57 primary school teachers. The data were obtained through a personal information form and the "Self-Assessment Scale for Technological Competency for 21st Century Learning" adapted by Fidan et al. (2020). Analyses were conducted using SPSS 22.0. Results indicated that, in general, teachers possessed high levels of technological competency. However, these competencies varied based on demographic factors such as gender, age, and education level. Teachers in the 26–35 age group scored the highest in technological competency, while competency scores tended to decrease as years of seniority increased. Teachers with a master's degree and those who had received in-service training showed higher competency levels. No significant differences were found in terms of gender. The findings suggest that professional development programs specifically targeting experienced teachers and the expansion of in-service training opportunities are necessary to improve teachers' technological competencies.

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Introduction

Technological developments are influencing and transforming education, just as they affect all areas of life. In our current era, the proliferation of technology continues to increase, making it one of the fundamental pillars of modern life—from healthcare to communication, commerce to transportation, and daily needs to education (Şimşek, 2023). In a time when information is constantly evolving, technological tools facilitate people's lives and enhance the efficiency of educational processes (Çiçek, 2023).

As technology plays a critical role in societal development, its impact on education is transformative. The integration of technology into education has made learning processes and teaching methods more efficient and effective. It supports individualized learning for students and decision-making processes for teachers, enriching overall educational experiences (Öztürk et al., 2024). After beginning their careers, teachers now carry out many tasks—such as

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administrative duties, school-related procedures, and student communication—via digital platforms. Therefore, the ability to use technological tools has become an essential requirement for teachers (Elkıran, 2021).

Instructional technologies and the ability to design materials are among the key skills that influence classroom management, the permanence of learning, and the achievement of educational goals. Hence, teachers must be proficient in using educational technologies to fulfill their professional responsibilities effectively (Özkurt & Keçici, 2017). Appropriately using these technologies for educational purposes positively influences student motivation. Moreover, developing these skills enhances both teachers' professional satisfaction and their self-efficacy (Güneş & Buluç, 2017).

Bandura defines the concept of self-efficacy as a person's belief in their ability to organize and successfully execute a given task (İpek & Acuner, 2011). The concept helps explain how confidence influences individual behavior, learning processes, and motivation. Self-efficacy plays an important role in education as well. Educators' self-perceptions significantly affect both their professional competencies and overall education quality. Studies show that factors such as the use of technology, integration of instructional technologies, and material design can positively impact teachers' self-efficacy perceptions (Tuluk, 2015; Eker & Seçkin, 2022; Eker, 2014; Güneş & Buluç, 2017; Aktürk & Delen, 2020).

Teachers' competencies are also critical to effective participation in educational processes. These competencies are essential for improving the quality and success of education. The literature indicates that teacher competencies contribute not only to students' academic achievement and motivation but also to teachers' professional development, adoption of innovations, ability to follow developments in their fields, and effective classroom management (Seferoğlu, 2004; Çiltaş & Akıllı, 2011; Yavuz et al., 2015). In this context, primary school teachers' self-assessments of their technology use are crucial for analyzing their competencies and developing context-appropriate strategies. Studies also show that factors such as teachers' age, gender, educational background, professional experience, and the use of technological devices influence the use of technology in educational activities (Ulaş & Ozan, 2010; İpek & Acuner, 2011; Doğru et al., 2017).

As key stakeholders in the education system, primary school teachers must use technology effectively and be aware of their competencies. They need to follow technological developments closely, integrate tools into teaching–learning processes, and conduct self-assessments to enhance their knowledge and skills. Teachers who can do this create richer learning environments and help both themselves and their students adapt to the demands of the 21st century. Therefore, identifying the factors influencing these processes is crucial for shaping curricula, planning in-service training, and determining the needs of teachers.

The aim of this research is to analyze the variables affecting primary school teachers' self-assessments regarding their technological competencies, such as age, gender, faculty of graduation, years of experience, educational level, in-service training status, level of technology use, and the types of technological devices used.

Accordingly, the research question is: "Which variables affect primary school teachers' self-assessments of their technological competencies?"

- Does the variable of age and gender affect primary school teachers' self-assessments of their technological competencies?
- Does the faculty from which teachers graduated affect their self-assessments of technological competencies?
- Does teaching experience (seniority) affect primary school teachers' self-assessments of their technological competencies?
- Does the level of education affect primary school teachers' self-assessments of their technological competencies?
- Does participation in in-service training affect primary school teachers' self-assessments of their technological competencies?
- Do the types of technological devices used affect primary school teachers' self-assessments of their technological competencies?
- Does the level of technology use affect primary school teachers' self-assessments of their technological competencies?

Method

Research Model

This study was conducted using the survey model, one of the quantitative research methods. The survey model refers to organizing the necessary conditions for the systematic and economical collection and analysis of data relevant to the research purpose (Karasar, 2000). This model is an approach used to determine participants' characteristics such as interests, abilities, and attitudes regarding a particular event (Büyüköztürk et al., 2023).

Participants

The study group consisted of 57 primary school teachers working in the province of Siirt. Among the participants, 42 were male (73.7%) and 15 were female (26.3%). In terms of age, 24 teachers (42.1%) were in the 26–35 age group and 28 teachers (49.1%) were in the 36–45 age group. Regarding educational background, 51 teachers (89.5%) graduated from faculties of education, 5 teachers (8.8%) from faculties of science and letters, and 1 teacher (1.8%) from a faculty of physical education. Based on seniority, 27 teachers (47.4%) had 11–20 years of experience, 25 teachers (43.9%) had 1–10 years, and 5 teachers (8.8%) had more than 21 years of experience. A total of 46 participants (80.7%) held bachelor's degrees, and 11 (19.3%) held master's degrees. Additionally, 36 teachers (63.2%) reported having received in-service training on technology use in education, while 21 teachers (36.8%) had not. 59.6% of the participants considered themselves competent in using technology. Regarding the frequency of technology use, 47.4% stated that they use technology frequently. In terms of the devices used, mobile phones (94.7%) and computers (91.2%) were identified as the most commonly used technological tools. When asked about their level of technology use in educational activities, 29.8% of the participants reported moderate use, 47.4% reported frequent use, and 22.8% reported very frequent use. Overall, these results indicate that more than half of the participants feel confident in their technological competencies and integrate technological tools—primarily mobile phones and computers—into their teaching practices with varying levels of intensity.

Data Colleciton Tool

Data were collected through a personal information form and the "Self-Assessment Scale for Technological Competency for 21st Century Learning" adapted by Fidan et al. (2020).

Analysis

Data were analyzed using the SPSS 22.0 software. To determine the factors affecting teachers' self-assessments of technological competency, independent samples t-tests and one-way ANOVA (F-tests) were conducted. Correlation analysis was also performed to examine the relationships between the scale and its subdimensions.

Process

A form was created using Google Forms, which included the personal information form and the "Self-Assessment Scale for Technological Competency for 21st Century Learning." The form was distributed via messaging applications, along with necessary explanations, to randomly selected primary school teachers working in public schools under the Ministry of National Education in the province of Siirt. In total, 57 primary school teachers participated in the study. The collected data were compiled into documents and organized into tables. After the analysis of the data, the findings were visualized with graphs.

Findings

Below are general statistics on the participants regarding their gender, age, faculty of graduation, years of experience, educational level, participation in in-service training, technological competency, technology usage level, and types of technological devices used.

Table 1. Descriptive statistics of the scale

Scale	Min	Max	Mean	SS	Skewness	Kurtosis	Cronbach Alfa
Self-Assessment of Technological Competency	2,00	5,00	3,8655	,93209	-,586	-,804	,971
E-Posta	1,80	5,00	4,2351	1,02756	-1,036	-,395	,950
World Wide Web	1,60	5,00	4,1930	,96137	-1,264	,446	,919
Integrated Applications	1,00	5,00	3,2325	1,20440	,121	-1,109	,913
Teaching with Technology	1,90	5,00	3,7702	1,02486	-,359	-1,167	,951

The table above presents the minimum–maximum values, mean, standard deviation, skewness–kurtosis, and Cronbach's alpha internal consistency coefficients for the "Self-Assessment Scale for Technological Competency for 21st Century Learning" used in the study. The average score obtained by participants from the scale was 3.86; the lowest recorded mean score was 2.00 and the highest was 5.00. The internal consistency coefficient (Cronbach's alpha) of the entire scale was calculated as .971, and the skewness and kurtosis values indicate that the data meet the assumptions of normality. Among the sub-dimensions of the scale, the highest mean score was 4.23 in the "E-mail" sub-dimension. The normality assumption was also met for all sub-dimensions. The internal consistency coefficient was calculated as .950 for the "E-mail" sub-dimension, .919 for the "World Wide Web," .913 for "Integrated Applications," and .951 for the "Teaching with Technology" sub-dimension.

Table 2. Correlation analysis

		Self-Assessment of Technological Competency	E-Posta	World Wide Web	Integrated Applications	Teaching with Technology
Self-Assessment of Technological Competency	r	1	,862**	,893**	,808**	,952**
	P		,000	,000	,000	,000
	N	57	57	57	57	57
E-Posta	r	,862**	1	,912**	,508**	,714**
	P	,000		,000	,000	,000
	N	57	57	57	57	57
World Wide Web	r	,893**	,912**	1	,565**	,757**
	p	,000	,000		,000	,000
	N	57	57	57	57	57
Integrated Applications	r	,808**	,508**	,565**	1	,775**
	p	,000	,000	,000		,000
	N	57	57	57	57	57
Teaching with Technology	r	,952**	,714**	,757**	,775**	1
	p	,000	,000	,000	,000	
	N	57	57	57	57	57

According to the correlation analysis conducted to examine the relationship between the scale used in the study and its sub-dimensions, there is a statistically significant positive correlation ($p<.05$) between the overall scale and the e-mail sub-dimension ($r = .862$). As the scores from the overall scale increase, the scores from the e-mail sub-dimension also increase at a rate of .862. Similarly, there is a statistically significant positive correlation ($r = .893$, $p<.05$) between the overall scale and the World Wide Web sub-dimension. This indicates that as the overall scale scores increase, the World Wide Web sub-dimension scores also increase, with a strength of .893. Furthermore, a statistically significant positive correlation ($r = .808$, $p<.05$) was found between the overall scale and the Integrated Applications sub-dimension. As the scores on the overall scale increase, the scores for Integrated Applications increase accordingly at a rate of .808. Lastly, the strongest correlation was found between the overall scale and the Teaching with Technology sub-dimension, with a statistically significant positive relationship (r = .952, p<.05). This indicates that increases in the overall scale scores are strongly associated with increases in the Teaching with Technology scores.

Table 3. Gender and technological competency

	Gender	N	Mean	S	t	sd	p
Technological Competency	Erkek	42	3,9266	,91966	,826	55	,413
	Kadın	15	3,6944	,97764			
E-Posta	Erkek	42	4,2571	1,04465	,269	55	,789
	Kadın	15	4,1733	1,01099			
World Wide Web	Erkek	42	4,2238	,97401	,402	55	,689
	Kadın	15	4,1067	,95279			
Integrated Applications	Erkek	42	3,3452	1,15023	1,187	55	,240
	Kadın	15	2,9167	1,33519			
Teaching with Technology	Erkek	42	3,8452	1,00710	,924	55	,359
	Kadın	15	3,5600	1,08021			

There is no statistically significant difference in participants' technology proficiency across the scale and its sub-dimensions based on gender (p > .05).

Table 4. Age and technological competency

	Gender	N	Mean	S	F	p	Post Hoc (Tukey)
Technological Competency	25 ve altı	2	3,6458	1,20797	,912	,442	
	26-35	24	4,0295	,72549			
	36-45	28	3,8185	1,04288			
	46-55	3	3,1389	1,29122			
E-Posta	25 ve altı	2	4,0000	1,41421	2,940	,041	b>c>d
	26-35[b]	24	4,6083	,68138			
	36-45[c]	28	4,0571	1,11270			
	46-55[d]	3	3,0667	1,51438			
World Wide Web	25 ve altı	2	3,5000	,98995	2,539	,066	
	26-35	24	4,5000	,63520			
	36-45	28	4,0857	1,08105			
	46-55	3	3,2000	1,31149			
Integrated Applications	25 ve altı	2	2,8750	1,23744	,355	,785	
	26-35	24	3,1354	1,17487			
	36-45	28	3,3839	1,29365			
	46-55	3	2,8333	,76376			
Teaching with Technology	25 ve altı	2	3,8500	1,20208	,307	,820	
	26-35	24	3,8625	,92116			
	36-45	28	3,7393	1,10264			
	46-55	3	3,2667	1,41892			

According to the ANOVA conducted to examine whether participants' technology proficiency significantly differs by age group, statistically significant differences were found in the "e-mail" sub-dimension (p < .05). Post-hoc analyses using Tukey's test revealed that the significant differences stem from the age groups 26–35, 36–45, and 46–55. Further comparisons indicated that the significant difference primarily originates from the 26–35 age group. This finding suggests that teachers in this age group may be more inclined to use digital communication tools and technology more actively and effectively.

Table 6. Graduation and technological competency

	Faculty	N	Mean	S	t	sd	p
Technological Competency	Education	51	3,8456	,95246	-669	54	,506
	Science&Literature	5	4,1417	,83052			
E-mail	Education	51	4,2275	1,03152	-,778	54	,440
	Science&Literature	5	4,6000	,89443			
World Wide Web	Education	51	4,1686	,97928	-,593	54	,555
	Science&Literature	5	4,4400	,93167			
Integrated Applications	Education	51	3,2157	1,22782	-,321	54	,749
	Science&Literature	5	3,4000	1,19373			
Teaching with Technology	Education	51	3,7451	1,05968	-,647	54	,521
	Science&Literature	5	4,0600	,74027			

According to the T-tests conducted to determine whether participants' technology competencies significantly differ based on the faculty they graduated from, no statistically significant differences were found in the scale or its sub-dimensions ($p > .05$)

Table 7. Senioritýn and technological competency

	Seniority	N	Ortalama	S	F	p	Post Hoc (Tukey)
Technological Competency	1-10 years	25	3,9750	,73951	3,425	,040	a>b>c
	11-20 years	27	3,9491	1,00069			
	21 + years	5	2,8667	1,00191			
E-mail	1-10	25	4,4560	,81142	6,603	,003	a>b>c
	1-10 years	27	4,2963	,99749			
	11-20 years	5	2,8000	1,20830			
World Wide Web	21 + years	25	4,3600	,68799	6,545	,003	a>b>c
	1-10 years	27	4,2889	,97875			
	11-20 years	5	2,8400	1,16103			
Integrated Applications	21 + years	25	3,1400	1,08513	,544	,583	
	1-10 years	27	3,3889	1,38906			
	11-20 years	5	2,8500	,54772			
Teaching with Technology	21 + years	25	3,8760	,89036	1,965	,150	
	1-10 years	27	3,8296	1,08975			
	11-20 years	5	2,9200	1,10995			

According to the ANOVA conducted to determine whether participants' technology competencies significantly differ based on their years of seniority, statistically significant differences were found in the overall scale, the e-mail sub-dimension, and the world wide web sub-dimension ($p < .05$). Post-hoc analyses using the Tukey test revealed significant differences between the groups. When comparing the groups with significant differences, it was observed that these differences stem from the 1–10 years of seniority group. This disparity may be due to less experienced teachers acquiring technological skills more rapidly or having more practical experience in using such technologies.

Table 8. Education level and Technological Competency

	Level	N	Ortalama	S	t	sd	p
Technological Competency	Bachelor's Degree	46	3,7808	,89901	-1,415	55	,163
	Master's Degree	11	4,2197	1,02826			
E-mail	Bachelor's Degree	46	4,1957	1,04178	-,589	55	,558
	Master's Degree	11	4,4000	,99599			
World Wide Web	Bachelor's Degree	46	4,1435	,96024	-,792	55	,432
	Master's Degree	11	4,4000	,98387			
Integrated Applications	Bachelor's Degree	46	3,0543	1,17487	-2,376	55	,021
	Master's Degree	11	3,9773	1,07503			
Teaching with Technology	Bachelor's Degree	46	3,6826	,99248	-1,328	55	,190
	Master's Degree	11	4,1364	1,12541			

According to the t-tests conducted to determine whether participants' technology competencies significantly differed based on their level of education, a statistically significant difference was found in the integrated applications sub-dimension ($p<.05$). The significant difference stems from higher mean scores among participants with a master's degree.

Table 9. In-service training and technology competence

	Trained	N	Mean	S	t	sd	p
Technological Competency	No	21	3,6052	,85864	-1,634	55	,108
	Yes	36	4,0174	,95100			
E-mail	No	21	3,8857	1,12529	-2,013	55	,049
	Yes	36	4,4389	,92189			
World Wide Web	No	21	3,9143	1,01896	-1,700	55	,095
	Yes	36	4,3556	,90093			
Integrated Applications	No	21	2,9881	1,02919	-1,174	55	,246
	Yes	36	3,3750	1,28799			
Teaching with Technology	No	21	3,5571	,92009	-1,203	55	,234
	Yes	36	3,8944	1,07410			

According to the T-tests conducted to determine whether participants' technology competencies differ significantly based on their level of education, a statistically significant difference was found in the e-mail sub-dimension ($p<.05$). The significant differences are due to the higher average scores of participants who received training.

Table 10. Technology usage level and technological competence

	Level	N	Ortalama	S	F	p	Post Hoc (Tukey)
Technological Competency	Moderate	17	3,3505	,98293	5,627	,006	c>b>a
	Frequent	27	3,9306	,84043			
	Very Frequent	13	4,4038	,73251			
E-mail	Moderate	17	3,6588	1,21195	5,772	,005	c>b>a
	Frequent	27	4,3111	,91034			
	Very Frequent	13	4,8308	,55285			
World Wide Web	Moderate	17	3,7765	1,19139	3,218	,048	c>b>a
	Frequent	27	4,2444	,84368			
	Very Frequent	13	4,6308	,64728			
Integrated Applications	Moderate	17	2,7059	1,19646	3,105	,053	
	Frequent	27	3,3148	1,16560			
	Very Frequent	13	3,7500	1,10397			
Teaching with Technology	Moderate	17	3,2412	1,09262	4,910	,011	c>b>a
	Frequent	27	3,8296	,90885			
	Very Frequent	13	4,3385	,87516			

According to the ANOVA conducted to determine whether participants' technological competencies significantly differ based on their level of technology usage, a statistically significant difference was found in all sub-dimensions and in the scale itself, except for the "integrated applications" sub-dimension (p<.05). Post-hoc analysis using Tukey's test revealed that there are significant differences among the usage level options. Upon comparison of the significant options, it was found that these differences stem from participants who reported using technology at a "very frequent" level.

Table 11. Proficiency in technology use and technological competence

	Level	N	Mean	S	F	p	Post Hoc (Tukey)
Technological Competency	No	3	2,0972	,10486	10,970	,000	c>b>a
	Partially	20	3,6021	,73802			
	Yes	34	4,1765	,85681			
E-mail	Hayır[a]	3	2,0667	,30551	11,866	,000	c>b>a
	No	20	4,0400	,93042			
	Partially	34	4,5412	,86063			
World Wide Web	Yes	3	2,0000	,40000	12,856	,000	c>b>a
	No	20	4,1000	,68518			
	Partially	34	4,4412	,88459			
Integrated Applications	Yes	3	2,0833	,87797	5,057	,010	c>b>a
	No	20	2,7750	1,10888			
	Partially	34	3,6029	1,14832			
Teaching with Technology	Yes	3	2,1667	,20817	7,721	,001	c>b>a
	No	20	3,4650	,94439			
	Partially	34	4,0912	,93269			

According to the ANOVA conducted to determine whether participants' technological competencies significantly differ based on their self-assessed proficiency in using technology, statistically significant differences were found in the overall scale and its sub-dimensions (p<.05). Post-hoc analyses, specifically the Tukey test, revealed significant differences among the options. These significant differences were found to originate from participants who considered themselves proficient in using technology.

Results

In light of the data obtained in the study, the self-assessed technological competencies of classroom teachers working in Siirt were examined in detail in terms of various demographic and professional variables, and the following conclusions were reached: It was determined that classroom teachers' overall self-assessed scores of technological competence were above average. Among the sub-dimensions, the highest average was observed in the e-mail dimension (4.23), indicating that participants use technological tools for communication more effectively and widely. Another important finding of the study revealed that there was no statistically significant difference between male and female participants in terms of the scale and its sub-dimensions. This shows that male and female teachers have similar levels of technology use. When the overall scores of technological competence were examined based on age groups, no significant difference was found; however, in the e-mail sub-dimension, a significant difference was found in favor of the 26-35 age group. This indicates that teachers in this age group are more inclined to use communication technologies and are more experienced in using these tools. Regarding the variable of teaching experience, significant differences were found in the overall scale and the sub-dimensions of e-mail and web, with teachers having 1-10 years of experience showing higher mean scores. These findings suggest that teachers in the early years of their careers are more open and ready for innovations and technological practices. In terms of academic background, a significant difference was observed only in the “Integrated Applications” sub-dimension in favor of teachers with graduate degrees. This shows that graduate-level teachers have higher self-assessments regarding their ability to integrate technology and adapt multi-dimensional programs to the classroom environment. In-service training, which holds an important place in the study, caused a significant difference only in the e-mail sub-dimension, in favor of those who received training. This suggests that in-service training may enhance teachers’ communication technology competencies. Participants who reported using technology "frequently" or "very frequently" had significantly higher mean scores across the scale and sub-dimensions, confirming that increased interaction with technology strengthens teachers' self-efficacy perceptions. Teachers who considered themselves "competent" or "partially competent" in using technological programs and applications scored significantly higher than those who reported being "not competent at all." This consistency between self-efficacy perceptions and actual use further supports the validity of the findings. Overall, the results indicate that teaching experience and age differences are apparent in many areas, that in-service and graduate education have positive effects on technological skills, and that teachers' perceptions of competence increase in parallel with access to and frequency of technology use.

Recommendations

Based on the analyses of teachers' demographic, professional, and technological conditions, the following suggestions can be offered: Although 63.2% of teachers stated that they received in-service training, 36.8% indicated they had not benefited from such opportunities. Therefore, it is recommended that online in-service training programs be developed by the provincial directorate of national education to increase accessibility. Teachers should receive training on using technology-supported tools, recognizing pedagogical innovations, and classroom management. Projects promoting and supporting technology use could be implemented by the provincial directorate of national education. Since 59.6% of participants considered themselves technologically competent and 35.1% partially competent, it is suggested that practical technology training be offered to teachers. These programs should include guidance on educational technologies commonly used in schools and universities today, such as smartboards and computer labs. The high concentration of teachers in the 36–45 age group (49.1%) indicates the need to address the specific needs of this demographic. Application-based programs led by experienced mentors could be organized for teachers in age groups that have more difficulty adapting to technological developments. To encourage teachers to be well-equipped in technology, experienced teachers should be encouraged to share their knowledge in in-service training programs. The study also revealed that phones and computers are the most frequently used devices by teachers, while other devices (e.g., smartboards, tablets) are underutilized. Accordingly, appropriate technological equipment should be provided to schools, and teachers should receive training on how to use them effectively. The high concentration of teachers with 11–20 years of experience (47.4%) shows the importance of providing special professional development opportunities for this group. Development programs tailored to teachers' levels of experience could be organized. Experienced teachers could receive training in leadership, mentoring, and innovative instructional approaches and methods. Additionally, promoting career advancement through new titles or rank promotions may be recommended. Since 89.5% of the teachers in the study graduated from Faculties of Education, while those from Faculties of Science and Letters (8.8%) and Faculties of Physical Education were fewer, special educational approaches should be developed based on faculty background. Professional development programs should be differentiated accordingly, and support programs for pedagogical formation may be offered to non-Education Faculty graduates. To enhance teachers' adaptation to technological and pedagogical innovations and improve their communication skills—which are known to be directly linked to motivation—motivational seminars highlighting teachers' success stories and experiences could be organized. Additionally, professional support and peer solidarity groups could be formed. It is clear that effective teaching involves much more than just delivering knowledge from the front of the classroom. The recommendations presented in this study aim to support teachers' professional development, improve classroom activities through structured planning, and enable more effective use of technological innovations.

Limitations of the Study

The study sample was limited to classroom teachers in a specific region. This limitation restricts the generalizability of the findings to teachers in other regions. Additionally, differences in technological infrastructure among schools where teachers work may lead to varying self-assessments of technological competence. Factors such as personal interest and regional disparities that could affect teachers' technology competence were not included in the scope of the study. Lastly, although teachers' participation in in-service training was evaluated, the content and quality of such training were not analyzed in detail. These limitations should be considered when interpreting and generalizing the study's results.

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