

# Teachers' digital literacy competencies according to their age status and their level of use in classes

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**Abstract.** Digital literacy means that individuals know how to properly use digital platforms/tools both for their personal development and for solving everyday problems, mastering information technologies and being aware of issues such as legal responsibility, data protection, security and ethics. In other words, people who are aware of their own and others' privacy, security, and responsibility while using technological tools/applications and the Internet, and who use digital tools while maintaining their ethical attitude, can be called competent digital literacy. Otherwise, it is impossible to call people who take their phone or tablet in their hands and use digital media in a limited way (usually social media users) without being aware of any responsibility and completely open to threats. The study aims to reveal the digital literacy competencies of teachers according to age and their level of use in classes. A total of 50 primary and secondary school teachers make up the study's sample. In this study, the mixed method was preferred to obtain more reliable results. In the mixed method research, while the numerical situation was revealed through quantitative data, they were strengthened with qualitative data. The "Digital Literacy Scale" was used to collect the quantitative data. This scale is a 5-point Likert-type tool and reveals the digital literacy status of teachers in a numerical sense. The qualitative data was collected using semi-structured interview questionnaires created by the researchers based on expert opinions. While the quantitative data collected was statistically analyzed and interpreted, the qualitative data was analyzed using the descriptive analysis technique. According to the research findings, teachers are generally aware of the importance of digital literacy for education and training.

## 1 Introduction

Digital literacy means that individuals know how to properly use digital platforms/tools both for personal development and for solving everyday problems, mastering information technologies and being aware of issues such as legal responsibility, data protection, security,

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and ethics. In other words, people who are aware of their own and others' privacy, security and responsibility when using technological tools/applications and the Internet, and who use digital tools while maintaining their ethical stance, can be called competent digital literates [1, 2, 3, 4]. Otherwise, people who pick up their phone or tablet and use digital media to a limited extent (usually social media users) cannot be called competent as they are not aware of any responsibility and are completely open to threats [5]

To be considered sufficient in terms of digital literacy, criteria such as use, understanding and creation are taken into account. "Use" is actually about being able to use search engines, computer programs, and digital media. "Understanding" is the ability to correctly understand, interpret, and critically view the things we encounter in digital environments. This makes it possible to act consciously and safely in digital environments. The "Create" criterion refers to the ability to produce content using digital media tools [6].

As in many other areas, being able to use digital environments and technologies is of great importance in the teaching profession today. While most teachers of the new generation, who are digital natives, are expected to be able to do this much more easily and quickly, it can be predicted that teachers who encountered the digital world at an older age will be able to do so with a little more effort [7, 8, 9]. In any case, teachers of all generations cannot turn their backs on technology and stay away from technology in today's educational environment [10]. Because it's no longer an option, it's a necessity.

#### Importance of the Study

Today's students no longer want to learn using traditional methods, with traditional, book-based instruction where the teacher is the narrator, and the student is the listener. They find it more effective, more enduring and more enjoyable to learn in the colorful, highly stimulating world of the digital world. Videos, digital games, digital teaching applications, online learning tools, etc. - educators should know and use these tools. Teachers who have deficits in this respect should be provided with further training. But the first step is, of course, a thorough assessment. Determining the level of digital competence of teachers is important in this sense. In this context, the study aims to determine the digital competencies of teachers depending on their age in range and the degree of their use in the classroom.

## 2 Method

### 2.1 Research Model

In this study, the mixed method (converging parallel pattern) was preferred in order to look at the situation from a broader perspective and comprehensively [11], (Özdemir et al. 2021). In mixed methods research, although the numerical situation is revealed by quantitative data, it is also reinforced by qualitative data. In other words: While the weaknesses of quantitative research are reinforced on the one hand, the data of qualitative study is numerically supported and strengthened on the other. In this sense, the generalizability of the results obtained is also increased.

### 2.2 Sample of the Study

The sample of the study consists of a total of 60 primary and secondary school teachers working in Northern Cyprus, 30 of whom are between the ages of 21-35, and the other 30 are between the ages of 36-65. The first group of these participants (21-35 years old) includes digital natives, and the second group (36-65) includes digital immigrants.

### 2.3 Data Collection and Analysis

The “Digital Literacy Scale” developed by Serkan Bayrakçı and Haldun Narmanlıoğlu [12] in their article titled “Digital Literacy as a Whole of Digital Competencies: A Scale Development Study” was used to collect the quantitative data. The necessary permissions to use the scale were obtained from the researchers. This scale is a 5-point Likert-scale tool that indicates the status of teachers' digital competence in a numerical sense. Semi-structured interview questionnaires were used to collect the qualitative data, which were created by the researchers based on expert opinions. While the quantitative data collected was statistically analyzed and interpreted, the qualitative data was analyzed using the descriptive analysis technique.

## 3 Findings

### 3.1 Quantitative Findings of the Study

In the findings section, the data obtained from the applied scale were tabulated and interpreted under the main themes related to the scale. The numbers in the tables listed from 1 to 5 mean the following, respectively: “1-Strongly disagree, 2-Disagree, 3-Undecided, 4-Agree, and 5-Strongly agree”.

#### 3.1.1 Ethics and Responsibility

**Table 1.** Responses to the statement “I am aware that I have personal or legal rights (privacy, copyright, freedom of speech, etc.) in digital settings as in daily life.”

	Participants aged 21-35 (first group)					Participants aged 36-65 (second group)				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	1	2	11	16	1	2	8	7	12
<b>%</b>	0	3,33	6,66	36,66	53,33	3,33	6,66	26,66	23,33	39,99

Table 1 shows that most participants aged 21-35 (36.66% agree - 53.33% strongly agree) are aware that they have personal or legal rights in digital settings. On the other hand, the majority of participants aged 36-65 (23.33%-agree, 39.99%-strongly agree) are aware that they have such rights, but unlike the first group, 26.66% of participants are undecided on this issue. In general, it was observed that the first group had a higher level of awareness than the second group with a difference of approximately 27 percent.

**Table 2.** Responses to the statement “I know how to protect my and others’ personal data (photo, address, family information, etc.) in online settings.”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	0	2	9	19	0	0	7	11	12
<b>%</b>	0	0	6,66	29,99	63,33	0	0	23,33	36,66	39,99

Table 2 shows that the members of the first group are highly aware of how to act to protect their own and others’ personal data in online environments (29.99% agree, 63.33% strongly agree). According to Table 2, the second group members mostly know how to act to protect

personal data, but unlike the first group, 23.33% are undecided on this issue. In total, the first group is found to be more knowledgeable than the second group by a margin of approximately 16.5 percent.

**Table 3.** Responses to the statement “I can cross-check whether the information I access online is accurate from different sources”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	0	1	8	21	0	0	6	14	10
<b>%</b>	0	0	3,33	26,66	69,99	0	0	19,99	46,66	33,33

According to Table 3, most participants in the first group (26.66%-agree, 69.99%-strongly agree) stated that they can check whether the information they access in online environments is accurate using a variety of sources. Participants in the second group also mostly (46.66%-agree, 33.33%-strongly agree) stated that they could check the information from the correct sources. However, unlike the first group, 19.99% were undecided. In general, it was seen that the first group was able to cross-check better than the second group by a margin of approximately 16.70 percent.

**Table 4.** Responses to the statement “I am aware of the ethical and legal responsibilities of behaviors such as cyberbullying (humiliation, profanity, hate speech, etc.) and abuse in online settings.”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	0	0	11	19	0	0	4	12	14
<b>%</b>	0	0	0	36,66	63,33	0	0	13,33	39,99	46,66

According to Table 4, participants in the first group stated that they are aware of the ethical and legal responsibilities of behaviors such as cyberbullying and abuse in online settings (36.66% (agree) and 63.33% (strongly agree)). In the second group, although the majority (39.99%-agree, 46.66%-strongly agree) are aware of their responsibilities, it was observed that 13.33% of participants were undecided on this issue.

**Table 5.** Responses to the statement “I can distinguish digital games and content that are suitable for cognitive and moral development from others.”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	0	3	8	19	0	0	3	9	18
<b>%</b>	0	0	9,99	26,66	63,33	0	0	9,99	29,99	59,99

According to Table 5, the participants in the first group stated that they could tell if digital games and content are suitable for cognitive and moral development at high rates such as 26.66% (agree) and 63.33% (strongly agree). It is seen that the members of the second group can also distinguish the content at high rates (29.99%-agree, 59.99%-strongly agree).

**Table 6.** Responses to the statement “I am aware that everything I do online is recorded.”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	0	2	8	20	1	0	2	10	17
<b>%</b>	0	0	6,66	26,66	66,66	3,33	0	6,66	33,33	56,66

Table 6 shows that the participants in the first group are aware that everything they do in online settings is recorded with high rates such as 26.66% (agree) and 66.66% (strongly agree). The members of the second group, mostly (33.33%-agree, 56.66%-strongly agree) stated that they are aware that everything is recorded. Here, it is seen that the positive answers of the two groups are close to each other (group 1: 93.32 - group 2: 89.99). However, 3.33% of the participants in the second group said that they were not aware at all that everything was recorded.

**Table 7.** Responses to the statement “I am aware of the ethical and legal responsibilities that may arise from copyright infringement in digital settings.”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	1	2	11	16	0	1	1	14	14
<b>%</b>	0	3,33	6,66	36,66	53,33	0	3,33	3,33	46,66	46,66

Table 7 shows that 36.66% (agree) and 53.33% (strongly agree) of the members of the first group are aware of their ethical and legal responsibilities that may arise from copyright infringement in digital environments. It is seen that the participants in the second group are aware of their ethical and legal responsibilities at a higher rate than the first group (46.66%-46.66%: a difference of 3.31%). On the other hand, it was determined that 3.33% (disagree) of the members of both groups are not aware of their responsibilities. 90 93

### 3.1.2 General Knowledge and Functional Skills

**Table 8.** Responses to the statement “I have knowledge about licensed software, demo software, pirated software, malware and crack.”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	5	3	6	16	2	2	11	10	5
<b>%</b>	0	16,66	9,99	19,99	53,33	6,66	6,66	36,66	33,33	16,66

Table 8 shows that the rate of participants in the first group who are knowledgeable about concepts such as licensed software, demo software, and crack is higher (19.99%- agree, 53.33% strongly agree). However, it is seen that there are also participants who are “undecided” (9.99%) and have no knowledge about these terms (16.66%). In the second group, the rate of participants who know these concepts (33.33%- agree, 16.66%- strongly agree; total 49.99%) and the rate of undecided-unknowing participants (36.66%- undecided, 6.66%- disagree, 6.66%- strongly disagree; total 49.98) are almost equal.

**Table 9.** Responses to the statement “I am knowledgeable about hardware and software technologies”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	3	4	4	19	1	4	11	9	5
<b>%</b>	0	9,99	13,33	13,33	63,33	3,33	13,33	36,66	29,99	16,66

According to Table 9, it can be said that a very high rate of the members of the first group (13.33%-agree, 63.33%-strongly agree) are familiar with hardware and software technologies. On the other hand, this rate is quite low in the second group compared to the first group (29.99%-agree, 16.66%-strongly agree). Again, the rate of undecided people in this group is higher than the first group (36.66%).

**Table 10.** Responses to the statement “I can install the operating system on my computer/I can format my computer”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	4	9	5	5	7	11	10	3	2	4
<b>%</b>	13,33	29,99	16,66	16,66	23,33	36,66	33,33	9,99	6,66	13,33

Table 10 shows that a low percentage of participants in the first group have knowledge about installing an operating system on their computers (39.99% who can install the system). Most participants are unable to install an operating system on their computers (16.66% - undecided, 43.32% - unable to install the system). It is seen that the participants in the second group have much less knowledge on this subject than the first group. Here, the percentage of those who can install a system is 19.99%, the percentage of those who cannot install a system is 69.99, and the percentage of those who are undecided is 9.99%.

**Table 11.** Responses to the statement “I can install software or programs on my computer or other electronic devices”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	2	1	2	13	12	5	8	3	6	8
<b>%</b>	6,66	3,33	6,66	43,33	39,99	16,66	26,66	9,99	19,99	26,66

When looking at Table 11, it can be seen that the rate of those who can install software or programs on their computers and other electronic devices is higher in the first group (83.32%) than the second group, and the total scores of those who are undecided and cannot install software or programs exceed those who can (46.65%) (undecided-9.99%, unable to install 43.32%; total 53.31%).

**Table 12.** Responses to the statement “I know about the terms Torrent, Internet, and World Wide Web (WWW)”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	1	4	8	17	1	5	4	14	6
<b>%</b>	0	3,33	13,33	26,66	56,66	3,33	16,66	13,33	46,66	19,99

According to Table 12, the first group of participants have knowledge about the meaning of terms such as torrent, internet, www at a high rate (26.66%-agree, 56.66%-strongly agree). Although the number of those in the second group who do not have knowledge is higher than the first group (3.33-16.66%), the rate of those who are knowledgeable is undeniably high (46.66%-agree, 19.99%-strongly agree).

**Table 13.** Responses to the statement “I can change the proxy/dns settings of devices to access prohibited websites”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	8	9	1	7	5	13	6	7	3	1
<b>%</b>	26,66	29,99	3,33	23,33	16,66	43,33	19,99	23,33	9,99	3,33

Table 13 shows that most participants in the first group are unqualified to change the proxy/dns settings of their devices to access prohibited websites. Accordingly, the rate of those who can change the settings is 39.99%, while the rate of those who cannot is 56.65. It was observed that most participants in the second group are also inadequate in changing the proxy/dns settings: the rate of those who can change the settings is 13.32%, while the rate of those who cannot is 63.32. The rate of those who are undecided is also considerably high (23.33%) compared to the first group (3.33%).

### 3.1.3 Daily Usage

**Table 14.** Responses to the statement “I can use e-Government applications effectively (i.e. tax penalty inquiry, electronic document management system- EDMS, etc.)”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	2	3	9	16	1	1	7	10	11
<b>%</b>	0	6,66	9,99	29,99	53,33	3,33	3,33	23,33	33,33	36,66

Table 14 shows that most of the participants in the first group (29.99% - agree, 53.33% - strongly agree; a total of 83.32%) can use e-Government applications effectively. On the other hand, a lower rate of participants in the second group than in the first group can use these applications (33.33% - agree, 36.66% - strongly agree; a total of 69.99%).

**Table 15.** Responses to the statement “I can use cloud computing technologies (Google Drive, iCloud, Dropbox, etc.) effectively in daily life”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	0	4	8	18	3	6	5	10	6
<b>%</b>	0	0	13,33	26,66	59,99	9,99	19,99	16,66	33,33	19,99

Based on Table 15, it can be claimed that the first group of participants can effectively use cloud computing technologies in daily life at a high rate (26.66%- agree, 59.99%- strongly agree; a total of 86.65%). Compared to the first group, the lower rate of the second group of participants was able to use these applications (33.33%- agree, 19.99%- strongly agree; a total of 53.32%).

**Table 16.** Responses to the statement “I can use the calendar on mobile devices not only to check the date but also for tasks such as reminders, taking notes, creating events, etc.”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	0	1	6	23	1	1	0	22	6
<b>%</b>	0	0	3,33	19,99	76,66	3,33	3,33	0	73,33	19,99

Table 16 shows that a high proportion of participants in the first group use the calendar on mobile devices not only to check the date but also for tasks such as reminders, taking notes, and creating events (19.99%-agree, 76.66%-strongly agree); a very close proportion of participants in the second group can also use the calendar for different purposes (73.33%-agree, 19.99%-strongly agree).

**Table 17.** Responses to the statement “I can engage in activities such as ‘uploading videos/live broadcasting’ in online settings”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	1	0	4	8	17	0	4	6	11	9
<b>%</b>	3,33	0	13,33	26,66	56,66	0	13,33	19,99	36,66	29,99

Table 17 shows that most participants in the first group (26.66%-agree, 56.66%-strongly agree; 83.32% in total) can engage in activities such as ‘uploading videos/live streaming’ in online environments. The majority of participants in the second group (36.66%-agree, 29.99%-strongly agree; 66.65% in total) can engage in such activities, but this rate is not as high as in the first group (1st group: 83.32%, 2nd group: 66.65%).

**Table 18.** Responses to the statement “I can use digital technologies effectively in daily practices such as reservations, shopping, and finding an address”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	0	0	5	25	0	1	3	12	14
<b>%</b>	0	0	0	16,66	83,33	0	3,33	9,99	39,99	46,66

Table 18 shows that a very high percentage of the participants in the first group (16.66%-agree, 83.33%-strongly agree) can effectively use digital technologies in daily practices such as reservations, shopping, and address finding. In addition, it is seen that most of the participants in the second group (39.99%-agree, 46.66%-strongly agree) can use digital technologies in daily practices. However, the percentage of participants in the first group who answered "strongly agree" is considerably higher (83.33%).

**Table 19.** Responses to the statement “I can add a web page I use to my favorites or bookmarks”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	1	0	0	6	23	0	4	4	5	17
<b>%</b>	3,33	0	0	19,99	76,66	0	13,33	13,33	16,66	56,66



Table 19 shows that a very high rate of participants in group 1 (19.99%-agree, 76.66%-strongly agree) can add a web page they use to their favorites or bookmarks. It is also seen that most participants in group 2 (16.66%-agree, 56.66%-strongly agree) can add the web page to their favorites. However, it is clear that this rate is higher in group 1 (group 1: 96.65%-group 2: 73.32%).

### 3.1.4 Privacy and Security

**Table 20.** Responses to the statement “I know how to restrict the access of applications to my personal information (location, contacts, camera, etc.)”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	1	2	11	16	1	2	10	11	6
<b>%</b>	0	3,33	6,66	36,66	53,33	3,33	6,66	33,33	36,66	19,99

According to Table 20, most participants in the first group are knowledgeable about restricting applications' access to their personal information (36.66% - agree, 53.33% strongly agree; total 89.99). Participants in the second group are less knowledgeable about applications than the first group (36.66% - agree, 19.99% strongly agree; total 56.65). The rate of undecided participants in the second group is also much higher compared to the first group (3.33% vs. 33.33%).

**Table 21.** Responses to the statement “I can identify and block unwanted/spam emails and phishing messages”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	1	1	8	20	2	4	4	11	9
<b>%</b>	0	3,33	3,33	26,66	66,66	6,66	13,33	13,33	36,66	29,99

According to Table 21, most of the participants in the first group (26.66% agree, 66.66% strongly agree) can identify and block unwanted/spam e-mails and phishing messages. On the other hand, a lower rate of participants in the second group is skilled in this area. In addition, 19.99% of the participants in the second group are not knowledgeable about blocking messages.

**Table 22.** Responses to the statement “I can change the privacy/security settings on my social media posts and profile”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	1	0	7	22	0	3	3	12	12
<b>%</b>	0	3,33	0	23,33	73,33	0	9,99	9,99	39,99	39,99

Table 22 reveals that the first group of participants can change the privacy/security settings on their social media posts and profiles at high rates (23.33%-agree, 73.33%-strongly agree; total 96.66). On the other hand, the rate of participants who can change their settings in the second group is not as high (39.99%-agree, 39.99%-strongly agree; total 79.98).

**Table 23.** Responses to the statement “I know how to create a strong password”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	0	0	0	5	25	1	4	3	9	13
<b>%</b>	0	0	0	16,66	83,33	3,33	13,33	9,99	29,99	43,33

Table 23 shows that the participants in group 1 are completely knowledgeable (99.99%) about how to create a strong password. Although the participants in group 2 know how to create a strong password at a higher rate (73.32%), this rate is not as high as the participants in group 1.

### 3.1.5 Social Dimension

**Table 24.** Responses to the statement “I can design and publish a website using web design systems (Weebly, Wordpress, etc.)”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	10	8	6	4	2	12	8	8	0	2
<b>%</b>	33,33	26,66	19,99	13,33	6,66	39,99	26,66	26,66	0	6,66

According to Table 24, most of the participants in the first group (59.99%) cannot design and publish a website using web design systems. Similarly, it is seen that the majority of the participants in the second group (66.65%) are unable to design a website.

**Table 25.** Responses to the statement “I can write and share on my own blog page or on different blogs”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	4	4	6	6	10	8	5	6	5	6
<b>%</b>	13,33	13,33	19,99	19,99	33,33	26,66	16,66	19,99	16,66	19,99

Table 25 shows that the participants in the 1st and 2nd groups can write and share articles on their personal blog pages or on different blogs. However, the rate of those who cannot do this in the second group (2nd group: 43.32%) is higher than in the 1st group (1st group: 26.66%).

**Table 26.** Responses to the statement “I can change various images (photos, audio recordings, videos, etc.) and produce new content with the help of digital technologies.”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	1	3	5	9	12	3	6	7	7	7
<b>%</b>	3,33	9,99	16,66	29,99	39,99	9,99	19,99	23,33	23,33	23,33

Table 26 shows that most of the participants in the first group (69.98%) have the ability to change various images and produce new content with the help of digital technologies. While the majority of the participants in the second group can also change their images and produce content, their rate is lower than those in the first group (46.66%).

**Table 27.** Responses to the statement “I can effectively use at least one software related to my field (Photoshop, SPSS, Office Word, etc.)”

	Participants Age 21-35					Participants Age 36-65				
	1	2	3	4	5	1	2	3	4	5
<b>f</b>	1	0	1	8	20	1	3	2	11	13
<b>%</b>	3,33	0	3,33	26,66	66,66	3,33	9,99	6,66	36,66	43,33

According to Table 27, most of the participants in the first group (93.32%) can effectively use at least one software related to their field. Most of the participants in the second group (79.99%) also demonstrate the same skill, but this rate is lower than in the first group.

### 3.2 Qualitative Findings of the Study

In this section where the qualitative findings of the study are explained, the responses of the participants aged 21-35 and 36-65 are jointly given and evaluated.

#### 3.2.1 Digital Literacy in General Framework

Answers to the question "What is your level of using computers and basic software (Word, Excel, PowerPoint)?"

When the responses given by the participants aged 21-35 to this question are examined, it is seen that 16 participants answered “adequate /I am adequate”, 12 participants answered, “very adequate”, 1 person answered “good”, and 1 person answered, “I can use Word and Powerpoint adequately”.

On the other hand, when the answers of the participants aged 36-65 were examined, it was seen that 20 participants answered “adequate /I am adequate”, 4 participants answered, “very adequate”, 3 people answered “inadequate”, one person answered “good”, one person answered “average” and one person answered, “Not very good, just enough to meet my needs”.

Answers to the question "How competent are you in searching for information on the internet about a topic you want to know about?"

When the answers given by the participants aged 21-35 to this question are analyzed, it is seen that 22 participants answered, “very adequate /I am very adequate ”, 5 participants answered “I am adequate”, 1 person answered “good”, 1 person answered “I am adequate, I can search for the information I want”, and 1 person answered, “I can use it perfectly”.

An examination of the responses of participants aged 36-65 shows that 16 participants responded “adequate /I am adequate”, 10 participants responded, “very adequate/I am very adequate”, 1 person responded “inadequate”, 1 person responded “good”, 1 person responded, “very good” and 1 person responded, “I think I am adequate”.

Answers to the question “How much do you know about digital security (password security, personal data protection, etc.)?”

According to the responses given to this question by the participants aged 21-35, 18 participants answered “good”, 11 participants answered “average”, and 1 person answered, “I have enough knowledge”. Responses given by the participants aged 36-65 show that 14 participants answered “average”, 10 participants answered “good”, 4 people answered “little”, one person answered, “I am adequate”, and one person answered, “I have average knowledge”.

### 3.2.2 Digital Literacy in Education

Responses to the question "Which digital tools do you use in your classes? Write down their names" (Participants mostly wrote down more than one tool in this question).

The answers given by the participants aged 21-35 to this question reveal that the following tools are in use: YouTube (23 people), PowerPoint (20), Interactive whiteboard (16), Kahoot (11), Educational applications (10), e-learning platforms (5), smart board (4), Wordwall (3), educational sites (2), Class Dojo (1), gamma (1), ChatGPT (1), All Web 2.0 Tools (1), e-books (1), Google Classroom (1), Course materials (1), HLS Education (1).

Participants aged 36-65 use the following tools: YouTube (22 people), PowerPoint (21), Interactive whiteboard (13), Kahoot (2), Educational applications (5), e-learning platforms (7), smart board (4), Wordwall (1), Eba/Eba Academy (2), e-book (1), GeoGebra (1), I do not use any digital tools (1).

Answers to the question "How skilled are you in creating digital content for educational purposes? If you are skilled, please explain what kind of content you create."

According to the answers given to this question by the participants aged 21-35, 16 participants answered "good", 10 participants answered "average", and 4 people answered "little". In addition, the following answers were given: "I can create content through the specified applications that are suitable for the course content", "I am skilled to a good extent", "I give importance to visuals and eye-catching elements in the videos I prepare to ensure my students learn and remember more effectively", "Digital quizzes, presentations, etc.", "I am moderately skilled. Preparing video lessons, creating online quizzes, digital games", "I took part in video production in the distance education commission".

According to the answers of the participants aged 36-65, 14 participants answered "average", 11 participants answered "good", 5 people answered "little", one person answered "preparing video lessons, online quizzes", one person answered "I can prepare exams on Google Form", and one person answered, "I think I have some preparation skill".

Answers to the question "To what extent do you use digital technologies in your classes?"

When the answers given to this question by the participants aged 21-35 are examined, it is seen that 11 participants responded "good", 14 participants said "average", 4 people said "little", and one person answered "I used it with 5th graders this year. I will not teach 5th graders next year; thus, I will not be able to use it."

When the answers of the participants aged 36-65 are examined, it is seen that 17 participants answered "average", 7 participants answered "little", 4 people answered "a lot" and 2 people answered "barely".

### 3.2.3 Professional Development and Digital Literacy

Responses to the question "Have you received any training to improve your digital literacy skills? Or are you considering receiving any training?"

Participants aged 21-35 responded to this question as follows: 7 participants said "Yes/Yes, I received a lot of training during the pandemic period", 12 participants said "No, but I am improving myself/making an effort to improve myself", and 7 participants said "no". In addition, some participants gave the following answers: "I am trying to follow developments, I am learning on my own, I would like to receive training, yes, I am considering receiving training if there is a suitable one, I attended more courses than necessary during the distance education period, I also attended all the courses provided by Sodimer, it may be for the sake of following innovations."

According to the answers given to this question by the participants aged 36-65, 9 participants said "Yes/I am considering participating again if it is organized, I am thinking of taking more training", 11 participants said "No, but I am improving myself/I am learning

by watching videos on YouTube”, 10 participants said “No”, and one participant said “No, I did not take any. I am 50 years old, it is too late for me”.

Answers to the question "Do you follow new developments in educational technologies and digital literacy? If yes, where and how do you follow them?"

When the answers given by the participants aged 21-35 to this question are examined, it is seen that 19 participants answered “yes” and 6 participants answered “no”. When asked where and how they follow, they indicated social media (12 people), academic resources/books, articles (8) websites/blogs (11), close circle (7), online courses (1), in-service training (1), symposium on being a teacher in the information age (1), and Youtube (1).

According to the answers given to this question by the participants aged 36-65, 10 participants answered “yes”, 5 participants answered “no”, and 1 person answered “It is an area I am not interested in; age is also a factor of course...” When asked where and how they follow, they indicated websites (11), social media (8), close circle (6), books/articles (2), media (2), Youtube education channels (1), education and seminars (1).

#### 4. Collaboration and Digital Literacy in Communication

Answers to the question “On which digital platforms do you collaborate with your colleagues?”

When the answers given by the participants aged 21-35 to this question are examined, it is seen that 28 participants responded “WhatsApp”, 16 participants answered, “Google Meet”, 13 participants answered “Zoom”, 13 participants responded “Messenger”, 2 participants answered “e-mail”, 5 participants responded “Teams”, and 1 participant each answered Dropbox, Discord, and Telegram.

When the answers given to this question by the participants aged 36-65 are examined, it is seen that 26 participants answered “WhatsApp”, 9 participants answered, “Google Meet”, 13 participants answered “Zoom”, 12 participants answered “Messenger”, 1 participant answered “e-mail”, 1 participant answered “Teams”, and 1 participant answered “Edmodo”.

Answers to the question “In what ways do you use digital tools to communicate with parents and students?”

According to the responses given to this question by the participants aged 21-35, 28 participants answered, “text message”, 12 participants answered, “voice message”, 6 participants answered, “sending video”, 1 participant answered, “I have live meetings”, and 1 participant answered, “With student parents, on the phone or face to face, with students face to face/writing messages”.

When the answers given by the participants aged 36-65 to this question are examined, it is seen that 27 participants answered, “text message”, 7 participants answered, “voice message”, 1 participant answered, “sending video”, and 1 participant answered, “I hold a live meeting”.

## 4 Conclusion

This study used mixed methods. The phenomenon was examined in depth through quantitative and qualitative data, and detailed findings were obtained. The quantitative data of the study was obtained using the “Digital Literacy Scale” mentioned above. The data in the answers given to the 27 questions asked to the participants using the scale were examined in detail and certain results were reached. Accordingly, it was revealed that the participants in the first group (21-35 years old) were more competent in the context of digital literacy than the participants in the second group (36-65 years old) in 25 questions. It was determined that the second group was more competent in one of the remaining 2 questions (Table 7), and the two groups were almost equally competent in the other item (Table 5). Major differences were detected in 12 of the 25 items in which the first group was more competent (Table 8, 9,

10, 11, 12, 13, 15, 20, 21, 23, 25, 26). In 2 items (Tables 5, 6, 16), it was determined that the first group was slightly ahead of the second group. Based on these findings, it can be claimed that the 21-35 age group participants in the first group are more knowledgeable and competent in terms of digital literacy than the second group participants. It was determined that the knowledge and competence of the second group participants, especially in the areas of “General knowledge and functional skills” and “Social dimensions”, were rather low compared to the first group.

The qualitative data of the study were examined by grouping them under four headings: digital literacy in general, digital literacy in education, professional development and digital literacy, and collaboration and digital literacy in communication.

In terms of the participants' level of using computers and basic software, 29 of the first group participants considered themselves adequate in this regard, while 24 of the second group participants considered themselves adequate. As regards their answers to the question about how adequate they were in searching for information on the internet about a topic they were curious about, it was seen that the first group (28K) and the second group (26K) considered themselves adequate in this regard. In terms of digital security, it was determined that the first group (18K) was ahead of the second group (10K).

In terms of the digital tools used by the participants in their classes, it was observed that YouTube and MS PowerPoint were frequently used in both groups. It was determined that Kahoot and Wordwall applications were used at a slightly higher rate in Group 1, and other digital applications were almost equally used by the participants in both groups. It was observed that Group 1 (16K) was more competent than Group 2 (11K) in creating digital content for educational purposes. On the other hand, it was observed that Group 1 participants (11 people at a good level) used digital technologies in their classes much more than Group 2 participants (11 people at a moderate level – none at a good level).

To develop their digital literacy skills in a professional sense, 7 of the participants in the first group received training whereas it was observed that 9 of the participants in the second group received such training. On the other hand, it was determined that 19 participants in the first group and 10 participants in the second group followed new developments in educational technologies and digital literacy. While the participants in the first group said that they followed these developments mostly from social media (12K), the participants in the second group answered that they followed the developments usually from websites (11K).

When the participants' communication with their colleagues was examined, it was determined that they collaborated mostly through WhatsApp and in writing. In addition, the second most favorite application of the first group was found as Google Meet, whereas it was Zoom for the second group.

When the quantitative and qualitative results of the study are examined, it can be argued that the participants aged 21-35 (group 1) are more knowledgeable, competent and open to development in terms of digital literacy compared to the participants aged 36-65 (group 2). However, the participants in the first group also suffer from insufficient knowledge in the context of digital literacy in certain aspects. In this sense, participants in both groups need to develop themselves individually and institutionally in the area of digital literacy. Since the participants in question are teachers, the Ministry of Education is supposed to organize in-service trainings on this subject and contribute to their development. In addition, it is self-evident that teachers also need to develop themselves individually.

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