Evaluating primary school students' views on using technology for self-directed learning

Nesibe Parsel [a], Ministry of Education and Culture, Lefkosa, North Cyprus, Turkey.

Zehra Ozcinar Uzunboylu [b1], Ataturk Teacher Training Academy, Kucuk Kaymaklı, Lefkosa, 99010, North Cyprus, Turkey, zehra.ozcinar@aoa.edu.tr, https://orcid.org/0000-0002-1974-2958

Abstract

This study investigates primary school students' perspectives on their self-learning capabilities through the use of technology, addressing the growing emphasis on learner autonomy in digital learning environments. Despite increasing integration of technology into education, limited research has explored how students at early grade levels perceive and develop self-learning skills using technological tools. To address this gap, a descriptive survey model was employed, involving 120 students from a private primary school. Data were collected using a demographic information form and a validated scale measuring technology-assisted self-learning, and were analyzed using independent samples t-tests and frequency analysis via statistical software. Findings revealed no significant differences in self-learning abilities based on gender. However, a significant variation was observed across grade levels, with fifth-grade students demonstrating higher self-learning proficiency with technology compared to fourth-grade students. These results suggest that as students' progress through primary education, their ability to engage in autonomous learning with technological support improves. The findings underscore the importance of scaffolding self-directed learning skills from early grades and suggest implications for curriculum design that promotes technology-enabled autonomy in learning.

Keywords: Digital learning; primary education; self-directed learning; student perception; technology integration

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* ADDRESS FOR CORRESPONDENCE: Zehra Ozcinar Uzunboylu b , Ataturk Teacher Training Academy, Kucuk Kaymaklı, Lefkosa, 99010, North Cyprus, Turkey,
E-mail address: zehra.ozcinar@aoa.edu.tr

1. INTRODUCTION

Today, we live in a world where technology is rapidly developing and has spread to nearly every field of our lives. This era is often referred to as the 'Technology Age,' and it represents one of the fastest and most influential transformations in human history (Sancar et al., 2017; Kaya & Kaya, 2012). The development of technology has also led to significant transformations in the field of education (Koç, 2013). The role and importance of technology in education can be examined from various perspectives, including information access, learning methods, teaching materials, and student motivation (Zheng et al., 2022).

The role of technology in education has become even more significant worldwide, especially during the COVID-19 pandemic. In Turkey, the pandemic deeply affected daily life and education, with schools closing or facing limitations (Demir & Demir, 2014). This situation made it necessary for educators and students to shift to distance education and use technology (Özdoğan & Berkant, 2020; Deslandes Martineau et al., 2024).

Technology has provided various tools and platforms for students and teachers, allowing the education process to continue (Yılmaz et al., 2017; Asandaş & Hacıcaferoğlu, 2021; Liu et al., 2024). In the context of education, technology plays an essential role in both formal and informal learning environments. Formal education is typically structured, with a specific curriculum and instructional programs offered by reputable institutions, often leading to certificates, diplomas, or degrees (Eskiadam, 2023).

In contrast, informal education is unstructured and not subject to a formal program. It involves acquiring knowledge and skills through life experiences, interactions, and environments (Köseoğlu & Türkmen, 2020). Informal education provides continuous learning opportunities through events, relationships, and experiences, whether planned or not (Altunçekiç, 2021).

In formal education, technology is used in various ways. For example, smart blackboards allow teachers to present lesson content interactively (Gündüz et al., 2020). Students can interact with these boards, enriching their learning experience (Saruhan, 2021). E-books and digital learning materials also enhance the learning environment, making lessons more interactive and accessible (Baytar, 2022; Bozkurt & Bozkaya, 2013). Technology is also employed in distance education and online lessons, allowing students to attend classes from home or other locations using video conferencing tools, online platforms, and learning management systems (Kapucu & Adnana, 2018). Education software and applications also support learning by offering practical tools for students. For example, math applications, language learning tools, and scientific simulations provide interactive learning experiences (Şen et al., 2010).

In informal education, technology facilitates access to information, social media, content sharing, mobile apps, games, and video/podcast platforms. The internet provides easy access to information, allowing individuals to engage in self-directed learning (Orhan, 2020; Dülger et al., 2025). Online resources, video platforms, online courses, and social media enable individuals to acquire information about topics of interest and share their knowledge, experiences, and ideas with others (Ergan & Ergan, 2021). Mobile applications and games make learning enjoyable, and language learning apps, puzzles, quizzes, and educational games are examples of technology used in informal education.

Video and podcast platforms offer learning opportunities on various subjects. Individuals can watch presentations by experts, follow conferences, and listen to instructive content (Yazıcı & Kartal, 2021). Self-directed learning refers to an individual's ability to determine their learning path, researching, assimilating, and applying information. This approach encourages the development of lifelong learning skills (Yeşilyurt, 2021). Therefore, self-directed learning strategies and methods are of great importance in modern education (Charoento, 2017). Self-directed learning has a long history, from acquiring information through books and written resources to the digital technologies that facilitate learning today.

In the past, people acquired knowledge through books and visited libraries to discover new topics. However, with the advancement of digital technology, self-directed learning has become more accessible. Today, self-directed learning is not only important for personal development but also for acquiring vocational skills. As the world of work rapidly changes, individuals must continuously acquire new knowledge and skills.

In conclusion, self-directed learning has evolved throughout history, and with the advent of digital technologies, it has become more widespread and accessible. The internet facilitates instant access to information, making learning easier. Online resources, e-books, video lessons, and interactive platforms provide individuals with learning opportunities that suit their pace and interests. Social media and online communities also play a crucial role in supporting self-directed learning by enabling individuals to share experiences and receive feedback, enriching and motivating their learning process (Yıldız, 2020). Therefore, self-directed learning has become an essential tool for staying competitive and meeting the continuous learning requirements of today's fast-paced world.

1.1. Related research

When examining field research related to the use of technology by teachers, teacher candidates, and students, the study conducted by Başaran et al. (2021) found that teachers, in the beginning, expressed difficulties using distance education tools such as Zoom. Sert et al. (2012) also reported in their research that teachers' use of technology was evaluated. Most studies have shown that teachers' use of information and communication technologies is aimed at general development. Yürektürk and Coşkun (2020) discussed the use of technology among Turkish teachers. The majority of teachers felt insufficiently familiar with technology, and the level at which they used technology in their lessons was found to be moderate.

Usta and Korkmaz (2010) evaluated the use of technology among teacher candidates and concluded that a large portion of teacher candidates felt their computer skills were sufficient. Additionally, Ayaz et al. (2016) found that the use of teaching technologies had a positive effect on the academic achievements of primary school students. In another study, Özyurt and Badur (2020) evaluated primary school students' perceptions of technology and found that students mostly used technology for academic purposes, such as completing homework and watching educational videos.

Field research related to students' self-directed learning revealed diversity in the findings. Akman and Bircan (2021) concluded that secondary school students' levels of self-directed learning with technology were high, as were their computer thinking skills. In their research, Aydede and Kesercioğlu (2012) found that active learning applications positively affected students' self-directed learning skills. The study used the "Self-Directed Learning Skill Scale," and it was found that there was a significant difference in the pretest and posttest scores between the experimental and control groups, with the experimental group showing a more significant improvement.

1.2. Purpose of study

The purpose of this research is to evaluate the views of primary school students in the Turkish Republic of Northern Cyprus regarding the use of technology for self-directed learning. Therefore, the following research questions have been explored:

Is there a significant difference in self-directed learning with technology among primary school students based on gender?

Is there a significant difference in self-directed learning with technology among primary school students based on their grade level (4th and 5th grade)?

2. METHODS AND MATERIALS

This part of the research provides information about the research model, study group, data collection tools, data collection process, and data analysis, as well as the ethical considerations involved in the research process.

2.1. Research design

This study, which was conducted with a descriptive approach, aimed to examine primary school students' views on using technology for self-directed learning. A quantitative research method was used to investigate the topic. Descriptive scanning, a type of research, involves reviewing and summarizing existing literature related to a specific field, identifying key themes and trends, and exploring current gaps. Quantitative research involves collecting, analyzing, and interpreting numerical data to measure relationships, understand variables, and examine statistical relationships. This type of research uses statistical techniques to analyze digital data, providing results based on objective findings (Özmen & Karamustafaoğlu, 2019).

2.2. Participants

The research universe consisted of primary school students. In this study, 120 4th and 5th-grade students were randomly selected from a special school in Nicosia. The distribution of the research sample group according to gender and class level is provided in Table 1.

Table 1
Students' gender and education are what they saw as variables according to distributions

Gender	f	%
Girl	67	55.83
Male	53	44.17
Class		
4th Grade	59	49.17
5th Grade	61	50.83
Total	120	100

Table 1 shows the distribution of students according to gender. Among the students, the fifth-grade class had a higher number of participants. The research sample included 120 primary school students, of whom 67 (55.83%) were female and 53 (44.17%) were male. The age range of the students was 9 to 11, with an average age of 10.

2.3. Data collection tools

The research sample group consisted of students, and the 'Children for Self-Help with Technology Learning Scale' was applied for data collection. The scale was selected from Timothy et al. (2010) and adapted to Turkish by Demir & Yurdugul (2013). Additionally, a 'Personal Information Form' was used to gather demographic information from the participating students. The scale, which includes 6 items, has undergone validity and reliability studies. It uses a 5-point Likert scale with the following options: 1 – Definitely disagree, 2 – Disagree, 3 – Undecided, 4 – Agree, and 5 – Definitely agree.

2.4. Data collection procedure

The research's quantitative data was collected in the spring of the 2022-2023 academic year. The research sample group consisted of students, and the scale was applied in the educational environment based on the class they were in. During the scale implementation, the researcher stayed in the classroom to assist students with any items on the scale that they didn't understand. The scale application lasted approximately 20-25 minutes.

2.5. Data analysis technique

SPSS (Statistical Package for the Social Sciences) software was used for the data analysis in this research. Independent groups' T-tests were used to determine whether there were differences based on gender and class level. Correlation analysis was conducted to explore the relationships between variables. In the case of a significant relationship, the direction of the connection was also analyzed using correlation analysis. A significance level criterion of 0.05 was applied during the evaluation of the results.

2.6. Ethics

Before the data collection phase of the study, information about the research content was provided to the sample group of students. It was emphasized that their answers would remain confidential, and personal information, such as their names, would not be written on the forms. Additionally, it was made clear that the application was voluntary, and students were encouraged to respond honestly. The scale application was conducted with the necessary permissions obtained from the school. The study was carried out in stages, following research principles and appropriate procedures.

3. RESULTS

This section evaluates students' responses on the scale of self-help learning with technology. The results from the students' answers were compared with the findings from previous studies conducted in the field.

Table 2

Gender is assigned to the variable according to the independent variables ' T-test results

	n	$\bar{x}$	ss	Std error mean	t	df	Sig (2-tailed)
Girl	67	3,2662	0.69876	0.08537	0.163 118 0.871		
Male	53	3.2453	0.69538	0.09552			

Table 2 shows the results of the independent variables t-test based on the students' gender. No significant difference was found in the technology use for self-directed learning between female and male students ($p > .05$). When examining the literature, Akman and Bircan (2021) also found similar results in their research. Their study indicated that there was no significant difference in students' technology use for self-directed learning based on gender.

Table 3

Education is seen class to a variable according to the independent variables T- test results

	n	$\bar{x}$	ss	Std error mean	t	df	Sig (2-tailed)
Fourth	59	3,0876	0.67193	0.08748	-2.696 118 0.008		
Fifth	61	3,4208	0.68151	0.08726			

Table 3 shows the results of the independent variables t-test based on the students' education level. A significant difference was found in the students' technology use for self-directed learning, depending on the class they were in. Specifically, a significant difference was observed in favor of 5th-grade students ($p < .05$). This result aligns with the research conducted by Çakmak (2020), which examined the self-sufficiency perception in relation to technology use for self-directed learning among secondary school students in grades 5, 6, 7, and 8. In Çakmak's study, however, no significant difference was found between the students' education level and their technology use for self-directed learning.

Table 4

Scale of the articles' frequency and percentage values

Article	Score range	f	%
When I'm not at school, I can ask my teacher online about my questions related to the lessons.	Definitely I disagree	8	6.7
	I disagree	10	8.3
	I have no idea	29	24.2
	I agree	30	25.0
	Definitely I agree	43	35.8
	Definitely I disagree	29	24.2

I use the computer (such as e-mail, YouTube, and Facebook) to share my thoughts and ideas about my homework.	I disagree	49	40.8
	I have no idea	23	19.2
	I agree	15	12.5
	Definitely I agree	4	3.3
	Definitely I disagree	7	5.8
I find that the internet helps me understand my lessons better by providing more information.	I disagree	17	14.2
	I have no idea	20	16.7
	I agree	45	37.5
	Definitely I agree	31	25.8
	Definitely I disagree	8	6.7
I use the computer as a tool to help me learn and access information about a subject.	I disagree	23	19.2
	I have no idea	26	21.7
	I agree	34	28.3
	Definitely I agree	29	24.2
	Definitely I disagree	11	9.2
I use the computer to develop my skills	I disagree	23	19.2
	I have no idea	18	15.0
	I agree	43	35.8
	Definitely I agree	25	20.8
	Definitely I disagree	9	7.5
I use the computer to learn more about a subject by accessing different websites and getting ideas from people.	I disagree	38	31.7
	I have no idea	26	21.7
	I agree	36	30.0
	Definitely I agree	11	9.2
Total		120	100

In the research, 18 students stated that they could ask their teachers questions online when they were not at school, while 29 students reported that they could not. However, it was concluded that 73 students believed they could ask their teachers questions online when not physically present at school. This shows that 60.8% of the students mostly use the internet for educational purposes and believe in establishing communication with their teachers online. These findings align with Aydemir (2021), who noted that during distance education, communication between teachers, students, and guardians was maintained through phone calls, messaging, and other applications, which supported lesson delivery and homework assignments.

Regarding the item, "I use the computer to share my thoughts and ideas about my homework (such as through e-mail, YouTube, or Facebook)," the majority of students (53.3%) stated they did not share their homework via computer or did not agree with this practice at all. A smaller portion (19.2%) expressed indecision, while only 15.8% reported that they did or would definitely use a computer to share their homework. These findings suggest that most students do not prefer using computers for sharing homework and might favor other, more traditional or personal communication methods. This aligns with Ekici and Uçak (2012), who found that primary school students' habits related to using email, social networks, and chat programs were quite limited.

When evaluating the item, "I find more information on the internet to better understand my lessons," 76 students responded positively, indicating they benefit from the internet to enhance their understanding. On the contrary, 24 students stated that they did not turn to the internet for help with their lessons. The majority (59.2%)

believed that finding more information online can be helpful for better understanding, while 27% were undecided and 13.3% disagreed with the idea. These insights are consistent with Şekerci (2022), who noted that students commonly used the internet to support their learning and improve lesson comprehension.

As for the statement, "I use the computer as a tool to access information while learning a subject," 52.5% of the students agreed that they use computers as a helpful tool in their learning process. Another 21.7% were undecided, and 25.8% disagreed with the statement. Tor and Erden (2004) previously found that primary students preferred using books and encyclopedias as primary sources of information before turning to technology. However, with the increasing accessibility and spread of technology in recent years, students are now more likely to rely on digital tools to access information.

In terms of developing computer skills, 68 students (56.6%) reported using computers to improve their skills. On the other hand, 34 students (28.4%) indicated that they did not use computers for this purpose, and 18 students stated no opinion. This supports findings by Demir and Yurdugul (2013), who discovered that students primarily use computers to access information when needed and to assist with their lessons.

Lastly, when it came to the use of computers for learning more about a subject from different websites or people, the majority (61.7%) of students did not use computers for this purpose or disagreed with the idea. About 21.7% were unsure, and only 39.2% agreed. This contrasts with Tasyürek (2021), who found that teachers believed students could conduct research from websites related to their lessons. The discrepancy suggests that although the potential exists for using computers for research and idea-sharing, many students still do not fully utilize this capability, possibly due to habit, lack of digital skills, or preference for other methods.

4. DISCUSSION

The research examined primary school students' views on learning independently through technology. It was found that, when analyzed by gender, most students did not hold strong opinions about the topic. The t-test analysis revealed no significant difference between boys and girls in terms of their ability to use technology for self-directed learning. This suggests that gender does not have a statistically significant impact on students' ability to use technology for independent learning. Therefore, it can be said that at the primary school level, students have the potential to learn independently using technology regardless of their gender.

When students' self-directed learning levels through technology were compared based on their grade level, a significant difference was found between fourth and fifth graders. Fifth grade students showed higher levels of independent learning with technology than fourth-grade students. This suggests that fifth graders may have gained more experience or have more access to resources and materials related to their lessons, enabling them to use technology more effectively for self-learning. The findings indicate that primary school students' self-learning skills through technology can develop over time, and students in higher grades may reach more advanced levels in this area.

The research also found that most participating students use the internet effectively to solve questions related to their lessons outside of school. A large portion of students reported being able to ask questions online to their teachers, indicating that technology plays an important role in education by enhancing communication. This ability to communicate remotely with teachers supports the learning process, allowing students to quickly receive feedback, clarify topics, and resolve uncertainties. These opportunities contribute to a more productive learning experience and highlight the importance of technology in enabling student independence and providing learning support beyond the classroom.

However, the majority of students did not share their homework using computers, and few accepted this idea. Many students were either undecided or preferred not to use computers for sharing homework, showing a tendency toward more traditional or different communication methods. Only a small portion of students expressed a clear preference for sharing homework via computer. These results suggest that using computers for

homework sharing is not a widespread preference among students, and they may be leaning toward alternative approaches for this task.

In the research, participating students indicated that outside of school lessons, the internet plays an effective role in helping them solve problems and meet their learning needs. It shows that students primarily use online communication with their teachers to ask questions and address concerns. This highlights the important role technology plays in the educational process. Through technology, students have the ability to establish remote communication with their teachers, which greatly benefits their learning. The ability to ask questions online helps facilitate a quicker and more effective feedback loop, supporting students' learning process.

This ability also enables students to clarify misunderstandings, resolve issues, and create a more productive learning experience. According to the research findings, technology's role in education is critical. The internet provides students with more independence and freedom in their learning process. Even outside school hours, students can solve questions related to their lessons online, further improving the effectiveness and efficiency of their learning.

However, it was found that most students did not participate in sharing homework through the computer, with a significant portion indicating they had no preference for doing so. This reflects a more indecisive attitude among non-participants. On the other hand, a small group showed a preference for sharing homework using computers. These results suggest that students generally prefer more traditional communication methods or tools for homework sharing, rather than using computers. The low participation in sharing homework via computers shows that traditional methods are still preferred by most students.

5. CONCLUSION

The students who participated in the research largely believe that the internet helps them find more information and better understand their lessons. The findings show that most students view the internet as an effective source for learning and believe it contributes positively by providing access to more information. However, a portion of the students did not express a clear opinion, while a few others believe that the internet does not aid in understanding lessons better. This suggests that some students do not view the internet as a helpful tool in the learning process or place more trust in other learning methods. These differing views highlight that, while the internet is considered an important source of information and preferred by many for better understanding lessons, individual preferences and learning styles vary. Therefore, it is important for teachers to consider a range of learning methods and resources to meet students' diverse needs.

The majority of students also believe that computers can help them in the learning process, particularly in accessing information. However, a smaller number of participants disagreed with this idea, suggesting that not all students consider computers an essential tool for learning. While many students use computers to develop their skills, some students disagreed or showed no preference for using computers in this way. Additionally, most students do not rely on computers to obtain opinions or ideas from different websites or people, and some explicitly reject this idea. These findings indicate that although many students recognize the value of computers in developing skills, there is uncertainty about using them as a primary source for gathering opinions or external input. Most students seem to prefer other resources or are cautious about trusting a specific website or person, showing a tendency to seek information through diverse methods rather than relying solely on computers.

6. RECOMMENDATIONS

This section of the research presents suggestions under two main headings: those related to teachers and those concerning future research. These suggestions are based on the results obtained from the current study.

Teachers should enhance their ability to use technology effectively by participating in online courses, seminars, and training programs that improve their knowledge of digital tools and technology management. Keeping up to date with current technological advancements will allow teachers to better prepare lesson content and assign

homework in ways that align with students' increasing use of technology. It is recommended that teachers guide students in recognizing when and how to use technology for learning and help them develop foundational digital skills. Additionally, teachers should engage in activities that enhance their own ability to learn through technology and include instructional techniques that promote independent digital learning.

Teachers should also provide guidance to students on digital ethics, online safety, and privacy. By incorporating educational materials, applications, online resources, and interactive learning tools, they can create more effective and engaging lessons that support technology integration.

As for future research, this study was conducted specifically with 120 students in 4th and 5th grades at a single primary school. To obtain more generalizable results, similar research should be carried out with students from different grade levels and from various primary schools in different cities. This would allow for a broader comparison of findings and could offer more comprehensive insights into the role of homework and technology in primary education.

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