Using Digital Tools in Turkish Course: Experiences of Prospective Primary School Teachers in Preparing Activities

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Abstract

The purpose of this study is to investigate the digital activities prepared by prospective primary school teachers for a Turkish course and the processes involved in organizing activities. The research used a case study design, with data collected through semi-structured interviews and document analysis. The study group comprised 24 final year prospective primary school teachers selected from the Department of Primary School Education at a university in Konya-Turkey, who were eligible for criterion sampling. They were tasked with designing activities using digital tools for their respective learning domains (listening, speaking, reading and writing) and grade levels (second, third and fourth). Accordingly, each grade level is associated with eight potential prospective teachers, and each learning domain is associated with six potential prospective teachers. The prospective teachers described their experiences in preparing activities using digital tools through a semi-structured interview form, which was also shared with the students online. The researcher actively followed the form during this process and immediately intervened in cases that were not understood or needed clarification. The semi-structured interview form comprises four questions. Data analysis was conducted using content analysis. To ensure the research's validity and reliability, various approaches specific to qualitative research were used in terms of internal and external validity, internal and external reliability, credibility, confirmability, transferability, and consistency. According to the findings, prospective primary school teachers benefited from different digital tools, designed original activities, and considered the suitability of the activities to the curriculum and the level of the students. Nevertheless, some prospective teachers struggled with technical issues, content development, and the selection of suitable tools. Prospective teachers recommended using more digital tools in class and having access to paid tools. Lastly, although the prospective teachers believed that their undergraduate education and individual skills were generally sufficient for technology integration, they stressed the importance of hands-on experience. At the conclusion of the study, recommendations aligned with the research findings are provided.

Keywords: *Digital tools, Digital literacy, Preparing activity, Prospective primary school teachers, Turkish course*

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INTRODUCTION

Rapid developments in information and communication technologies have significantly impacted education and training processes (Kong, 2014; Shelton, 2017; Toprakçı, 2006). The increasing digitalization of teaching and learning dynamics necessitates the use of digital tools (Voogt et al., 2013), which have facilitated rapid advancements in the field. Especially amid the COVID-19 pandemic, digital tools have gained even greater importance and efficacy in distance education (Daniel, 2020; Toprakçı et.al., 2021; Wang et al., 2020). The rise of Web 2.0 and social media platforms has revolutionized how people access and engage with information (Greenhow et al., 2009), giving birth to a new cohort of students called "digital natives" (Prensky, 2001). For individuals born into the digital age, technology has become a fundamental aspect of daily life. From this perspective, proficiency with digital tools and mediums has become a crucial competency in 21st-century education (Ng, 2012).

Digital literacy involves not only the aptitude to operate technological devices but also the competence to efficiently investigate, assess, generate, and distribute information through these platforms and tools (Bawden, 2008; Gilster & Gilster, 1997). Moreover, digital literacy comprises several dimensions, including critical thinking and ethical considerations (Hobbs, 2010; Jenkins, 2009). This proficiency also necessitates a skeptical mindset toward technology (Martin & Grudziecki, 2006). In summary, digital literacy includes a range of cognitive, affective, and psychomotor skills and attitudes that involve accessing and evaluating online information, creating digital content, communicating, collaborating, problem-solving, and innovative thinking (Ferrari, 2012; Lankshear & Knobel, 2011). It is crucial to teach digital literacy skills to individuals from a young age. In this regard, educators have the responsibility to equip students with fundamental skills.

Digital literacy is crucial for effective teacher profiles in the modern era. Studies indicate that teachers with superior digital literacy levels are more adept at incorporating technology into their courses (Hsu, 2016; Tondeur et al., 2017; Instefjord & Munthe, 2017). Furthermore, research has found a positive correlation between digital literacy abilities and teachers' pedagogical activities during courses (Mouza et al., 2014). In this regard, teachers' competencies in digital literacy can directly enhance students' academic accomplishment (Scherer et al., 2019). However, for various reasons, teachers do not sufficiently integrate educational technologies into their lessons and instead rely on traditional teaching methods (Karadeniz & Vatanartıran, 2015; Uluyol & Eryılmaz, 2015). However, today's educational approach requires teachers to integrate technology with content knowledge and pedagogical skills to create interactive learning environments (Kabakçı Yurdakul et al., 2012; Tondeur et al., 2017). Therefore, it is crucial to emphasize digital literacy and technology integration skills in both pre-service and in-service teacher training.

Teachers acquiring the competencies necessary to use digital tools during their undergraduate education will greatly benefit their professional lives. It is essential that they have the skills to use these tools effectively. During the pre-service period, prospective teachers should first gain a background in recognizing digital tools (Kay, 2006; Tondeur et al., 2017). In the following courses, students will learn how to use different educational technologies and digital tools and gain experience in integrating them into course activities. Furthermore, integrating educational technologies into courses helps prospective teachers develop pedagogical approaches that are suitable for diverse learning styles and needs (Hechter & Vermette, 2014; Pamuk et al., 2015). In this context, inadequate preparation of prospective teachers may lead them to experience difficulties with technology integration in the early years of their careers. Therefore, introducing practical training on digital tools and educational technologies in undergraduate education can improve the future teaching practice of prospective teachers.

The Department of Primary School Education for undergraduate programs training primary school teachers should focus on the use of digital tools and the incorporation of educational technologies into courses. It is necessary to recognize that children today are deeply intertwined with technology and the internet from a very young age (Holloway et al., 2013). Research indicates that a significant number of elementary school students frequently use smartphones, tablets, and the internet (Livingstone et al., 2015; Mascheroni & Ólafsson, 2016; Radesky, et al., 2020). To provide a more purposeful educational encounter for this cohort, educators must grasp how to use these digital platforms that are already common among students and merge their existing digital interactions with learning (Guernsey et al.,

2012; Livingstone, 2009). Therefore, it is important for prospective primary teachers to acquire technology integration skills in education by considering the digital profile of students (OECD, 2015). To this end, students should be given the chance to personally use and learn how to operate technology during their university education.

The acquisition and development of fundamental literacy skills among primary school students is facilitated through the Turkish course. Prospective primary school teachers enroll in courses such as Reading and Writing Instruction and Turkish Language Instruction. In these courses, candidates are expected to obtain diverse information about listening, speaking, reading, and writing learning areas, and perform various practices aligned with the primary school Turkish program. According to Belet Boyacı and Güner Özer (2019), information, media and technology literacy skills are emphasized in the objectives of 2005, 2015, 2017 and 2018 Turkis language programs. The significance of these skills has increased in direct correlation with the expanding scope and content of information, media, communication, and technology concepts. Especially when considering information, media, and technology literacy, this emphasis on skills underscores their essential importance. In this context, digital competence is seen as one of the fundamental skills in the Turkish curriculum (Yamaç, 2018). This is due to the fact that the use of technological tools in language teaching can increase student motivation, sustain attention, and help improve language skills (Mothibi, 2015). Especially, the use of multimedia and interactive content can enrich and deepen the language learning process (Sauro, 2005). This customized approach enables learners to develop their language abilities in a way that caters to their specific needs and preferences (Lai & Gu, 2011; Warschauer, 2006). Consequently, the capability of prospective teachers in designing activities related to this aspect, which is emphasized in the Turkish primary school curriculum, becomes crucial at this stage. For in a study by O'Neal et al. (2017) on primary school teachers' beliefs about the role of technology in teaching and learning, it was concluded that teachers valued the use of technology in teaching and learning but needed more guidance. Anderson et al. (2001) and Hattie and Timperley (2007) suggest that the quality and applicability of activities heavily influence teachers' ability to make learning engaging and meaningful. Therefore, the effective use of digital tools in Turkish lessons can help students acquire these competencies. The integration of digital tools in the design and implementation of these activities can provide students with rich and varied learning experiences.

When examining the literature, it becomes evident that prospective teachers' digital competencies are generally insufficient (Alnasib, 2023; Tomczyk et al., 2023; Yang et al., 2022). Studies indicate that prospective primary school teachers have limited technology-related competencies, including digital literacy, technology integration self-efficacy, and Technical Pedagogical Content Knowledge (TPACK) (Byker et al., 2018; Lachner et al., 2021). In addition, Aydemir et al. (2019) proposed developing a rubric for digital literacy skills at the primary school level, and Şahin et al. (2022) developed a digital literacy scale for primary school students. Duran and Özen (2018) included digital literacy in Turkish courses and curricula, whereas Altun (2019) examined basic education programs and textbooks in the context of digital literacy. In addition, Arslan (2019), Gökbulut (2021), Keskin and Küçük (2021), Kol et al. (2022), Korkmaz (2020), and Kaya Özgül et al. (2023) evaluated the digital literacy levels of primary school teachers by considering various variables. In studies examining prospective primary school teachers, the level of digital literacy of prospective primary school teachers (Kaya Özgül et al., 2023; Yılmaz & Esmer, 2021), the contribution of training on the use of technology in teaching primary literacy to the level of technology use of prospective primary school teachers (Çetinkaya-Özdemir & Durmuş, 2023), and their technological pedagogical content and content knowledge competencies in relation to various elements (Gömleksiz & Fidan, 2013; Karalar & Aslan Altan, 2016; Öztürk, 2013; Sağlam Kaya, 2019) were investigated. Kuru (2019) analyzed the perceptions of prospective elementary school teachers regarding the educational technology concept, while Dursun and Tertemiz (2021) studied the impact of Web 2.0 tools on mathematics lesson plans. In particular, addressing the skills required for preparing activities using digital tools on the Turkish course, which offers education on both mother tongue and lays the foundation for literacy skills, would accurately depict the current situation of prospective primary school teachers. These studies were generally conducted using quantitative research methods in the positivist paradigm (Aydemir et al., 2019; Byker et al., 2018; Kol et al., 2022; Tomczyk et al., 2023). Depending on the approach used, there are also studies conducted in quasi-experimental (Lachner et al., 2021), cross-

sectional survey (Arslan, 2019), survey (Gökbulut, 2021; Gömleksiz & Fidan, 2013; Karalar & Aslan Altan, 2016; Kaya Özgül et al., 2023; Keskin & Küçük, 2021; Öztürk, 2013; Yılmaz & Esmer, 2021), relational survey (Sağlam Kaya, 2019) designs. Korkmaz's (2020) study used mixed methods research. Qualitative research methods were utilized less frequently in these studies. Document analysis (Altun, 2019; Duran and Özen, 2018), action research (Dursun and Tertemiz, 2021), and phenomenology (Kuru, 2019) were the research methods encountered. Only one study used a case study design (Çetinkaya-Özdemir & Durmuş, 2023) in these studies. The case study for this research consists of the activities prepared by prospective primary school teachers using digital tools within the framework of Turkish course and their acquired experiences from the process.

The objective of this study was to investigate the digital activities created by prospective primary school teachers for a Turkish course, along with the associated preparation processes. In accordance with the stated purpose, this study sought answers to the following questions;

1. How is the distribution of the activities prepared by prospective primary school teachers for the Turkish course using digital tools?
2. What are the processes of prospective primary school teachers in preparing digital activities for the Turkish course?

METHOD

In this study, a case study design, which is a qualitative research design, was used to examine the digital activities created by prospective primary school teachers for the Turkish course and the processes involved in preparing them. Subjective evaluations were excluded to maintain objectivity throughout the research. Technical term abbreviations were explained when they were first used in the study. Consistent citation and footnote style were followed. The language used was formal, value-neutral, and free from biased or ornamental language. Causal connections between statements were established to ensure a logical flow of information and a clear structure with logical progression. A case study is a qualitative research design intended to examine and describe an existing phenomenon in the context of real life, where boundaries are not clearly defined and multiple data sources are required (Creswell & Poth, 2018; Yin, 2018). The most notable feature of a case study is the detailed examination of one or more situations. A comprehensive understanding of the phenomenon is sought through cross-referencing data from various sources (Baxter & Jack, 2008; Yıldırım & Şimşek, 2021). To this end, a case study was deemed a suitable research design for an in-depth analysis of prospective primary school teachers' experiences in creating digital activities for the Turkish course and the digital content produced in the process.

1. Study Group

The study group for this research was selected using criterion sampling, which is a purposive sampling method. Criterion sampling is a purposive sampling method that enables the in-depth study of situations that satisfy a predetermined set of criteria (Creswell & Creswell 2021; Patton, 2014). The sampling method was chosen because participants with specific criteria can provide richer and more detailed data in line with the research questions and objectives (Palinkas et al., 2015). Criterion sampling enables a detailed study of complex phenomena and flexibility in participant selection (Miles et al., 2014), forming a suitable study group to answer the research problem.

The research study comprises 24 volunteer prospective primary school teachers enrolled in the final year of the Department of Primary School Education during the spring semester of 2022–2023 at a university in Konya, Turkey. These teachers were chosen based on passing essential courses such as Turkish Language Instruction, Instructional Technologies, Principles and Methods of Education, and Measurement and Evaluation. Because participation in the study was voluntary, 24 prospective primary school teachers participated. Based on these criteria, 17 of the prospective teachers were female and 7 were male. To uphold ethical standards, the prospective primary school teachers participating in the research were identified with coded labels P1, P2, ..., P24 to maintain confidentiality.

In the study, prospective primary school teachers utilized digital tools to create course plan activities for predetermined grade levels (2nd, 3rd, and 4th grade) and Turkish learning domains

(listening, speaking, reading, and writing). Table 1 provides descriptive information, including the gender of the prospective elementary school teachers and the distribution of activities they prepared according to grade level and Turkish learning domains.

Table 1. *Descriptive information on the participants*

Participant	Gender	Grade Level of the Activity	Turkish Language Learning Domain
P1	F	3rd grade	Speaking
P2	F	4th grade	Listening
P3	F	2nd grade	Writing
P4	M	4th grade	Speaking
P5	F	4th grade	Listening
P6	F	2nd grade	Reading
P7	F	4th grade	Speaking
P8	F	3rd grade	Listening
P9	M	3rd grade	Writing
P10	F	3rd grade	Listening
P11	F	2nd grade	Speaking
P12	M	3rd grade	Reading
P13	M	4th grade	Writing
P14	F	2nd grade	Reading
P15	M	4th grade	Writing
P16	F	2nd grade	Listening
P17	F	2nd grade	Writing
P18	F	3rd grade	Speaking
P19	F	2nd grade	Speaking
P20	M	2nd grade	Listening
P21	F	4th grade	Reading
P22	F	3rd grade	Reading
P23	F	3rd grade	Writing
P24	M	4th grade	Reading

According to Table 1, there is an equal distribution of prospective primary school teachers across all learning domains and grade levels. Specifically, each grade level is associated with eight potential prospective teachers, and each learning domain is associated with six potential prospective teachers. The study excluded the first-grade level because it is primarily used for teaching reading and writing.

2. Data Collection Tools

In this study, we collected data using a semi-structured interview form and document analysis techniques. Semi-structured interviews are a form of qualitative data collection in which the researcher has predetermined topics and questions but can modify or add new questions as necessary (Ekiz, 2009; Patton, 2014). In this study, we used a semi-structured interview format to assess prospective primary school teachers' perspectives on preparing digital activities. Our form encouraged participants to share their nuanced insights (Merriam, 2009; Creswell & Poth, 2018). The interview form questions were presented to three experts from the Department of Primary School Education (Expertise in Turkish language instruction, measurement and evaluation, and curriculum development). The number of questions and stems were modified on the basis of their input, and a prospective teacher, external to the study group, was consulted to confirm that the questions were clear and comprehensible. Finally, the form was finalized. The interview form was shared with the prospective teachers online from the outset, and the sharing ceased when the activities planned for digital tools were completed. Throughout this process, the prospective teachers answered the interview questions. In cases where the questions were unclear or the answers superficial, the researcher provided clarifications and asked follow-up questions. The interview questions (including additional explanations) are as follows:

1. Explain thoroughly the process of preparing digital activities appropriate for the Turkish grade level and domain. (You can refer to the resources used and your approach to designing the activities.)

2. Which points were considered while creating digital activities appropriate for the Turkish learning domain and grade level? Please explain the reasoning behind each decision. (You can mention situations that you particularly emphasize.)
3. Please provide a detailed account of the challenges faced in creating digital activities and propose solutions to address them.
4. Evaluate your undergraduate education and the digital activities you created in the context of the Turkish course. Provide an explanation of your evaluation. (Consider in terms of preparing activities with digital tools)

Document analysis involves examining written materials that contain information about the phenomenon being investigated (Yıldırım & Şimşek, 2021). In this study, the digital documents consist of the digital activities created by prospective teachers as part of their course plans. The documents will be analyzed to investigate the phenomenon under study. Course plan; first part (course name, grade level, learning domain, learning outcomes, duration), second part (teaching methods, techniques and strategies, educational digital tools used), third part-pre-process [preliminary preparation (preparation of tools] and mental preparation [mobilization of prior knowledge, study consists of five parts: work with keywords, prediction, setting goals and determining the type, method and technique]), fourth part - operation sequence (comprehension, mental construction and application of knowledge), and fifth part - post-operation (performance evaluation, making evaluations related to the learning domain).

3. Data Collection Process

After explaining the study 's purpose to the prospective teachers, they were allocated three weeks to devise activities using the course plan and digital tools. In this procedure, participants were requested to respond to the questions presented in a semi-structured interview form. The data collection process of the research for investigating the processes of prospective primary school teachers in preparing activities with digital tools for teaching Turkish is as follows:

1. Prospective primary school teachers identify at least three learning outcomes from the Turkish primary school curriculum according to grade level and subject domain,
2. Preparation of a course plan within the scope of the selected outcomes
3. The course plan makes full use of digital tools.

4. Data Analysis

The data analysis process involved examining the participants' responses to open-ended questions in the semi-structured interview format and their digital activities in the furnished course plans. To analyze the information, content analysis was used. In qualitative research, content analysis offers a comprehensive approach for comprehending and interpreting data. During the content analysis process, a coherence of meaning was established via an initial reading and comprehension of the data (Bengtsson, 2016; Krippendorff, 2018). This stage evaluated the data 's integrity. Content analysis involves a systematic process of coding, categorizing, identifying, and defining themes in qualitative data (Creswell & Creswell, 2021). The study began with coding the data according to participant statements using Saldaña 's (2015) coding cycles. The codes were then grouped under themes based on their similar characteristics. The first and second coding cycles involved reviewing the data repeatedly to develop, define, and associate codes and themes. Throughout the entire process, code consistency was maintained using a coding key, while findings were interpreted within the research question framework. This ensured thorough data analysis and the attainment of significant results. Graneheim and Lundman (2004) recommended conducting a horizontal analysis to establish relationships between themes and sub-themes. To evaluate the frequency of subtheme emergence, the data were combined and interpreted using frequency analysis (Weber, 1990). The raw data gathered from the semi-structured interview form were analyzed using content analysis to interpret themes, sub-themes, and frequencies. In addition, participants' views on subthemes were incorporated via direct quotations.

The course plans for Turkish created by primary school prospective teachers and the digital activities that were developed from them have been analyzed through document analysis. Document analysis is a method for analyzing and evaluating written, visual, or electronic materials in a systematic manner (Bowen, 2009). This technique is particularly useful for gaining in-depth comprehension of educational practices (Cohen et al., 2018). The digital activities, within the course plan prepared by

prospective teachers, were categorized according to the Turkish learning domains of listening, speaking, reading, and writing, alongside their sequence of operations: pre-operation, during operation, and post-operation. This categorization phase followed the "coding and theming" processes described by Miles et al. (2014). Finally, visual examples of digital tools were projected at the end of each learning domain.

Various strategies can ensure the validity and reliability of qualitative research. *Internal validity* indicates the accuracy of research results, which can be confirmed through long-term observation and member checking (Creswell & Miller, 2000). To ensure internal validity, the researcher established long-term interaction with participants. In addition, the participants were presented with the findings through member checking and provided approval. In qualitative research, *external validity* is generally at the discretion of the reader. However, the inclusion of rich and detailed descriptions (Merriam, 2009) allows readers to evaluate the transferability of the findings to their own context. This study enhanced external validity by incorporating such descriptions, providing the reader with a comprehensive understanding of both the context and the results.

Internal reliability in qualitative research is typically ensured through transparent coding processes (Miles et al., 2014). Repetition of the coding processes by various researchers is viewed as a form of expert evaluation. In this study, internal reliability was assured by transparently conveying all processes. The coding procedure was repeated by different researchers, and consistency was verified. *External reliability* refers to whether other researchers can replicate the same study in various contexts. Providing detailed methodological descriptions (Shenton, 2004) can enhance external reliability. This study achieved external reliability by offering a detailed analysis that enabled other researchers to replicate it successfully.

Credibility of qualitative research aligns with its internal validity and accuracy of data interpretation (Creswell & Miller, 2000). Comprehensive and direct quotations with detailed reporting of all research processes increased credibility. *Confirmability* indicates an objective and transparent research approach, where the researcher's decisions are traceable and verifiable (Bowen, 2009). The study transparently conveyed the data analysis process and explained the raw data used to arrive at the results. *Transferability*, which pertains to the external validity of qualitative research and determines the validity of findings across different contexts (Shenton, 2004), was addressed. The study group and context were detailed, ensuring transferability for comparable investigations. *Consistency* was maintained by providing detailed explanations of the data collection, analysis, and interpretation processes, as described by Campbell et al. (2013) and Merriam (2009). The same methods were used throughout the process, and codes were defined with the coding key to enhance consistency.

5. Role of the Researcher

In qualitative research, the researcher is viewed as the data collection instrument. The researcher collects data by trying to understand the experiences and perspectives of the participants (Pezalla et al., 2012). The researcher's biases and assumptions can influence the data collection and analysis process. Therefore, it is important for the researcher to be aware of his/her own biases and to keep these biases under control (Chenail, 2011). In this study, the researcher took care to be impartial and objective during the data collection and analysis processes. This was an attempt to control bias. The researcher got to know the participants by interacting with them for a long time and established a relationship of trust. Long-term observation and interaction with participants help the researcher to understand the participants' experiences and perspectives more deeply (Creswell & Miller, 2000). In this regard, in the study, a semi-structured interview form was shared online with the prospective primary school teachers, and they were asked to answer the questions in the interview form. In cases where the prospective teachers could not understand the questions or answered superficially, the researcher obtained more detailed data through probing questions and explanations. In this regard, the researcher remained in interaction with the participants online from the beginning to the end of the study. In the data analysis process, the researcher remained faithful to the participants' statements in coding and creating themes, and the researcher's assumptions were avoided. The researcher provided transparency by reporting all processes in detail. The researcher's transparency and detailed reporting increases the reliability of the research. Detailed reporting allows other researchers to replicate a similar study (Shenton, 2004). As a

result, the researcher studied in accordance with qualitative research ethics and tried to minimize the influence of her own subjectivity on the data.

FINDINGS

The study aimed to analyze the procedures used by prospective primary school teachers while creating digital activities for the Turkish course. The research questions are addressed and the findings, including themes, participant codes, and frequency data, are presented objectively.

1. Findings on the distribution of digital tools in activities prepared by prospective primary school teachers for the Turkish course:

Within the context of the first research question, Table 2 presents data on the distribution of digital tools used by prospective primary school teachers in Turkish course activities.

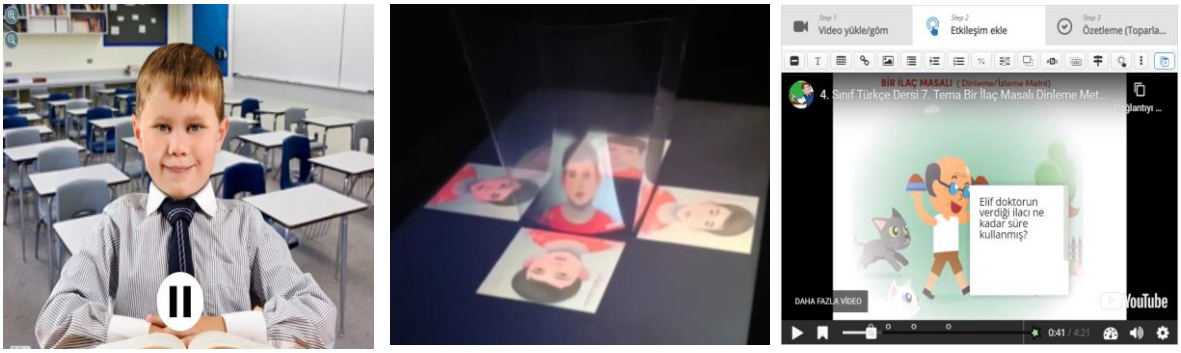
Table 2. *Digital tools used by prospective primary school teachers in activities*

	Listening (*f*)	**Speaking (*f*)**	**Reading (*f*)**	**Writing (*f*)**
Pre-Processing	LearningApps (4) Canva (3) Voki (2) Lumi Powton Sitepal	D-ID (3) Animator (2) Baamboozle Canva Lumi Plotagon Storyboardthat Voki	LearningApps (4) Lumi (2) Wordwall (2) Baambozle Canva Voki Wordart	Canva (4) LearningApps (2) Worditout (2) Pixton Quiver Sitepal Voicechanger Voki Wordart
During Processing	Lumi (9) Sitepal (5) D-ID (3) Davinci Resolution 18 Animaker Canva Kapcut LearningApps Powtoon Wordwall	Lumi (4) Voki (3) D-ID (2) Plotagon (2) Animaker Chatter pix Inshoot Kalma Sitepal Storyjumper Voicechanger Wordart Wordwall	Storyjumper (6) Wordwall (3) Canva (3) Crosswordlabs Edpuzzle Educaplay Jigsawplanet Padlet Plotagon Powtoon Renderforest Tontastic Wordart	LearningApss (6) Wordwall (5) Canva (4) Storyboardthat (2) Voki (2) Book Creator Crosswordlabs Imagine Forest Microsoft Bing Pixton Storyjumper
Post Processing	LearningApps (6) Wordwall (4) Lumi (3) D-ID Kahoot Socrative	Wordwall (9) LearningApps (3) Kahoot (2) Lumi (2) Blooket	LearningApps (4) Wordwall (4) Baambozle Educandy Educaplay Google form Kahoot Storybird Wordart	LearningApps (3) Canva (2) Blooket Inshoot Jigsawplanet Jotterpad Plot Generator Quiziz Quizlet Storyboardthat Wordwall

According to Table 2, prospective primary school teachers used 44 distinct digital tools 202 times while creating activities for the Turkish language course. The three most frequently used digital tools were LearningApss (n=33), Wordwall (n=28), and Lumi (n=22). Additionally, prospective teachers used 22 digital tools for listening skills, 26 for speaking skills, 29 for reading skills, and 31 for writing skills in their activities.

It was observed that prospective primary school teachers used thirteen distinct digital tools fifty-two times during activity preparation in the Turkish course 's listening domain. The top three digital tools used in this domain were Lumi (n=13), LearningApps (n=11), and Sitepal (n=6). In this learning domain, six digital tools were used 12 times before listening, and 10 digital tools were used 24 times during the

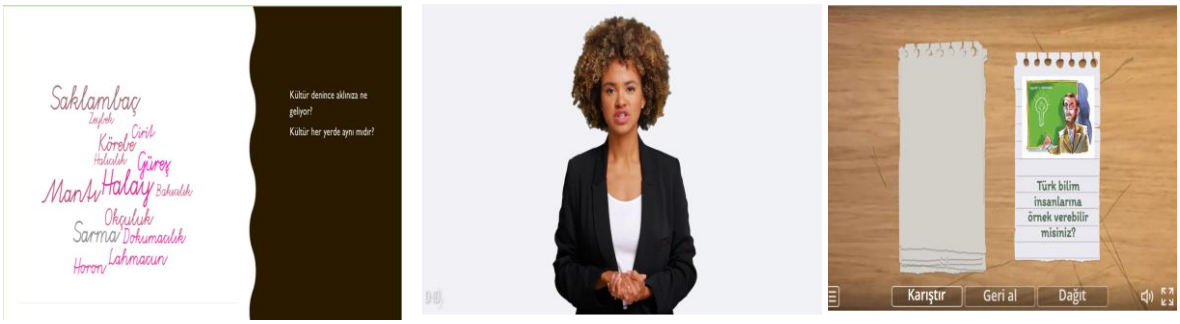
listening phase. After completion of the listening phase, six digital tools were utilized 16 times. Image 1 displays the digital tools used by prospective primary school teachers during the listening learning domain.



Pre-Listening (Sitepal) | During Listening (Davinci Resolve 18) | Post-Listening (Lumi)

Image 1. *Examples of digital tools in the listening learning domain*

It is evident that prospective primary school teachers used 20 distinct digital tools on 48 occasions while developing activities in the speaking learning domain of Turkish courses. The three most frequently used digital tools in the speaking learning domain are Wordwall (n=10), Lumi (n=7), and D-ID (n=5). In this learning domain, eight digital tools were used 11 times before speaking, 13 digital tools were utilized 20 times during speaking, and five digital tools were used 17 times after speaking. Image 2 displays instances of digital tools implemented by prospective teachers in the realm of speaking acquisition.



Pre-Speaking (Worditout) | During Speaking (D-ID) | Post-Speaking (Wordwall)

Image 2. *Examples of digital tools used in the speaking learning domain*

It is noted that during the preparation of activities for Turkish courses in the reading domain, prospective primary school teachers used 21 distinct digital tools 49 times. For the speaking learning domain, the three most frequently used digital tools were Wordwall (n=9), LearningApps (n=8), and Storyjumper (n=6). Within this learning domain, seven digital tools were implemented 12 times before reading, 13 digital tools were used 22 times during reading, and nine digital tools were used 15 times after reading. Image 3 displays the digital tools used by prospective primary school teachers in the domain of studying education.

Pre-Reading (LearningApps) | During Reading (Storyjumper) | Post-Reading (Educaplay)

Image 3. *Examples of digital tools used in the reading learning domain*

It is evident that prospective primary school teachers used 23 distinct digital instruments 53 times within the domain of writing education in Turkish courses when devising activities. The top three digital tools in the writing education domain were LearningApps (n=11), Canva (n=10), and Wordwall (n=6). Before writing, 14 instances incorporated nine digital tools, 25 instances used 11 digital tools 14 instances included 11 unique digital tools. Image 4 illustrates examples of digital tools used by prospective primary school teachers in the writing education domain.

Pre-Writing (Wordart) | During Writing (BookCreator) | Post-Writing (Storyboardthat)

Image 4. *Examples of digital tools in the writing learning domain*

2. Findings related to the process of preparing digital activities for the Turkish course of prospective primary school teachers.

Within the context of the study's second research question, Table 3 displays the findings on the preparation process of prospective primary school teachers when developing digital activities for the Turkish course. Table 4 presents the considerations addressed in the activities, and Table 5 presents the challenges encountered during preparation and related proposed solutions. Finally, Table 6 presents the prospective teachers' self- and-undergraduate education assessments.

Table 3. *The preparation process for primary school teachers for digital activities*

Theme	Sub-theme (*f*)	Participants
Source research	Internet (9)	P3, P6, P7, P11, P12, P17, P18, P20, P21
	Course notes (7)	P1, P8, P10, P11, P13, P18, P21
	Textbook (6)	P2, P7, P13, P16, P18, P19
	Turkish language curriculum (6)	P5, P7, P14, P16, P23, P24
	Academic book (5)	P5, P6, P11, P13, P22
	Primary school teacher (3)	P8, P12, P18
	Explanation video (3)	P4, P5, P9
	Scientific article (2)	P22, P24
	Education Information Network (EBA) (1)	P9
Activity design	Preparing the original activity (18)	P1, P2, P3, P5, P6, P7, P8, P10, P11, P12, P16, P17, P18, P19, P20, P21, P22, P23
	Adapting prebuilt activities (6)	P4, P9, P13, P14, P15, P24

According to Table 3, the preparation process for prospective primary school teachers in developing digital activities for the Turkish course comprises source research and activity design themes. After analyzing the data, nine sub-themes were identified under the source research theme and two under the activity design theme.

The sub-themes of the internet (n=9), course notes (n=7), textbooks (n=6), Turkish curriculum (n=6), academic books (n=5), primary school teacher (n=3), explanation video (n=3), scientific article (n=2), and Education Information Network (EBA) (n=1) are highlighted in the source research theme. While the prospective primary school teachers were preparing digital activities for the Turkish course, P21 stated that the internet was used as a source with the statement, *"I researched digital tools available*

on the internet and used blog pages and social media accounts as sources for the activities…"; P10 stated that the course notes were used as a source with the statement, *"I reviewed instructor notes and found the ones from the Turkish Language Instruction course particularly helpful. The course activities and materials used by the instructor were informative and served as useful guides…"*; P2 stated that the textbooks were used as a source with the statement, *"I systematically analyzed the activities in Grade 4 Turkish textbooks and used them to develop new activities. Subsequently, I implemented my planned activities onto digital platforms…"*; P7 stated that the Turkish language curriculum was used as a source with the statement, *"First, I reviewed the curriculum with a focus on topics related to speaking skills that were prioritized and targeted. From this review, I determined the outcomes to include in my speaking activities for 4th graders…"*; and P6 stated that the academic books were used as a source with the statement, *"… In addition, I checked out the materials that Turcademy provided. The books on teaching Turkish and Web 2.0 tools from different publishers were helpful."* As a source while preparing digital activities, P12 mentioned, *"I consulted with an acquaintance that is a primary school teacher for suggestions. I reviewed Instagram pages and Telegram groups for teachers and shared ideas with them..."* referring to primary school teachers; P5 stated, *"I viewed pre-made videos on YouTube that contained numerous activities of Turkish listening comprehension. The videos that presented and demonstrated web 2.0 tools were very useful…"* referring to explanation videos; P24 highlighted, *"First, I conducted a comprehensive literature review by analyzing various academic articles. The studies conducted in these articles proved to be beneficial…"* referring to scientific articles; and P9 noted, *"… I am able to access EBA through my internship. Using the EBA resources has always proved useful for me in courses, as well as in preparing activities for Turkish courses."* referring to the Education Information Network (EBA).

The sub-themes of preparing the original activity (n=18), and adapting pre-built activities (n=6) are highlighted in the activity design theme. In developing digital activities for the Turkish course, most prospective primary school teachers created activities based on personal experiences. As P1 stated *"…I designed all activities to meet the objectives and outcomes using a creative approach."* P19 noted *"I created the activities independently and in an original way. My goal is to tailor the activities to the needs of each student, adhering to the principles of inclusive education. In this respect, I tested myself..In this respect, I tested myself."* On the contrary, some prospective teachers made adaptations by using existing activities, as indicated by P4 's statement, "*I modified the activities in the training videos I watched to suit my needs.*" and P13 's statement, "*I designed the activities based on activities that had been done before. I worked with ready-made activities because it was easier to walk through them and it saved me time.*"

Table 4. *Issues that prospective primary school teachers should pay attention to when developing digital activities*

Theme	Sub-theme (*f*)	Participants
Curriculum	Grade level (9)	P1, P2, P6, P7, P8, P9, P12, P18, P19
	Compatibility with learning domains (8)	P2, P3, P15, P16, P18, P19, P21, P23
	Stages of learning domains (7)	P7, P10, P13, P17, P20, P22, P24
	Various teaching methods and techniques (5)	P4, P5, P11, P13, P14
	Appropriate measurement and evaluation tools (4)	P5, P7, P11, P14
Student level	Textbook (8)	P1, P2, P5, P8, P9, P16, P19, P23
	Pre-implementation (5)	P10, P11, P12, P20, P22
	Considering outcomes (4)	P3, P6, P15, P21
	Consultation with primary school teacher (3)	P2, P13, P23
	Prebuilt activities (3)	P9, P14, P15
	Consultation with a peer (3)	P4, P17, P18
	Pre-measurement and evaluation (2)	P7, P24
Individual differences	Interim assessments (6)	P4, P8, P11, P13, P14, P24
	Student levels (6)	P5, P6, P9, P10, P15, P18
	Rich content (4)	P1, P6, P14, P17
	All senses (3)	P2, P16, P23
	Simplifying content (2)	P19, P22
	Individual needs (1)	P7
	Learning styles (1)	P7

According to Table 4, prospective primary school teachers focus on the themes of curriculum, student level, and individual differences while preparing digital activities for the Turkish course. The analysis of the data revealed five sub-themes under the curriculum theme and seven sub-themes under the themes of suitability to student level and individual differences.

The sub-themes of the grade level (n=9), compatibility with learning domains (n=8), stages of the learning domains (n=7), various teaching methods and techniques (n=5), and appropriate measurement and evaluation tools (n=4) are highlighted in the curriculum theme. Regarding the suitability of digital activities developed by prospective primary school teachers for the Turkish course's curriculum, P18 emphasizes considering the grade level, *"While preparing the activities, I ensured that they were appropriate for a third grade level audience by referencing the course content outlined in the Turkish curriculum..."* Statement P23, *"I reviewed the subjects within the curriculum and assessed whether my activities were suitable for the topic. I analyzed the activities of the writing section of the curriculum..."* the compatibility with the learning domain is highlighted. The Turkish learning domains are underlined with the statement P20, *"I focused on the steps involved in developing Turkish language skills. To enhance the pre-listening, during, and post-listening stages, I designed digital activities..."* The use of different methods and techniques is highlighted with the statement P14, *"... While preparing the activities, I considered optimal teaching strategies and used various methods and techniques..."* and with the statement P11, *"... It is crucial to objectively assess students' comprehension of the subject matter. To this end, I incorporated digital assessment and evaluation tools at specific intervals to measure the knowledge acquisition. To ensure a positive experience, I structured the activities to resemble a game rather than a test..."* the use of appropriate measurement-evaluation tools is emphasized.

The sub-themes of the textbook (n=8), pre-implementation (n=5), considering the outcomes (n=4), consultation with primary school teacher (n=3), pre-built activities (n=3), consultation to peer (n=3), and pre-measurement and evaluation (n=2) are highlighted in the student level theme. Regarding the suitability of digital activities created by primary education prospective teachers for the Turkish course at the student level, the statement P8, *"In preparing the activities, I have searched the MoNE books related to the grade level, reviewed the activities appropriate for the grade level, and followed a path accordingly..."* indicates consulting the Turkish course textbook; the statement P22, *"...When creating educational activities, it can be challenging to assign an appropriate grade level as some activities may be too simplistic or too advanced. To test the effectiveness of my activities, I had my third-grade nephew complete one and he found it engaging..."* indicates conducting a pre-implementation with a student at the relevant grade level; the statement P15, *"...I ensured that it is appropriate for the Turkish curriculum. The activities were prepared with the 2nd grade writing domain outcomes in consideration..."* indicates considering the outcomes in the Turkish learning domains; and the statement P2, *"I reviewed the Turkish textbook for 4th graders to confirm the level-appropriateness of the activities. The following completion, I collaborated with a trusted primary school teacher and incorporated their feedback by implementing necessary changes..."* indicates consulting a primary school teacher. Continuation of the same theme, statement P14, *"... I researched similar activities for the learning domain on the Internet. I created my own activity by comparing the activities I found according to the level of the activities..."* points out the importance of published activities; the statement P18, *"... We gained valuable experience through the Teaching Practice course. I requested constructive criticism and feedback from my peers regarding the appropriateness of the activities I developed for the students' level..."* points out the importance of consulting peers; and the statement P24, *"... Before beginning the activities, I developed relevant questions and used the answers to determine the level of the activities..."* points out the importance of preliminary measurement and evaluation.

The sub-themes of the interim assessments (n=6), student levels (n=6), rich content (n=4), all senses (n=3), simplifying the content (n=2), individual needs (n=1), and learning styles (n=1) are highlighted in the individual differences theme. Regarding the suitability of digital activities developed by prospective primary school teachers for individual differences in the Turkish course, statement P13, *"... To ensure comprehension of my activity among all the students, I developed various assessment tools for each stage. Additionally, I provided self-assessment forms at the conclusion of the activity."* underlines interim assessments; statement P5, *"I aim to objectively consider student levels in activity preparation, with a particular focus on attention deficits. These activities are designed to be engaging and accessible to*

all students. In order to do this, I made the activities more interesting." underlines being at the level of all students; the statement P17, *"... I considered students' learning situations in the activities, ensuring content was rich and encompassed diverse teaching strategies related to daily life and a variety of digital tools."* underlines having rich content. Continuation of the same theme, statement P16, *"... I developed activities that engaged students visually, auditorialy, and tactically. Additionally, I used digital tools to evaluate students, leveraging all of their sensory modalities."* emphasizes appealing to all senses; the statement P19, *"... In the activities, I ensured that the subject matter of the course content was comprehensible without subjective evaluations. I developed speaking activities suitable for all children and not excessively challenging in terms of complexity. Technical term abbreviations are explained when first used."* highlights simplifying the content; and the statement P7, *"... Firstly, I developed a digital assessment game to identify each student 's specific needs. This assisted me in understanding their physical, mental, or emotional requirements and making appropriate adjustments. Activities were designed on the basis of various learning styles to provide a combination of concrete, abstract, and practical experiences."* considers both students' individual needs and learning styles.

Table 5. *Challenges encountered by prospective primary school teachers in preparing digital activities and their proposed solutions*

Theme	Sub-theme (*f*)	Participants
Challenges encountered	Competence in the use of digital tools (8)	P4, P6, P10, P11, P12, P15, P16, P21
	Designing grade-level activities (8)	P3, P5, P7, P9, P12, P20, P21, P23
	Access to the full program version (6)	P2, P4, P11, P16, P21, P24
	Determine suitable digital tools (5)	P17, P18, P19, P20, P22
	Preparing the original content (5)	P8, P9, P13, P14, P15
	Audio recording (1)	P1
	Digital storytelling (1)	P2
Solution proposals	Increasing the use of digital tools in courses (12)	P4, P5, P7, P8, P11, P12, P13, P14, P17, P18, P19, P22
	Mandating the use of digital tools in courses (11)	P1, P3, P6, P8, P9, P10, P15, P16, P19, P20, P23
	Covering the cost of digital tools with usage fees (6)	P2, P4, P11, P16, P21, P24

According to Table 5, prospective primary school teachers challenges encountered when preparing digital activities for Turkish course, and offer solution proposals. Analyzing the data revealed seven sub-themes for challenges encountered, and three sub-themes for solution proposals.

The sub-themes of competence in the use of digital tools (n=8), designing grade-level activities (n=8), access to the full program version (n=6), determining suitable digital tools (n=5), preparing original content (n=5), audio recording (n=1), and digital storytelling (n=1) are highlighted in the challenges encountered theme. Regarding the challenges encountered by prospective primary school teachers while preparing digital activities for the Turkish course, the statement P10, *"I possess a moderate level of expertise in using computers. Using digital resources and organizing the corresponding activities proved to be time-consuming for me..."* emphasizes lack of sufficient proficiency in the use of digital tools; the statement P3, *"Designing activities suitable for the outcomes of the selected grade posed a challenge. Adapting suitable subject-related and diverse activities for a second-grade level was demanding..."* emphasizes being unable to design activities at the grade level; the statement P21, *"Since I am not very experienced with digital resources, it took some time to prepare activities with digital tools. Since most of the digital tools require a fee, I could not use their full versions, which made it challenging for me to connect the activities..."* indicates not having access to full versions of digital programs; and the statement P17, *"It was challenging to select digital tools to enhance writing skills. While numerous Web 2.0 tools exist, deciding which ones to use and implementing them appropriately in relation to the topic proved to be a daunting task..."* highlights the difficulty of determining a digital tool relevant to the purpose of the activity. Continuation of the same theme, statement P9, *"While preparing for the event, I did not generate novel digital content, but instead modified activities from online videos to fit my location. The event content consisted of standard elements and commonly used digital tools..."* addresses the challenge of creating original content; the statement P1 *"The audio prepared on the Sitepal app was not downloaded and*

experienced excessive echoing. The audio recording process on this app for classroom use was the only aspect that posed a challenge…" highlights the challenge of creating audio recordings; and the statement P2, *"I found it challenging to create a digital story for the listening and viewing domain. I found it challenging to create a digital story for the listening and viewing domains. The process involved composing the storyline, inserting graphics and visuals, and recording the narration…"* considers the challenge of creating digital stories.

The sub-themes of increasing the use of digital tools in courses (n=12), mandating the use of digital tools in courses (n=11), and covering the cost of digital tools with usage fees (n=6) are highlighted in the solution proposals theme. Regarding solutions to the challenges encountered by prospective primary school teachers while preparing digital activities for the Turkish course, the statement P12, *"… Although digital tools are used as an example in courses, this approach should be applied to all courses. Digital tools are widely used in teaching courses. Providing more examples in our courses will allow us to explore a wider range of digital tools."* proposes increasing the use of illustrative tools by integrating digital instruments in all courses; the statement P8, *"… Both the preparation of activities and the use of digital tools ought to be required in all courses. In this way, we can become more proficient in using these digital tools. During this era of constant technological advancement, conducting all courses digitally and employing web tools will more effectively get us ready for our careers."* proposes mandating the use of digital tools in university courses to enhance their professional preparedness; and the statement P16, *"… Web tools typically require payment, and in demo versions, we are limited in the content we can create. Considering budget constraints, I primarily used free tools. Unfortunately, purchasing paid tools is not an option for students. Therefore, universities should cover the expenses associated with accessing these sites. They should be treated similarly to databases, which are easily accessible through the university."* proposes that the university should cover the costs of full-version digital tools to allow students easy access.

Table 6. *Evaluation of prospective primary school teachers' self- and-undergraduate education in preparing digital activities*

Theme	Sub-theme (*f*)	Participants
Self-assessment	Sufficient	
	Effective use (10)	P2, P3, P5, P7, P11, P13, P17, P20, P23, P24
	Mastery of technological tools (6)	P1, P7, P8, P17, P19, P23
	Insufficient	
	Lack of technological skills (6)	P4, P6, P14, P16, P21, P22
	Lack of knowledge (5)	P9, P10, P12, P16, P18
	Lack of foreign language (2)	P1, P15
Undergraduate education assessment	Sufficient	
	Functional applications (6)	P1, P2, P11, P14, P22, P24
	Rich applications (5)	P1, P3, P13, P17, P23
	Providing experience (4)	P5, P8, P10, P22
	Guidance (3)	P7, P10, P19
	Insufficient	
	Incomplete lectures (5)	P4, P12, P16, P20, P21
	Minimal exemplars (5)	P6, P15, P16, P18, P20
	Lack of experience (3)	P9, P12, P15

According to Table 6, prospective primary school teachers conducted self-assessment and undergraduate education assessments on the preparation of digital activities for the Turkish course. The analysis of the data resulted in the identification of two sub-themes, namely sufficient and insufficient, in both evaluations.

Effective use (n=10) and mastery of technological tools (n=6) are identified as sufficient sub-themes; while lack of technological skills (n=6), lack of knowledge (n=5), and lack of foreign language (n=2) are identified as insufficient sub-themes in the self-assessment theme. In the process of preparing digital activities for the Turkish course, prospective primary school teachers' self-assessments were sufficient, with the statement P3, *"I researched various activities related to my topic before successfully preparing them. As a follower of technological advancements, I effortlessly used web tools and incorporated different applications into my activities…"* evaluates in terms of active use of digital tools; and the statement P23, *"I provided support for the activities I organized by presenting numerous examples, and*

objectively speaking, I was successful in this regard. Despite the time consumed in preparing the digital tools for writing activities that were suitable for the grade level, I overcame the challenges. My interest and proficiency in technological tools greatly assisted me in this process, as I adeptly used new digital tools without requiring any assistance…" evaluates in terms of mastery of technological tools. Continuation of the same theme, prospective primary school teachers' self-assessments as insufficient, with the statement P4, *"Well, I have realized I must exert twice the effort to enhance my capabilities in the digital arena, even though it's not my forte. I require assistance in using digital tools for their designated functions because I struggle with technology. I need to enhance my technological proficiency…"* evaluates the lack of technological skills; the statement P18, *"At first glance, the task appeared simple. However, as I delved into the work, I quickly realized that my understanding of Web 2.0 tools was insufficient. This knowledge gap was clearly reflected in my struggles to execute the required activities with the web tools…"* evaluates in terms of lack of knowledge; and the statement P15, *"I encountered issues navigating certain digital tools due to their foreign language interface. My limited proficiency in English posed a challenge in this regard…"* evaluates in terms of lack of foreign language.

Functional applications (n=6), rich applications (n=5), providing experience (n=4), and guidance (n=3) are identified as sufficient sub-themes; while incomplete lectures (n=5), minimal exemplars (n=5), and lack of experience (n=3) are identified as insufficient sub-themes in the undergraduate education assessment theme. In the process of preparing digital activities for the Turkish course, prospective primary school teachers' undergraduate education assessment was sufficient, with the statement P11, *"… I acquired proficient skills in digital tools for teaching various courses, including Turkish Language Instruction, Mathematic Instruction, and Science Instruction. By using these tools for activity planning, we effectively reinforced their practical application in teaching courses."* that they benefited from functional applications; the statement P3, *"… We covered various digital programs during the courses, with a particular focus on the Turkish Language and Mathematics Instruction courses where we used a range of digital programs. My future aim is to become an educator who satisfies modern-day necessities by implementing the knowledge I have gained from these courses."* that they learned to use diverse applications; the statement P22, *"… The digital applications presented by our professors were satisfactory; I gained substantial knowledge regarding digital tools. Furthermore, we explored several digital resources that can assist in course introduction, teaching, and evaluation. Learning how to integrate diverse methods and techniques with digital tools in various classes proved to be invaluable."* that they gained substantial experience; and the statement P19, *"… I acquired proficiency in employing Web 2.0 tools during my undergraduate studies. The inclusion of these tools in our lectures and research assignments was pertinent. Our professors demonstrated how to effectively use digital tools through exemplary activities and our course work. This instruction has influenced my approach to teaching."* their undergraduate education guided them. Continuation of the same theme, prospective teachers consider their undergraduate education insufficient with the statement P20, *"… Most of the lecture 's sample activities did not fully resonate with me. Perhaps this is because our courses were online because of the pandemic and earthquake. However, the activities should have been thoroughly discussed and covered in all aspects. To be frank, I believe they are deficient in this regard."* in terms of incomplete course lectures on using digital tools in courses; the statement P6, *"… In the courses that emphasized digital tools, we were presented with a few examples. Avoiding personal evaluations in academic writing is imperative, unless explicitly indicated as objective interpretations or opinions. It would be beneficial to have more extensive exposure to digital tools through additional lectures and further examples."* in terms of a few examples of digital tools being given in courses; and the statement P9, *"… There were occasions when we encountered obstacles in integrating Web 2.0 tools. This was particularly the case for remote courses. However, for non-education courses, I discovered that the professors lacked familiarity with these digital tools and did not possess the requisite expertise for their assimilation into the curriculum."* in terms of some course instructors lacking experience in using digital tools.

As a result, this study observed that prospective primary teachers used different digital tools for teaching Turkish language, but they experienced technical problems and shortcomings. Pedagogical content knowledge was reflected in the digital activities prepared by the prospective teachers, but difficulties were encountered in creating original content and technical skills. The participants emphasized the importance of enhancing their technology integration experiences and noted that their

university education provided only partial preparation in this area. The study results illuminate strategies to improve technology integration in teacher education, including increasing the number of practical courses and bolstering technical resources. To ensure that prospective teachers become qualified educators, it is crucial to enhance their experiences with technology integration and process-based evaluation.

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

In this study, the objective was to investigate the digital activities prepared by prospective primary school teachers for teaching Turkish courses and the processes of preparing these activities. The results of the study indicate that prospective primary school teachers can benefit from various digital tools in the Turkish course. This finding aligns with Mishra and Koehler's (2006) Technological Pedagogical Content Knowledge (TPACK) model, which highlights the significance of teachers' ability to efficiently use digital tools in instruction by blending content, pedagogy, and technology knowledge. Furthermore, based on this finding, prospective primary school teachers have good digital literacy skills. Yontar's (2019) research stated objectively that the digital literacy level of prospective primary school teachers was average. The study found that prospective teachers used various digital tools in the writing learning domain, followed by the reading, speaking, and listening domains. This finding indicates that providing digital tools to support writing can enhance and broaden students' text creation and editing processes, as noted by Warschauer and Matuchniak (2010). It can be argued that equipping prospective teachers with a diverse range of digital writing tools, which is a challenging and up-to-date learning domain for children, can greatly benefit their professional careers. In addition, the research findings demonstrate a significant use of digital tools for learning in the domains of reading, speaking, and listening, which aligns with Coiro and Dobler 's (2007) study on the vital role of digital literacy skills in these domains. Visual and text-based activities are conducive to developing writing and reading abilities, while listening and speaking require more auditory materials (MoNE, 2019). Therefore, prospective teachers possess a wider range of digital tools for both writing and reading.

When analyzing the three most preferred digital tools (Learning Apps, Wordwall, and Lumi) used by prospective primary school teachers in Turkish course activities, it can be seen that they are very functional tools. These tools offer numerous applications. The preference of prospective teachers for these tools may be due to the fact that these platforms provide students with interactive and visual richness, increase student participation, and provide the opportunity to create materials that are appropriate for individual differences (Hughes, 2005). Additionally, the literature suggests that teachers prioritize ease of use and functionality in their selection of Web 2.0 tools (Borthwick & Hansen, 2017). The tools' capability to cover all Turkish learning domains and provide various applications creates their appeal. These tools allow prospective teachers to conveniently design Turkish course plans and use them flexibly as required. The significance of integrated and user-friendly tools cannot be stressed enough for technology integration (Harris et al., 2009).

The study's findings indicate prospective primary school teachers favor digital tools suitable to their learning domains' structure. This suggests that these individuals can effectively combine pedagogical, content, and technology knowledge (Angeli & Valanides, 2009; Chai et al., 2013). For instance, the researchers utilized digital tools specific to the subject matter, including Sitepal for audio recording in listening exercises, D-ID for creating talking avatars in speaking exercises, Storyjumper for constructing digital stories in reading exercises, and Canva for designing in writing exercises. Integrating a plethora of Web 2.0 technologies within education (O'Reilly, 2005; Alexander, 2006) offers students multiple opportunities to develop their language skills. Digital tools enhance language learning by providing greater access to diverse resources, encouraging interaction, fostering collaboration, and promoting creativity (Altun & Bangir Alpan, 2021).

According to the findings of the study, prospective primary school teachers used different sources of information (internet, textbooks, academic publications, etc.) when designing digital activities for the Turkish course. Coutinho (2008) reported that prospective teachers used various resources related to Web 2.0 tools. This result indicates that prospective teachers are highly motivated to create student-centered and authentic instructional materials (Prestridge, 2010). Considering this, it is crucial for

prospective teachers to develop original activities by researching different sources of information to positively develop their research skills and creativity. This practice is believed to enhance their future professional endeavors.

According to the findings of the study, the prospective primary school teachers paid attention to the compatibility of the digital activities they prepared with the Turkish curriculum, their suitability to the students' level, and the consideration of individual differences. Prior literature emphasizes the importance of teachers selecting technology that aligns with curriculum objectives and student needs (Harris et al., 2009; Tondeur et al., 2017). Prospective teachers' awareness of pedagogical content knowledge and student-centered thinking is promising for their professional development. This confirms that the effective use of technological tools in 21st century education depends not only on technical skills but also on being aware of their pedagogical potential (Ertmer & Ottenbreit-Leftwich, 2010).

Some prospective primary teachers had difficulties selecting appropriate digital tools, solving technical problems, accessing full versions, making audio recordings, and creating digital stories while preparing digital activities for the Turkish course. Some of them also felt insufficient in generating original content and developing activities that aligned with student proficiency levels. Similarly, research in the literature indicates that teachers and prospective teachers encounter comparable issues with technology integration (Kabakçı Yurdakul & Çoklar, 2014; Tondeur et al., 2017). To overcome these problems, prospective teachers proposed expanding and promoting the use of digital tools in courses, and providing access to paid tools. This recommendation is also evident in the literature (Foulger et al., 2017). These recommendations mean that universities and education policymakers need to be more proactive in ensuring digital equity in education. Including technology integration experiences and guidance more often in teacher education will better equip future teachers in this regard.

The study found that prospective primary school teachers generally perceived their undergraduate education as adequate in terms of technology integration. This aligns with the overall satisfaction identified by Gil-Flores et al. (2017). Nevertheless, the prospective teachers emphasized the importance of increasing the number of hands-on course experiences. The literature suggests that practical experience is vital to the successful implementation of technology (Goodyear & Retalis, 2010; Tondeur et al., 2017). Interestingly, Kaya Özgül et al. (2023) found that primary school teachers boasted higher levels of digital literacy than their prospective teachers. As professionals gain experience, integrating digital tools into education becomes more manageable. However, it is worth noting that some prospective primary school teachers felt insufficient due to their lack of technological and foreign language skills, which agrees with Tezci's (2011) conclusion that technological literacy skills are not perceived equally among prospective primary school teachers.

In line with the results of this study the following recommendations can be made:

- In order to minimize the difficulties encountered by prospective primary school teachers in preparing digital activities for Turkish lessons, the use of digital tools should be expanded in educational institutions.
- Prospective teachers should be given access to full versions of digital tools that they can use in their training.
- Prospective teachers should have more experience using digital tools and developing materials as part of their curriculum.
- Prospective teachers should be provided with support and guidance in preparing instructional materials that are appropriate for student levels and individual differences.
- They should also receive continuous training to enhance their digital literacy skills.
- Prospective teachers should receive information about various digital tools that aid in language acquisition and their corresponding pedagogical applications.

Türkçe Dersinde Dijital Araçların Kullanımı: Sınıf Öğretmeni Adaylarının Etkinlik Hazırlama Deneyimleri

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Özet

Bu çalışmanın amacı, sınıf öğretmeni adaylarının Türkçe dersi için hazırladıkları dijital etkinliklerin ve bu etkinlikleri hazırlama süreçlerinin incelenmesidir. Araştırmada durum çalışması deseni kullanılmış, veriler yarı yapılandırılmış görüşmeler ve doküman analizi yoluyla toplanmıştır. Çalışma grubu, Konya'daki bir üniversitenin Sınıf Eğitimi Anabilim Dalı'ndan ölçüt örnekleme uygun son sınıf 24 sınıf öğretmeni adayından oluşmaktadır. Sınıf öğretmeni adaylarından öğrenme alanlarına (dinleme, konuşma, okuma ve yazma öğrenme alanları) ve sınıf düzeylerine (ikinci, üçüncü ve dördüncü sınıf düzeyleri) göre dijital araçlarla etkinlik tasarlamaları istenmiştir. Buna göre, her bir sınıf düzeyine sekizer ve her bir öğrenme alanına ise altışar öğretmen adayı karşılık gelmiştir. Öğretmen adayları bu dijital araçlara dayalı etkinlikleri hazırlama sürecinde edindiği tecrübeleri görüşme formuna yansıtmışlardır. Yarı yapılandırılmış görüşme formu öğrencilerle çevrimiçi ortamda paylaşılmıştır. Araştırmacı bu süreçte aktif olarak formu takip ederek anlaşılmayan ya da açıklığa kavuşturulması gereken hususlarda hemen devreye girmiştir. Yarı yapılandırılmış görüşme formu dört sorudan oluşmaktadır. Verilerin analizinde içerik analizinden yararlanılmıştır. Araştırmanın geçerlik ve güvenirliğini sağlamaya ilişkin; iç ve dış geçerlik, iç ve dış güvenilirlik, inandırıcılık, teyit edilebilirlik, aktarılabilirlik ve tutarlılık hususlarında nitel araştırmaya özgü çeşitli yaklaşımlara başvurulmuştur. Bulgulara göre, sınıf öğretmeni adayları farklı dijital araçlardan faydalanmış, özgün etkinlikler tasarlamış ve etkinliklerin müfredata ve öğrenci seviyesine uygunluğunu göz önünde bulundurmuştur. Bununla birlikte, bazı öğretmen adayları teknik sorunlar, içerik geliştirme ve uygun araçların seçimi konularında zorlanmıştır. Aday öğretmenler, sınıfta daha fazla dijital araç kullanılmasını ve ücretli araçlara erişim sağlanmasını tavsiye etmiştir. Son olarak, aday öğretmenler lisans eğitimlerinin ve bireysel becerilerinin teknoloji entegrasyonu için genel olarak yeterli olduğuna inanmakla birlikte, uygulamalı deneyimin önemini vurgulamışlardır. Araştırmanın sonunda araştırma sonuçları doğrultusunda önerilere yer verilmiştir.

Anahtar Kavramlar: *Dijital araçlar, Dijital okuryazarlık, Etkinlik hazırlama, Sınıf öğretmeni adayları, Türkçe dersi*

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Genişletilmiş Özet

***Problem*:** Artan dijitalleşme, öğretim ve öğrenme süreçlerinin dinamiklerini değiştirmiş ve dijital araçların kullanımını gerekli hale getirmiştir (Voogt vd., 2013). Dijital araçların kullanımı bu alanda hızlı bir değişim ve gelişmeyi sağlamıştır. Özellikle COVID-19 pandemisinin etkisiyle uzaktan eğitim, dijital araçların önemini ve etkinliğini daha da artırmıştır (Daniel, 2020; Wang vd., 2020). Bu noktadan hareketle, 21. yüzyılda eğitim anlayışında temel beceriler arasında dijital okuryazarlık ön plana çıkmıştır (Ng, 2012). Dijital okuryazarlık, eleştirel düşünme ve etik konular dahil olmak üzere çok boyutlu bir yapıya sahiptir (Hobbs, 2010; Jenkins, 2009). Çağımızda etkili bir öğretmen profili için dijital okuryazarlık şarttır. Yapılan araştırmalar, dijital okuryazarlık düzeyi yüksek öğretmenlerin derslerinde teknolojiyi daha başarılı bir şekilde entegre ettiğini göstermektedir (Hsu, 2016; Tondeur vd., 2017; Instefjord ve Munthe, 2017). Öğretmenlerin hizmet öncesi dönemini kapsayan lisans eğitimlerinde dijital araçları kullanma yetkinliklerini kazanması mesleki hayatta kolaylık sağlayacaktır. Bu dönemde, öncelikle öğretmen adaylarının dijital araçları tanıyarak bir alt yapıları oluşmalıdır (Kay, 2006; Tondeur vd., 2017). İlkokula öğretmen yetiştiren sınıf öğretmenliği lisans programlarında da dijital araç kullanımı ve eğitim teknolojilerinin derslere entegrasyonu üzerinde yoğunlaşılmasına önem verilmelidir. Çünkü günümüzde çocuklar çok küçük yaşlardan itibaren teknoloji ve internetle iç içe büyümektedir (Holloway vd., 2013). Yapılan araştırmalar, ilkokul öğrencilerinin büyük bir kısmının düzenli olarak akıllı telefon, tablet ve internet kullandığını göstermektedir (Livingstone vd., 2015).

İlkokul öğrencilerinin temel okuryazarlık becerilerinin kazandırılması ve geliştirilmesi Türkçe dersi aracılığıyla sağlanmaktadır. Sınıf öğretmeni adayları bu derse ilişkin İlk Okuma ve Yazma Öğretimi ve Türkçe Öğretimi gibi dersler almaktadırlar. Türkçe Öğretimi dersinde öğrenme alanlarına (dinleme, konuşma, okuma ve yazma) yönelik çeşitli bilgileri edinerek ilkokul Türkçe programına uygun çeşitli pratikler kazanmaları beklenmektedir. Belet Boyacı ve Güner Özer'e (2019) göre, son yıllardaki eğitim programlarında bilgi, medya ve teknoloji okuryazarlığı becerilerine vurgu yapılmaktadır. Yamaç (2018) da Türkçe öğretim programında dijital yetkinliğin temel bir beceri olarak ele alındığını belirtmektedir. Bu noktada, öğretmen adaylarının etkinlik hazırlama yetenekleri önemli hale gelmektedir. Öğretmenlerin, öğrenmeyi anlamlı ve aktif hale getirme yetenekleri büyük ölçüde etkinliklerin kalitesine ve uygulanabilirliğine bağlıdır (Anderson vd., 2001; Hattie ve Timperley, 2007). Bu nedenle, dijital araçların Türkçe derslerinde etkin bir şekilde kullanılması, öğrencilerin bu becerileri kazanmalarına yardımcı olabilir. Çünkü, dijital araçların, bu etkinliklerin tasarlanması ve uygulanmasında kullanılması, öğrencilere zengin ve çeşitli öğrenme deneyimleri sunabilir. Böylelikle teknolojinin dil öğretimine entegrasyonu, öğrencilere bireysel öğrenme yollarını seçme olanağı sunabilir (Lai & Gu, 2011; Warschauer, 2006). Alanyazında, öğretmen adaylarının genel dijital yetkinliklerinin yeterli olmadığına dair çalışmalar bulunmaktadır (Foulger vd., 2017; Cabezas-González vd., 2021; Tomczyk vd., 2023). Bu bağlamda, sınıf öğretmeni adaylarının bir ders kapsamında dijital araçlarla etkinlik hazırlayabilme durumlarının belirlenmesi alanyazına katkı sağlayacağı anlaşılmaktadır. Özellikle de hem anadili eğitiminin verildiği hem de okuryazarlık becerilerinin temelinin atıldığı Türkçe dersine ilişkin dijital araçlara dayalı etkinlik hazırlama becerilerinin ele alınması sınıf öğretmeni adaylarının mevcut durumunu yansıtacaktır.

Alanyazındaki çalışmalarda, genellikle pozitivist paradigmada nicel araştırma yöntemleri tercih edilmiştir (Aydemir vd., 2019; Byker vd., 2018). Araştırma desenlerinde yarı deneysel, kesitsel araştırma, anket ve ilişkisel tarama gibi yöntemler sıkça kullanılmıştır (Lachner vd., 2021; Arslan, 2019; Gökbulut, 2021). Korkmaz (2020) karma yöntemle çalışmışken, nitel araştırma yöntemlerine daha az başvurulmuştur; bu yöntemler arasında doküman analizi, eylem araştırması ve fenomenoloji yer almaktadır (Altun, 2019; Dursun ve Tertemiz, 2021; Kuru, 2019). Sadece Çetinkaya-Özdemir ve Durmuş (2023) durum çalışması desenini kullanarak ilkokul öğretmen adaylarının teknolojik yeterliliklerini değerlendirmiştir. Bu araştırmanın durum çalışması desenine dayalı örnek olayını, sınıf öğretmeni adaylarının Türkçe dersi kapsamında dijital araçları kullanarak hazırladıkları etkinlikler ve bu süreçte edindikleri deneyimler oluşturmaktadır.

Araştırmada, sınıf öğretmeni adaylarının Türkçe dersi için hazırladıkları dijital etkinliklerin ve bu etkinlikleri hazırlama süreçlerinin incelenmesi amaçlanmaktadır. Bu amaç doğrultusunda aşağıdaki sorulara yanıt aranmıştır.

1. Sınıf öğretmeni adaylarının Türkçe dersi için dijital araçlarla hazırladığı etkinliklerin dağılımı nasıldır?

2. Sınıf öğretmeni adaylarının Türkçe dersi için dijital etkinlik hazırlama süreçleri nasıldır?

***Yöntem*:** Bu araştırma durum çalışması deseninde yürütülmüştür. Araştırmanın çalışma grubunun belirlenmesinde, Creswell ve Creswell'in (2021) ve Patton'un (2014) önerdiği gibi, amaçlı örnekleme yöntemlerinden ölçüt örnekleme kullanılmıştır. Buna göre, araştırmanın katılımcılarını 2022-2023 eğitim-öğretim yılı bahar döneminde Konya'da bir üniversitenin Sınıf Öğretmenliği Anabilim Dalı'nda öğrenim gören ve Öğretim Teknolojileri ve Materyal Tasarımı, Ölçme ve Değerlendirme, Türkçe Öğretimi gibi önemli alan derslerini başarıyla tamamlamış 24 gönüllü son sınıf öğretmen adayı oluşturmaktadır.

Araştırmada, sınıf öğretmeni adayları önceden belirlenen sınıf düzeyleri (2., 3. ve 4. sınıf) ve Türkçe öğrenme alanlarına (dinleme, konuşma, okuma ve yazma) ilişkin bir ders planının aşamalarına bağlı kalarak dijital araçlarla etkinlikler hazırlamışlardır. Verilerin toplanmasında, Ekiz'in (2009) ve Patton'un (2014) önerdiği gibi yarı yapılandırılmış görüşme ile Merriam'ın (2009) ve Creswell ve Poth'un (2018) vurguladığı doküman incelemesi teknikleri kullanılmıştır. Yarı yapılandırılmış görüşme formunda, öğretmen adaylarının Türkçe dersi etkinliklerini hazırlarken izledikleri süreçlere ilişkin dört açık uçlu soru yer almaktadır. Görüşme formu, alan uzmanlarının görüşleri doğrultusunda düzenlenmiştir. İçerik analizi sürecinde, Creswell ve Creswell'in (2021) önerdiği şekilde, veriler kodlanmış, kategorilere ayrılmış ve temalar belirlenmiştir. Araştırmanın geçerlik ve güvenirliğini artırmak için Miles ve diğerlerinin (2014) önerdiği uzun süreli etkileşim, üye kontrolü, zengin-yoğun betimleme gibi stratejiler uygulanmıştır. Saldaña'nın (2015) kodlama döngüleri doğrultusunda ilk olarak katılımcı ifadelerinden yola çıkılarak ilk kodlar oluşturulmuş, sonrasında bu kodlar benzer özelliklerine göre temalar altında birleştirilmiştir.

***Bulgular*:** Araştırma bulguları incelendiğinde, sınıf öğretmeni adaylarının Türkçe dersi etkinliklerini hazırlarken 44 farklı dijital aracı 202 kez kullandıkları görülmektedir. Öğretmen adaylarının en sık tercih ettikleri üç dijital araç sırasıyla LearningApps, Wordwall ve Lumi olarak belirlenmiştir. Öğretmen adaylarının Türkçe öğrenme alanlarına göre dijital araç kullanım dağılımına bakıldığında, dinleme becerileri için 22, konuşma becerileri için 26, okuma becerileri için 29, yazma becerileri için 31 farklı dijital aracı kullandıkları tespit edilmiştir. Dinleme alanındaki etkinliklerde en çok Lumi, LearningApps ve Sitepal; konuşma alanında Wordwall, Lumi ve D-ID; okuma alanında Wordwall, LearningApps ve Storyjumper; yazma alanında ise en fazla LearningApps, Canva ve Wordwall kullanılmıştır.

Öğretmen adaylarının etkinlik hazırlama sürecinde internet, ders notları, akademik yayınlar gibi farklı bilgi kaynaklarından yararlandıkları ve büyük oranda özgün etkinlikler ürettikleri görülmektedir. Hazırlanan etkinliklerin Türkçe programına uygunluğuna, seçilen sınıf düzeyine uygunluğuna ve bireysel farklılıklara dikkat edildiği belirlenmiştir. Bununla birlikte bazı öğretmen adaylarının dijital araçları etkili kullanmakta zorlandıkları, özgün içerik oluşturmakta güçlük çektikleri ve uygun araç seçiminde kararsızlık yaşadıkları tespit edilmiştir.

Öğretmen adayları yaşadıkları zorlukların çözümü için hizmet öncesi eğitimlerinde derslerde daha fazla dijital araç kullanımına yer verilmesini ve ücretli araçlara üniversite bütçesi ile erişim sağlanmasını önermişlerdir. Son olarak, aday öğretmenler lisans eğitimlerinin ve bireysel becerilerinin teknoloji entegrasyonu için genel olarak yeterli olduğuna inanmakla birlikte, uygulamalı deneyimin önemini vurgulamışlardır.

***Sonuç ve Tartışma*:** Araştırmada elde edilen bulgulara göre, sınıf öğretmeni adaylarının Türkçe dersinde çeşitli dijital araçlardan yararlanabildikleri anlaşılmaktadır. Bu sonuç, Mishra ve Koehler'in (2006) Teknolojik Pedagojik İçerik Bilgisi (TPACK) modeline uyumludur, ki bu model de öğretmenlerin içerik, pedagoji ve teknoloji bilgilerini bütünleştirerek öğretimde dijital araçları etkili bir şekilde kullanabilmelerinin önemine vurgu yapmaktadır.

Araştırmada öğretmen adayları öğrenme alanları açısından en çok farklı dijital araca yazma öğrenme alanında yer verirken, sonrasında sırasıyla okuma, konuşma ve dinleme öğrenme alanlarında yer vermiştir. Bu sonuç, Warschauer ve Matuchniak'ın (2010) belirttiği gibi yazmanın dijital araçlarla desteklenmesinin, öğrencilerin metin oluşturma ve düzenleme süreçlerini kolaylaştırabileceği ve genişletebileceği gerçeğini yansıtmaktadır.

Sınıf öğretmeni adaylarının Türkçe dersi etkinliklerinde en çok tercih ettiği üç dijital araç (LearningApps, Wordwall, ve Lumi) incelendiğinde çok işlevsel araçlar oldukları anlaşılmaktadır. Bu araçlarda çok sayıda uygulama yer almaktadır. Öğretmen adaylarının bu araçları tercih etmelerinin nedeni, bu platformların öğrencilere interaktif ve görsel zenginlik sağlaması, öğrenci katılımını artırması ve bireysel farklılıklara uygun materyal oluşturma imkanı sunması olabilir (Hughes, 2005).

Araştırma bulguları, sınıf öğretmeni adaylarının öğrenme alanlarının yapısına uygun dijital araçları tercih ettiğini göstermektedir. Bu sonuç, öğretmen adaylarının pedagoji bilgisi, alan bilgisi ve teknoloji bilgisini bütünleştirebildiğini göstermektedir (Angeli ve Valanides, 2009; Chai vd., 2013). Örneğin, dinleme alanı için ses kaydına olanak veren Sitepal; konuşma alanı için avatarları konuşturabilen D-ID; okuma alanı için dijital hikâye oluşturabilen Storyjumper ve yazma alanı için tasarım yapmaya yarayan Canva gibi alana özgü dijital araçları alana özgü bir şekilde kullanmışlardır.

Araştırmada elde edilen bulgulara göre, sınıf öğretmeni adayları Türkçe dersi için dijital etkinlik tasarlarken çeşitli bilgi kaynaklarından (internet, ders kitapları, akademik yayınlar vb.) yararlanmışlardır. Coutinho (2008) da, öğretmen adaylarının Web 2.0 araçlarına ilişkin çeşitli kaynaklardan yararlandıklarını raporlamıştır. Bu sonuç, öğretmen adaylarının öğrenci merkezli ve özgün eğitim materyalleri oluşturma konusundaki motivasyonlarının yüksek olduğunu göstermektedir (Prestridge, 2010).

Araştırmada elde edilen bulgulara göre, sınıf öğretmeni adayları hazırladıkları dijital etkinlikleri Türkçe öğretim programıyla uyumlu hale getirmeye, öğrenci seviyesine uygunluğuna ve bireysel farklılıkları dikkate almaya özen göstermişlerdir. Alanyazında da öğretmenlerin teknolojiyi seçerken öğretim programı hedefleriyle ve öğrenci ihtiyaçlarıyla uyumluluğuna dikkat edilmesi gerektiği vurgulanmaktadır (Harris vd., 2009; Tondeur vd. 2017). Öğretmen adaylarının pedagojik alan bilgisinin farkında olması ve öğrenci merkezli düşünmesi, mesleki gelişimleri açısından umut vericidir.

Sınıf öğretmeni adaylarının bazıları Türkçe dersi için dijital etkinlik hazırlarken; uygun dijital araçları seçme, teknik sorunları çözme, tam sürümlere erişim sağlama, ses kaydı yapma ve dijital hikâye oluşturma noktasında güçlük yaşamışlardır. Ayrıca özgün içerik üretme ve öğrenci seviyesine uygun etkinlik tasarlama konusunda yetersiz hissetmişlerdir. Benzer şekilde alanyazındaki çalışmalarda da öğretmen adaylarının teknoloji entegrasyonunda benzer zorluklar yaşadığı belirtilmektedir (Kabakçı Yurdakul ve Çoklar, 2014; Tondeur vd., 2017).

Araştırmada sonuç olarak, sınıf öğretmeni adaylarının lisans eğitimlerini teknoloji entegrasyonu bağlamında genelde yeterli gördükleri belirlenmiştir. Bu, Gil-Flores ve diğerleri (2017) tarafından yapılan araştırmada da belirtilen genel bir memnuniyetle örtüşmektedir. Ancak, öğretmen adayları uygulamalı ders deneyimlerinin arttırılmasının önemini vurgulamışlardır. Alanyazında da uygulamalı deneyimin teknoloji entegrasyonu başarısında kritik bir rol oynadığına işaret etmektedir. (Goodyear ve Retalis, 2010; Tondeur vd., 2017). Nitekim, Kaya Özgül ve diğerlerinin (2023) araştırmasında sınıf öğretmenlerinin dijital okuryazarlık düzeylerinin sınıf öğretmeni adaylarından daha yüksek olduğu sonucuna ulaşılmıştır.

Bu çalışmanın sonuçları doğrultusunda şu öneriler sunulabilir:

- Sınıf öğretmeni adaylarının Türkçe dersleri için dijital etkinlikler hazırlarken karşılaştıkları zorlukları en aza indirmek için eğitim kurumlarında dijital araçların kullanımı yaygınlaştırılmalıdır.
- Aday öğretmenlerin eğitimlerinde kullanabilecekleri dijital araçların tam sürümlerine erişimleri sağlanmalıdır.
- Aday öğretmenler, dijital araçları kullanma ve müfredatlarının bir parçası olarak materyal geliştirme konusunda daha fazla deneyim sahibi olmalıdır.
- Aday öğretmenlere, öğrenci seviyelerine ve bireysel farklılıklara uygun öğretim materyalleri hazırlama konusunda destek ve rehberlik sağlanmalıdır.
- Ayrıca öğretmen adayları dijital okuryazarlık becerilerini geliştirmek için sürekli eğitim almalıdırlar.
- Aday öğretmenler, dil edinimine yardımcı olan çeşitli dijital araçlar ve bunların ilgili pedagojik uygulamaları hakkında bilgi almalıdır.

KAYNAKÇA / REFERENCES

Alexander, B. (2006). Web 2.0: A new wave of innovation for teaching and learning? *Educause Review*, *41*(2), 32-44.

Alnasib, B. N. (2023). Digital competencies: are pre-service teachers qualified for digital education?. *International Journal of Education in Mathematics, Science and Technology*, *11*(1), 96-114.

Altun, N. (2019). *Temel eğitim programları ve ders kitaplarının dijital okuryazarlık bağlamında incelenmesi [Investigation of primary education curricula and textbooks in the context of digital literacy].* Yüksek lisans tezi, Gazi Üniversitesi. https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp, Erişim tarihi: 27.06.2023.

Altun, N., & Bangir Alpan, G. (2021). Temel eğitim programlarında dijital okuryazarlık [Digital literacy in primary education curricula]. *Eğitim ve Toplum Araştırmaları Dergisi [Journal of Research in Education and Society]*, *8*(2), 280-294.

Anderson, L. W., & Krathwohl, D. R. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives: Complete edition*. Addison Wesley Longman, Inc.

Angeli, C., & Valanides, N. (2009). Epistemological and methodological issues for the conceptualization, development, and assessment of ICT–TPCK: Advances in technological pedagogical content knowledge (TPCK). *Computers & Education*, *52*(1), 154-168.

Arslan, S. (2019). *İlkokullarda ve ortaokullarda görev yapan öğretmenlerin dijital okuryazarlık düzeylerinin çeşitli değişkenler açısından incelenmesi [Investigation of digital literacy levels of teachers working in primary and secondary schools in terms of various variables]*. Doktora tezi, Sakarya Üniversitesi. https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp, Erişim tarihi: 27.06.2023.

Aydemir, Z., Sakız, G., & Doğan, M. C. (2019). İlkokul düzeyinde dijital okuryazarlık becerileri rubriğinin geliştirilmesi [Development of digital literacy skills rubric at primary school level]. *Milli Eğitim Dergisi [Journal of National Education]*, *48*(1), 617-638.

Bawden, D. (2008). Origins and concepts of digital literacy. *Digital Literacies: Concepts, Policies and Practices*, *30*(2008), 17-32.

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report*, *13*(4), 544-559. https://doi.org/10.46743/2160-3715/2008.1573

Belet Boyacı, Ş. D. & Güner Özer, M. (2019). Öğrenmenin geleceği: 21. yüzyıl becerileri perspektifiyle Türkçe dersi öğretim programları [The future of learning: turkish language course curricula from the perspective of 21st century skills]. *Anadolu Journal of Educational Sciences International*, *9*(2), 708-738. http://dx.doi.org/10.18039/ajesi.578170

Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *NursingPlus Open*, *2*, 8-14.

Borthwick, A. C., & Hansen, R. (2017). Digital literacy in teacher education: Are teacher educators competent?. *Journal of Digital Learning in Teacher Education*, *33*(2), 46-48.

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal, 9*(2), 27-40. https://doi.org/10.3316/QRJ0902027

Byker, E. J., Michael Putman, S., Polly, D., & Handler, L. (2018). Examining elementary education teachers and preservice teachers' self-efficacy related to technological pedagogical and content knowledge (TPACK). *Self-Efficacy in Instructional Technology Contexts*, 119-140.

Cabezas-González, M., Casillas-Martín, S., & García-Peñalvo, F. J. (2021). The digital competence of pre-service educators: The influence of personal variables. *Sustainability*, *13*(4), 2318.

Campbell, J. L., Quincy, C., Osserman, J., & Pedersen, O. K. (2013). Coding in-depth semistructured interviews: Problems of unitization and intercoder reliability and agreement. *Sociological Methods & Research, 42*(3), 294-320. https://doi.org/10.1177/0049124113500475

Chai, C. S., Koh, J. H. L., & Tsai, C. C. (2013). A review of technological pedagogical content knowledge. *Journal of Educational Technology & Society*, *16*(2), 31-51.

Chenail, R. J. (2011). Interviewing the investigator: Strategies for addressing instrumentation and researcher bias concerns in qualitative research. *Qualitative Report*, *16*(1), 255-262.

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education*. Routledge.

Coiro, J., & Dobler, E. (2007). Exploring the online reading comprehension strategies used by sixth-grade skilled readers to search for and locate information on the Internet. *Reading Research Quarterly*, *42*(2), 214-257.

Coutinho, C. P. (2008). Web 2.0 tools in pre-service teacher education programs: An example from Portugal. In D. Remenyi (Ed.), *The proceedings of the 7th European conference on e-learning* (pp. 239–245). Academic Publishing Limited.

Creswell, J. W. & Creswell, J. D. (2021). *Araştırma tasarımı: Nitel, nicel ve karma yöntem yaklaşımları [Research design: Qualitative, quantitative and mixed methods approaches],* (Çev.: E. Karadağ). Nobel Yayıncılık.

Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into Practice, 39*(3), 124-130. https://doi.org/10.1207/s15430421tip3903_2

Creswell, J., & Poth, C. (2018). *Qualitative inquiry research design: Choosing among five approaches (Fourth Edition)*. Sage Publications.

Çetinkaya-Özdemir, E., & Durmuş, M. (2023). İlk okuma yazma öğretimine yönelik teknoloji eğitiminin sınıf öğretmeni adaylarının teknoloji kullanım düzeylerine katkısının incelenmesi [Investigation of the contribution of technology education for primary literacy teaching to the technology usage levels of primary school teacher candidates]. *E-Uluslararası Eğitim Araştırmaları Dergisi, 14* (1), 265-283. DOI: https://doi.org/10.19160/e-ijer.1219346

Daniel, S. J. (2020). Education and the COVID-19 pandemic. *Prospects*, *49*(1), 91-96.

Duran, E., & Özen, N. E. (2018). Türkçe derslerinde dijital okuryazarlık [Digital literacy in turkish lessons]. *Türkiye Eğitim Dergisi*, *3*(2), 31-46.

Dursun, H., & Tertemiz, N. I. (2021). Çevirim-içi yapılan web 2.0 araçları öğretiminin sınıf öğretmeni adaylarının matematik ders planlarına yansıtma durumlarının incelenmesi [Examining reflections of the training on the web 2.0 tools through online education on mathematics lesson plans developed by the pre-service classroom teachers]. *Turkish Studies-Educational Sciences*, *16*(1).

Ekiz, D. (2009). *Bilimsel araştırma yöntemleri [Methods of scientific research]*. Anı Yayıncılık.

Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *Journal of research on Technology in Education*, *42*(3), 255-284.

Ferrari, A. (2012). *Digital competence in practice: An analysis of frameworks*. Publications Office of the European Union.

Foulger, T. S., Graziano, K. J., Schmidt-Crawford, D., & Slykhuis, D. A. (2017). Teacher educator technology competencies. *Journal of Technology and Teacher Education*, *25*(4), 413-448.

Gil-Flores, J., Rodríguez-Santero, J., & Torres-Gordillo, J. J. (2017). Factors that explain the use of ICT in secondary-education classrooms: The role of teacher characteristics and school infrastructure. *Computers in Human Behavior*, *68*, 441-449.

Gilster, P., & Glister, P. (1997). *Digital literacy*. Wiley Computer Pub.

Gökbulut B., (2021). Öğretmenlerin dijital okuryazarlık düzeyleri ile hayat boyu öğrenme eğilimlerinin incelenmesi [Examination of teachers' digital literacy levels and life long learning tendencies]. *Yükseköğretim ve Bilim Dergisi [Journal of Higher Education and Science], 11*(3), 469-479. https://doi.org/10.5961/jhes.2021.466

Gömleksiz, M. N., & Fidan, E. K. (2013). Sınıf öğretmeni adaylarının teknolojik pedagojik içerik bilgisi öz-yeterliklerine ilişkin algı düzeyleri [Self-efficacy perception levels of prospective classroom teachers toward technological pedagogical content knowledge]. *Inonu University Journal of the Faculty of Education*, *14*(1), 87-113.

Goodyear, P., & Retalis, S. (Eds.). (2010). *Technology-enhanced learning: Design patterns and pattern languages.* Sense Publishers.

Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse education today*, *24*(2), 105-112.

Greenhow, C., Robelia, B., & Hughes, J. E. (2009). Learning, teaching, and scholarship in a digital age: Web 2.0 and classroom research: What path should we take now?. *Educational Researcher*, *38*(4), 246-259.

Guernsey, L., Levine, M., Chiong, C., & Severns, M. (2012). *Pioneering literacy in the digital wild west: Empowering parents and educators.* New America Foundation & Joan Ganz Cooney Center.

Harris, J., Mishra, P., & Koehler, M. (2009). Teachers' technological pedagogical content knowledge and learning activity types: Curriculum-based technology integration reframed. *Journal of Research on Technology in Education*, *41*(4), 393-416.

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, *77*(1), 81-112.

Hechter, R., & Vermette, L. A. (2014). Tech-savvy science education? Understanding teacher pedagogical practices for integrating technology in K-12 classrooms. *Journal of Computers in Mathematics and Science Teaching*, *33*(1), 27-47.

Hobbs, R. (2010). *Digital and media literacy: A plan of action. Knight commission on the information needs of communities in a democracy.* The Aspen Institute.

Holloway, D., Green, L., & Livingstone, S. (2013). *Zero to eight: Young children and their internet use*. EU Kids Online.

Hsu, P. S. (2016). Examining current beliefs, practices and barriers about technology integration: A case study. *TechTrends*, *60*, 30-40.

Hughes, J. (2005). The role of teacher knowledge and learning experiences in forming technology-integrated pedagogy. *Journal of Technology and Teacher Education*, *13*(2), 277-302.

Instefjord, E. J., & Munthe, E. (2017). Educating digitally competent teachers: A study of integration of professional digital competence in teacher education. *Teaching and Teacher Education*, *67*, 37-45.

Jenkins, H. (2009). *Confronting the challenges of participatory culture: Media education for the 21st century*. The MIT Press.

Kabakçı Yurdakul, I., & Çoklar, A. N. (2014). Modeling preservice teachers' TPACK competencies based on ICT usage. *Journal of Computer Assisted Learning*, *30*(4), 363-376.

Kabakçı Yurdakul, I., Odabaşı, H. F., Kılıçer, K., Çoklar, A. N., Birinci, G., & Kurt, A. A. (2012). The development, validity and reliability of TPACK-deep: A technological pedagogical content knowledge scale. *Computers & Education*, *58*(3), 964-977.

Karadeniz, Ş., & Vatanartıran, S. (2015). Sınıf öğretmenlerinin teknolojik pedagojik alan bilgilerinin incelenmesi [Primary school teachers' technological pedagogical content Knowledge]. *İlköğretim Online [Elementary Education Online]*, *14*(3), 1017-1028.

Karalar, H., & Aslan Altan, B. (2016). Sınıf öğretmeni adaylarının teknolojik pedagojik alan bilgisi yeterliklerin ve öğretmen özyeterliklerinin incelenmesi [Examining pre-service primary education teachers' tpack competencies and teacher selfefficacies]. *Cumhuriyet International Journal of Education*, *5*(5), 15-30.

Kay, R. H. (2006). Evaluating strategies used to incorporate technology into preservice education: A review of the literature. *Journal of Research on Technology in Education*, *38*(4), 383-408.

Kaya Özgül, B., Aktaş, N. & Özdemir, E. Ç. (2023). Sınıf öğretmenlerinin ve sınıf öğretmeni adaylarının dijital okuryazarlık düzeylerinin çeşitli değişkenlere göre incelenmesi [Examination of digital literacy levels of primary school teachers and primary school teacher candidates according to various variables]. *Cumhuriyet International Journal of Education, 12*(1), 204-221. https://doi.org/10.30703/cije.1191366

Keskin, H. & Küçük, G. (2021). Sınıf öğretmenlerin kendilerine yönelik dijital okuryazarlık düzeylerinin farklı değişkenler açısından incelenmesi [Investigation of digital literacy levels of classroom teachers in terms of different variables]. *Temel Eğitim Araştırmaları Dergisi [Journal of Research in Elementary Education], 1*(2), 131-147. https://doi.org/10.29228/tead.9

Kol, Ş., Batıhan, E., Keleş, Ü., Denk, B. & Demir, G. (2022). Sınıf öğretmelerinde dijital okuryazarlığın değerlendirilmesi [Evaluation of digital literacy in classroom teachers]. *Avrasya Eğitim ve Literatür Dergisi [Eurasian Academy of SciencesEurasian Education & Literature Journal], (16)*, 101-116. https://doi.org/10.17740/eas.edu.2022-V16-07

Kong, S. C. (2014). Developing information literacy and critical thinking skills through domain knowledge learning in digital classrooms: An experience of practicing flipped classroom strategy. *Computers & Education*, *78*, 160-173.

Korkmaz, M. (2020). *Sınıf öğretmenlerinin dijital okuryazarlık seviyelerinin belirlenmesi [Determining digital literacy levels of primary school teachers]*. Yüksek lisans tezi, Eskişehir Osmangazi Üniversitesi. https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp, Erişim tarihi: 27.06.2023.

Krippendorff, K. (2018). *Content analysis: An introduction to its methodology*. Sage publications.

Kuru, E. (2019). Sınıf öğretmeni adaylarının eğitim teknolojisi kavramına ilişkin metaforik algıları [The metaphorical perceptions of classroom teacher candidates of the concept of education technology]. *Kahramanmaraş Sütçü İmam Üniversitesi Sosyal Bilimler Dergisi, 16*(1), 257-278.

Lachner, A., Fabian, A., Franke, U., Preiß, J., Jacob, L., Führer, C., ... & Thomas, P. (2021). Fostering pre-service teachers' technological pedagogical content knowledge (TPACK): A quasi-experimental field study. *Computers & Education*, *174*, 104304.

Lai, C., & Gu, M. (2011). Self-regulated out-of-class language learning with technology. *Computer Assisted Language Learning*, *24*(4), 317-335.

Lankshear, C., & Knobel, M. (2011). *EBOOK: New literacies: Everyday practices and social learning*. McGraw-Hill Education.

Livingstone, S. (2009). *Children and the Internet*. Polity.

Livingstone, S., Mascheroni, G., Dreier, M., Chaudron, S., & Lagae, K. (2015). *How parents of young children manage digital devices at home: The role of income, education and parental style*. EU Kids Online.

Martin, A., & Grudziecki, J. (2006). DigEuLit: Concepts and tools for digital literacy development. *Innovation in Teaching and Learning in İnformation and Computer Sciences*, *5*(4), 249-267.

Mascheroni, G., & Ólafsson, K. (2016). The mobile Internet: Access, use, opportunities and divides among European children. *New Media & Society*, *18*(8), 1657-1679.

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. Jossey-Bass.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook*. Sage Publications.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, *108*(6), 1017-1054.

MoNE (MEB) [Milli Eğitim Bakanlığı], (2019). *Türkçe dersi öğretim programı [Turkish course curriculum]*. MEB.

Mothibi, G. (2015). A meta-analysis of the relationship between e-learning and students' academic achievement in higher education. *Journal of Education and Practice*, *6*(9), 6-9.

Mouza, C., Karchmer-Klein, R., Nandakumar, R., Ozden, S. Y., & Hu, L. (2014). Investigating the impact of an integrated approach to the development of preservice teachers' technological pedagogical content knowledge (TPACK). *Computers & Education*, *71*, 206-221.

Ng, W. (2012). Can we teach digital natives digital literacy? *Computers & Education*, *59*(3), 1065-1078.

O'Neal, L. J., Gibson, P., & Cotten, S. R. (2017). Elementary school teachers' beliefs about the role of technology in 21st-century teaching and learning. *Interdisciplinary Journal of Practice, Theory, and Applied Research, 34*(3), 1–15. http://dx.doi.org/10.1080/07380569.2017.1347443

OECD [Organisation for Economic Co-operation and Development] (2015). *Students, computers and learning: Making the connection*, *PISA*. OECD Publishing.

O'Reilly, T. (2005). What is Web 2.0: Design patterns and business models for the next generation of software. *O'Reilly Media*. Retrieved from https://www.oreilly.com/pub/a/web2/archive/what-is-web-20.html.

Öztürk, E. (2013). Sınıf öğretmeni adaylarının teknolojik pedagojik alan bilgilerinin bazı değişkenler açısından değerlendirilmesi [Prospective classroom teachers' technological pedagogical content knowledge assessment in terms of some variables (TPCK)]. *Uşak Üniversitesi Sosyal Bilimler Dergisi [Usak University Journal Of Social Sciences]*, *6*(2)**,** 223-228

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration And Policy in Mental Health And Mental Health Services Research*, *42*, 533-544.

Pamuk, S., Sungur, S., & Öztekin, C. (2017). A multilevel analysis of students' science achievements in relation to their self-regulation, epistemological beliefs, learning environment perceptions, and teachers' personal characteristics. *International Journal of Science and Mathematics Education*, *15*, 1423-1440.

Patton, M. Q. (2014). *Nitel araştırma ve değerlendirme yöntemleri [Qualitative research and evaluation methods]* (Çev.: M. Bütün & S. B. Demir). Pegem Akademi Yayıncılık.

Pezalla, A. E., Pettigrew, J., & Miller-Day, M. (2012). Researching the researcher-as-instrument: An exercise in interviewer self-reflexivity. *Qualitative research*, *12*(2), 165-185.

Prensky, M. (2001). Digital natives, digital immigrants part 2: Do they really think differently? *On The Horizon*, *9*(6), 1-6.

Prestridge, S. (2010). ICT professional development for teachers in online forums: Analysing the role of discussion. *Teaching and Teacher Education*, *26*(2), 252-258.

Radesky, J.S., Weeks H.M., Ball R., et al. (2020). Young children's use of smart phones and tablets. *Pediatrics,146*(1), e20193518.

Sağlam-Kaya, Y. (2019). Öğretmen adaylarının teknopedagojik eğitim yeterliklerinin çeşitli değişkenler ve öğretmen öz yeterlikleri bağlamında incelenmesi [Investigation of preservice teachers' technopedagogical teaching competencies and teacher's self-efficacy in terms of various variables]. *Kuramsal Eğitimbilim Dergisi [Journal of Theoretical Educational Science]*, *12*(1), 185-204.

Şahin, A., Özkan, R. A., & Turan, B. N. (2022). İlkokul öğrencilerine yönelik dijital okuryazarlık ölçeğinin geliştirilmesi: Geçerlik ve güvenirlik çalışması [Development of the digital literacy scale for primary school students: a study of validity and reliability]. *Ana Dili Eğitim Dergisi [Journal of Mother Tongue Education]*, *10*(3), 619-630. https://doi.org/10.16916/aded.1109283

Saldaña, J. (2015). *The coding manual for qualitative researchers*. SAGE Publications.

Sauro, S. (2005). English language learning and technology: Lectures on applied linguistics in the age of information and communication technology. *Studies in Second Language Acquisition*, *27*(3), 486-487.

Scherer, R., Siddiq, F., & Tondeur, J. (2019). The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education. *Computers & Education*, *128*, 13-35.

Shelton, C. (2017). Giving up technology and social media: Why university lecturers stop using technology in teaching. *Technology, Pedagogy and Education*, *26*(3), 303-321.

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information, 22*(2), 63-75. https://doi.org/10.3233/EFI-2004-22201

Tezci, E. (2011). Factors that influence pre-service teachers' ICT usage in education. *European Journal of Teacher Education*, *34*(4), 483-499.

Tomczyk, Ł., Fedeli, L., Włoch, A., Limone, P., Frania, M., Guarini, P.& Falkowska, J. (2023). Digital competences of pre-service teachers in Italy and Poland. *Technology, Knowledge and Learning*, *28*(2), 651-681.

Tondeur, J., Roblin, N. P., van Braak, J., Voogt, J., & Prestridge, S. (2017). Preparing beginning teachers for technology integration in education: Ready for take-off? *Technology, Pedagogy and Education, 26*(2), 157-177.

Tondeur, J., Van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2017). Understanding the relationship between teachers' pedagogical beliefs and technology use in education: A systematic review of qualitative evidence. *Educational Technology Research and Development*, *65*, 555-575.

Toprakçı, E. (2006). Obstacles in integration of the schools into information and communication technologies according to the opinions of the teachers and principals of primary and secondary schools in Turkey, *thee-Journal of Instructional Science and Technology (e-JIST),* 9(1), 1-16. Retrieved: https://ascilite.org/archived-journals/e-jist/docs/vol9_no1/papers/commentary/toprakci.htm

Toprakçı, M.S.,Hepsöğütlü, Z. B. & Toprakçı, E. (2021) The perceptions of students related to the sources of problems in distance education during the covid-19 epidemic (example of İzmir Anatolian High School. *E-International Journal of Pedandragogy (e-ijpa)* 1(2), 41-61. TrDoi: https://trdoi.org/10.27579808/e-ijpa.40

Uluyol, Ç., & Eryılmaz, S. (2015). 21. yüzyıl becerileri işığında FATİH projesi değerlendirmesi [Evaluation of FATIH project in the consideration of 21st century skills]. *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi*, *35*(2), 209-229.

Voogt, J., Erstad, O., Dede, C., & Mishra, P. (2013). Challenges to learning and schooling in the digital networked world of the 21st century. *Journal of Computer Assisted Learning*, *29*(5), 403-413.

Wang, G., Zhang, Y., Zhao, J., Zhang, J., & Jiang, F. (2020). Mitigate the effects of home confinement on children during the COVID-19 outbreak. *The lancet*, *395*(10228), 945-947.

Warschauer M. (2006). *Laptops and literacy: Learning in the wireless classroom*. Teachers College Press.

Warschauer, M., & Matuchniak, T. (2010). New technology and digital worlds: Analyzing evidence of equity in access, use, and outcomes. *Review of research in education*, *34*(1), 179-225.

Weber, R. P. (1990). *Basic content analysis*. Sage.

Yamaç, A. (2018). Yeni okuryazarlığa genel bir bakış: Karar alıcılar, araştırmacılar ve öğretmenler için bazı öneriler [An overview of new literacy: some recommendations for policy makers, researchers, and teachers]. *Kuramsal Eğitimbilim Dergisi [Journal of Theoretical Educational Science], 11(*3), 383-410. http://dx.doi.org/10.30831/akukeg.370469

Yang, L., Martínez-Abad, F., & García-Holgado, A. (2022). Exploring factors influencing pre-service and in-service teachers´ perception of digital competencies in the Chinese region of Anhui. *Education and Information Technologies*, *27*(9), 12469-12494.

Yıldırım, A., & Şimşek, H. (2021). *Sosyal bilimlerde nitel araştırma yöntemleri [Qualitative research methods in social sciences]* (12. Ed.). Seçkin Yayıncılık.

Yılmaz, E., & Esmer, B. (2021). Sınıf öğretmeni adaylarının dijital okuryazarlık becerilerinin incelenmesi [Examination of digital literacy skills of prospective primary school teachers]. *19. Uluslararasi Sinif Öğretmenliği Eğitimi Sempozyumu (Usos 2021) [19th International Primary Teacher Education Symposium] [IPTES 2021] 12-14 November 2021/Online*, 74-79.

Yin, R. K. (2018). *Case study research and applications: Design and methods*. Sage Publications.

Yontar, A. (2019). Öğretmen adaylarının dijital okuryazarlık düzeyleri [Digital literacy levels of teacher candidates]. *Ana Dili Eğitimi Dergisi [Journal of Mother Tongue Education], 7*(4), 815-824. http://dx.doi.org/10.16916/aded.593579