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Examination of Web 2.0 Tools Used in Early Childhood Education: A cross-section from Türkiye

Erken Çocukluk Eğitiminde Kullanılan Web 2.0 Araçlarının İncelenmesi: Türkiye'den Bir Kesit

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Abstract: Web 2.0 tools, defined as the second-generation web platforms that support the exchange of information and ideas between users, have become a frequently preferred software type in education in terms of their ease of use, suitability for the purpose, and accessibility. For this reason, they have also started to be used effectively in early childhood education. This research examines Web 2.0 tools used in early childhood in Türkiye according to different variables. For this purpose, 52 software selected by obtaining expert opinions were analyzed by descriptive analysis. It is seen that they are generally developed by individuals or companies based in the United States, and almost all of them have Turkish language support both in terms of the features in the software and third-party software, 29 of the software are entirely free, and 23 are partially accessible. When the functional features of the software are examined, it is seen that it is used for image-visual-video editing, preparing educational material, creating image-poster-avatar, creating interactive stories, creating animations, communication-sharing, creating digital boards, preparing presentations, recognizing interactive celestial bodies, learning a language, preparing puzzles, drawing, following development, creating music, creating simulations, creating augmented reality and creating word clouds.

Key Words: Early childhood education, digital technology, educational technology, Web 2.0 tools, document analysis

Özet: Web 2.0 araçları, kullanıcılar arasında bilgi ve fikir alışverişini destekleyen ikinci nesil web platformları olarak tanımlanmakta olup ve kullanım kolaylığı, amaca uygunluk ve erişilebilirlikleri açısından eğitimde sıkça tercih edilen bir yazılım türü haline gelmiştir. Bu nedenle, erken çocukluk eğitiminde de etkili bir şekilde kullanılmaya başlanmıştır. Bu araştırma, Türkiye'de erken çocukluk döneminde kullanılan Web 2.0 araçlarını farklı değişkenlere göre incelemektedir. Bu amaçla, uzman görüşleri alınarak seçilen 52 yazılım betimsel analiz yöntemiyle incelenmiştir. Genel olarak bu yazılımların Amerika Birleşik Devletleri merkezli bireyler veya şirketler tarafından geliştirildiği ve neredeyse tamamının hem yazılım içindeki özellikler hem de üçüncü taraf yazılımlar açısından Türkçe dil desteğine sahip olduğu görülmüştür. Yazılımlardan 29'u tamamen ücretsizken, 23'üne kısmen erişilebilmektedir. Yazılımların fonksiyonel özellikleri incelendiğinde; görüntü-görsel-video düzenleme, eğitim materyali hazırlama, görsel-poster-avatar oluşturma, etkileşimli hikayeler oluşturma, animasyon hazırlama, iletişim-paylaşım, dijital panolar oluşturma, sunum hazırlama, etkileşimli gök cisimlerini tanıma, dil öğrenme, bulmaca hazırlama, çizim yapma, gelişimi takip etme, müzik oluşturma, simülasyonlar oluşturma, artırılmış gerçeklik hazırlama ve kelime bulutları oluşturma gibi amaçlarla kullanıldığı görülmüştür.

Anahtar Kelimeler: Erken çocukluk eğitimi, dijital teknoloji, eğitim teknolojisi, Web 2.0 araçları, doküman analizi.

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Introduction

In Türkiye, the use of Web 2.0 tools in early childhood education enhances learning environments, making them more interactive and engaging. Educators utilize a variety of platforms, such as digital storytelling, game-based learning applications, and interactive presentation tools, to increase children's participation in the learning process. These tools not only foster creativity but also reinforce social skills among children. For instance, digital games and applications strengthen problem-solving abilities, while activities requiring group collaboration support social interactions. Moreover, the integration of Web 2.0 tools encourages parents to take a more active role in their children's educational journeys. Through social media and blogs, parents can monitor their children's development and communicate with teachers, thereby becoming more involved in the educational process. This dynamic strengthens the family-school partnership and enriches children's learning experiences. Ultimately, the incorporation of Web 2.0 tools in early childhood education in Türkiye facilitates the development of digital skills, allowing children to engage in education in a more effective and creative manner.

Technology education has become increasingly important during the last few decades. Previous studies, however, have paid insufficient attention to technology education for young children aged 3–8 years, compared to research in other age groups (Su et al., 2024). The use of technology in early childhood education is essential due to its potential to enhance children's learning processes. It allows them to be introduced to technology early and learn how to use these tools consciously and efficiently. It can be said that the correct and balanced use of technology will positively affect children's cognitive development and other developmental areas (Clements & Sarama, 2003). In addition, it supports them in solving problems and reason, developing thinking and listening skills using digital stories (Neuman & Dwyer, 2009), developing their artistic skills to express their creativity (Matthews, 2003), and discovering rhythm, melody and sounds (Berger & Cooper, 2003). The effective use of technology in education is an essential guide for the child's interaction with technology. Teachers guide them on using digital technologies in education and provide children with appropriate content. It is necessary to teach the correct use of technology and to direct children's experiences (Plowman et al., 2010). Proper support from families during this process contributes to a supportive home learning environment by actively engaging in children's use of digital technology. Parents can ensure safe and productive use by monitoring and guiding their children's use of technology (NAEYC, 2012).

The widespread use of digital technologies has highlighted the importance of software quality. In this context, Web 2.0 tools have come to the forefront. The term Web 2.0, first used by DiNucci (1999) in 1999, was defined by O'Reilly (2005) as new applications and services that enable the creation of a participatory environment and structure. Web 2.0 is an umbrella concept and includes tools that will allow the implementation of many applications. These tools' names are also social tools (Horzum, 2010). In this context, it can be said that Web 2.0 tools, which provide ease of use, work on many digital tools, are easily accessible, have a wide variety, and can be used as support educational materials in many areas needed in early childhood education, is at the forefront of the software tools used effectively in education. One of the main reasons for this is its software diversity in many areas that may be needed in learning environments to support all children's mental regions.

Web 2.0 tools that contribute to children’s interactive and stylistic learning support all developmental areas positively. They allow children to express their ideas and share them with others through peer interaction in learning environments supported by this software tool (Churchill, 2009). Unique social media platforms created with such software allow children to communicate with others safely during their learning process and develop their digital literacy (Greenhow et al., 2009). Web 2.0 tools that make learning environments more engaging and enjoyable also support children in expressing their creativity and developing artistic skills through appropriate software. Programs with digital storytelling features, in particular, enable children to create their own stories using sound, images, and text (Sadik, 2008). Drawing and animation tools allow children to draw and animate online, which develops their creative thinking and expression skills (Matthews, 2003).

Web 2.0 tools also facilitate children’s access to information in early childhood education. They support children’s access to educational content and learning (Frydenberg, 2008). Depending on the nature of the software used, cloud-based storage and sharing tools also allow children to store and share

their work and engage in collaborative activities (O'Reilly, 2007). Web 2.0-based interactive platforms allow children to play educational games and interact in virtual classrooms, making the learning experience more dynamic (Wheeler et al., 2008). It can be stated that these tools and approaches show how the use of Web 2.0 tools in early childhood education is effective in developing children's various skills and how these tools can be integrated into education.

Web 2.0 tools in early childhood education may provide various benefits but also bring some negative aspects. Considering many variables, such as the duration of children's exposure to technology during the education process, the software quality used, and the harmful content they may encounter online, teachers must use Web 2.0 software tools. While these negative aspects are expressed, they primarily support children's learning processes; increasing screen time may negatively affect their physical and mental health. The American Academy of Pediatrics (2016) stated that long-term screen use may lead to health problems such as obesity, sleep disorders, and attention problems in children. In addition, it can be predicted that children's excessive screen use will reduce physical activity and face-to-face social interactions. Lack of digital literacy in Web 2.0 tools may pose security risks for children and expose them to online dangers. Livingstone and Haddon (2009) emphasize that cyberbullying, inappropriate content, and privacy violations are among the dangers children may encounter on the Internet. Children not being adequately informed about digital security and privacy may increase these risks. Again, children exposed to technology for long periods and rapid content changes may experience focus and attention problems. Christakis (2009) stated that fast-paced and constantly changing digital content can negatively affect children's attention spans. This situation can negatively affect the development of attention and focus skills, especially in early childhood. Software that is not used at the right time instead of socio-emotional activities supporting the child's normal development can cause their social interactions to decrease. When children spend too much time with digital tools, their opportunities for face-to-face interactions may decrease. Liang (2022) revealed that face-to-face interactions develop children's social skills and empathy abilities and that digital communication negatively affects this development. The quality and suitability of educational content is essential. While Web 2.0 tools offer a wide range of content, not all of this content may be pedagogically appropriate and reliable. O'Keeffe and Clarke-Pearson (2011) emphasize that the quality and suitability of the digital content that children are exposed to should be carefully evaluated. Inappropriate or low-quality content can negatively affect children's learning experiences. These negative aspects indicate that Web 2.0 tools should be used carefully and consciously in early childhood education. Educators and parents should balance children's interactions with digital tools and take the necessary precautions to keep them safe in the digital world. The first step for preschool children to use Web 2.0 tools safely is related to parents and teachers having Web 2.0 literacy regarding the safe and effective use of these tools (Özerdem Temel &Türkoğlu, 2023; Yağan, Yeşil & Ertaş, 2023).

Today, the more effective use of technology in education, the existence of many academic studies that reveal the positive contributions of technology, the more effective use of Web 2.0 tools, especially in the post-pandemic education process, and the development of greater awareness by teachers about the convenience and advantages provided by such software can make the research up-to-date and vital. This research analyses Web 2.0 tools used in early childhood education in Türkiye according to different variables.

The effective integration of technology in education has become increasingly important, particularly in light of numerous academic studies highlighting the positive contributions of technological advancements. The utilization of Web 2.0 tools has gained particular significance in the post-pandemic educational landscape, as educators develop a heightened awareness of the conveniences and advantages these tools offer. This research aims to analyze Web 2.0 tools in early childhood education in Türkiye according to different variables.

Method

This research is designed as a descriptive study, which means that it aims to provide a comprehensive overview rather than delving into a structural analysis within an explanatory framework. Specifically, the focus is on the various Web 2.0 software tools that are employed in early childhood education

settings. The method of document analysis plays a critical role in this study, as it encompasses a wide array of written sources. These sources include, but are not limited to, books, scholarly articles, official reports, personal letters, diaries, online content, and archival documents. Each of these written materials contains valuable information pertinent to the facts and events that are the subjects of investigation (Bowen, 2009; Yildirim & Simsek, 2021).

Moreover, the process of storing and reviewing this data necessitates a thorough and meticulous evaluation of the information presented in the documents. This careful examination is crucial for uncovering the most relevant answers to the questions posed by the researchers. As a result, this approach allows for the extraction of more detailed and analyzed insights from a diverse range of documents, ultimately enriching the findings of the study (Merriam & Tisdell, 2015).

Study Materials

In qualitative research, study materials refer to data collection tools and resources used in the research process. These materials include various data collected by the researcher to find answers to the research questions and conduct analysis. While determining the study materials, it is also essential that they meet the primary purpose of the research. The suitability and variety of the documents used in this process help the researcher find comprehensive and in-depth answers to the research questions. In addition, electronic and digital resources include various data sources such as websites, blogs, social media sharing and digital archives. These sources provide up-to-date and comprehensive information and allow the researcher to collect data quickly (Bowen, 2009). An extensive literature review was conducted to determine the study materials of the research, and the Web 2.0 tools used in education were listed. In the process of deciding on the tools to be included in the research, Web 2.0 tools were listed and this list was presented to three academics working on technology in early childhood and 11 teachers who stated that they frequently used Web 2.0 tools in their classes and they were asked which ones they frequently used. Following the answers, the Web 2.0 tool list was finalized and began to be examined according to their different features. Following the expert opinions, the software tools to be included in the study materials was determined.

Data Collection Tools

In the study, the checklist developed by the researcher was used as a data collection tool. The checklist consists of two parts. The first part includes questions about the country where the software was developed, whether it is paid or not, the type of platform used by the software, and whether the software has Turkish language support. The second part of the checklist includes a statement to determine the function of the software. The checklist developed as a data collection tool was reviewed and finalized by three field experts and one Turkish language expert.

Data Collection and Analysis

While collecting data, all software that constitutes the study materials was meticulously examined, and the data was transferred to electronic media. Then, the data was analyzed and tabulated by performing descriptive analysis. This stage allows the data to be examined systematically (Saldana, 2021). Descriptive content analysis is the process of systematically defining and giving meaning to qualitative data. This method focuses on describing the data directly and in detail and is usually organized on a theme or category basis (Yıldırım & Şimşek, 2021). Descriptive analysis helps the researcher discover data patterns, relationships, and meanings. It also ensures that the data is described as it is and presented clearly to the reader (Patton, 2014) and facilitates the understanding and explanation of complex phenomena and processes (Merriam, 2015). The analysis of the data took three months part-time.

Findings

Table 1 provides information about the software tools defined and the countries where it was developed.

Table 1. Distribution of web 2.0 software tools by country

Item	Software Name	Function of Tool	Country	f
1	Animaker	Used for video ads, product launches, training, social media, video resumes and corporate videos	USA	31
2	Animoto	Video maker		
3	Blabberize	Voice Recording Talking Images		
4	Block Poster	Creating a Poster		
5	Book Press	Book Design and Formatting		
6	Chatterpix	Practice		
7	Classdojo	Communication Platform Allows to Visualize Classrooms at Home and Share with the Community		
8	Comic Llife	Cartoon and Poster Program		
9	Comic Panel Creator	Cartoon Design		
10	Cram	Preparing Exams And Games		
11	Duolingo	Learning Foreign Languages through Games		
12	Edmodo	Classroom Management Social Network		
13	Edpuzzle	Virtual Classroom		
14	Gimp	Gnu Image Processing Program		
15	Google Auto Draw	Drawing Tool		
16	Inshot	Editing Videos and Photos		
17	Musiclab	Learning Music with Experiments		
18	Padlet	Making Presentations with Smart Board		
19	Phet	Simulation		
20	Photogrid	Photo Collage		
21	Quik - Gopro	Creating Video		
22	Quiver	Augmented Reality Tool		
23	Scoompa	Creating Video		
24	Scratchjr	Visual Programming		
25	Story Jumper	Creating an E-Book		
26	Storyboardthat	Creating Digital Stories		
27	Thinglink	Creating Interactive Images		
28	Toontastic	Creating 3D Animations and Cartoons		
29	Voki	Improving Classroom Teaching Participation and Lesson Comprehension Skills		
30	Wheel Decide	Creating a Wheel of Fortune		
31	Wordart	Creating Text Images		
32	Answergarden	Feedback Tool	Netherlands	3
33	Colormandala	Mandala Drawing Painting		
34	Photovisi	Photo Collage		
35	Arcimboldo Art Creator	Human Portrait from Fruits and Vegetables	England	3
36	Powtoon	Creating Video Animation		
37	Wordwall	Fun Questions and Answers		
38	Filmora Go	Photo and Video Editor	People's	2
39	Viva Video	Video Making Editing	Republic of China	
40	Remove Bg	Background Edit	Austria	1
41	Canva	Graphic Design Platform for Creating Social Media Graphics, Presentations, Posters	Australia	1

Table 1. Distribution of web 2.0 software tools by country (continued)

Item	Software Name	Function of Tool	Country	f
42	Differences	Find the Difference Game	Belarus	1
43	Jigsaw Planet	Creating Puzzles with Images	Czech Republic	1
44	Kizoa	Video Editing and Collage	France	1
45	Live Worksheets	Worksheet Preparation and Application	Spain	1
46	Learning Apps	Teaching Lessons through Games	Switzerland	1
47	Linoit	Preparing a Digital Panel	Japan	1
48	Bitmoji	Create Your Own Avatar	Canada	1
49	Celestia	Free Space Simulation that Allows 3D Examination of the Universe	Liechtenstein	1
50	Kahoot	For Education, Competition and Game	Norway	1
51	Kidokit	0-6 Age Child Development and Game	Türkiye	1
52	Code Avengers	Coding Program to Design Their Own Websites And Games	New Zealand	1
	Total			52

When looking at Table 1, it is seen that 31 of the software was developed by individuals or institutions based in the United States, three in the Netherlands and England, two in China, and the others in various countries. Table 2 provides information on whether the software is paid or not.

Table 2. Distribution of data according to paid status of software

Variable	f
Free	29
Partially Paid (Content Limitation)	14
Partially Paid (Time Limit)	8
Paid	1
Total	52

According to Table 2, 29 of the software tools are available for free use. 14 software tools are available for free use with content restrictions. Eight software are available for free use with time restrictions. One software tool is paid. Table 3 provides information on the platforms on which the software can be used.

Table 3. Distribution of data according to platforms where software tools are used

Variable	f
Smart phone	47
Tablet Computer	47
Web	43
Computer	38
Total	175

Table 3 shows the platforms on which the software tools are used. Since each software tool can be used on multiple platforms, the total number of platform uses exceeds the number of software tools. In this context, 47 software tools can be used through APK and JPA extension applications developed for smartphones and tablet computers. In comparison, 43 software tools are accessible via third-party web browsers such as Chrome, Microsoft Edge, and Opera. Additionally, 38 software tools can be used with EXE-based applications developed for computers. Table 4 provides information on the software tool's Turkish language support.

Table 4. Distribution of data according to turkish language support of software tools

Variable	f
Language Support Available	27
Language Support Available Thanks to Web Support	18
No Language Support	7
Language Support Partially Available	1
Total	52

According to the data in Table 4, 27 of the software tools offer Turkish language support on every platform. 18 of the software tools offer Turkish language support thanks to the translation feature of third-party Web software tools. While seven software tools do not have Turkish language support, one software tool has partial Turkish language support.

Discussion and Conclusion

The importance of Web 2.0 tools in education cannot be overstated, as these technologies significantly enhance teaching and learning experiences by fostering collaboration, creativity, and engagement among students and educators alike. Unlike traditional educational resources, Web 2.0 tools enable interactive participation, allowing learners to not only consume information but also contribute to the creation and sharing of knowledge. Platforms such as blogs, wikis, and social networking sites encourage students to collaborate on projects, engage in discussions, and receive real-time feedback, thereby promoting a sense of community and collective learning. Additionally, these tools cater to diverse learning styles, providing opportunities for visual, auditory, and kinesthetic learners to access content in formats that resonate with them. Furthermore, the integration of Web 2.0 tools in the classroom supports the development of critical 21st-century skills, such as digital literacy, communication, and problem-solving, which are essential for success in an increasingly interconnected world. By embracing these technologies, educators can create a more dynamic and inclusive learning environment that not only prepares students for future challenges but also empowers them to take ownership of their educational journeys. Overall, the effective use of Web 2.0 tools transforms the educational landscape, making learning more engaging, relevant, and responsive to the needs of today's learners (Özer & Özer, 2017; Timur et al., 2020)

This research investigates the utilization of Web 2.0 software tools in early childhood education in Türkiye. Employing a descriptive study design, the analysis examines 51 Web 2.0 applications across various dimensions, including their features, country of origin, pricing structures, platforms, and support for the Turkish language, utilizing document analysis as the primary method.

The findings reveal that a significant majority of the examined software applications was developed by individuals or institutions based in the United States. Among the analyzed applications, 29 are offered free of charge, while 23 are available in a partially free format. Most of these applications are designed as APK and JPA extensions for smartphones and tablets, with Turkish language support being prevalent across many of them. The primary functionalities identified include image, visual, and video editing, as well as the preparation of educational materials. Additional features encompass the creation of interactive stories, animations, and communication-sharing capabilities.

The findings highlight the pivotal role of Web 2.0 software tools in early childhood education, emphasizing its applicability for diverse pedagogical purposes. Effective technology integration requires more than a technological perspective; it is essential to recognize that viewing integration solely as the use of technology is insufficient (Fishman et al., 2004). Teachers' technological knowledge and skills, while important, are not enough on their own for meaningful integration in educational settings. The decisions educators make regarding the pedagogical use of technology are critical to achieving successful outcomes. Integration that neglects pedagogical factors does not contribute meaningfully to the educational process.

Central to this is the concept of Technological Pedagogical Knowledge (TPK), which encompasses an understanding of the pedagogical benefits and limitations of technological tools within the teaching

process, as well as how these technologies transform teaching and learning (Harris et al., 2009; Koehler & Mishra, 2009). For educators striving to excel in this area, it is crucial to consider the individual needs and differences of students by identifying and employing technological tools that align with appropriate pedagogical methods throughout the learning and teaching processes. Teachers must be proficient in analyzing, planning, and evaluating these technologies to integrate them effectively into their classrooms (Koehler et al., 2007). Moreover, educators should possess the knowledge necessary to implement materials effectively in the teaching-learning process (Mishra & Koehler, 2006) and must be able to determine which types of technologies are most suitable for specific stages of the subject matter (Coklar et al., 2007). Teachers and teacher candidates should be informed about effective Web 2.0 tools that bring an alternative dimension to the education process with their easy-to-use structure, user-friendly interfaces and wide range of products suitable for the needs and they should be encouraged to prepare materials themselves that will combine field knowledge with technology and use them in the education process (Tatlı et al., 2020). In this way, a comprehensive understanding of both technology and pedagogy is essential for fostering an effective learning environment.

However, certain deficiencies, particularly regarding Turkish language support, must be addressed to enhance the broader adoption of these technologies. The increasing integration of digital technologies into various facets of life, including education, suggests that more effective utilization of Web 2.0 software tools by educators in early childhood settings could positively impact the educational process. Numerous academic studies have demonstrated the beneficial contributions of well-integrated software tools to children's learning experiences.

Research has examined the influence of Web 2.0 software tools on student outcomes, revealing numerous positive effects, including enhanced academic success facilitated by the interactive features of these applications (Alkhawaldeh et al., 2017; Cagiltay, 2020; Chen et al., 2018; Huang et al., 2016; Kara et al., 2020; Özerdem Temel & Turkoglu, 2023; Yang & Gunn, 2020; Zhao et al., 2022). Furthermore, it is posited that the effective and judicious use of Web 2.0 software tools by teachers can significantly enhance children's engagement and motivation.

Regarding pricing policies, it is observed that while free software typically provides essential functionalities, paid applications often offer advanced features and support that may enhance educational practices. Comprehensive versions of such software tools are likely to assist educators more effectively in monitoring children's learning processes. Conversely, partially free applications may not always meet educational objectives adequately.

A study by Liu and Hwang (2020) highlights the role of mobile devices in early childhood education, indicating that smartphones and tablets facilitate children's learning and improve access to educational materials, although certain applications may be better suited to desktop environments. Given that early childhood learners generally lack literacy skills, the significance of Turkish-language in-app instructions becomes paramount. Research by Yilmaz et al. (2021) identifies a gap in Web 2.0 software tools that meet the needs of Turkish-speaking users, a challenge that can be mitigated through the provision of translations using third-party software.

In conclusion, further research into the application of Web 2.0 software tools in early childhood education is warranted to elucidate the effects of these technologies in greater detail. Nevertheless, existing findings indicate substantial potential and pedagogical value for these technologies in early childhood educational contexts.

References

Alkhawaldeh, M., Hyassat, M., Al-Zboon, E., & Ahmad, J. (2017). The Role of Computer Technology in Supporting Children's Learning in Jordanian Early Years Education. *Journal of Research in Childhood Education*, 31(3), 419–429. https://doi.org/10.1080/02568543.2017.1319444

American Academy of Pediatrics. (2016). Media and young minds. *Pediatrics* 138(5), e20162591. https://doi.org/10.1542/peds.2016-2591

Berger, A. A. & Cooper, S. (2003). Musical play: A case study of preschool children and parents. *Journal of Research in Music Education* 51(2), 151-165. https://doi.org/10.2307/3345848

Chen, L., Chen, T. L., Lin, C. J., & Liu, H. K. (2018). Preschool teachers' perception of the application of information communication technology (ICT) in Taiwan. *Sustainability (Switzerland),* 11(1). https://doi.org/10.3390/su11010114

Christakis, D. A. (2009). The effects of infant media usage: what do we know and what should we learn? *Acta Paediatric*a 98(1), 8-16. https://doi.org/10.1111/j.1651-2227.2008.01027.x

Churchill, D. (2009). Educational applications of Web 2.0: Using blogs to support teaching and learning. *British Journal of Educational Technology* 40(1), 179-183. https://doi.org/10.1111/j.1467-8535.2008.00865.x

Clements, D. H. & Sarama, J. (2003). Young children and technology: What does the research say? *Young Children* 58(6), 34-40. https://eric.ed.gov/?id=EJ784139

Coklar A.N., Kilicer, K. ve Odabasi, H.F. (2007). A critical perspective on the use of technology in education: Technopedagogy. *7. Proceedings of the International Conference on Educational Technologies.* (39-44), Near East University, Nichosia.

DiNucci, D. (1999). Fragmented future. Print 53(4), 32-33. http://darcyd.com/fragmented_ future.pdf

Fishman, B., Marx, R. W., Blumenfeld, P., Krajcik, J. & Soloway, E. (2004). Creating a framework for research on systemic technology innovations. *The Journal of the Learning Sciences*, 13(1), 43-76.

Frydenberg, M. (2008). Principles and pedagogy: The two Ps of podcasting in the information technology classroom. *Information Systems Education Journal* 6(6), 1-11. https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=0953c93730467641f701f4154b01d0f42fd562a6

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. https://doi.org/10.3102/0013189X09336671

Harris, J., B., Mishra, P. & Koehler, M. J. (2009). Teachers‟ Technological Pedagogical Content Knowledge: Curriculum-based Technology Integration Reframed. *Journal of Research on Technology in Education*, 41 (4), 393-416.

Horzum, M. B. (2010). Examining teachers' awareness of Web 2.0 tools, their frequency of use and purposes in terms of various variables. *International Journal of Human Sciences,* 7(1), 604-634.

Huang, Y., Li, H., & Fong, R. (2016). Using Augmented Reality in early art education: a case study in Hong Kong kindergarten. *Early Child Development and Care,* 186(6), 879–894. https://doi.org/10.1080/03004430.2015.1067888

Kara, N., & Cagiltay, K. (2020). In-service Preschool Teachers' Thoughts about Technology and Technology Use in Early Educational Settings. *Contemporary Educational Technology*, 8(2), 119–141. https://doi.org/10.30935/cedtech/6191

Koehler, M. J. & Mishra, P. (2009). What is technological pedagogical content knowledge? *Contemporary Issues in Technology and Teacher Education,* 9(1), 60-70.

Koehler M. J, Mishra, P., & Yahya, K (2007) Tracing the development of teacher knowledge in a design seminar: integrating content, pedagogy, and technology. *Computers &Education,* 49(3), 740–762. https://doi.org/10.1016/j.compedu.2005.11.012

Liang, A. (2022). *The effect of screen media on children: The change from negative to positive.* ICMETSS, 602–610. https://doi.org/10.2991/978-2-494069-45-9_73

Livingstone, S., & Haddon, L. (2009). EU Kids Online: Final Report. London School of Economics and Political Science. https://eucpn.org/sites/default/files/document/files/5._eu_kids_online_-_final_report.pdf

Matthews, J. (2003). *Drawing and painting: Children and visual representation.* Sage.

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

National Association for the Education of Young Children (NAEYC). (2012). Technology and interactive media as tools in early childhood programs serving children from birth through age 8. Position Statement January, 1-15. https://www.naeyc.org/sites/default/files/globally-shared/downloads/PDFs/resources/position-statements/ps_technology.pdf

Neuman, S. B. & Dwyer, J. (2009). Missing in action: Vocabulary instruction in pre-k. *The Reading Teacher* 62(5), 384-392. https://doi.org/10.1598/RT.62.5.2

O'Keeffe, G. S., & Clarke-Pearson, K. (2011). The impact of social media on children, adolescents, and families. *Pediatrics* 127(4), 800-804. https://doi.org/ 10.1542/peds.2011-0054

O'Reilly, T. (2005). Web 2.0: compact definition?, http://radar.oreilly.com/2005/10/web-20-compact-definition.html.

O'Reilly, T. (2007). What is Web 2.0: Design patterns and business models for the next generation of software. *Communications & Strategies* 65(1), 17-37. https://ssrn.com/abstract=1008839

Özer, Ü. & Özer, E. (2017). Sosyal bilgiler ile bilgisayar ve öğretim teknolojileri öğretmeni adaylarının eğitimde web 2.0 kullanımına yönelik görüşleri. International Congress On Politic, Economic And Social Studies, 3, 106-118.

Özerdem Temel, A., & Türkoğlu, B. (2023). Okul öncesi öğretmenlerinin eğitimde web 2.0 araçlarının kullanımına yönelik görüşlerinin incelenmesi. [Investigation of Preschool Teachers's Opinions on the Use of Web 2.0 Tools in Education] *Necmettin Erbakan Üniversitesi Ereğli Eğitim Fakültesi Dergisi,* 5(Özel Sayı), 217-243.

Plowman, L., Stephen, C., & McPake, J. (2010). *Growing up with technology: Young children learning in a digital world.* Routledge.

Sadik, A. (2008). Digital storytelling: A meaningful technology-integrated approach for engaged student learning. *Educational Technology Research and Development* 56(4), 487-506. https://doi.org/10.1007/s11423-008-9091-8

Sever, R., Bayar, B. & Toker, O. (2023). Öğretmenlerin Web 2.0 araçlarına yönelik görüşleri. Turkish Studies - Education, 18(1), 1-13. https://dx.doi.org/10.7827/TurkishStudies.62451

Su, J., Zhong, Y., & Chen, X. (2024). Technology education in early childhood education: A systematic review. *Interactive Learning Environments*, *32*(6), 2848-2861.

Tatlı, Z., İpek Akbulut, H., & Altınışık, D. (2016). The impact of web 2.0 tools on pre-service teachers' self confidence levels about TPCK. Turkish Journal of Computer and Mathematics Education (TURCOMAT), 7(3), 659-678. https://doi.org/10.16949/turkbilmat.277878.

Timur, S., Timur, B., Arcagök, S. & Öztürk, G. (2020). Fen bilimleri öğretmenlerinin web 2.0 araçlarına yönelik görüşleri. Journal of Kirsehir Education Faculty, 21(1), 63-107.https://doi.org/10.29299/KEFAD.2020.21.01.003

Weng, J., & Li, H. (2020). Early technology education in China: A case study of Shanghai. *Early Child Development and Care,* 190(10), 1574–1585. https://doi.org/10.1080/03004430.2018.1542383

Wheeler, S., Yeomans, P., & Wheeler, D. (2008). The good, the bad and the wiki: Evaluating student-generated content for collaborative learning. *British Journal of Educational Technology* 39(6), 987-995. https://doi.org/10.1111/j.1467-8535.2007.00799.x

Yağan, S., Yeşil, Z., & Ertaş, Ö. N. (2023). Okul öncesi öğretmenlerinin web 2.0 araçlarının kullanımına ilişkin deneyimleri. [Preschool Teachers' Experiences Of Using Web 2.0 Tools]. Sayı 44, 80-98.

Yang, T., & Gunn, C. (2020). Understanding kindergarten teachers' perceptions of the use of touchscreen technologies: An exploratory study in mainland China. *E-Learning and Digital Media*, 1–17. https://doi.org/10.1177/2042753020980120

Yıldırım, A & Şimşek, H. (2021). *Qualitative research methods in the social sciences.* Seçkin.

Zhao, Y., Lu, J., Woodcock, S., Ren, Y. (2022). Social media web 2.0 tools adoption in language and literacy development in early years: A scoping review. *Children*, 9, 1901. https://doi.org/10.3390/children9121901