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Educational Technologies Concept and Web 2.0 Tools: A Case Study with Pre-Service Foreign Language Teachers*

Eğitim Teknolojileri Kavramı ve Web 2.0 Araçları: Yabancı Dil Öğretmen Adaylarıyla Gerçekleştirilmiş Bir Durum Çalışması

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ABSTRACT

The aim of this research is fourfold: first, to elucidate various facets concerning educational technologies and Web 2.0 tools; second, to explore how German and French pre-service teachers conceptualize educational technologies; third, to examine their utilization patterns of Web 2.0 tools; and fourth, to investigate the prevalence of technology-related challenges encountered during school internships, alongside their perspectives on technology integration in educational settings The study group comprised 14 volunteer pre-service foreign language teachers. All participants are French or German pre-service teachers in their fourth year, undergoing internships in schools equipped with technological infrastructure. This qualitative study employed a case study research design. The data of the study were acquired via semi-structured interviews employing the criterion sampling method. Subsequently, the gathered data underwent coding, thematic categorization, and assessment through content analysis, conducted using the Maxqda software during the analysis phase. The results demonstrated that pre-service foreign language teachers still need help with educational technologies when they go to teaching internships. Moreover, while most of them may need to be more conceptually certain about Web 2.0 tools, five individuals indicated they benefit from them, particularly from Kahoot.

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ÖZ

Bu araştırma, eğitim teknolojileri ve Web 2.0 araçlarıyla ilgili çeşitli yönleri açıklamayı amaçlamaktadır. Çalışma özellikle Almanca ve Fransızca öğretmen adaylarının bir kavram olarak eğitim teknolojilerini nasıl düşündüklerine odaklanmaktadır. Bu çalışma ayrıca Web 2.0 araçlarının kullanım ortamlarını belirlemeyi ve okul stajları sırasında öğretmen adaylarının karşılaştığı teknolojiyle ilgili zorlukları araştırmayı da hedeflemektedir. Teknolojinin eğitim ortamlarına hangi ölçüde dâhil edildiğiyle ilgili öğretmen adaylarının görüşlerini saptamak da çalışmanın amaçları arasındadır. Çalışma grubu, 14 gönüllü yabancı dil öğretmen adayından oluşmaktadır. Katılımcılar, teknolojik altyapıya sahip okullarda staj yapmakta olan dördüncü sınıf Fransızca veya Almanca öğretmen adaylarıdır. Bu nitel araştırmada, durum çalışması araştırma yönteminden yararlanılmıştır. Araştırmanın verileri, ölçüt örnekleme yöntemine başvurularak yarı yapılandırılmış görüşmeler yoluyla elde edilmiştir. Daha sonra, toplanan veriler kodlama, tematik kategorizasyon ve içerik analizi yoluyla değerlendirilmiş, Maxqda yazılımı kullanılarak analizler gerçekleştirilmiştir. Sonuçlar, yabancı dil öğretmen adaylarının staj okullarında halen eğitim teknolojileri konusunda yardıma ihtiyaç duyduklarını göstermiştir. Öğretmen adaylarının çoğu kavramsal olarak Web 2.0 araçlarını tanımlarken kendilerinden emin olmasa da, aralarından beş kişi özellikle Kahoot'tan faydalandıklarını belirtmiştir.

Anahtar Sözcükler: *Yabancı Dil Öğretimi/Öğrenimi, Eğitim Teknolojileri Kavramı, Web 2.0 Araçları, Yabancı Dil Öğretmen Adaylarının Öğretmenlik Uygulamaları*

INTRODUCTION

Technology constitutes extensive investigations encompassing various dimensions and multifaceted advancements within a vast domain. Thus, associating this domain solely with computers or digital devices would be overly restrictive. Language and technology have been profoundly interrelated since the invention of writing. Writing technology has brought an objective perspective to language, leading to a more precise articulation of expressions and sentences, facilitating easier transmission across generations (Chun et al., 2016).

Information and communication technologies (ICTs) and educational technologies are effective in students' learning process. Numerous studies have been conducted on the impact of educational technologies on the reading and writing skills of students learning a foreign language (FL) (Li, 2014; Hoopingarner, 2009; Xu et al, 2019). Educational

technologies and open online resources utilized in foreign language teaching (FLT) are continually evolving and being updated. However, the specific challenges and problems faced by pre-service foreign language teachers attending teaching internships when using these technologies and how they resolve these problems remain not fully understood (Siregar et al., 2024). Additionally, within the present study, the usage levels of educational technologies by pre-service foreign language teachers, their engagement with technological advancements, and their utilization of Web 2.0 tools have been investigated. The existing research predominantly focuses on examining and analyzing individuals identified as English language learners (Al Arif et al., 2024; Arochman et al., 2024; Benraghda, 2024; Gilakjani, 2017; Zaki & Kaur, 2024). However, in this paper, we will observe the results of a study conducted with a small group of pre-service French and German language teachers. "One major feature of well-collected qualitative data is that they focus on naturally occurring, ordinary events in natural settings so that we have a strong handle on what “real life” is like" (Miles et al., 2014, p. 30).

1.1. Theoretical Framework

The rapidly changing and advancing technological developments today provide several benefits to foreign language teaching and learning (FLT&L). Technology, encompassing countless audiovisual teaching materials, is a significant tool in FLT. Hence, concepts such as 'Computer-Assisted Language Learning (CALL)', 'Technology-Enhanced Learning', 'Educational technology' or 'Instructional technology' have been the subject of various studies in the field of FLT (Hoang, 2024; Kuru Gönen, 2019; Teo, Lee & Chai, 2007; Moradi, 2025; Vuong & Thu, 2024). "Instructional technology, as a component of educational technology, is a process that involves creating and organizing the necessary environments for learning to take place, guiding educators, and facilitating the design and preparation of appropriate tools and resources" (Ültay, 2020, p. 12). Technological tools and resources are believed to be effective in the learning processes of individuals who learn a FL, especially in young learners' and teenagers' language learning processes (Papadaki & Karagianni, 2024; Wati et al., 2025). A person learning independently a F.L. and who is a young learner can easily benefit from an application based on their interests

and turn this into an opportunity for language learning. However, a FL student whose age does not suit this scenario or who must adhere to the curriculum implemented in school can utilize technology in the classroom as much as the teacher incorporates it. Henceforth, it has become imperative for both educators and pre-service foreign language teachers to engage in continuous education and to enhance their proficiency in technological advancements and ICT tools within the field of education (Borthwick & Gallagher-Brett, 2014; Li, 2014).

When examining the literature on the use of technology in classrooms consisting of learners studying French as a F.L., notable studies have been identified. For instance, Adair-Hauck, Willingham-McLain and Earnest Youngs (2020) conducted an experimental study by integrating technology-based language tasks into lessons with 33 college students. Their research aimed to scrutinize students' performance in French listening, speaking, reading, and writing skills. The results indicated that students exposed to multimedia activities in the treatment group exhibited superior outcomes compared to the control group. According to the findings of the relevant article, when ranking the four language skills, students demonstrated significantly higher achievement in French writing skills after implementing multimedia task-based instruction. Subsequently, reading and listening abilities followed in achievement, while the least impact was observed in speaking skills. Additionally, it has been observed that technology-based tasks positively influence students, facilitating collaborative efforts beyond the classroom environment.

Upon examining another article, it is notable to mention a study concerning computer-focused language activities involving 71 students enrolled in French courses across five different Canadian universities conducted through a mixed-method approach (Peters et al., 2009). The study deliberated on which technological activities were predominantly utilized/preferred by students, their frequency of use, and which technological activity students perceived as the most beneficial.

Subsequent studies have encompassed several qualitative and quantitative investigations concerning educational technologies or digital tools involving both learners studying French and instructors teaching the French language (Adu-Marfo et al., 2024; Auger et

al., 2023; Boreland et al., 2022; Impedovo et al., 2016; Karabulut et al., 2012; Lomicka et al., 2011; Turnbull & Lawrence, 2003).

Concerning students learning German as a FL, Wei's (2003) study endeavors to discern the efficacy of various task types, especially digital video clips, employed in online German language learning. This research adopted a quasi-experimental design to investigate the potential difference between cohorts exposed to the treatment of German-captioned video clips and those subjected to the treatment of German-English-captioned video clips. The findings indicate that students demonstrated a statistically significant improvement in post-test scores compared to their pretest performance. However, no statistically significant distinction was observed between Treatment A, involving German-captioned video clips, and Treatment B, involving German-English-captioned video clips.

In an investigation conducted by Belz and Reinhardt (2004), the data was generated by a singular focal student within the framework of a fourth-semester German course at a significant public institution in the United States. This study adopted the case study method and employed focus group interviews, biographical surveys, and course portfolios about language play. The student predominantly engages in language play that is morphologically oriented. Notably, unlike some German learners, there must be more syntactic experimentation in the student's linguistic expression.

Several other studies employing case studies or experimental research methods regarding technology and online materials with students learning German as a FL have also been identified in the last few decades (Karaman, 2023; Momcilovic & Petrovic, 2016; Schuetze & Lowey, 2015; Starks-Yoble & Moeller, 2015).

Numerous distinct studies have been carried out when researching the use of Web 2.0 tools in FLT. Bozna and Yüzer (2020) conducted a case study on the usage levels of Web 2.0 tools among participants. As a result, participants used Web 2.0 tools regularly due to their inclusion of visual-auditory materials and their entertaining nature. Kuznetsova and Soomro (2019) explored the importance of university students' experiences and

awareness regarding Web 2.0 tools while learning a F.L. In this study, which involved 137 participants, it emerged that students utilized Web 2.0 tools moderately in their foreign language learning (FLL) processes, employing these tools to compare the F.L. and culture with their native language and culture. Prykhodko et al. (2019) investigated the role of educational blogs associated with Web 2.0 tools in the F.L.L. phase. This experimental study with 211 students demonstrated that blogs were influential in FLT. According to the authors, blogs offer several advantages, such as providing a comfortable and convenient working environment for both teachers and students, facilitating easy access to various external applications/links embedded within blogs (such as dictionaries, podcasts, online open courses), and creating a common socialization space for students from different nations. Stefancik and Stradiotová (2020) conducted an experimental study on podcasts, considered a Web 2.0 tool, with 414 participants learning German or English. As a result of the aforementioned study, podcasts can significantly improve students' listening skills when integrated into FLT&L processes.

In line with these trends in Web 2.0 tools, actual candidates aspiring to become teachers have demonstrated utilization of educational technologies and Web 2.0 tools during the course of their prior internships in Turkey. Nevertheless, the specific applications incorporated by the candidates and the issues they encountered, along with their respective resolutions, still need to be discovered or documented. With the specified objective in mind, the current study sought to assess the technological encounters, possible challenges, viewpoints, and levels of awareness among fourth-grade F.L. teacher candidates during their teaching practicums at internship schools. Additionally, the study aimed to offer recommendations based on its findings.

1.2. Purpose of the study

The objective of this study has four main components: first, to clarify diverse aspects related to educational technologies and Web 2.0 applications; second, to investigate how prospective German and French teachers perceive and understand educational technologies; third, to analyze their usage tendencies concerning Web 2.0 tools; and

fourth, to assess the technology-associated difficulties faced during teaching practicums, as well as their viewpoints on incorporating technology into educational environments.

The participants of the study consist of 4th-year pre-service foreign language teachers enrolled in the Department of German Language Teaching and French Language Teaching. Throughout the research, the pre-service foreign language teachers will be questioned about how they evaluate their levels of technology usage. In line with these objectives, the following research questions (RQs) were set:

RQ1- How do pre-service foreign language teachers define educational technologies?

RQ2- How proficient are pre-service FL teachers in utilizing and understanding educational technologies?

RQ3- What are the technological experiences and issues faced by pre-service FL teachers in university classrooms or during internships?

RQ4- To what degree do pre-service teachers integrate Web 2.0 tools or open online resources in their FL teaching and learning process, and can they offer specific examples elucidating their utilization in educational practices?

RQ5- How do pre-service teachers evaluate their levels of technology usage?

METHOD

A case study design has been employed in the study. "The “cases” in a case study can appear to be more straightforward (e.g., individual people, groups of people, organizations, and neighborhoods) or more fluid (e.g., decisions, processes, social relationships, […]" (Yin, 2018, p. 111). The case in this study is the pre-service foreign language teachers observed during the practicum, as first mentioned by the author. According to Miles and Huberman, case studies are used "to summarize the current status of the case" (1994, p. 76). The research involved asking questions about pre-service foreign language teachers' views, experiences, and perspectives about educational technologies and Web 2.0 tools in the post-COVID19 pandemic era. The case study research design was chosen to learn about the extent to which the teacher candidates use

educational technologies and Web 2.0 tools at university and internship schools, as well as the challenges they face while using these technologies and tools.

Based on the definitions above, the primary aim is to highlight the experiences and perspectives of present-day FL teacher candidates. Following this situation, within a specific time frame (8th May 2023 - 30th June 2023), pre-service foreign language teachers have been questioned about the extent/how they implement educational technologies, online technologies, and Web 2.0 tools in their real lives, specifically in the Foreign Language Teaching Department and during their lessons in internship schools in the post-COVID19 situation. During this process, efforts have been made to understand what kind of technological tools they have utilized and the problems they have encountered.

2.1. Participants

The research study group was selected using the purposive sampling method based on criterion sampling in qualitative research. Random purposeful sampling "adds credibility to the sample when the potential purposeful sample is too large" (Miles & Huberman, 1994, p. 28). As Miles, Huberman, and Saldaña (2014) have also emphasized, there will never be enough time for any researcher to complete a study. However, it is essential to establish criteria, take action accordingly, and initiate the study from somewhere. In this study, 14 pre-service German and French language teachers, all in their 4th grade at the university were selected as the criteria for having practical experience with educational technologies, as they attended a practicum school for the last two semesters. Furthermore, these selected FL teacher candidates had followed online FL courses throughout the COVID-19 pandemic, gaining experience with online Technologies and Web 2.0 tools during that period.

Table 1. Information about the Participants

	Frequency (f)
Level of Education	
Undergraduate	14
Age *(at the time of research)*	

22 years	3
23 years	3
24 years	6
25 years	2
Department	
German Language Teaching	8
French Language Teaching	6

2.2. Data Collection

The methods and techniques used in this study were discussed during meeting 09 of the Gazi University Ethics Committee on May 9, 2023, and deemed appropriate by the relevant committee. The data was collected in Ankara between May 9, 2023, and June 30, 2023.

Before the actual implementation, a pilot study was conducted with three participants. The content was organized and refined based on the answers to the questions. The placement of some questions was altered. In line with the sequence in the interview form, first, questions related to personal information were posed to the participants, followed by the interview questions (All questions are provided in Appendix A). The interviews were carried out individually, either on a one-on-one basis or online, with each participant and each lasted approximately 10-15 minutes.. Following the earthquake disaster in Turkey on February 6, 2023, some of the interviews with teacher candidates were conducted via the Zoom platform, considering the situation of the teacher candidates. Before starting the interviews, verbal consent from the participants was required and every interview was documented or captured on record. Participants were initially informed that the ongoing study is not a knowledge test; instead, they would only be asked questions about their opinions, perspectives, and experiences to prevent potential stress or anxiety. The obtained information has been stored in audio recordings, researcher notes, and on the computer and has not been shared with other individuals. During and after each interview, notes were taken regarding the participant's gestures, facial expressions, and behaviors that might not be captured in the audio recording.

Subsequently, the researcher listened to all interviews from the recordings and transcribed them to the computer. Throughout the data collection phase, reference was made to the semi-structured interview form, a commonly utilized tool in qualitative research, which is included in the appendix.

2.3. Data Analysis

Before the interviews in the research, participants were informed about the purpose of the study. The interviews were conducted with pre-service foreign language teachers who participated voluntarily and were recorded using a voice recording device. The researcher also took notes during interviews. Afterwards, all of the interviews were translated from Turkish to English. The responses given by the participants were transcribed in their entirety to a Word document without any alterations. Transcripts include 6.466 words, generated from 154.78 minutes of recordings of all participants. The identity of each response and its respective teacher candidate was indicated as "S1, S2, S3..." for anonymity. During the qualitative data analysis, Maxqda software (2020) was utilized. It is believed that the mentioned software supported the organization, grouping, visualizing and reporting of the data. The obtained data was subjected to analysis using the specified program; themes, categories, and codes were created. "Codes are tags or labels for assigning units of meaning to the descriptive or inferential information compiled during a study" (Miles & Huberman, 1994, p. 56). Therefore, it can be stated that the codings performed on transcripts help us explain the functionality of codes by facilitating the more evident observation of frequently used expressions, similarities, or contrasts.

According to Miles and Huberman, the coefficient of agreement among coders is calculated using the formula "(Consensus/consensus + disagreement) x 100." It has been reported that initially applying this formula results in around 70% inter-coder reliability. "For pre-coding and recoding reliability, a reliability of around 80%, higher than the inter-coder agreements, is suggested (2015, p. 64). The authors have updated this information in the subsequent edition of the book as follows: "Eventually, intra- and/or intercoder agreement should be within the 85% to 90% range, depending on the size and range of the coding scheme." (Miles et al., 2014, p. 89-90).

The codes were examined by another expert with a doctoral degree in German Language Teaching to ensure inter-rater reliability. Eventually, with a rate of 0.82 coefficient agreement between the encoders, results were reported to reach a valid agreement.

In this paper, participants' responses were shared without alterations and without mentioning their names; certain tables were created and presented under the findings and discussion section.

2.4. Role of the Researcher

As Greenbank (2003) emphasized, qualitative researchers must manifest their proficiency in conducting the study by openly addressing pertinent aspects of themselves. This entails exploring and disclosing biases, presumptions, objectives, and historical experiences. In this particular context, the researcher acted impartially in executing the analysis and accessing the study's findings. Consequently, the researcher assumed the role of an objective observer of the qualitative research, adopting an etic approach to interpret the responses without personal bias. His/her overarching aim is to delve into the underlying meaning embedded within the data, uncovering patterns, themes, and insights that contribute to a deeper understanding of the subject under investigation (Holloway & Biley, 2011; Zahle, 2021).

FINDINGS AND DISCUSSION

Findings

In this study, the knowledge and opinions of fourth-year pre-service foreign language teachers regarding Web 2.0 tools and educational technologies were examined. In this study, 8 categories and 24 codes were created under 3 themes (except the demographic information), which were discussed in tables and figures generated with the assistance of the Maxqda software (2020). The questions posed by the researcher to pre-service foreign language teachers during individual interviews are provided in the appendix at the end of the study (see Appendix A).

The word cloud below and the code matrix (see Appendix B) have been created in the Maxqda program based on all the interviews and analyses conducted throughout this study. "Word clouds (or tag clouds) are popular, fun ways to display text data in graphical form" (DePaolo & Wilkinson, 2014, p. 38). The cloud highlights the most frequently used words in the study by pre-service foreign language teachers in a larger and different color (here, technology) to foster critical thinking and to concretize the data of all interviews realized by the researcher, such as "technology", "students", "language", "foreign", "listening", "applications", "internet", "university", "Twitter", "Kahoot", etc. (Reyes-Foster & deNoyelles, 2016). The following word cloud summarizes all the interviews conducted by the researcher and the most frequently used words in the study by pre-service language teachers. Since questions related to technology were asked, the most frequently used word was "technology" and "technological" .The word cloud displays the most frequently used words, while the least used words are unknown.

Figure 1. The Word cloud showing the most frequently used words by participants

Data obtained from the views of FL teacher candidates have been thoroughly examined below in detail, presented in titles along with subcategories and visualized with figures, based on the three main themes identified.

Theme 1: "Perspectives of pre-service foreign language teachers regarding educational technologies"

This theme constitutes the study's first and most fundamental theme, containing five categories and 16 codes. It addresses research questions 1 (RQ1) and 5 (RQ5) along with its associated categories and themes. Firstly, pre-service foreign language teachers were queried on how they define the concept of educational technologies and whether they can articulate a definition, and they were expected to provide examples related to educational technologies.

Table 2. "Perspectives of pre-service foreign language teachers regarding educational technologies" theme

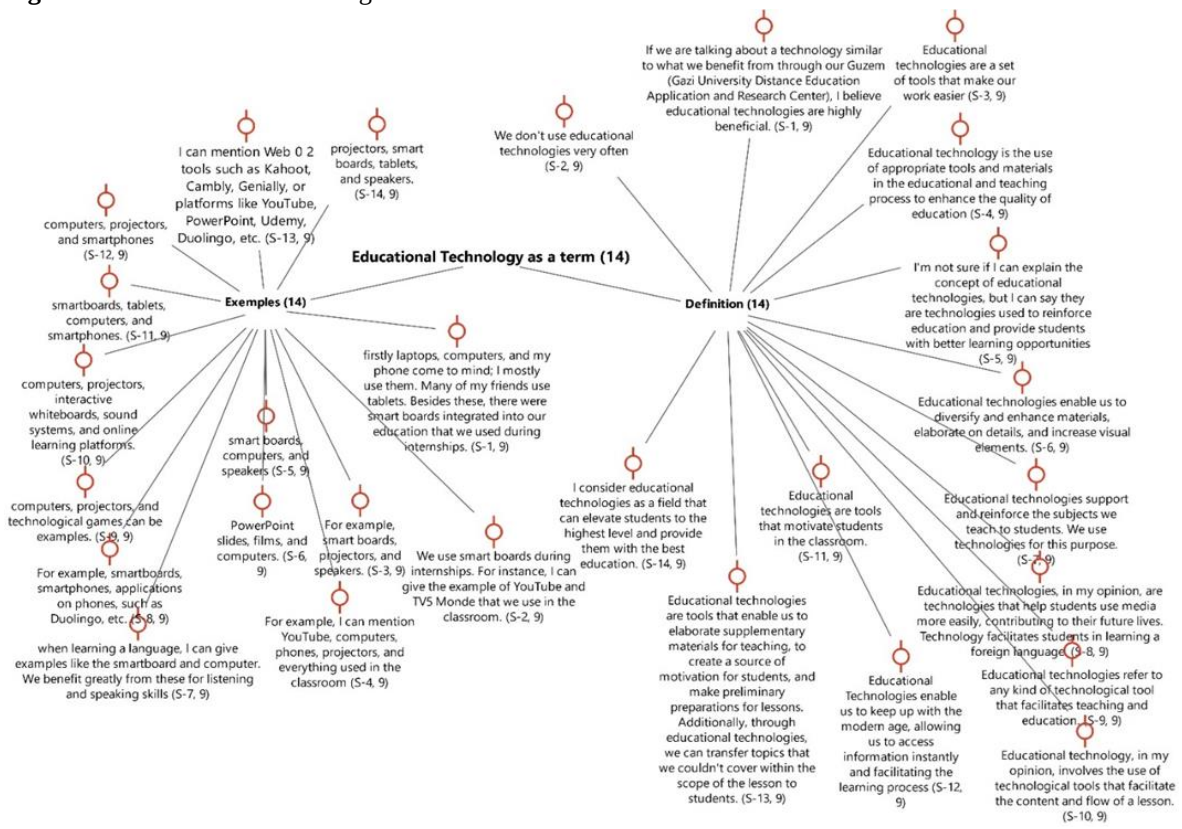
Theme 1	**Categories**	**Codes**	**Coded parts**
Perspectives of pre-service FL teachers regarding educational technologies	*Educational technologies as a term*	Definition	Educational technologies refer to any kind of technological tool that facilitates teaching and education. (S-9)
		Examples	Projectors, smartboards, smartphones, speakers, etc.
	Concern levels regarding their future technology usage	Concerned	I think I might face some difficulties with technology in the classroom (…) (S-2)
		Not Concerned	No. When I become a teacher, I won't have any issues with technology. I trust in my abilities. (S-14)
		Thinks that she'll have problems, but she is not concerned	When I become a teacher, if there is a lack of infrastructure at school (…) yes, I might face issues related to technology. Other than that, I don't think I will have any problems. (S-11)
	Technology courses	Effective courses about tech at the univ.	(…) I had an elective course taken remotely. It was called 'Open and Distance Education.' (…) (S-8)
		Not very satisfied with lessons related to educational tech.	We had a course on Information Technologies in my education. I didn't find it very effective (S-8)
		Effective courses on technology beyond the university	There is a platform at Middle East Technical University (METU), where I listen to some courses (…) (S-2)

	Beliefs in technology usage proficiency	Use of technology 'poor'	I think my level of technology usage is poor (…). (S-6)
		Use of technology 'moderate'	I would say my level of technology usage is moderate (…). (S-4)
		Use of technology 'good'	I can assess my level of technology usage as 'good' (…). (S-13)
		Use of technology 'very good'	I would say my level of technology use is very good (…). (S-11)
	Awareness about current technological developments	Following	Yes, I follow current technological developments (S-1)
		Not particularly following but following	Especially, I don't actively keep up with technological advancements (…) (S-3)
		Not following	I don't actively follow the latest technological developments (S-7)
		Resource	I saw Chat GPT on Twitter and tried it. (…) (S-3)

As Table 2 reads, "Educational Technologies as a term" is generated as the first category of this study which encompasses two codes: "definition" and "examples". To ascertain whether participants can define "educational technologies" and can provide examples, the researcher posed the following questions: "How do you explain the concept of educational technologies? Can you provide an example?".

12 out of 14 participants attempted to define "educational technologies" in their own words up to a certain point in terms of terminology, while two individuals could not define it, whereas all participants could provide examples. The noteworthy aspect here is that even participants who could not define the term 'educational technologies' were able to give examples, as Figure 1 indicates.

Figure 2. "Educational Technologies as a term"



"Concern levels regarding their future technology usage" category

This category has been generated based on the 6th question in the interviews, and three different codes have been created under this category: "Concerned", "Not Concerned" and "Thinks that she'll have problems but she is not concerned".

Two participants identified as having concerns about technology or educational technologies when they become teachers in the future, anticipating difficulties in managing technology in the classroom. One participant (S-2) attributed her concern to having taken technology and computer-related courses online during the COVID-19 pandemic and lacking confidence due to her inability to practice. The other participant (S-7) cited infrastructure deficiencies in schools as the source of her concern as follows:

"Actually, I think I might face some difficulties with technology in the classroom. During the pandemic, we had our computer and technology classes online. Since we didn't have face-to-face sessions, I couldn't practice. My knowledge and skills in theory are good, but I'm concerned about facing challenges when it comes to practical application." (S-2)

"If I become a teacher in Turkey, I believe I will definitely face issues with using technology. Unfortunately, there are a lot of infrastructure deficiencies in public schools." (S-7)

The majority of participants (9 individuals) indicated that they do not consider encountering any issues related to technology or educational technologies when they become teachers in the future, expressing confidence in their abilities:

"No, I don't think I'll face any issues regarding technology usage when I become a teacher because I have grown up being very familiar with technology." (S-8)

Finally, 3 pre-service foreign language teachers believe that they might encounter challenges in technology when they become teachers, but they are not overly concerned. For instance, S-3, as given below, attributes her lack of concern to her confidence in Web 2.0 tools:

"When I become a teacher, I might face technical issues, yes. Besides that, I can handle everything myself. I can engage students by using technology to play games as well. During my internship at school, I played a game using Kahoot with the students. The students in the class are usually very mischievous, but when it comes to Kahoot, even the student who never pays attention in class would lift their heads up and look at the visuals in the class, listening attentively." (S-3)

The data under the category of "Technology Courses", the second category of this theme, is defined by three codes: Effective courses about technology at the univ., Not very satisfied with lessons related to educational tech., and Effective courses on technology beyond the university. In light of the obtained data, it has been determined that 10 participants found the technology-related courses they took at the university effective, while 6 of them were not satisfied with some technology courses they followed. Based on the researcher's recorded observations and notes during the interviews, it is indicated that for this question, the same participant (for instance S-8, as follows) expressed dissatisfaction with some technology courses, while, conversely, finding some other courses very effective in terms of technology:

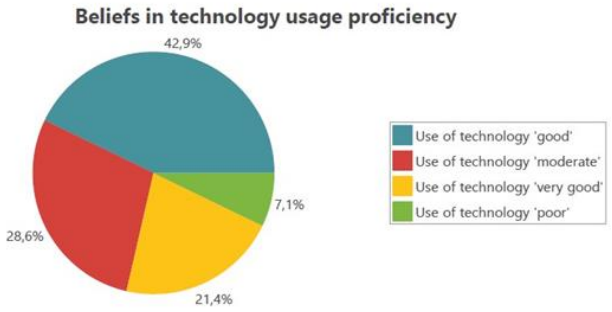
"In terms of technology, we had a course on "Information Technologies" in my education. I didn't find it very effective. Then, I had an elective course taken remotely during the

Covid-19 pandemic. It was called "Open and Distance Education". That course was very effective for me. We learned which platforms can be used for distance learning in that course. Besides these courses, I didn't take any other courses related to technology." (S-8).

Therefore, it is not possible to generalize the data for this question, as pre-service foreign language teachers' responses vary among participants. Furthermore, except for 2 participants (S-2 and S-9), all others answered "no" to the question of whether they have taken any courses or seminars related to technology beyond the university.

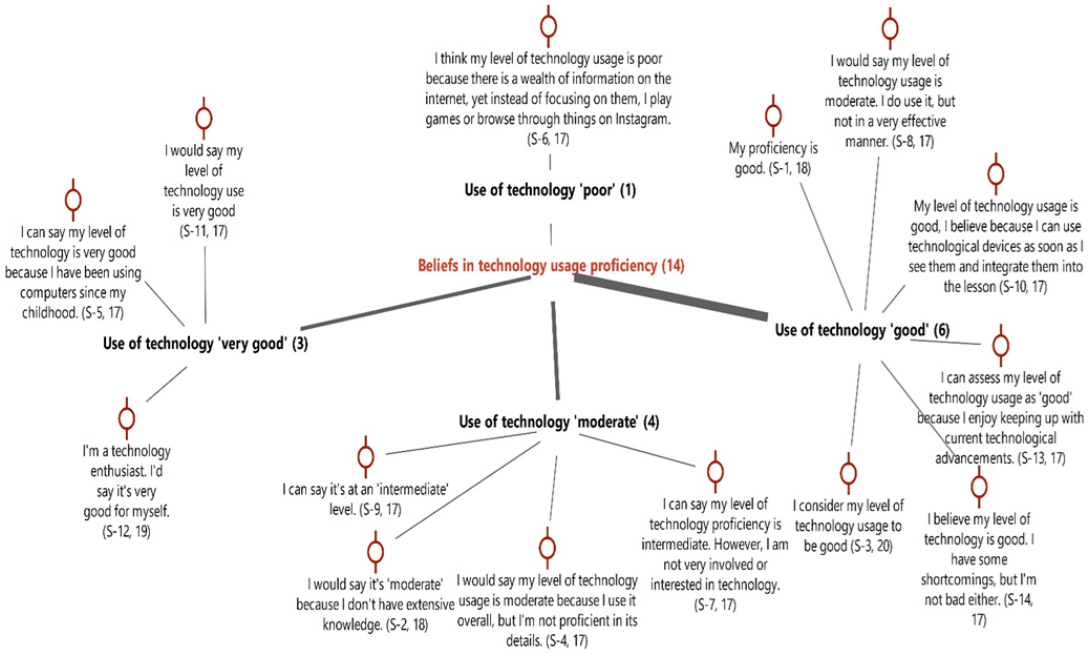
The category "Beliefs in technology usage proficiency" which is the third category of this theme, encompasses four different codes: "Use of technology 'poor'", "Use of technology 'moderate'", "Use of technology 'good'", "Use of technology 'very good'". As seen in the chart below generated in the Maxqda software, the majority of participants (42.9%) believe their level of technology usage is 'good'; 28.6% perceive it as 'moderate'; 21.4% rate it as 'very good,' and the remaining 7.1% believe their usage level is 'poor.'

Figure 3. Beliefs in technology usage proficiency of pre-service foreign language teachers



The visualization below, generated with Maxqda software, reveals an interesting trend: the majority of participants demonstrate a high level of confidence in their technological proficiency within the category of 'beliefs in technology usage proficiency'. The pre-service FL teachers have indicated that they were born in the era of technology and therefore grew up constantly tinkering with technological devices. The average age of 23,5 explains the reason for their confidence.

Figure 4. Beliefs in technology usage proficiency of pre-service foreign language teachers



"Awareness about current technological developments" category

This category has been identified as the fourth and final category under the theme "Perspectives of pre-service foreign language teachers regarding educational technologies", encompassing the four codes: "Following", "Not particularly following but following", "Not following" and "Not following".

Six participants responded "yes" to the question of whether they follow technological developments. The other six individuals provided an answer similar to the example below, stating:

"I don't particularly keep up with the latest technological developments. However, I become aware of new technologies through social media and my friends." (S-5)

The remaining 2 pre-service foreign language teachers (S-7 and S-10) explicitly stated that they do not follow technological developments. Additionally, participants were asked

where they follow technological developments from, and most individuals mentioned that they follow them through social media (10 individuals), particularly Twitter (5 individuals). 2 participants specifically mentioned that they discover technological developments through ChatGPT, an artificial intelligence system.

Theme 2: "Experiences of pre-service foreign language teachers regarding educational technologies"

This theme constitutes the second main theme of the study and addresses the following two research questions:

RQ2- How proficient are pre-service foreign language teachers in utilizing and understanding educational technologies?

RQ3- What are the technological experiences of pre-service foreign language teachers in university classrooms or during internships, and if any, what are the issues they face?

Based on the experiences of FL pre-service foreign language teachers, two different categories and four different codes have been established as follows.

Table 3. "Experiences of pre-service foreign language teachers regarding educational technologies" theme

Theme 2	Categories	Codes	Examples Coded
Experiences of pre-service FL teachers regarding educational technologies	*The Most Effective Educational Technologies*	Used online technologies and applications	I had designed instructional material using **Genially**. On that platform, teachers can add their voice recordings and visuals. (S-13)
		Purpose of using online technologies	Applications supporting the four essential skills are effective in foreign language education. (S-13)
	Technology experiences in training school	Problems	Yes, I experienced a technology-related problem at the internship school. The e-books on the smart board were set to a duration of 40 minutes. After 40 minutes, the smart board would shut down on its own. (S-2)

	Didn't face any problems	we didn't encounter any problems in terms of technology at the internship school. We were using a smart board. We used it comfortably, it was simple. (S-3)

"The Most Effective Educational Technologies" category

Two codes have been created under this category: "Used online technologies and applications" and " Purpose of using online technologies". Teacher candidates have reported benefiting from various university technologies and during their high school internships. The majority of participants, when discussing the purpose of using educational/online technologies in FLT, mentioned listening skills as can be seen below (10 participants). At the same time, some also referred to speaking skills, reading skills, or vocabulary instruction.

"Educational technologies are highly effective, particularly for improving listening skills in foreign languages" (S-6)

Under the second category titled "Technology experiences in training school" two different coding schemes have been implemented: "Problems" and "Didn't face any problems". The notable observation here is that the majority of participants (8 participants) experienced difficulties while using technological devices, especially smartboards during their teaching internships at schools. The remaining 6 participants mentioned that they did not experience any problems in this regard.

Theme 3: "Perspectives and experiences of pre-service foreign language teachers about Web 2.0 tools"

This theme is the third and final theme of the study. Under this theme, a category (Use and Practice of Web 2.0 tools) and four different codes have been created as can be observed below:

Table 4. "Perspectives and experiences of pre-service foreign language teachers about Web 2.0 Tools" theme

Theme 3	Categories	Codes	Examples Coded
Perspectives and experiences of pre-service language teachers about Web 2.0 Tools	*Use and Practice of Web 2.0 tools*	Informed but can't explain them	I've heard of Web 2.0 tools, but I can't explain them. I might be using them, but I'm not sure. (S-5)
		Not sure about Web 2.0 Tools	There are some websites, are they Web 2.0 tools? (S-12)
		Don't know about Web 2.0 Tools	Web 2.0 tools, I don't know what they are. I'm not sure. Can you explain? (S-8)
		Examples of Web 2.0 tools	Kahoot, Cambly, Genially, or platforms like YouTube, PowerPoint, Udemy, Duolingo, are among them. (S-13)

In the interview conducted with 14 pre-service F.L. teachers, a revealing insight into their familiarity with Web 2.0 tools emerged and a question was posed to teacher candidates: "Do you use Web 2.0 tools in FLT&L ? Can you provide examples of how you use them?" which corresponds the research question 4 (RQ4) of this study.

"Use and Practice of Web 2.0 tools" is one of the categories of the research, and under this category, four different codes have been obtained: "Don't know about Web 2.0 Tools," "Not sure about Web 2.0 Tools," "Informed but can't explain them," and "Examples of Web 2.0 Tools." (as shown in figure 5 below).

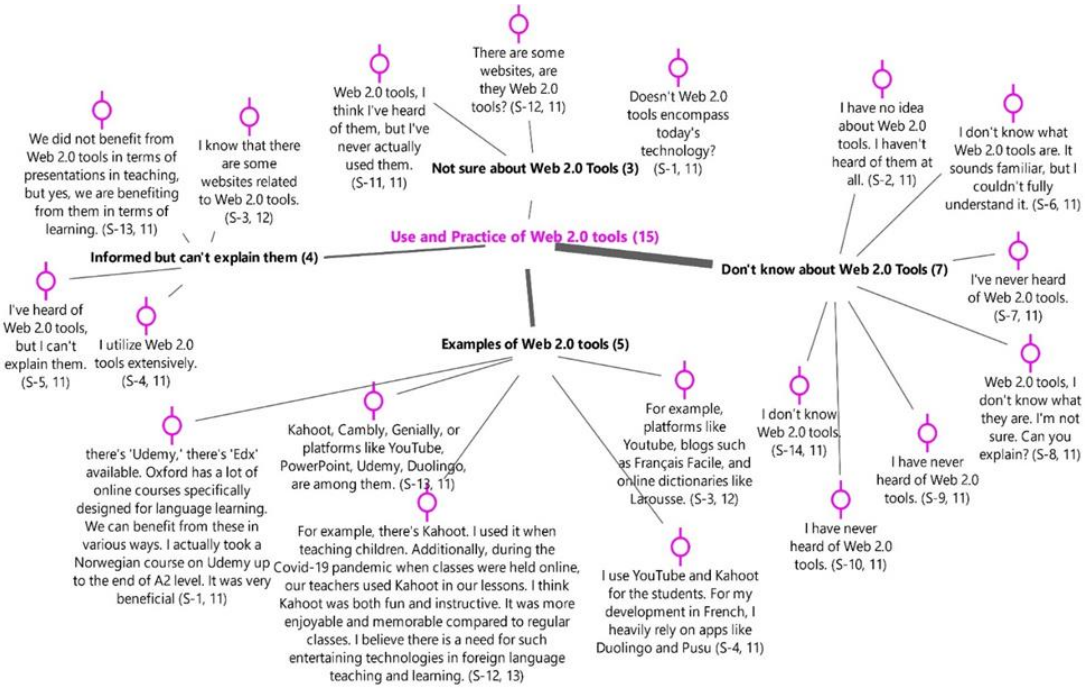
Out of the 14 candidates, 7 admitted to having no information about Web 2.0 tools, while 3 expressed uncertainty about their proficiency. Additionally, 4 candidates claimed to possess knowledge of these tools but struggled to provide a clear definition. Among the participants, only five were able to give examples of Web 2.0 tools, and interestingly, Kahoot was the most frequently cited example (as shown in figure 5 below). This indication suggests varying familiarity and competence with modern technological resources among pre-service F.L. teachers. The revelation emphasizes the significance of digital technology gaps in F.L. teacher training curriculums. When asked about Web 2.0 tools, S-12 provided Kahoot as an example and expressed that she found it very useful:

"There's Kahoot. I used it when teaching children. Additionally, during the COVID-19 pandemic, when classes were held online, our teachers used Kahoot in our lessons. I think Kahoot was both fun and instructive. It was more enjoyable and memorable compared to regular classes. I believe there is a need for such entertaining technologies in FLT&L". (S-12)

When it comes to S-13, she emphasized that she didn't utilize Web 2.0 tools during the teaching phase at internship school but only employed them in her language learning process:

"We did not benefit from Web 2.0 tools in terms of presentations in teaching, but yes, we are benefiting from them in terms of learning. Kahoot, Cambly, Genially, or platforms like YouTube, PowerPoint, Udemy, and Duolingo are among them" (S-13).

Figure 5. Use and Practice of Web 2.0 Tools



Discussion

There are numerous studies focusing on the opinions or experiences of in-service or pre-service foreign language teachers regarding educational technologies, ICT tools or Web

2.0 tools (Aydemir & Demirkan, 2024; Cengiz & Kaçar, 2024; Çepni & Çepni, 2024; Harmandaoğlu Baz & Cephe, 2022). These studies have highlighted that educational technologies and Web 2.0 tools provide individualized learning environments, as they allow individuals to benefit from them based on their own preferences and interests. Additionally, their engaging and enjoyable nature has been reported to enhance motivation and self-efficacy, thereby offering advantages to both students and teachers from this perspective (Degirmencioglu & Gilanlioglu, 2025; Genç & Kirmizibayrak, 2025). In a recent study conducted, the results indicated a broad agreement on the positive impact of technology on motivation and educational outcomes (Degirmencioglu & Gilanlioglu, 2025).

According to another recent study conducted with pre-service foreign language teachers in Turkey, pre-service English teachers predominantly depend on vocabulary exercises through digital resources and utilize them throughout the lesson without making additional efforts to collaboratively build knowledge or involve students in further writing and speaking activities (Çepni & Çepni, 2024).

In a study seeking to examine the effect of a technology-oriented course on the self-confidence and expertise of pre-service English as a foreign language (EFL) teachers regarding the integration of Web 2.0 tools into foreign language teaching, a quasi-experimental design is conducted with 48 third-year English language teaching (ELT) pre-service teachers enrolled in "teaching English to young learners (TEYL)" course (Genç & Kirmizibayrak, 2025). According to the results of the mentioned study, the educational process in this research enhanced participants' abilities to combine technology with their teaching expertise and competencies, and this experimental process had a notable impact on their knowledge and self-efficacy levels.

Unlike many of the studies mentioned above, the present study was conducted with French and German pre-service teachers. Their views were gathered on the following topics: the concept of educational technologies, technology-related issues encountered at internship schools, their confidence in using technology, the effectiveness of the technology courses they attended, their beliefs regarding technology usage proficiency, their experience with technology usage, and their knowledge of and use of Web 2.0 tools.

In this study, twelve out of fourteen participants made an attempt to describe "educational technologies" in their terms, to some extent in terms of terminology. At the same time, two were unable to define it, though all participants were able to give examples. Regarding the concern levels about their future technology usage, most participants (9 individuals) stated that they do not anticipate facing any challenges related to technology or educational technologies when they become teachers, expressing confidence in their skills. However, 4 participants, despite their confidence and lack of concerns, believe that they may encounter difficulties with technological tools in the classroom or that there may be technological shortcomings at the school where they will work. This situation also indicates that pre-service foreign language teachers do not trust the technological tools in schools due to the experiences they have gained. Six of the participants were dissatisfied with certain technology courses they had followed in university. Another finding is that most participants (42.9%) think their technology usage proficiency is 'good'. Six participants also confirmed the question of whether they follow technological developments.

When discussing the purpose of using educational/online technologies in FLT, the majority of participants highlighted listening skills as the primary focus and considered an interesting observation of the present study. Of the 14 candidates, 7 acknowledged not know Web 2.0 tools, while 3 conveyed doubt regarding their expertise. Only five participants provided examples of Web 2.0 tools, with Kahoot being the most commonly mentioned. This finding highlights pre-service FL teachers' familiarity with modern technological tools and underscores the importance of addressing digital technology gaps in FL teacher training programs.

CONCLUSION

The current research investigated French and German foreign language (FL) pre-service language teachers' opinions and experiences regarding educational technologies and Web 2.0 tools. In this study, transcriptions were made based on semi-structured interviews

carried out with 14 pre-service teachers, and a total of 8 categories and 24 codes were formulated across 3 overarching themes. These were presented in tables and figures generated using the Maxqda software (2020).

Pre-service foreign language teachers were questioned about their opinions and experiences on educational technologies and Web 2.0 tools, which have become even more crucial in the field of education with the COVID-19 pandemic, as well as their confidence in using these technologies. These participants have attended some courses online throughout several academic terms, specifically during the COVID-19 pandemic and after the earthquake in Turkey on February 6, 2023. After overcoming all these processes, the positive or negative situations encountered by this group while using educational technologies in high schools during their internship were also investigated. Some pre-service foreign language teachers have expressed their preference for attending educational technologies or information technologies courses face-to-face rather than online. This paper sought answers to questions such as what problems teacher candidates may encounter when they become teachers in the future, how they can solve these problems about educational technologies, what awareness they have about Web 2.0 tools, how they take advantage of them, and whether they encounter any issues while using them.

12 of the 14 participants endeavored to articulate their understanding of the term "educational technologies". Among them, the majority (9) expressed that they are not concerned regarding potential technological challenges in their future teaching careers, while 6 participants expressed dissatisfaction with certain technology-related courses they had taken at university. Most participants (42.9%) perceive their technology usage level as "good", with an additional 21.4% rating it as "very good". This situation indicates their confidence in educational technologies. Participants were queried about their sources for tracking technological advancements, with most indicating social media as their primary source (10 individuals), notably Twitter (5 individuals), while 2 participants specifically cited Chat GPT, an artificial intelligence platform, for discovering such developments.

Pre-service foreign language teachers have also indicated the advantages of utilizing diverse technologies within their university courses and throughout their practicum experiences in secondary education settings. When deliberating on the significance of integrating educational and digital tools into FLT&L, a significant subset of them highlighted the enhancement of listening skills. Another noteworthy finding is that most of the participants (8 pre-service foreign language teachers) encountered challenges when utilizing technological equipment, particularly smartboards, during their teaching practicum at schools.

As for the Web 2.0 tools, among the 14 pre-service foreign language teachers, 7 lacked knowledge, 3 were unsure of their expertise, and only 5 could provide examples, with Kahoot being the most commonly mentioned tool.

These discoveries can potentially provide valuable insights for FL educators, departments, and students, aiding them in making pivotal decisions about integrating and utilizing technology within their academic programs.

For further research in the field of FLT, it is suggested to explore the views or the comportments of pre-service foreign language teachers by conducting quantitative or experimental studies on educational technologies, Web 2.0 tools, and even FLT&L processes supported by artificial intelligence (AI). Furthermore, conducting qualitative or quantitative studies for in-service teachers is also advisable. This would enable the discovery of deficiencies, misconceptions, and innovations regarding the use of educational technologies, Web 2.0 tools, artificial intelligence-supported language models, and other digital technologies, thus addressing existing issues and shortcomings. Educational technologies should be integrated into lifelong learning for in-service teachers as well.

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GENİŞ ÖZET

***Amaç**: Bu çalışmanın amacı Almanca Öğretmenliği ve Fransızca Öğretmenliği Anabilim Dallarında kayıtlı 4. sınıf öğretmen adaylarının eğitimde teknoloji kullanımı ve Web 2.0 araçlarıyla ilgili görüşlerini, deneyimlerini ve farkındalık düzeylerini ortaya çıkarmaktır. Bu kapsamda aşağıdaki araştırma sorularına cevap aranmıştır:*

1-Yabancı dil öÖğretmen adayları eğitim teknolojilerini nasıl tanımlamaktadır?

2- Yabancı dil öğretmen adayları eğitim teknolojilerini kullanma ve anlama konusunda ne kadar yetkindirler?

3- Üniversite sınıflarında veya staj okullarında yabancı dil öğretmen adaylarının teknolojiyle ilgili deneyimleri nelerdir ve varsa karşılaştıkları sorunlar nelerdir?

4- Yabancı dil öğretmen adayları hangi ölçüde Web 2.0 araçlarını veya açık çevrimiçi kaynakları yabancı dil öğretim ve öğrenme süreçlerine dâhil ediyorlar? Bu kullanımlarını öğretim uygulamalarında net örnekler vererek açıklayabilirler mi?

5- Yabancı dil öğretmen adayları teknoloji kullanım düzeylerini nasıl değerlendirirler?

***Yöntem**: Araştırma, öğretmen adaylarının eğitim teknolojileri ve Web 2.0 araçları hakkındaki görüşlerini, deneyimlerini ve bakış açılarını görüşmeler aracılığıyla sorgulamayı içermektedir. Yabancı dil öğretmen adaylarının üniversitede ve staj okullarında eğitim teknolojilerini ve Web 2.0 araçlarıyla ilgili deneyimlerinin öğrenilmek istenmesinden dolayı durum çalışması araştırma desenine başvurulmuştur.*

Bu çalışmada, eğitim teknolojileriyle ilgili deneyime sahip oldukları için üniversitenin son iki döneminde uygulama okullarında staja giden, 4. sınıf Almanca ve Fransızca dil öğretmeni adayı olan 14 öğrenci seçilmiştir. Ayrıca, seçilen yabancı dil öğretmen adayları, COVID-19 pandemisi sırasında çevrimiçi teknolojiler ve Web 2.0 araçlarıyla deneyim kazanmak için çevrimiçi yabancı dil derslerini takip etmişlerdir.

Görüşmeler, her katılımcıyla yüzyüze veya çevrimiçi olarak gerçekleştirilmiştir. Katılımcıların verdiği yanıtlar, hiçbir değişiklik yapılmadan bir Word dosyasına aktarılmıştır. Her yanıtın ve ilgili öğretmen adayının kimliğini gizli tutmak için katılımcılar "S1, S2, S3..." şeklinde belirtilmiştir. Nitel veri analizi sırasında Maxqda yazılımı (2020) kullanılmıştır. Söz konusu yazılımın, verilerin düzenlenmesine, gruplandırılmasına, görselleştirilmesine ve raporlanmasına destek sağladığı düşünülmektedir. Bu çalışmada, (demografik bilgiler hariç) 3 tema altında toplam 8 kategori ve 24 kod oluşturulmuştur. Bu kategoriler ve kodlar, Maxqda yazılımının (2020) yardımıyla oluşturulan tablolar ve şekiller üzerinden tartışılmıştır. Temalar "Öğretmen adaylarının eğitim teknolojileri konusundaki görüşleri", "Öğretmen adaylarının eğitim teknolojileriyle ilgili deneyimleri" ve "Öğretmen adaylarının Web 2.0 araçlarıyla ilgili görüş ve deneyimleri" olarak belirlenmiştir.

***Bulgular:** İlk tema çalışmanın en temel temasını oluşturmakta ve beş kategoriyi ve 16 kodu içermektedir. Bu tema, 1 ve 5. araştırma sorularını ve onlarla ilişkilendirilen kategorileri ve temaları ele almaktadır. 14 katılımcıdan 12'si, eğitim teknolojilerini kendi sözcükleriyle belli bir noktaya kadar tanımlamaya çalışmıştır, geriye kalan iki kişi tanımlayamamıştır. Ancak, dikkat çeken bulgu ise, 'eğitim teknolojileri' terimini tanımlayamayan katılımcıların bile örnekler verebilmesidir. Katılımcıların çoğunluğu (9 kişi), gelecekte öğretmen olduklarında teknoloji veya*

eğitim teknolojisi ile ilgili herhangi bir sorunla karşılaşacaklarını düşünmediklerini belirtti ve yeteneklerine güvendiklerini ifade ettiler. Teknoloji kullanım inançları konusunda katılımcıların çoğunluğu (%42.9), teknoloji kullanım düzeylerini 'iyi' olarak değerlendirmekte; %28.6'sı 'orta düzeyde' olduğunu düşünmekte; %21.4'ü 'çok iyi' olarak derecelendirmekteddir ve geriye kalan %7.1'i kullanım düzeylerini 'zayıf' olarak görmektedir.

İkinci tema olan "Öğretmen adaylarının eğitim teknolojileriyle ilgili deneyimleri" teması araştırma sorularından 2 ve 3'e yanıt oluşturmaktadır. Bu tema altında oluşan bulgulara göre Katılımcıların çoğunluğu, yabancı dil öğretimi derslerinde eğitim teknolojileri veya çevrimiçi teknolojilerin kullanım amacı olarak dinleme becerilerini düşündüklerini belirtmişlerdir. Ayrıca yine katılımcıların çoğunluğunun (8 katılımcı) staj için gittikleri okullarda teknolojik cihazları, özellikle de akıllı tahtaları kullanırken zorluklar yaşadıkları saptanmıştır.

Son tema olan "Öğretmen adaylarının Web 2.0 araçlarıyla ilgili görüş ve deneyimleri" başlığı altında ise 14 katılımcıdan 7'sinin Web 2.0 araçları hakkında hiç bilgi sahibi olmadıkları saptanmıştır. Katılımcılardan sadece beşi Web 2.0 araçlarına örnek verebilmiştir ve Kahoot en sık verilen örnek olmuştur.

***Tartışma ve Sonuç:** Çalışma kapsamında yabancı dil öğretmen adaylarına COVID-19 pandemisiyle eğitim alanında daha da önemli hale gelen eğitim teknolojileri ve Web 2.0 araçları hakkındaki görüş ve deneyimleri, ayrıca bu teknolojileri kullanma konusundaki kendilerine olan güvenlerine yönelik olarak sorular yöneltilmiştir.*

Sonuçlar yabancı dil öğretimi alanındaki eğitimcileri, anabilim dalları ve öğrencileri için önemli saptamalar sunma potansiyeline sahiptir. Çalışmanın eğitimcilere eğitim teknolojilerinin ve Web 2.0 araçlarının akademik programlara entegrasyonu ve kullanımıyla ilgili önemli kararlar almalarında yardımcı olabileceği düşünülmektedir. Yabancı dil öğretimi alanında konuyla ilgili daha fazla araştırma yapılması; eğitim teknolojileri, Web 2.0 araçları ve hatta yapay zeka (AI) tarafından desteklenen yabancı dil öğretimi/öğrenimi süreçleri üzerine nitel, nicel veya deneysel çalışmalar yürütülmesi önerilmektedir.

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Contribution of Researchers

Only a single researcher was involved in the planning, execution, and writing of this study.

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We would like to thank the pre-service foreign language teachers who answered the questions during the data collection process.

Conflict of Interest

The researcher do not have any personal or financial conflicts of interest with other individuals or institutions related to the research.

Ethics Committee Declaration

This study was conducted with the approval numbered E-77082166-604.01.02-652789, granted at the meeting of the Gazi University Ethics Commission dated 09.05.2023 and numbered 09.

Appendix A: Interview Form

Personal Information:

1. Could you specify your age?
2. In which Department of Study are you enrolled? (German Language Teaching/French Language Teaching)
3. Would you please indicate your overall grade point average?
4. What is the year of your entrance into the university?
5. To which school did you go/will you go for the internship in the fourth grade?

Interview Questions:

1- How do you explain the concept of educational technologies? Can you provide an example?

2- Which technologies do you think are effective in foreign language teaching? For what purposes do you consider using technology in foreign language teaching?

3- Do you use Web 2.0 tools in foreign language teaching/learning? Can you provide examples of how you use them?

4- What do you think are the purposes of using technology in foreign language teaching?

5- Did you experience any technology-related problems in the school/classroom/lesson where you conducted your teaching practice? If your answer is YES, could you please specify the reasons?

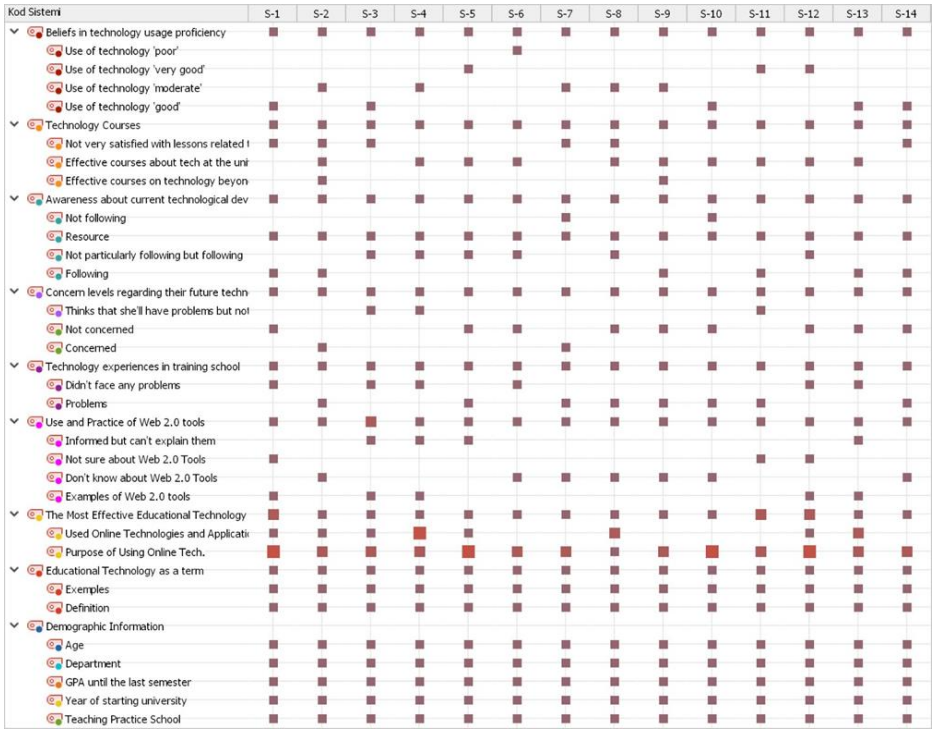
6- Do you think you will face any challenges in using technology when you become a teacher? What are your thoughts regarding your knowledge and practical skills in using these tools?

7- Do you follow current technological developments? If so, how do you do it (which websites or platforms do you use)?

8- What courses do you think have been effective in your technology-related education? Have you received education outside of formal courses, such as workshops, seminars, conferences, etc., on this topic?

9- How would you assess your overall level of technology usage? (very poor, poor, moderate, good, very good) Please explain the reasons for your assessment.

Appendix B: Code Matrix


Kod Sistemi
S-1
S-2
S-3
S-4
S-5
S-6
S-7
S-8
S-9
S-10
S-11
S-12
S-13
S-14
Beliefs in technology usage proficiency
Use of technology 'poor'
Use of technology 'very good'
Use of technology 'moderate'
Use of technology 'good'
Technology Courses
Not very satisfied with lessons related t
Effective courses about tech at the uni
Effective courses on technology beyon
Awareness about current technological dev
Not following
Resource
Not particularly following but following
Following
Concern levels regarding their future techn
Thinks that she'll have problems but not
Not concerned
Concerned
Technology experiences in training school
Didn't face any problems
Problems
Use and Practice of Web 2.0 tools
Informed but can't explain them
Not sure about Web 2.0 Tools
Don't know about Web 2.0 Tools
Examples of Web 2.0 tools
The Most Effective Educational Technology
Used Online Technologies and Applicati
Purpose of Using Online Tech.
Educational Technology as a term
Exemples
Definition
Demographic Information
Age
Department
GPA until the last semester
Year of starting university
Teaching Practice School