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Eğitimde Nitel Araştırmalar Dergisi

A Qualitative Study of Foreign Nursing Students' Experiences of Educational Process*

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Abstract: Foreign students face difficulties in nursing education, where theoretical and practical education processes are applied simultaneously. As to clinical education processes, which have an important place in nursing education, foreign students' experience communication problems with patients, nurses, and peers, and this brings along adaptation problems. In this study, it was aimed to determine the experiences of foreign nursing students in the undergraduate education process. The research was carried out according to the case study, which is one of the qualitative research methods. Ten foreign nursing students were included in the study. Data were collected with a socio-demographic information form and a semi-structured focus group interview form. Five main themes were determined in nursing foreign students' experiences with nursing education: (1)being a nursing student, (2)feeling, (3)reason for preference, (4) being a minority in a country, and (5)solution suggestions. In line with the results from our study, it is thought that ensuring the continuity of Turkish courses throughout undergraduate education, a clearer explanation of theoretical courses, enrichment of courses with different teaching methods, and increasing the use of visual materials will be beneficial for their success and adaptation in order to minimize the language barrier of the students.

Keywords: Foreign student, nursing education, case study

About the Article

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Introduction

In recent years, with the effect of globalization and the changing world order, significant effects have been experienced in the field of higher education (Malekısanımalekı & Altay, 2017; Özaslan et al., 2019). With modernization, the number of students who want to receive a university education outside their own country in developed or developing countries is increasing every year (Kumcağız et al., 2016). As of 2020, although the number of foreign students has decreased due to the impact of the Covid-19 pandemic, the continuation of face-to-face education in higher education has had a positive effect on student mobility (Roliak, 2022). Foreign students who find themselves in a different education system and culture during this internationalization process experience a number of economic, psychological, or social problems, primarily language barriers (Gökyer, 2017; Kıroğlu et al., 2010). Furthermore, it has been reported that these students have problems adapting to an environment different from their own culture in their schools, are subjected to discrimination at times, and have problems concerning their academic performance and social interactions (Yıldırım & Köksal, 2017).

It is stated that foreign students face various difficulties in nursing education, where theoretical and applied education processes are simultaneously applied. The main reason for these difficulties is cultural differences and the fact that the language spoken in the country is different from the native language. (Özaslan et al., 2019). At the beginning of the academic year, an exam is organised to measure the Turkish language level of the students in order to overcome their language difficulties. Students who fail the exam receive language education for one year and continue their university education if they have sufficient language score (Erdil, 2018). However, it is stated that students have problems in adapting and communicating despite receiving language support (Kol et al., 2021; Yılmaz et al., 2021; Ünsal et al., 2024). In studies conducted with nursing students in different countries, it has been determined that the students experience problems such as communication with patients in clinical practices, discrimination by their peers, adaptation to a new culture, non-acceptance of their professional practices by clinical nurses, and difficulties in understanding theoretical lessons (Iskander Narouz, 2018; Dos Santos, 2021; Jeong et al., 2011).

There are studies in the literature that examine the experiences of students who come to Turkey from different countries to receive nursing education during their educational process (Özaslan et al., 2019; Tuzcu et al., 2020; Yılmaz et al., 2021; Kol et al., 2021; Alan et al., 2022; Ünsal et al., 2024). In the study of Özaslan et al. (2019), it was stated that foreign nursing students had problems with adaptation to a foreign language during the theoretical and clinical practice process, they had difficulty in expressing themselves, and the people they communicated with did not understand them. Similarly, in the study of Tuzcu et al. (2020), it was determined that international students experienced adaptation and communication problems in nursing education mostly due to language barriers and had difficulty in understanding the theoretical courses due to reasons arising from language and teaching method. The results of a few studies conducted in recent years are not different from other studies. In general, it is stated that international nursing

students experience various problems such as language barriers, cultural adaptation problems and lack of social support (Yılmaz et al., 2021; Kol et al., 2021; Ünsal et al., 2024).

The population of international students in Turkish universities is increasing. (Kumcağız et al., 2016). Factors such as economic problems, war and unfavourable living conditions are also important factors in the increase of international students in Turkey (Alan et al., 2022). International students show great interest in the nursing profession, which has an important place in health services. The difficulties experienced by students increase their adaptation problems, cause them to give up education and negatively affect the quality of education. Understanding the specific learning needs of international nursing students and providing significant support to meet these needs is critical to the success of nursing education programmes. And furthermore, this study is considered to be important in determining the problems experienced by foreign nursing students who have come to Turkey for education, both in the theoretical and practical education processes and in presenting suggestions to increase the adaptation of such students. In line with this information, our study was carried out to determine the experiences of foreign nursing students in the undergraduate education process.

Method

Type of Research

In this study, it was tried to explain the educational process experiences of foreign nursing students. The research was carried out according to the case study, which is one of the qualitative research methods. Case studies are studies that examine a specific situation in depth. In this way, the factors related to a situation are researched with a holistic approach and the result is reached (Subasi & Okumuş, 2017). In this study, it has been tried to present the experiences of foreign students about the nursing education process with a holistic approach.

Sample

Ten foreign nursing students were included in the study. The data on the sociodemographic characteristics of the students are presented in Table 1. The majority of students from different nationalities are female. The inclusion criteria are as follows: Being a student in the Nursing Department of the Faculty of Health Sciences at the university where the research is carried out (1); being enrolled in the department of nursing with international student quota (2); having at least one semester of nursing education (3); having a basic level of understanding and communication in Turkish (4); agreeing to participate in the study (5).

Table 1.

Sociodemographic Characteristics of Students

	Age	Gender	Nationality	Duration of stay in Turkey
Student 1 (S1)	22	Female	Cameroon	5 years
Student 2 (S2)	27	Male	Afghanistan	3 years
Student 3 (S3)	22	Female	Syria	10 years
Student 4 (S4)	23	Male	Iraq	8 years
Student 5 (S5)	19	Female	Somali	1 year
Student 6 (S6)	21	Female	Russia	12 years
Student 7 (S7)	23	Female	Syria	6 years
Student 8 (S8)	19	Female	Somali	1 year
Student 9 (S9)	26	Female	Saudi Arabia	11 years
Student 10 (S10)	19	Female	Nigeria	1 year

Data Collection

The study data were collected with a socio-demographic information form and a semi-structured Focus Group Interview (FGI) form. In the socio-demographic information form, there are six questions in total: age, gender, nationality, grade level, satisfaction with being a student in the nursing department, and the period of time lived in Turkey. The FGI method gives the opportunity to ask in-depth questions on a specific subject, and to make the situation more explanatory by asking again if the answer is incomplete or not clear, and to complete the answers. This method is more advantageous in terms of the participants being foreign students. The FGI form includes three open-ended questions created by the researchers in line with the literature. For the validity of the questions, the questions were submitted to the opinion of three experts. The data in the study were collected in March 2022. The Consolidated Criteria for Reporting Qualitative Studies (COREQ) checklist was used in the implementation and reporting of the study.

The focus group interview was held face-to-face in the meeting room of the students' school. The interview was conducted by the first and second authors, who participated in seminars on qualitative research methods and had previous qualitative work experience. Considering that students may have difficulties in understanding and speaking Turkish due to the nature of the study, care was taken to ask questions in simple and plain Turkish. A sufficient amount of time was provided to the students to prevent them from answering the questions superficially. The 10 foreign students participating in the study were coded as S1, S2, ... S10 (Table 1).

The students were informed about the location and time of the interview, and the meeting room was suitably arranged for the interview (seating arrangement where all students can see each other, precautions for separation from the group, arrangement of tables and chairs for the participants to sit comfortably, name badges with participants names, etc.). During the interview, a voice recorder was used as the students stated that they

could not express themselves comfortably in case of video recording. The students were informed of the aim of the research, some basic rules about the interviewing process, and the approximate duration of the interview. The interview continued until the saturation point was reached. When the data started to repeat and no new information emerged, the interview ended. FGI lasted for a total of 1.5 hours until a new concept and a different opinion/explanation on the research topic were not produced anymore, and each student was allowed to take the floor.

Data Analysis

In the research, the content analysis method was used to reveal the experiences of foreign nursing students. The first and second authors analysed the data. Both are experienced in qualitative research. During the analysis process, the researchers did not use any software programmes. In the first instance, the researchers analysed the transcribed voice recordings independently of each other. When transcribing the audio recordings, care was taken to write down exactly what the participants said. The researchers formed themes and sub-themes from the participants' statements. In the final stage, the researchers came together to discuss the themes and sub-themes and then to reach consensus. Data analysis consists of seven steps. The steps in the analysis phase of the data are given below.

The steps of the data analysis:

1. The original opinions of the students in the FGIs and the observation notes taken during FGI were transcribed in the computer environment without any changes.
2. The appropriateness of the opinions and notes with the purpose of the research was checked, and it was determined that no opinions other than the purpose of the research were expressed.
3. The opinions were combined in line with their semantical similarity, and the frequency of the opinions combined under each code was specified by creating code names representing these opinions.
4. The codes were grouped according to their semantic integrity and theme names were created to represent these codes.
5. To increase the reliability of the data analysis, the researchers worked independently during the creation of codes and themes. The analyses were then discussed.
6. In order to reduce the effect of positive or negative thoughts that the first and second authors may have about the students during the analysis phase, each student participating in the research was coded by the third and fourth authors with a numbering system (S1, S2, …, S10).
7. In order to ensure the external reliability of the research, the analysis stages of the data were explained in detail. This detailed explanation reduces the possibility of the

research results being affected by subjective assumptions and prejudices and becomes a guide for those to conduct similar research (Çelik et al., 2020).

Reliability and Ethics

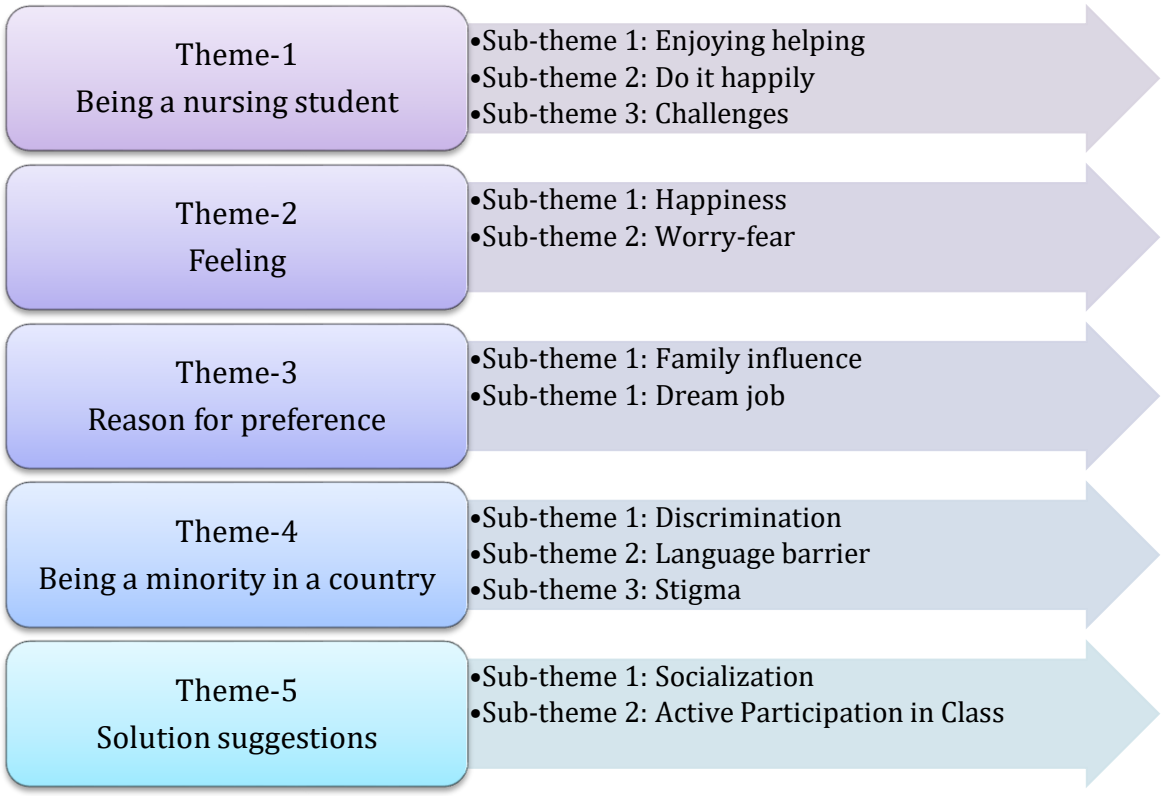
The permit of Sakarya University of Applied Sciences Ethics Committee dated 04.03.2022 and numbered E-26428519-044-41464 was obtained. The students in the sample were informed about the purpose of the study, their roles in the study, and the use of a voice recorder during the focus group interviews, and their verbal consents were obtained. The students participating in the study were also informed by the researchers about their right to participate in the study or to withdraw from the study at any time. The study was conducted in line with the principles of the Declaration of Helsinki.

Results

At the end of the FGIs, five main themes were determined: being a nursing student, feeling, reason for preference, being a minority in a country, and solution suggestions. These themes and sub-themes are presented in Figure 1.

Figure 1.

Themes and Sub-Themes



Theme 1: Being a Nursing Student

It was determined that the nursing students in the study define being a student with some expressions under the headings of "Enjoying helping, doing it happily, and the challenges of working conditions". Therefore, three sub-themes were determined under the theme of being a nursing student. These sub-themes and expressions are provided below.

Sub-theme 1: Enjoying helping

Among the sub-themes, the highest number of opinions (n=3) was expressed in the theme of enjoying helping. Opinions such as touching people's lives, contributing, and being happy to make people happy were reported. Participant expression examples are as follows:

"*I love helping people. I can even work for free in this profession*" / S4

"*I really love nursing and want to pursue this profession. Nursing is a good fit for me because I love people and I love helping people.* " / S2

Sub-theme 2: Do it happily

Another sub-theme under the theme of being a nursing student was determined as 'doing it with love'. Most participants (n=5) stated that they like this profession as it enables them to help. One participant explained this as follows:

"*Nurses stay with patients for a very long time and provide care for them. I wanted to be like them, to help people. I was very happy when I got into the nursing department.*" / S7

Sub-theme 3: Challenges

The challenges of studying in the nursing department, which is an applied education, in another culture and language for students were discussed in this sub-theme (n=3). One participant explained this as follows:

"*… But last semester was very busy for me. We get out of courses and get into internships, so busy. I am very happy that I got into nursing, but internships and exams were very busy… I find internships and exams very busy at the same time.*" / S4

Theme 2: Feelings

It was observed that the students expressed some feelings during the interviews. While answering the questions asked within the scope of our study, the students were observed to experience intense happiness as well as worry and fear about being nurses in the future.

Sub-theme 1: Happiness

When the theme of feeling was examined, almost all students (n=9) were observed to be happy as they would be nurses. All students got into this department and to Turkey willingly. A student expressed his/her feelings as follows:

"*Being a nurse is very good for me. We had an internship last term. It was very nice. We did not have any problems with the patients or the nurses. It was a very good experience*". / S3

Sub-theme 2: Worry-fear

Participants (n=3) were also observed to experience worry/fear and happiness at the same time. When the source of their worry was examined, there were seen to be worries caused by being a foreigner in a country. For example, a participant expressed his/her feelings with the following sentences:

"*As a nursing student, my feelings are a bit complicated, because being a nursing student makes me happy, that's what I want to be, but studying in another country, in another place, in another language… Sometimes I'm afraid if I can do it. Even if I do, will the people (Turks) accept me? I feel such an emotion*". / S1

Theme 3: Reason for Preference

The reason for the preference theme was determined after the foreign students in the study stated that they preferred to be a nursing student in Turkey. The sub-themes related to this theme were determined as family influence and dream job.

Sub-theme 1: Family influence

The participant, who stated to have gotten into this department and to the country with the influence of his/her family expressed his/her opinion as follows: "…. *I decided to become a healthcare professional because my family wanted this and they thought that they had many children and there was not one healthcare professional among them, and I could not resist this idea*" / *S9*.

Sub-theme 2: Dream job

Two participants stated that they had wanted to be nurses since childhood and that nursing was their dream job. Participants expressed this as follows:

My father also worked at the hospital.. *When I went to work with my father and saw the nurses, I said I wanted to be like them.*" / S7

"*Nursing has been my dream since I was little. I wanted to make this dream come true in my country, but it did not happen because of the war.*" / P4

Theme 4: Being a Minority in a Country

Almost all students in the study defined being a nursing student in Turkey as being a minority. Three sub-themes were identified for this definition: discrimination, language barrier, and stigma.

Sub-theme 1: Discrimination

The majority of foreign students studying at a university in Turkey stated that they felt excluded and that they thought there was discrimination (n=8). The opinions of some participants in this sub-theme are as follows:

"*…. or when I'm on the bus and there is an empty seat next to me, people don't want to sit there and I don't know why.*" / S10

"*But my other foreign friends and I think the same: we feel discrimination. I don't feel excluded outside, but I feel excluded especially among my friends at this university.*" / S9 stated to feel higher discrimination in the university environment.

Sub-theme 2: Language barrier

Students generally reported experiencing problems with the difference between spoken-written language and self-expression under this sub-theme (n=9). They also added that they had difficulty understanding the exams and courses at the university.

"*Sometimes I can't explain some stuff and I don't understand some stuff. Especially in exams... because we talk differently when we talk, but sometimes the questions are very difficult for me, especially when the teachers ask questions. I cannot fully understand the question.*" / S2

The statement of a student having difficulty in expressing himself/herself and feeling non-understood by others is as follows:

"*When I go anywhere here, people talk very fast. 'I don't speak this language, calm down and listen to me' (the participant says this in a harsh tone). For example, when I go to get a photocopy, I think about how I will say it. The person in front of me says 'I understand', but no, he does not understand and does not calm down. That person thinks he knows what I am going to say, but no, he does not understand.*" / S10

Sub-theme 3: Stigma

When the answers under the sub-theme of stigma were examined, it was observed that the students were negatively affected by the looks of other people, they felt like they were diseased, and they felt uncomfortable with this situation (n=5). An example statement of this sub-theme is given below:

"*Sometimes I'm walking, people are staring at me. 'Why are you looking at me, is there something wrong with me? ' (The participant is looking at his/her own body here.) I know*

we are different… Because they have white skin, not black like us, no one notices them… When I first came, they were staring at me so much that I was thinking 'Am I sick, is it something wrong with my color, am I not a normal person? ' / S1

Theme 5: Solution Suggestions

As a result of FGI, the students may be identified as mostly having problems regarding language. Therefore, the solution suggestions developed for the experienced difficulties were also solutions regarding the elimination of the language barrier.

Sub-Theme 1: Socialization (n=3)

According to the students' opinions, socialization is one of the most effective activities to overcome the language barrier. Emphasizing the importance of socializing with Turkish students and even with their families, the participant (S9) stated to have learned Turkish words during the time spent with his/her roommate and his/her family:

"*I have a Turkish roommate. My Turkish is very bad, and we speak Turkish with him at home, he helps me a lot. He even takes me to his house; his grandfather and grandmother speak old Turkish. They explain to me the words one by one.*" / S9

Another participant suggested, "*S2: We should participate in the special days of the Turks, we should be together*". One participant suggested that socialization can be achieved with some activities to be done in the classroom.

Sub-theme 2. Active Participation in Class (n=4)

Suggestions for active participation in class were made to solve the language barrier. One participant explained this situation as follows:

"*For example, it's like I give a lecture. Frankly, I want to try. Can I lecture? Will I be able to convey what I want to the other person? I think that if I can do that, only this way I can overcome stage fright or fear of being a speaker.*" / S9

Discussion and Conclusion

Nursing students who receive their education in another country may be at risk of not benefiting from the nursing education they receive sufficiently due to a number of factors, including language, cultural and system differences (Kılıç et al., 2021). This study aimed to understand the experiences of international students studying nursing and to help educators create solutions to existing problems. The study identified five themes: being a nursing student, feeling, reasons for preference, being a minority in a country and solution suggestions. Each theme was discussed separately.

Being a Nursing Student

The international students participating in this study indicated that they were motivated to assist others due to the intrinsic nature of the profession, which they found appealing. However, the students reported experiencing challenges due to cultural and linguistic differences, particularly given the practical nature of the training. Similarly, a study conducted with international students revealed that they encountered challenges during practical training. In particular, it was found that students encountered difficulties in subjects directly related to nursing roles, including caregiving, drug administration, and patient education (Kılıç et al., 2021). The findings of our study indicated that students encountered difficulties due to the concurrent implementation of clinical practices and theoretical courses. It is widely acknowledged that students face significant challenges when pursuing their education in a language other than their mother tongue within the context of nursing education, where theoretical and practical learning are concurrently undertaken (Dos Santos, 2021). In the study conducted by Özaslan et al. (2019), students reported experiencing difficulties in both theoretical and practical education, with greater challenges reported in the latter. It is encouraging to note that the students in our study expressed positive attitudes towards the nursing profession. A review of the literature revealed no studies that corroborated these findings among international students. It is postulated that this result may be attributed to the students' enthusiasm for the nursing profession and the heightened importance of healthcare workers in the context of the ongoing pandemic. It is, however, a matter of concern for those engaged in academic research that the adverse experiences encountered by international students during their period of study may result in their eventual detachment from the profession. In addition to the difficulties experienced due to the content of the education programme, it is recommended that counselling services for international students be increased, especially in the first years of education. Furthermore, the content and duration of orientation programmes for these students should be improved. The concept of intercultural nursing should be emphasised in the courses. Nurses who speak a foreign language should be selected as mentors in clinical practice and Turkish students at the university. The continuity of Turkish courses should be ensured, and the theoretical courses should be explained more clearly. In a recent study, the students in the sample proposed mentoring and orientation programmes as potential solutions to the difficulties they encountered (Ünsal et al., 2024).

Feeling

The study revealed that students held disparate attitudes towards their role as nursing students. The students, all of whom reported that they had elected to pursue their studies in the nursing department, exhibited a range of emotional states, from positive affect to anxiety and fear. The concept of "foreignness" emerges as a significant factor contributing to the negative sentiments expressed by students. In a study, the overwhelming majority of international students enrolled in the nursing department identified the experience of being a foreign student as a significant challenge. The underlying cause of these challenges was identified as the difficulties encountered in

legal processes due to the status of being a foreign national, coupled with the financial and moral challenges faced (Tuzcu et al., 2020). The term "foreigner," in accordance with its denotation, engenders exclusion and marginalization of the individual. Such circumstances may give rise to difficulties in adapting to the new environment. A study conducted in our country revealed that the adaptation of international nursing students to the university environment was at a medium level (Yılmaz et al., 2021). In our country, there has been a shift in discourse towards the use of the term 'international' in reference to individuals from diverse countries pursuing educational opportunities for various reasons (Özaslan et al., 2019). It is recommended that the term 'international' be used in place of 'foreign' when describing students from other countries, and that activities be planned to help these students feel at home in the local culture. Furthermore, it may be beneficial for universities to offer free psychological counseling services to mitigate the negative impact of stress and anxiety on students, as well as to equip those experiencing such emotions with effective coping strategies.

Reason for Preference

A review of the reasons why students in our sample selected the nursing department for their undergraduate studies in Turkey revealed two distinct categories: those who opted for the nursing department at the request of their family and those who did so of their own volition. Similarly, the study by Tuzcu et al. (2020) identified that the reasons for students to choose the nursing department were that their families wanted them to do so and that they wanted to do so themselves. A positive correlation was identified between the willingness of students to pursue a career in nursing and their more favourable attitudes towards the profession (Eycan et al., 2024; Zencir & Eşer, 2016). A deliberate selection of a profession has been demonstrated to enhance job satisfaction among nurses and to elevate patient satisfaction levels (Türk et al., 2018). It is imperative that international students who have elected to pursue a career in nursing are provided with the necessary support to overcome the challenges they may encounter during their academic journey. This will ensure that they are able to maintain their motivation and succeed not only in their studies but also in their future professional endeavours. It is possible that these difficulties may have a negative effect on students' willingness to continue with their studies. Students who have been admitted at the request of their families may require support in developing a sense of professional identity and maintaining high levels of motivation throughout their studies. Otherwise, they may experience psychological difficulties as a result of the challenges they will face during their education and in their professional lives.

Being a Minority in a Country

The majority of students surveyed reported experiencing discrimination. The study conducted by Kol et al. (2021), revealed that international students perceived discrimination, encountered prejudice based on their ethnicity and language, and expressed concerns about being rejected by patients in clinical settings. Additionally, they indicated that their lack of fluency in Turkish led to feelings of diminished importance. In

the study conducted by Özaslan et al. (2019), it was established that the experiences of nursing students varied according to their nationality. Those who migrated from certain countries were found to be subjected to greater stigma. In our study, students of African descent from Somalia, Cameroon and Nigeria reported experiencing greater discrimination on the basis of their skin colour than their counterparts from Russia, Syria and Iraq. Such circumstances have the potential to negatively impact the educational experiences of students. A study revealed that the most common cause of stress experienced by nursing students was discrimination. Junious et al. (2010) identified language difficulties, cultural differences and financial constraints as additional sources of stress for students. The majority of students in the study reported experiencing language difficulties, including comprehension issues in the classroom, communication challenges in Turkish, and exam question comprehension problems. The students cited anxiety about being misunderstood in communication with Turkish individuals, difficulties in understanding certain words, and challenges in reading and comprehending the content in the textbook, even when they could speak Turkish, as key reasons for their difficulties. A review of national and international studies on this topic reveals that the challenges faced by international students in Turkey and elsewhere are largely comparable (Johannessen et al., 2022; Tuzcu et al., 2020; Flateland et al., 2019; Kol et al., 2016; Özkan & Güvendir, 2015; Jeong et al., 2011; Wang et al., 2008). The negative experiences of ethnic minority nursing students due to language and cultural differences constitute an obstacle to their success (Johannessen et al., 2022). The number of international students enrolled at universities is increasing as a result of globalisation. Turkey is one of the most preferred countries for international students (Ünsal et al., 2024). It is imperative that international nursing students arriving in our country are able to adapt to the university environment in order to avoid negative experiences. It is recommended that orientation programmes be enhanced with respect to language and cultural aspects, thus facilitating the integration of international students into the university and the department.

Solution Suggestions

It is imperative that the challenges faced by international nursing students, who will ultimately be responsible for the wellbeing of others in their professional careers, are addressed in order to ensure their success. The findings of our study and an analysis of the relevant literature indicate that language is the primary source of difficulties encountered by international students, both in terms of academic performance and communication with their peers. In the study conducted by Dapremont (2011) with Black nursing students in the USA, it was determined that students required peer support and encouragement of group work with other students in order to enhance their academic success. The students participating in our study highlighted the significance of speaking Turkish in facilitating language acquisition and communication, and proposed socialisation and active participation in the course as potential solutions to communication challenges. In this regard, universities may wish to consider encouraging the use of active learning methods that will facilitate interaction between international and Turkish students and encourage international students to utilise the Turkish language

within the course. This may involve organising activities related to the Turkish language and culture, as well as events that introduce different cultures. Additionally, the establishment of student communities, which international students can participate in, may prove beneficial.

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Genişletilmiş Türkçe Özet

Küreselleşmeyle birlikte, lisans eğitimini başka ülkelerde alan öğrenci sayısında yıllar geçtikçe artış görülmektedir (Kumcağız vd., 2016). Ekonomik sorunlar, savaş ve olumsuz yaşam koşulları gibi çeşitli nedenlerden dolayı Türkiye, oldukça tercih edilen ülkelerden biri haline gelmiştir (Ünsal vd., 2024; Alan vd., 2022).

Teorik ve uygulamalı eğitim süreçlerinin eş zamanlı olarak uygulandığı hemşirelik eğitiminde uluslararası öğrencilerin çeşitli zorluklarla karşılaştığı belirtilmektedir. Bu zorlukların temel nedeni kültürel farklılıklar ve ülkede konuşulan dilin anadilden farklı olmasıdır. (Özaslan ve ark., 2019). Ülkemizde her akademik yılın başında, öğrencilerin dil zorluklarını aşmak amacıyla Türkçe dil seviyelerini ölçmek için bir sınav düzenlenmekte ve sınavda başarısız olan öğrenciler, bir yıl boyunca dil eğitimi almaktadırlar. Yeterli dil puanına sahip olmaları halinde üniversite eğitimlerine devam etmektedirler (Erdil, 2018). Ancak, öğrencilerin dil desteği almalarına rağmen uyum ve iletişim kurmada sorun yaşadıkları bilinmektedir (Kol vd., 2021; Yılmaz vd., 2021; Ünsal vd., 2024). Farklı ülkelerde hemşirelik öğrencileri ile yapılan çalışmalarda öğrencilerin klinik uygulamalarda hastalarla iletişim, akranları tarafından ayrımcılık, yeni bir kültüre uyum, mesleki uygulamalarının klinik hemşireleri tarafından kabul edilmemesi, teorik dersleri anlamada güçlükler gibi sorunlar yaşadıkları belirlenmiştir (Iskander Narouz, 2018; Dos Santos, 2021; Jeong ve ark., 2011).

Uluslararası öğrenciler, sağlık hizmetlerinde önemli bir yere sahip olan hemşirelik mesleğine yoğun ilgi göstermektedir. Öğrencilerin yaşadıkları zorluklar uyum sorunlarını artırmakta, eğitimden vazgeçmelerine neden olmakta ve eğitim kalitesini olumsuz etkilemektedir. Uluslararası hemşirelik öğrencilerinin özel öğrenme ihtiyaçlarını anlamak ve bu ihtiyaçları karşılamak için destek sağlamak, hemşirelik eğitim programlarının başarısı için kritik öneme sahiptir. Bu bilgiler doğrultusunda çalışmamız, uluslararası hemşirelik öğrencilerinin lisans eğitim sürecindeki deneyimlerini belirlemek amacıyla gerçekleştirilmiştir. Bu çalışmanın, Türkiye'ye eğitim için gelen uluslararası hemşirelik öğrencilerinin hem teorik hem de pratik eğitim süreçlerinde yaşadıkları sorunların belirlenmesi ve bu öğrencilerin uyumlarının artırılmasına yönelik öneriler sunulması açısından önemli olduğu düşünülmektedir.

Nitel araştırma yöntemlerinden biri olan tanımlayıcı türde yürütülen bu çalışmanın örneklemini, farklı milletlerden gelen 10 yabancı uyruklu hemşirelik öğrencisi oluşturmuştur. Araştırmanın verileri, Sosyo-Demografik Bilgi Formu ve Yarı Yapılandırılmış Odak Grup Görüşmesi Formu ile toplanmıştır. Odak Grup Görüşmesi Formu, araştırmacılar tarafından literatür doğrultusunda oluşturulan üç açık uçlu soru içermektedir. Soruların geçerliliği için sorular, üç uzmanın görüşüne sunulmuştur. Odak grup görüşmesi, Mart 2022'de araştırmanın yapıldığı üniversitenin toplantı salonunda yüz yüze gerçekleştirilmiştir. Görüşme nitel araştırma yöntemleri üzerine seminerlere katılmış ve daha önce nitel çalışma deneyimi olan birinci ve ikinci yazarlar tarafından yapılmıştır. Görüşme araştırma konusuyla ilgili yeni bir kavram, farklı bir görüş/açıklama üretilmeyinceye kadar toplam 1,5 saat sürmüş ve her öğrenciye söz hakkı verilmiştir.

Araştırma verilerinin analizi için içerik analizi yöntemi kullanılmıştır. Birinci ve ikinci yazarlar verileri analiz etmiştir. Analiz sürecinde araştırmacılar herhangi bir yazılım programı kullanmamıştır. İlk etapta, araştırmacılar yazıya dökülen ses kayıtlarını birbirlerinden bağımsız olarak analiz etmişlerdir. Ses kayıtları yazıya dökülürken katılımcıların söylediklerini tam olarak yazmaya özen gösterilmiştir. Araştırmacılar, katılımcıların ifadelerinden temalar ve alt temalar oluşturmuştur. Son aşamada araştırmacılar, bir araya gelerek tema ve alt temaları tartışmış ve uzlaşmaya varmışlardır. Çalışmanın uygulanmasında ve raporlanmasında Consolidated Criteria for Reporting Qualitative Research (COREQ) kontrol listesi kullanılmıştır. Çalışmanın yapılabilmesi için kurum ve etik izinler alınmış olup çalışma Helsinki Deklarasyonu ilkeleri doğrultusunda yürütülmüştür.

Veri analizi sonucunda; hemşirelik öğrencisi olmak, duygu, tercih nedeni, bir ülkede azınlık olmak ve çözüm önerileri olmak üzere beş ana tema bulunmuştur. Araştırmaya katılan hemşirelik öğrencilerinin öğrenciliği "Yardım etmekten zevk almak, severek yapmak ve çalışma koşullarının zorlukları" başlıkları altında bazı ifadelerle tanımladıkları belirlenmiştir. Bu nedenle hemşirelik öğrencisi olmak teması altında üç alt tema belirlenmiştir. Görüşmeler sırasında öğrencilerin bazı duyguları ifade ettikleri gözlemlenmiş ve duygu ana teması oluşmuştur. Çalışmamız kapsamında sorulan soruları yanıtlarken öğrencilerin yoğun bir mutluluğun yanı sıra gelecekte hemşire olacaklarına dair endişe ve korku yaşadıkları gözlemlenmiştir. Çalışmada yer alan yabancı uyruklu öğrencilerin Türkiye'de hemşirelik öğrencisi olmayı tercih ettiklerini belirtmeleri üzerine tercih nedeni teması belirlenmiştir. Bu temaya ilişkin alt temalar ise aile etkisi ve hayalindeki meslek olarak belirlenmiştir. Çalışmaya katılan öğrencilerin neredeyse tamamı, Türkiye'de hemşirelik öğrencisi olmayı azınlık olmak olarak tanımlamıştır. Azınlık teması için ayrımcılık, dil engeli ve damgalanma olmak üzere üç alt tema belirlenmiştir. Yapılan görüşme sonucunda öğrencilerin, yaşanan zorluklara yönelik geliştirilen çözüm önerileri, sosyalleşme ve derse etkin katılım şeklinde olmuştur.

Çalışmamızda öğrencilerin büyük çoğunluğunun, hemşirelik mesleğini yardım etme güdüsüyle yapmak istedikleri ve mesleği sevdikleri belirlenmiştir. Literatürde konuya ilişkin araştırmalar incelendiğinde; uluslararası öğrencilerin bu ifadelerini destekleyen çalışma sonucuna rastlanmamıştır. Araştırmamızdan elde edilen bu sonucun, öğrencilerin hemşirelik mesleğine olan ilgisinden, son yıllarda COVID-19 pandemisi ile birlikte sağlık çalışanlarının öneminin ön plana çıkmasından kaynaklandığı düşünülmektedir. Bu çalışmada öğrencilerin çoğu ayrımcılığa maruz kaldıklarını bildirmişlerdir. Somali, Kamerun ve Nijerya'dan gelen siyahi öğrenciler; Rusya, Suriye ve Irak'tan gelen hemşirelik öğrencilerine göre ten renkleri farklı olduğu için daha fazla ayrımcılığa maruz kaldıklarını ifade etmişlerdir. Ayrıca çalışmamızdaki öğrencilerin çoğu dil problemi yaşadıklarını, dersleri anlamakta zorluk çektiklerini, Türkçe dilinde kendilerini ifade etmede güçlük çektiklerini, sınavlarda soruları anlamakta zorlandıklarını ifade etmişlerdir. Bunun nedenleri arasında Türk bireyler ile iletişim kurmada anlaşılamama kaygısı yaşamalarını, bazı kelimeleri anlamakta güçlük çekmelerini, Türkçe konuşmakta zorlanmasalar bile kitaptaki kelimeleri okuyup anlama konusunda sıkıntı yaşadıklarını söylemişlerdir. Görüldüğü üzere çalışmamızdaki

uluslararası öğrenciler en çok dil problemlerini ve bir ülkede azınlık olmaya bağlı ayrımcılık yaşamalarını olumsuz deneyimleri olarak ifade etmiştir. Konu ile ilgili yapılan ulusal ve uluslararası çalışmalar çalışma bulgularımızı destekler niteliktedir (Johannessen et al., 2022; Tuzcu et al., 2020; Kol et al., 2016; Özkan & Acar-Güvendir, 2015; Jeong et al., 2011; Johnson & Mohide, 2008; Wang et al., 2008). Çalışmamızdan elde edilen sonuçlar doğrultusunda öğrencilerin dil problemlerini minimuma indirmeye yönelik lisans eğitimleri boyunca Türkçe kurslarının devamlılığının sağlanması, teorik derslerin daha açık anlatılması, farklı öğretim yöntemleri ile derslerin zenginleştirilmesi, görsel materyallerin kullanımının arttırılmasının başarı ve uyumları açısından yararlı olacağı düşünülmektedir. Ayrıca üniversitede uluslararası öğrencilerin sosyal ilişkilerini güçlendirmeye yönelik danışmanlık verilmesi, öğrenci topluluklarına katılımlarının sağlanması, uluslararası ve Türk öğrencilerin etkileşim içinde olmalarını sağlayacak etkinliklerin düzenlenmesi sosyokültürel uyumlarını arttırabilir. Bununla birlikte öğrencilerin sosyalleşme sürecinin eğiticiler tarafından yakından takip edilerek, diğer öğrenciler ile iletişimlerinin desteklenmesinin faydalı olacağı düşünülmektedir.

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Opinions of Science Teachers Working in BİLSEMs on the Adequacy of In-Service Training*

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Abstract: The current study aims to determine the opinions of science teachers working in BİLSEMs on the adequacy of the in-service new skills provided by the Ministry of National Education of Turkiye. The study employed the case study design, one of the quantitative research models. The study participants are 11 science teachers working in BİLSEMs in different provinces in different regions of Turkiye in the 2022-2023 school year. In the determination of the participants, the purposive sampling method was used. As the data collection tool, a semi-structured interview form developed by the researchers in line with the expert opinions was used. Descriptive and content analysis techniques were developed to analyze the data obtained from the interviews. As a result of the research, it was determined that the participants expressed their opinions that in-service training through distance education was insufficient, that the content should be enriched, and that essential information for specially gifted children and different methods for science lessons should be included in the in-service training course. In this regard, various in-service training programs designed by the opinions of teachers can be developed.

Keywords: In-service training, science education, gifted students, Science and Art Centres

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Introduction

Gifted individuals contribute to discovering new knowledge and assist in transferring information to future generations (Sternberg, Ambrose & Karami, 2021). It is, therefore, necessary to provide an exceptional education service to gifted individuals in line with their interests and abilities, considering the individual differences, learning levels, or speeds that arise during educational activities (Heacox & Cash, 2020). In Turkiye, BİLSEM (Science and Art Centre under the Republic of Turkiye, Ministry of National Education), established and operated by specialized subject teachers, is responsible for maximizing the existing capacity of gifted individuals. BİLSEM aims to determine fields where gifted individuals can conduct in-depth studies, considering their talents and interests. It plans activities where these gifted individuals can explore their unique skills in these identified areas and then implements these planned activities through individual and group training sessions (BİLSEM Yönergesi, 2019). Individuals can participate in BİLSEM education within the framework of the established program during their non-formal education while continuing their primary, middle school, or high school education (Çoban, 2020). The science field, one of the areas where gifted individuals receive education, is crucial for enabling them to play a vital role in the progress of society as productive individuals, utilizing their capacities and creativity (Yalçınkaya, 2023).

You will attach great importance to science, which is the tool of man's effort to understand and interpret what is happening around him with a deep sense of curiosity, for the world in which you will live (Erdoğan, 2023). In the worldwide education system, where the steps towards knowledge are easy, and the prohibitions on knowledge are increasingly increasing, for effective science education to be given starting from pre-school education, the system must be sensitive to scientific and technological advances and the methods to be used in transferring these advances to individuals must be in a structure (Önal and Sarıbaş, 2019). A science education system with this innovative structure requires well-equipped, original and creative science teachers with sufficient knowledge. When individuals perceive science-related theories and activities as significant for themselves and their environment, they become more enthusiastic about actively participating in the tasks and activities they want to carry out within the context of the lessons (Aguilera & Perales-Palacios, 2020). The characteristics and qualifications of teachers who will provide education to gifted individuals having higher educational aspirations (including Master's and Ph.D. degrees) compared to their peers (Eker & Sarı, 2020). Teachers responsible for the education of gifted individuals are expected to be competent to identify their educational needs and prepare and implement suitable education plans accordingly. They should monitor the impact of their planned and implemented educational programs on gifted individuals and take precautions against potential problems that may arise during the process (Sak et al., 2020).

In Turkiye, teachers providing education to gifted individuals need to demonstrate a continuous effort in possessing qualities such as being up-to-date, open to innovation, and capable of implementing education programs tailored to the needs of students (Akhan & Altaş, 2021) since teachers possessing these qualities positively impact the

permanence of education (Karataş, 2020). This understanding necessitates that teachers should be in a continuous state of development throughout their professional careers (Dilekçi, 2022). In the past, teachers could sustain their professional lives, believing that knowledge was fixed and static, relying on the information they acquired during their undergraduate education. However, in today's rapidly changing world, where understanding is evolving rapidly, it becomes essential for teachers to keep up with the latest developments in their field (Dilekçi, 2021). Therefore, to continue developing their knowledge, skills, and competencies, teachers need to participate in in-service training even after receiving pre-service education and starting their careers (Yüceland, 2022). With in-service training, teachers' knowledge, opinions and experiences deepen throughout their careers and that will help them develop professionally (Kocabaş, 1993). However, when the existing research is examined, it is seen that the in-service training received by teachers who provide education to gifted individuals in BİLSEMs is ineffective both for teachers themselves and indirectly for the students they educate (Ağca, 2019).

Upon reviewing the literature, it becomes evident that some studies have concluded that in-service training needs to be improved. Kızılkaya (2021) aimed to determine the critical issues and practices in the education of gifted students in BİLSEMs within the framework of existing problems and to determine solutions to them and stated that the teachers and administrators working in BİLSEMs find the in-service training they receive insufficient. The teachers were found to need in-service training on technology and communication skills. Avcı and Güven (2021) conducted a study to determine the in-service training needs of teachers about online education. They found that teachers perceive their professional development as necessary and have expectations for in-service training, especially in supporting students' development in their areas of interest, using digital tools, assessment and evaluation techniques, and generating original content. Tupas and Noderama (2020) examined the in-service training programs for teachers in the Philippines. They found that the participants attended in-service trainings every year but perceived the effectiveness and efficiency of these trainings as insufficient. The participants believed that the number and quality of in-service training should be increased. Edinger (2020) examined the professional development program for online teachers in the education of gifted individuals and found that teachers perceived this program as highly beneficial for the education and pedagogy of gifted students, and they felt encouraged to improve through this program continuously. However, they also reported that the program's online format was ineffective.

The importance of teachers, the most critical education component, becomes highly evident. For teachers to adapt their educational programs according to individual differences, maintain the continuity of a dynamic educational process, stay up-to-date with recent developments, and enrich education with various new activities, the in-service training they receive should be continuous, high-quality, and sufficient. When the relevant literature is reviewed, a few studies examine the effectiveness of in-service training programs implemented by the Ministry of National Education (MoNE) under the Republic of Turkiye for science teachers working with gifted students and their impact on gifted students. This study fills the existing literature gap on the professional development

of teachers guiding gifted students in BİLSEMs by providing crucial insights into the process of updating in-service training programs. Furthermore, this study contributes to identifying deficiencies in the in-service training provided to science teachers in BİLSEMs. The current study aims to identify the expectations of science teachers who interact directly with gifted students regarding the in-service training they receive and the impact of in-service training programs on the development of gifted students in science. Thus, the study can contribute to restructuring the existing in-service training programs. Considering the differences between gifted students in the field of science, the fact that there is no specific in-service training course for science teachers who undertake the task of teaching science subjects within the scope of the enriched education program with these children and that there is no study that makes a difference in the literature in this field makes this study unique.

This study aims to determine the adequacy of the in-service training provided in BİLSEMs, as science teachers perceive. In this context, the main research question is as follows: In this context, the main problem statement of the research is: What is the contribution of the in-service training received by science teachers working in BİLSEMs to the professional development of teachers and the education of gifted children?

In line with the primary purpose of the study, answers to the following sub-problems were sought:

1. What are the opinions of science teachers working in BİLSEMs on the applications in the in-service training they receive?

2. What are the opinions of science teachers working in BİLSEMs on the content of the in-service training they receive?

3. What are the opinions of science teachers working in BİLSEMs regarding the training they should receive in their branch to cater to the needs of gifted students?

4. What are the effects of the in-service training they receive on developing gifted students in science?

Method

Research Design

Because of its purpose, this study was conducted with a case study with a qualitative analysis. Qualitative research allows for the in-depth examination and interpretation of individuals' thoughts and perceptions about their worlds and lives (Merriam & Grenier, 2019). This design's main idea is to understand the research group's individual meaning structures and intentions by looking at the relevant phenomenon from the perspectives of individuals (Mayring, 2011).

Study Group

The study group consists of 11 science teachers working in BİLSEMs in different provinces in different geographical regions of Turkiye (Black Sea, Eastern Anatolia, and Central Anatolia) in the spring term of the 2022-2023 school year. Since the answers from the participants to the interview questions were close to each other and uniform, 11 participants were deemed sufficient for this study. During the data collection process, the inclusion of more participants in the study was stopped as similar answers to the interview questions began to appear. The criterion sampling method, one of the purposive sampling methods, was used for the study group to consist of science teachers working in BİLSEMs and already receiving in-service training. While creating the sample group, it was aimed to ensure sample diversity by selecting BİLSEMs located in different geographical regions. In accordance with the purpose of the study, science teachers who worked in BİLSEMs and had previously received in-service training were preferred as samples. Purposive sampling is used in qualitative research to ensure that individuals with specific characteristics are included in the study (Berg & Lune, 2019). Criterion sampling is a method in which individuals with certain features are selected as observation units, and people with these characteristics are included in the sample (Büyüköztürk et al., 2014). The personal characteristics of the participants involved in the study on a volunteer basis are given in Table 1.

Table 1. *Demographic Characteristics of the Participants*

Variable	Characteristic	N
Gender	Female	7
	Male	4
Education Level	Undergraduate	2
	Graduate	9
Professional Experience	Less than five years	1
	6-10 years	3
	11-15 years	3
	16-20 years	0
	21 years and more	4

Data Collection Tool

An interview form consisting of open-ended questions developed by the researchers to determine the opinions of science teachers working in BİLSEMs on the adequacy of in-service training they receive was used as the data collection tool. The initial form of the data collection tool was created by obtaining expert opinions from four faculty members specialized in teacher training. Getting expert opinions is a process involving examining the research by individuals who are experts in qualitative research methods and also knowledgeable about the subject of the study, aiming to enhance the study's credibility (Creswell, 2003). The data collection tool was then administered to two science teachers working in BİLSEMs for a pilot study, and the final version of the data collection tool was done. When preparing the data collection tool, conducting pilot interviews to test the

items and determine which ones to use in the study is important for ensuring the validity and reliability of the study (Polat, 2022).

The first section of the data collection tool aims to gather demographic information, including the teacher's professional experience, educational background, and participation in projects or competitions with their students. The second section includes open-ended questions to allow the teachers to evaluate the implementation and content of the in-service training they have received, identify the training they should receive in their branch, and assess the impact of the in-service training on gifted students.

Data Collection

The data of the study were collected using the semi-structured interview technique. Participants were contacted to schedule interviews, and appointments were made. Before the interviews, the participants were informed that participation would be voluntary, that their personal information would be kept confidential, that their interviews would be audio-recorded during the interviews, and that the data obtained would only be used for scientific purposes. The interviews lasted approximately eight to ten minutes, and the data obtained from the interviews were recorded using an audio recording device and transferred to a digital platform for storage. The participants' demographic information was kept confidential by giving them code names such as P1, P2, … . A separate form was prepared for each participant for the analysis process. After the interviews were completed, the responses given by the participants were transcribed, and the analysis phase was initiated.

Data Analysis

The audio recordings obtained from the participants were transcribed. The answers to the interview questions were analyzed by creating themes and codes. Descriptive analysis and content analysis techniques were used to analyze the obtained data. Descriptive analysis is a type of qualitative data analysis in which the data obtained with different data collection techniques are summarized and interpreted according to predetermined themes, and the researcher uses direct quotations to reflect the thoughts of the individuals interviewed (Yıldırım & Şimşek, 2003). Content analysis is one of the most used methods among the different types of qualitative data analysis. In content analysis, text elements are classified using inductive and deductive methods (Özbay, 2021).

Validity and Reliability

In order to increase the credibility of the results obtained in qualitative studies, it is necessary to test the reliability and validity. During the data collection process, allowing participants to express themselves freely and to answer questions without any intervention and preparing a detailed report on how the data analysis process is conducted positively affects the validity (Creswell & Poth, 2016).

The data obtained from the interviews were analyzed using the content analysis technique, resulting in eight themes and 18 codes. Then, two experts were asked to match the obtained themes and principles to test the reliability. After this match, the agreement and disagreement numbers were used to calculate the reliability of the study using Miles and Huberman's (1994) formula "Reliability = (agreement/agreement + disagreement) x 100)," and thus, the reliability was found to be 94%. In qualitative research, an agreement of 90% or higher between expert evaluations and the researcher indicates that reliability has been achieved (Saban, 2009). Both experts consulted concluded that both the themes and codes are consistent with each other. This result shows that the study is reliable in terms of the consistency of the findings.

Ethics

In the current study's stages, great care was taken not to violate ethical principles and moral rules were adhered to. The ethics committee approval for the study was obtained due to the eighth session with decision number 01-54 dated May 16, 2023,from the Gaziosmanpaşa University Social and Human Sciences Research Ethics Committee.

Findings

This section presents the results of the data analysis obtained from the interviews with 11 science teachers working in BİLSEMs. According to the results of the content analysis conducted on the interview data, the data were collected under eight themes: "Face-to-Face Training," "Distance Training," "Subjects Covered in the Training," "Its Advantages," "Subject Content," "Personal Development," "For the Teacher" and "For the Student."

Table 2. *All the Themes and Codes*

Themes	Codes	Frequency
Face-to-Face Education	Applied training	2
	Lack of quantity	3
	Experience sharing	2
Distance Training	Useful training	2
	Inadequate training	6
Subjects Covered in the Training	Rich content	5
	Being inadequate	3
Its Advantages	Having contact with experts	2
	Cost	2
Subject Content	Technological information	3
	Characteristics of gifted students	3
	Enriched activities	2
Personal Development	Sense of adequacy	3
	Professional need	10
For the Teacher	Increasing self-confidence in science	2

	Variety of activities	2
For the Student	Finding useful	6
	Finding effective	3

In the data collected regarding in-service training applications, two themes were identified: "Face-to-Face Training" and " Distance Training." Under the theme of "Face-to-Face Training," a total of three codes were created: "Applied training," "Lack of quantity," and Experience sharing." Under the theme of "Distance Education," two codes were determined: "Useful training" and "Inadequate training."

In the data collected regarding the content of the in-service training, two themes were identified: "Subjects Covered in the Training" and "Its Advantages." In the theme of "Subjects Covered in the Training," a total of two codes were identified: "Rich content" and "Sense of inadequacy." Under the theme of "Its Advantages," two codes were determined: "Having contact with experts" and "Cost."

In the data collected regarding the branch of the participants, two themes were identified: "Subject Content" and "Personal Development." Under the theme of "Subject Content," a total of three codes were identified: "Technological knowledge," "Characteristics of gifted students," and "Enriched activities." Under the theme of "Personal Development," two codes were identified: "Sense of adequacy" and "Professional need".

Two themes were identified in the data collected regarding the effect of in-service training on the development of gifted students in science: "For the Teacher" and "For the Student." Under the theme of "For the Teacher," two codes were determined: "Increasing self-confidence in science" and "Variety of activities." Under the article "For the Student," two codes were identified: "Finding useful" and "Finding effective."

In the current study, firstly, the teachers' opinions regarding the in-service training programs they received were examined. The findings regarding the teachers' opinions on the applications in the training program are presented in Table 3.

Table 3. *Participants' Opinions on the In-service Training Applications*

Theme	Code	Frequency
Face-to-Face Training	Applied training	2
	Lack of quantity	3
	Experience sharing	2
Distance Training	Useful training	2
	Inadequate training	6

Table 3 shows that the participants' opinions on the applications in the in-service training program are categorized under the themes of "Face-to-Face Training" and "Distance Training." The relevant table sheds light on the participants' opinions on the applications

in the in-service training program they received, the observed deficiencies, and the areas where they need improvement.

The participants' opinions predominantly concentrate on the code of "Inadequate training" within the theme of "Distance Training," with six participants stating opinions. Some of the participants' related ideas are presented below:

"...I do not personally believe that the current in-service training is very beneficial or of high quality because something that is done at a distance does not seem very useful to me." (P1)

Under the "Face-to-Face Training" theme, the "Lack of quantity" code comes to the fore, with three participants stating opinions about it. Participants' opinions on this code are presented below:

"I am trying to attend the in-service training sessions for BİLSEM, but they are limited. There are restricted quotas, like 20 participants in one group or 30 participants in another group. How will they accommodate 60 people from all over Turkiye, or how they will select participants, remains uncertain." (P6)

The teachers' opinions on the content of the in-service training they received were examined, and the results are presented in Table 4.

Table 4. *Participants' Opinions on the Content of the In-service Training*

Theme	Code	Frequency
Subjects Covered in the Training	Rich content	5
	Being inadequate	3
Its Advantages	Having contact with experts	2
	Cost	2

Table 4 shows that the participants' opinions on the content of in-service training are grouped under the themes of "Subjects Covered in the Training" and "Its Advantages." The teachers' opinions gathered under the theme of "Subjects Covered in the Training" are predominantly concentrated on the "Rich content" code. Participants' opinions on this code are presented below:

"I do not believe there is any problem with their content. I think they have rich and valuable content." (P2)

The participants' opinions are also concentrated on the code of "Being inadequate" under the theme of "Subjects Covered in the Training," with three participants expressing opinions about it (Table 4). Participants' opinions on this code are presented below:

"...They come in a standardized format, not tailored specifically to the needs of individuals within the institution, and those contents do not always fit every organization. As I mentioned earlier, I believe there is a need to enrich the content of the in-service training." (P8)

Two participants expressed their opinions under the code of "Having contact with experts" in the "Its Advantages" theme. Participants' opinions on this code are presented below:

"…There are times when I work closely with an instructor, and they show, do, and implement things right before me. Being able to witness the application firsthand and having the opportunity for immediate intervention was much better, in my opinion." (P1)

The teachers' opinions on the training they need to receive in their own branch regarding gifted students were examined and the results are presented in Table 5.

Table 5. *Participants' Opinions on the In-service Training for Their Branch*

Theme	Code	Frequency
Subject content	Technological information	3
	Characteristics of gifted students	3
	Enriched activities	2
Personal development	Sense of adequacy	3
	Professional need	10

Table 5 provides the participants' opinions on the in-service training regarding their branch, which are grouped as "Subject Content" and "Personal Development." Under the "Personal Development" theme, the teachers' opinions predominantly concentrated on the "Professional need" code, with ten participants expressing opinions about it. Participants' views on this code are presented below:

"I believe I need more education, and I continue to take it." (P4)

Three participants expressed their opinions on the "Technological information" code under the "Subject Content" theme. Participants' opinions on this code are presented below:

"Since 2015, we have been following and knowing about robotics, coding, and technology. We were interested in computers. However, I felt like I was in a narrow framework because there were students with very different characteristics. Therefore, I need more training." (P4)

Three participants agreed on the "Characteristics of gifted students" code under the "Subject Content." Participants' opinions on this code are presented below:

"Training programs that can highlight the characteristics of these children should be provided in BİLSEMs or for teachers who will work with gifted students." (P3)

Three participants expressed their opinions on the code of "Sense of adequacy" under the theme of "Personal Development. Participants' opinions on this code are presented below:

"In my opinion, a teacher in my branch needs to be highly competent and well-equipped." (P1)

The teachers' opinions on the effect of the in-service training on the development of gifted students in science were investigated, and the results are presented in Table 6.

Table 6. *Participants' Opinions on the Effect of the In-service Training on the Development of Gifted Students*

Theme	Code	Frequency
For the Teacher	Increasing self-confidence in science	2
	Variety of activities	2
For the Student	Finding useful	6
	Finding effective	3

Table 6 shows the participants' opinions on the effect of the in-service training on the development of gifted students in science, which are grouped under the themes of "For the Teacher" and "For the Student." In the article "For the Student," participants' opinions are predominantly concentrated on the code of "Finding useful," with six participants expressing opinions about it. Participants' views on this code are presented below:

"Certainly, the in-service training sessions we receive are very beneficial for students' development." (P10)

Three participants expressed their opinions on the code of "Finding useful" under the "For the Student" theme. Participants' opinions on this code are presented below:

"There are very beneficial in-service training courses that will positively impact students' development." (P1)

Two participants expressed their opinions on the "Variety of activities" code under the theme of "For the Teacher." Participants' opinions on this code are presented below:

"…" What can you create with which material? What alternative material can you suggest to children instead of this one? How do you start the activity, and how do you guide them?" I definitely think that findings answer to such questions is very useful." (P6)

Results and Discussion

The results derived from the findings of the study are given below:

In the current study, the participants' opinions on the applications in the in-service training they received were examined. The participants generally evaluated face-to-face and distance training within the context of the applications in the in-service training. The participants mostly find that the in-service training they receive in distance training needs to be improved and more efficient. In addition, some participants stated that the face-to-face training programs need to be improved in quantity, and they expect face-to-face training. Similarly, Ay (2022) demonstrated that the in-service training programs received by the teachers in distance training need to be revised because they cannot interact with the trainer. The program has technical problems and requires increased in-service training with enriched content. Yıldırım (2020), on the other hand, concluded that teachers expect face-to-face training and that they think a program that can provide

the opportunity to practice should be included in the in-service training provided through distance education. Contrary to these research findings, Wasserman and Migdal (2019) concluded that in-service training received by teachers through distance education met the teachers' professional training needs, even though they were not physically together with the instructor in the same environment.

Secondly, the participants' opinions on the content of the in-service training they received were examined in the current study. It was shown that the participants evaluated the range of the in-service training and the advantages of the movement in general. The participants stated that their in-service training is rich in content, instructional, and adequate. At the same time, some participants noted that the content could be more suitable for teachers who teach incompetent and gifted individuals. Although some teachers have positive and some negative opinions about the range of the in-service training, teachers have different expectations, which the different learning abilities of teachers could address. Tekin (2020) found that some teachers think distance training content is effective due to its informative nature and positive impact on their professional development, and the content is easily understandable. On the other hand, some teachers criticized the content for lacking interaction opportunities and being limited to theoretical aspects only. Özer, Suna, and Sunar (2021) demonstrated that teachers found the range of in-service training adequate and expressed satisfaction with receiving in-service training that contributed to their current and professional knowledge.

Thirdly, the participants' opinions about the in-service training they receive about their branches were examined. When the participants' answers were concerned, they evaluated the subject's content and general personal development about the training they should receive for their branch. The participants' responses show that they consider in-service training in their department necessary. They must be well-equipped to appeal to students' interests, particularly in technological areas such as robotics, coding, and Arduino. They also expect to receive in-service training to acquire knowledge about the characteristics of gifted students to provide more accurate and specialized education. In line with the teacher's expectations, Eker (2020) found that teachers lack sufficient knowledge about gifted individuals and their education, and their knowledge is mainly theoretical. They feel inadequate in implementing educational models and expect in-service training that covers functional, practical, and applied content that can be used in the education programs for gifted students. According to the study conducted by Ağca et al. (2022), teachers working in BİLSEMs expressed a need for in-service training regarding the characteristics of gifted students and strategies, methods, and techniques to be used in their education. They emphasized the importance of in-service training being delivered by experts in the field and the necessity of practical and interactive in-service training in addition to theoretical education.

In the study, the participants' opinions on the effect of the in-service training they received on the development of gifted students in science were examined. The participants generally made their evaluations for the teacher and student. It is understood that the participants feel more competent because of the in-service training they receive, design

a greater variety of activities that appeal to students' interests, and find the in-service training beneficial for students' development. They believe in-service training should be continued with increased quantity and quality. A similar conclusion has been reached by Bayram and Şentürk (2022): in-service training programs provide opportunities for teachers' professional development. Additionally, the in-service training received enables teachers to monitor students' development better, recognize gifted students, and approach the education process with more accurate methods. They found that in-service training benefits students' development. Pharis et al. (2019) aimed to examine the changes in teachers' and principals' perspectives throughout the year due to the Teacher Professional Growth and Effectiveness System program implemented in rural Kentucky. They found that the program provided opportunities for collaboration within the institution, and teachers found the professional development training effective. They also identified a greater need for professional development to improve student performance. Eroğlu and Özbek (2020) found that in-service training contributes to teachers' understanding of students, maintaining the relevance of their professional knowledge and skills, achieving professional success, and enjoying their profession. However, they also concluded that they find the in-service training programs provided by the Ministry of National Education inadequate. Finally, some limitations of the study should be mentioned. The findings obtained in the study are limited to the participants working in BİLSEMs in the second term of the 2022-2023 school year. Another limitation is that the investigation is limited to the in-service training received by the participants.

Suggestions

1. In-service training can be planned by using appropriate methods and techniques (context-based teaching, inquiry-based teaching, argumentation, drama...) on subjects that will meet the needs of teachers and attract their attention. 2. Similar studies can be conducted using different methods to determine the educational needs of teachers working with gifted students.

2. A study that allows for a more comprehensive and continuous evaluation, with the contribution of different branch teachers and academicians, can be planned to determine the educational needs of teachers working with specially gifted students.

3. One result of this research is that teachers have a negative attitude towards online in-service education. In this respect, considering that teachers' in-service training is shifting towards online all over the world, it is recommended to carry out in-depth studies focusing on why teachers' insistent demands for face-to-face education continue.

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Genişletilmiş Türkçe Özet

Problem Durumu: Tarih bize göstermiştir ki özel yetenekli bireyler bilimsel ve sanatsal çalışmalara öncülük ederek var oldukları toplumların gelişmesine katkı sağlamışlardır. Özel yetenekli bireylerin var olan performanslarını en üst düzeyde kullanabilmelerini sağlamak ülkelerin gelişmişlik düzeyleriyle paralellik göstermektedir. Özel yetenekli bireylerin kapasitelerinin farkında olan ve bunun açığa çıkması için eğitim politikalarını özel yetenekli bireylere göre uyarlayan ülkeler, diğer ülkelere nazaran söz sahibi olan ve ekonomik kalkınma gücüne sahip ülkeler haline gelmektedir. Aynı zamanda bilgi çağı olan günümüz dünyasında özel yetenekli bireylerin fen ve teknolojiye eğilimleri gün geçtikçe artmaktadır. Fen ve teknoloji; özel yetenekli bireylerin yaşadıkları evreni anlamaları, bilimsel bilgi süreçlerini takip edebilmeleri, sürekli gelişmekte olan teknolojiye hakim olmaları adına önemli bir alandır. Bu bilgiler ve yapılan çalışmalar doğrultusunda milli ve evrensel geleceğin şekillenmesinde önemli role sahip olan özel yetenekli bireylerin var olan performanslarını en üst düzeyde kullanabilmeleri adına alacakları eğitim büyük önem arz etmektedir. Bu noktada eğitim programlarının önemli bir parçası olan öğretmenlerin eğitimdeki önemi yadsınamaz. Öğretmenlerin uyguladıkları eğitim programlarını; bireysel farklılıklara göre uyarlayabilmesi, dinamik bir eğitim sürecinin devamlılığını koruyabilmesi, güncel gelişmeleri takipte kalabilmesi, farklı ve yeni etkinlikler ile eğitimi zenginleştirmesi adına alacakları hizmet içi eğitimin süreklilik arz etmesi, kaliteli ve yeterli olması gerektiği düşünülmektedir. Literatür incelendiğinde; Milli Eğitim Bakanlığı'nın uyguladığı hizmet içi eğitim programlarının, özel yetenekli öğrencilerle çalışmalar yapan fen bilgisi öğretmenleri üzerindeki etkililiği ve özel yetenekli öğrencilerine olan etkisine yönelik yapılmış çalışmalarda sınırlılık söz konusudur. BİLSEM okullarında proje üretme ve bunları çeşitli yarışma, sunum ve etkinliklerle topluma sunma gibi konularda özel yetenekli öğrencilere rehberlik edecek olan öğretmenlerin mesleki gelişimlerine katkı sağlayacağı düşünülen hizmet içi eğitimlerin güncellenmesi sürecinde yol gösterici olabileceği düşünülen bu çalışma, literatürde var olan boşluğu da doldurması açısından önemlidir. Aynı zamanda BİLSEM'lerde görev alan fen bilgisi öğretmenlerine verilen hizmet içi eğitimin eksikliklerinin çok boyutlu olarak tespit edilmesine katkı sağlaması bakımından önemlidir denilebilir.

Araştırmanın Amacı: Bu çalışmanın amacı BİLSEM'lerde verilen hizmet içi eğitimin yeterliliğinin farklı yönlerden fen bilgisi öğretmenleri açısından belirlenmesidir.

Araştırmanın Yöntemi: Amacı doğrultusunda nitel araştırma türlerinden durum çalışması olarak tasarlanan bu çalışmanın çalışma grubunu, 2022-2023 eğitim öğretim yılı ikinci döneminde Türkiye'nin farklı coğrafi bölgesinde (Karadeniz, Doğu Anadolu ve İç Anadolu) yer alan farklı illerdeki BİLSEM'lerde çalışmakta olan 11 fen bilgisi öğretmeni oluşturmaktadır. Çalışmada verileri toplamak amacıyla araştırmacılar tarafından geliştirilen ve açık uçlu sorulardan oluşan "Görüşme Formu'' kullanılmıştır. Görüşmeden elde edilen veriler, betimsel analiz ve içerik analizi teknikleri ile analiz edilerek tema ve kodlar oluşturulmuştur. Daha sonrasında iki uzmandan güvenirliği test etmek amacıyla elde edilen temalar ve kodlar arasında eşleştirme yapmaları istenmiştir. Karşılaştırma

sonucunda görüş birliği ve görüş ayrılığı sayıları Miles ve Hubermann'ın (1994) "Güvenirlik = (görüş birliği / görüş birliği + görüş ayrılığı) x 100)" formülü kullanılarak araştırmanın güvenirliği %94 olarak tespit edilmiştir.

Araştırmanın Bulguları: Bu çalışmada ilk olarak katılımcıların aldıkları hizmet içi eğitimlerin uygulamalarına dair görüşleri incelenmiştir. Katılımcıların genel olarak "Yüz yüze eğitim" ve "Uzaktan eğitim" hakkında değerlendirme yaptıkları görülmektedir. Çoğunlukla katılımcıların uzaktan eğitim yoluyla aldıkları hizmet içi eğitimi yetersiz buldukları saptanmıştır. Çalışmada ikinci olarak katılımcıların aldıkları hizmet içi eğitimlerin içeriklerine yönelik görüşleri incelenmiştir. Genel olarak "Eğitim verilen konular" ve "Avantajları" hakkında değerlendirmeler yaptıkları belirlenmiştir. Katılımcıların çoğunun aldıkları hizmet içi eğitimlerin içeriğini zengin ve yeterli bulduğu; bir kısmının ise içeriği yetersiz bulduğu görülmüştür. Üçüncü olarak katılımcıların fen branşına yönelik hizmet içi eğitim görüşleri incelendiğinde ise genel olarak "Konu içeriği" ve "Bireysel gelişim" hakkında değerlendirmeler yaptıkları ve aldıkları hizmet içi eğitimi mesleki bir ihtiyaç olarak gördükleri belirlenmiştir. Katılımcıların aldıkları hizmet içi eğitimlerin özel yetenekli öğrencilerin fen alanında gelişimine dair görüşleri incelendiğinde ise genel olarak "Öğretmen açısından" ve "Öğrenci açısından" değerlendirme yaptıkları ve aldıkları hizmet içi eğitimlerin dolaylı olarak da olsa öğrencilere faydalı olduğu düşüncesinde oldukları saptanmıştır.

Tartışma ve Sonuç: Öğretmenlere verilen hizmet içi eğitim programlarının eksikliklerinin tespit edilmesi ve öğretmenlerin hizmet içi eğitimlerden beklentilerinin belirlenmesi mevcut hizmet içi eğitim programlarının yapılandırılması sürecine katkı sağlayacaktır. Bu bağlamda öğretmenlerin hizmet içi eğitimlerde yüz yüze eğitim beklentisi içerisinde oldukları, hizmet içi eğitimlerin içerikleri konusunda farklı beklentilere sahip oldukları, hizmet içi eğitimi bir gereklilik olarak gördükleri, kendi branşları için robotik, kodlama, arduino gibi teknolojik alanlarda hizmet içi eğitim alma ihtiyacı hissettikleri, özel yetenekli öğrencilerin özellikleri hakkında bilgi sahibi olmaya yönelik hizmet içi eğitim almak istedikleri, hizmet içi eğitimlerle daha farklı ve özgün etkinlikler tasarlayarak öğrencilerin ilgi alanlarına hitap ettikleri, hizmet içi eğitimlerin hem nicelik hem de nitelik olarak arttırılarak verilmeye devam edilmesi gerektiği düşüncesinde oldukları sonuçlarına ulaşılmıştır. Bu sonuçlar doğrultusunda, öğretmenlerin ihtiyaçlarını karşılayacak, onların ilgisini çekecek konularda uygun yöntem ve teknikleri kullanarak hizmet içi eğitimlerin planlanması gerçekleştirilebilir. Özel yetenekli öğrencilerle çalışan öğretmenlerin eğitim ihtiyaçlarının özellikle hangi konularda olduğunun belirlenmesi ile ilgili bu çalışmaya benzer daha farklı yöntemlerin kullanıldığı çalışmalar yapılabilir. Hizmet içi eğitimin gönüllü katılımının sağlanmasında motivasyonun artmasına olanak sağlayacak yüz yüze eğitim ile ulaşılabilirliği yüksek olan uzaktan eğitimlerin bir arada bulunduğu hibrit eğitim şeklinde eğitim programları çalışılabilir. Öğretmenlerin katılım sağlayacakları hizmet içi eğitimlerin kendilerine bir getiri sağlayacağı yeni hizmet içi eğitim programları (Maddi teşvik, Araştırma ve Geliştirme birimlerinde veya MEB'te farklı birimlerde görev alma açısından avantaj sağlamak, derece yükselmesi gibi) tasarlanabilir.

Anahtar Kelimeler: Hizmet içi eğitim, fen eğitimi, özel yetenekli öğrenciler, Bilim ve Sanat Merkezi.

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Teacher Trainers' and Curriculum Development Experts' Perspectives on Information Technologies Curriculum in Teacher Education

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Abstract

This case study had two purposes: (1) to explore the appropriateness of the learning outcomes of information technologies (IT) course curriculum in teacher education programs based on the opinions of curriculum development experts and (2) to evaluate the opinions of the academics about the adequacy of this curriculum. Curriculum development experts (n = 5) evaluated the learning outcomes of the IT course curriculum followed by the education faculties of 25 universities in Türkiye in terms of their qualitative relevance. We also obtained the opinions of 10 academics in these faculties for the evaluation of the IT course curriculum. To collect data, we used the "Qualitative Eligibility Form for Learning Outcomes" and "Evaluation Form for IT Curriculum". We employed descriptive statistics in the analysis of quantitative data while qualitative data were analysed using content analysis. The results showed that most of the learning outcomes in the IT course curriculum were not sufficient for the criteria of formal spelling conformity, necessity, and encouragement of higher-order thinking. The academics' perspectives revealed that course sessions and practical learning activities in the IT curriculum were not sufficient. They suggested that emerging technologies such as artificial intelligence, Web 2.0/3.0 tools, robotics, coding, and augmented/virtual reality should be integrated into the curriculum. The implications for IT curriculum in teacher education programs and recommendations for future research were also discussed.

Keywords: information technologies; curriculum evaluation; pre-service teacher; expert; teacher trainers; bologna process.

About the Article

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Introduction

In the context of digital transformation, developing information and communication technology (ICT) skills is paramount for prospective teachers during their pre-service training (Farjon et al., 2019). The acquisition of these skills has become a significant issue in teacher education for two main reasons. Firstly, technology education is valuable as it enables prospective teachers to use technology more effectively and efficiently in their personal lives and to be aware of associated risks and challenges. However, while basic skills like technology literacy and digital literacy may suffice for other individuals in society, they are not enough for teachers. Secondly, as pre-service teachers' transition from their training programs to real classroom environments, they must possess the skills and understanding to integrate new technologies into the teaching and learning process. This integration is essential for enhancing student learning and retention (Howard et al., 2021). Teachers who have acquired these skills are able to make informed decisions about using technology in educational settings and maintain this understanding even as technologies evolve (Tondeur et al., 2021). Moreover, effective ICT integration into teaching can support the learning process and improve the quality of education.

Several international organizations, such as the Organisation for Economic Co-operation and Development (OECD), the United Nations Educational, Scientific and Cultural Organization (UNESCO), The International Society for Technology in Education (ISTE), and the British Educational Communications and Technology Agency (BECTA), have established standards and indicators to develop teachers' competencies in using technology. For instance, ISTE (2022) proposes technology standards for educators, qualifying them in seven different roles (learner, leader, citizen, collaborator, designer, facilitator, and analyst) subdivided into 24 competencies. The Digital Competence Framework for Educators (DigCompEdu) also provides a scientifically sound structure describing the technology competencies of teachers in Europe (Redecker, 2017). It offers six areas (professional engagement, digital resources, teaching and learning, assessment, empowering learners, and facilitating learners' digital competence) with 22 competencies. Teacher training institutions strive to integrate these standards into their programs to equip pre-service teachers with ICT and digital skills before they enter the profession. Specifically, ICT skills frameworks such as Technological Pedagogical Content Knowledge (Koehler & Mishra, 2005), the Technology Acceptance Model (Davis, 1989), Will-Skill-Tool-Pedagogy (Knezek & Christensen, 2016), and Substitution-Augmentation-Modification-Redefinition (Puentedura, 2012) are incorporated into technology courses during undergraduate education to prepare pre-service teachers for effective technology integration.

Despite the wealth of information and research-supported initiatives, several studies have shown that most teachers struggle to integrate technology into their teaching to achieve specific lesson goals (Fraillon et al., 2020; Pozas & Letzel, 2021). This issue became particularly evident during the Covid-19 pandemic. For instance, a study by Glutsch et al. (2020) revealed that nearly 70% of teachers did not use digital learning applications during emergency remote education due to a lack of ICT competencies or

ineffective policy design. Zimmer and Matthews (2022) found that teachers have anxieties about adapting to evolving technology. Although pre-service teachers today are more familiar with technology than previous generations, they still seem unable to effectively integrate their technological knowledge and skills into education (Jung & Ottenbreit-Leftwich, 2020; Pozas & Letzel, 2021). This inability may stem from various factors such as low technological self-efficacy, motivational orientations, trainer attitudes, and insufficient knowledge and experience (Pozas & Letzel, 2021). However, the primary reason is often the inadequately planned and systematically organized theoretical and practical components of technology courses in undergraduate programs (Wang & Zhao, 2021). Therefore, these courses, which are critical to teacher education (Howard et al., 2021), need to be designed based on systematic processes and curriculum development criteria.

Teacher education programs around the world emphasize creating technology-rich learning environments that enable pre-service teachers to integrate technology into their teaching practices (Antonietti et al., 2022; Tondeur et al., 2020). Consequently, many countries continuously evaluate and update their curricula (Kurent & Avsec, 2023; Qiane et al., 2023; Zhang et al., 2022). The primary reason for this focus is that universities play a crucial role in developing and promoting technological skills (Núñez-Canal et al., 2022). In Türkiye, higher education programs are developed by considering both national standards, such as Development Plans and the Turkish Higher Education Qualifications Framework, and international standards, including the European Higher Education Area Qualifications Framework and the European Lifelong Learning Qualifications Framework.

For the past few decades, the quality of teaching and learning at universities has garnered significant interest from researchers. Consequently, the Bologna Process and accreditation processes have emerged as crucial steps in enhancing the quality of higher education. Studies on the Bologna Process indicate that it has introduced a new perspective to education, aiming to generate better learning outcomes and competencies (Del Pozo Andrés, 2009; Marcelo & Yot-Domínguez, 2019; Penbek et al., 2011).

Significance

As a key element of the curriculum, evaluating the appropriateness of learning outcomes is crucial for determining the characteristics pre-service teachers should acquire and for establishing a more effective connection with the content, educational situations, and assessment elements. Learning outcomes (curriculum outcomes at the macro level) are also a vital part of the accreditation process, which emphasizes specific standards in the context of quality assurance in higher education (Maher, 2004). These outcomes encompass knowledge, skills, attitudes, and abilities that learners are expected to attain by the end of a course or program. Additionally, learning outcomes guide teachers in creating the syllabus and course content, designing teaching methods and techniques, and shaping the assessment and evaluation process. Technology courses in teacher

education programs should be designed according to national and international standards, ensuring that pre-service teachers are well-equipped with technology skills as they enter the profession (Instefjord & Munthe, 2016). When learning outcomes are not established according to specific standards, the curriculum can become ambiguous, difficult to manage and implement, and ultimately ineffective.

The IT course guides pre-service teachers in developing skills such as information and technology literacy, digital literacy, and TPACK (Falloon, 2020). Technology courses in teacher training programs play a crucial role in preparing pre-service teachers for digital privacy and security, as well as their future professional lives (Çebi et al., 2022). In this respect, this study is significant because it demonstrates that the learning outcomes were insufficient according to Industry 4.0 standards (such as ISTE, DigCompEdu) and that the curriculum had deficiencies both in theory and practice. The lack of skills in the professional use of technology among pre-service teachers has consistently been a significant issue, yet there has been insufficient research addressing this problem (Nelson & Voithofer, 2022). Notably, the literature lacks a comprehensive study evaluating the adequacy of achievements in technology curricula within faculties of education, considering both the Bologna adaptation process and the contemporary challenges of Industry 4.0. In this context, the current research focuses on the information technology curriculum, specifically addressing the teaching of fundamental information and communication technologies in teacher training programs. Thus, the outcomes in the curriculum have been assessed, revealing technological deficiencies for the future. Moreover, evaluating outcomes from various universities has enhanced the study's originality. Initially, shortcomings in achievements were pinpointed, followed by evaluations of educational programs with expert opinions to offer guidance for the future. In this regard, the recent study is expected to contribute to teacher curricula and related literature.

Purpose

The purpose of this study was two-fold: (1) to explore the appropriateness of the learning outcomes of information technologies (IT) course curriculum in teacher education programs based on the opinions of curriculum development experts and (2) to evaluate the opinions of the academics about the adequacy of this curriculum. The research questions (RQs) of this study were as follows:

1. What is the distribution of learning outcomes of IT curriculum according to Bloom's Cognitive Domain Taxonomy?
2. What is the qualitative relevance of learning outcomes in the IT curriculum?
3. What are the opinions of academics about the adequacy of IT curriculum?
4. What are problems experienced in the implementation process of IT curriculum according to the opinions of academics?

5. What are the opinions of academics about reflections of Industry 4.0 on IT curriculum?

6. What are the opinions of academics about the adaptation of IT curriculum to the Bologna Process?

Background

IT curriculum for pre-service teachers in Türkiye

Typically, teacher training programs require pre-service teachers to enroll in one or more courses for technology training. Technology education is an important part of teacher education programs (Martin, 2018). Although the content of the teacher training programs in the world is similar, the names of the courses may differ. In the faculties of education in Türkiye, especially the teaching of basic subjects and concepts related to information and communication technologies is given within the scope of the Information Technologies (IT) curriculum.

Between 1989 and 1992, education colleges in Türkiye that trained teachers included the "Computer Use and Teaching I-II" course, with 2 hours per semester during the final year (fourth grade) of the program (CoHE, 2007). By 1998, this course was integrated into the Faculty of Education curriculum under the name "Computer," scheduled for the third semester. It covered basic office programs, classroom computer use, and basic keyboard skills. Initially planned for a single semester, the course consisted of 4 hours and 3 credits, including 2 hours of theory and 2 hours of practice (CoHE, 1998). In 2007, with the rise of the internet and technological advancements, "Computer-I" expanded to include software and hardware concepts, operating systems, office programs, ethics, and internet use. Meanwhile, "Computer-II" focused on fundamental concepts of computer-assisted education, its theoretical foundations, distance education, and the impacts of the internet on children and young people (CoHE, 2007). By 2018, reflecting the broader scope of information and communication technologies, the course was renamed "Information Technologies (IT)." The updated curriculum was designed to include 3 hours of theoretical instruction per week within a single semester of the pre-service teacher education program (CoHE, 2018). Table 1 shows an overview of the topics in the content of the IT curriculum.

Table 1. IT course contents in teacher education (CoHE, 2018)

Information technologies and computational thinking; problem-solving concepts and approaches; algorithms and flowcharts; computer systems; basic concepts of software and hardware; fundamentals of operating systems, current operating systems; file management; utilities (third-party software); word processing programs; calculation/table/graph programs; presentation programs; desktop publishing; database management systems; web design; use of the Internet in education; communication and cooperation technologies; safe internet use; informatics, ethics and copyrights; effects of computers and the Internet on children/young people.

The IT course plays a crucial role in teacher training, providing foundational technological skills and serving as a cornerstone for higher-level technology-related courses. Particularly in the 21st century and post-Covid-19 pandemic era, the significance of this course and similar ones for pre-service teachers has become increasingly apparent. Acquiring technology literacy through these courses is essential for educators as they prepare educational materials and guide their students (Spiteri & Chang Rundgren, 2020). Studies in the literature indicate that pre-service teachers recognize the importance and utility of information technology courses (Haseski, 2019) and acknowledge their contribution to professional development (Yeşildağ & Önlü, 2020).

In Türkiye, the curriculum of IT courses is shaped under the Türkiye Qualifications Framework (TQF) guidelines established by the Council of Higher Education (CoHE). However, there is a lack of detailed curriculum guidelines specifically tailored for faculties of education, outlining specific objectives, content, teaching methodologies, and assessment criteria for instructors. Universities largely define their own course objectives (learning outcomes) based on the contents outlined in Table 1, aligning with the principles of the Bologna Process. Consequently, variations may exist among higher education institutions regarding the achievements and structure of their IT course offerings.

The Bologna Process and Its Reflections in Türkiye

The Bologna Process is an intergovernmental reform initiative aimed at restructuring higher education institutions to enhance cooperation, quality assurance, and mobility across European teaching systems (Zahavi & Friedman, 2019). Its primary objectives include improving the quality of European higher education, facilitating exchange and cooperation within Europe, and promoting international recognition through common standards (Wächter, 2004). Initially conceived to create a European Higher Education Area, the Bologna Process expanded globally through initiatives by organizations such as UNESCO, World Bank, EU, and OECD (European Higher Education Area, 1999). As a result, the number of signatory countries grew to 48, influencing countries beyond Europe (European Commission, 2020). The idea of a European Higher Education Area originated in the Sorbonne Declaration of 1998 and was formalized in 1999 with the Bologna Declaration, signed by education ministers from 29 countries (European Commission, 2020). In Türkiye, the Bologna Process began in 2001, following its adoption by numerous European Union members. The implementation of the Bologna Process within the Turkish higher education system was entrusted to the Council of Higher Education (CoHE).

The Bologna Process provides opportunities for member countries to promote lifelong learning with a competitive approach to renewal and improvement initiatives in higher education (Kroher et al., 2021). The Bologna Process gave these countries chances to revise and update their curriculums to harmonize them with international programs while also laying emphasis on the determination of the objectives in the curriculums properly

and their relationship with each other. Thus, the issue of increasing the employment of graduates by increasing their competencies based on the need gained more importance (Pereira et al., 2020). Accordingly, each member country of the Bologna Process was charged with determining the National Qualifications Framework (NQF) in their education systems based on the European Qualifications Framework (EQF). In addition, each higher education unit was responsible for determining its own curriculum qualifications to be aligned with the NQF. After 2005, the establishment of NQF was initiated in Türkiye and the Higher Education Qualifications Commission (HEQC) was established in 2006 to carry out studies in this direction. In Türkiye, the Higher Education Institution (HEI) synthesized the "European Qualifications Environment and National Qualifications Framework" for each field, and the Turkish Qualifications Framework (TQF) was established and put into force in 2015 (TQF, 2023). Today's technology and opportunities underpin the field-specific competencies in the content of TQF. The degree to which these competencies are acquired is measured as "learning outcomes" during and at the end of each course/module by appropriate and objective methods. With the spread of the Bologna Process, the outcome-based model has started to be adopted in higher education (European Commission, 2020). Learning outcomes are, indeed, an effective academic quality assurance tool that allows educators to review and improve alignment between planned, implemented, and experienced curricula. Articulating appropriate learning outcomes is inarguably essential for the success (Ibrahim et al., 2022) and accreditation process of programs.

Revised Bloom Taxonomy

Bloom's Taxonomy is of great importance in terms of studying educational outcomes in the Bologna Process. Taxonomically, the first classification of the cognitive domain was created by a group of educators led by Benjamin S. Bloom and published in the book "Taxonomy of Educational Objectives, the Classification of Educational Goals, Handbook I: Cognitive Domain." in 1956 (Bloom et al., 1956). The Original Cognitive Domain Taxonomy of Bloom has six major categories ordered from simple to complex thinking in the cognitive domain: (i) knowledge, (ii) comprehension, (iii) application, (iv) analysis, (v) synthesis, and (vi) evaluation. It was created by listing the learning objectives, which include the knowledge, skills and attitudes that students are expected to learn, hierarchically and as prerequisites for each other. In 2001, the Revised Bloom Taxonomy was developed as a two-dimensional framework by Bloom's students: (i) knowledge and (ii) cognitive process. In addition to the structural arrangement, a terminological transition has been made from noun to verb in the Revised Bloom Taxonomy. The cognitive process dimension consists of six categories as remember, understand, apply, analyze, evaluate, and create respectively (Anderson & Krathwohl, 2001). These are briefly as follows (Krathwohl, 2002):

Remember: Retrieving relevant knowledge from long-term memory involves recognizing or recalling information to generate or retrieve definitions, facts, or lists, as well as reciting previously learned material (Recognizing and recalling).

Understand: Interpreting the meaning of instructional messages, encompassing oral, written, and graphic communication (Interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining).

Apply: Carrying out a procedure in a specific context (Executing and implementing).

Analyze: Analyzing material by breaking it down into its constituent parts and understanding how these parts relate to one another and to the overall structure or purpose (Differentiating, organizing, and attributing).

Evaluate: Forming judgments based on established criteria and standards (Checking and critiquing).

Create: Combining elements to create a novel, coherent whole or to produce an original work (Generating, planning, and producing).

The structure of the knowledge dimension was expressed as three types: factual, conceptual, procedural, and metacognitive (Anderson & Krathwohl, 2001). Factual knowledge is the basic knowledge that students need to know. Conceptual knowledge is the relationships between concepts in a structure, how the concepts are related, and how the concepts function together. Procedural knowledge is knowledge about how any process or work should be done. Metacognitive knowledge includes understanding cognition broadly, including awareness and knowledge of one's own cognitive processes (Krathwohl, 2002). Revised Bloom Taxonomy offers educators a method to cultivate a comprehensive grasp of specific objectives, enabling them to enhance assessment, instruction, and the crucial connection between them (Anderson, 2005). Appendix 1 shows the two-dimensional structure of Bloom's Revised Cognitive Domain Taxonomy. The learning outcome is displayed in the cell that is the intersection of the row containing the knowledge dimension and the column containing the cognitive process dimension. Importantly, this taxonomy has been widely used in the writing of cognitive domain outcomes and has been proposed as a guiding tool in designing learning outcomes in the Bologna Process (Booker, 2007).

Method

This study adopted a case study from qualitative research methods. Yin (1989) states that the case study particularly focuses on current events. Case study is a method used when we want to examine an event or phenomenon in depth (Yıldırım and Şimşek, 2011). A topic or event addressed in this research design is examined in depth by addressing it within its unique environment and conditions (Merriam & Tisdell, 2015).

Firstly, IT course packages of faculties of education were examined with the document review method, and the qualitative suitability of objectives was evaluated according to expert opinions. Thus, we tried to reveal the existing situation. At this stage, the opinions

of the academics who are the implementers of theinformation technologies curriculum were taken and evaluated with a questionnaire.

Participants

In the first phase of study, in the context of the Bologna Process, questions have been prepared to be able to carry out the study of IT courses in universities. Expert opinions were then obtained for these questions. Curriculum development experts (n=5) formed a working group as persons who will evaluate information packages of informatics courses in programs of education faculties of 25 universities in Türkiye. At first, universities that publish their learning outcomes on their websites are identified. Afterward to reach these documents, universities that had faculties of education with active students were determined by using the stratified sampling method. A total of 25 state universities, five of which are in the Black Sea Region, four in the Mediterranean Region, four in the Central Anatolia Region, four in the Southeastern Anatolia Region, four in the Eastern Anatolia Region, two in the Marmara Region, and the last two in the Aegean Region were included in the study. Since course information forms were not published on the Bologna websites of some universities, equality in the number of universities by region could not be achieved. Curriculum development experts (n=5) who were Ph.D. graduates in the field of curriculum and instruction evaluated these information packages according to certain standards. Two of these specialists were female and three of them were men.

In the second phase of the study, the group consisted of 10 academics (4 females, 6 males) who were curriculum practitioners and teacher trainers. These participants were selected from the faculties of education in 25 universities across various regions of Türkiye, using criterion sampling from purposeful sampling types. The criteria for selection included having taught IT courses and working in faculties of education. This is due to the selection of specialists who have knowledge of the IT curriculum outcomes. Among the participants, 2 were associate professors, 5 were assistant professors, and the rest were instructors.

Procedure

This study was conducted in the fall semester of the 2022-2023 academic year between 5 September and 10 February 2023. Before conducting the study, approval was obtained from the Social Sciences and Humanities Ethics Committee of the institution where researchers were working (Protocol Number: 2022-SBB-0109) and the study was carried out in accordance with principles of the 2008 Declaration of Helsinki. As the first step, learning outcomes evaluation criteria were set by taking the opinions of four field experts and an independent expert who reviewed them. In line with the first purpose of the study, as researchers, we examined information packages and course contents of IT courses in pre-service teacher programs of 25 universities. Learning outcomes of the information technologies course in the Bologna information packages were reduced into a single file by coding the university they belong to as U1, U2, U3, and so forth. This file

was then sent to curriculum development experts via e-mail together with the "Qualitative Eligibility Form for Learning Outcomes" which was developed based on the determined criteria. Curriculum development experts were informed about the purpose and content of the study, and their voluntary participation was ensured beforehand.

The evaluation form which was created in line with the second purpose of the study was sent to academics via Microsoft Forms. They were contacted before the application process and informed about the research process in detail. In addition, attention was paid to the voluntary participation of all participants. Average time to respond to the form was 24 minutes (Min=10, Max=35). Figure 1 shows the research procedure.

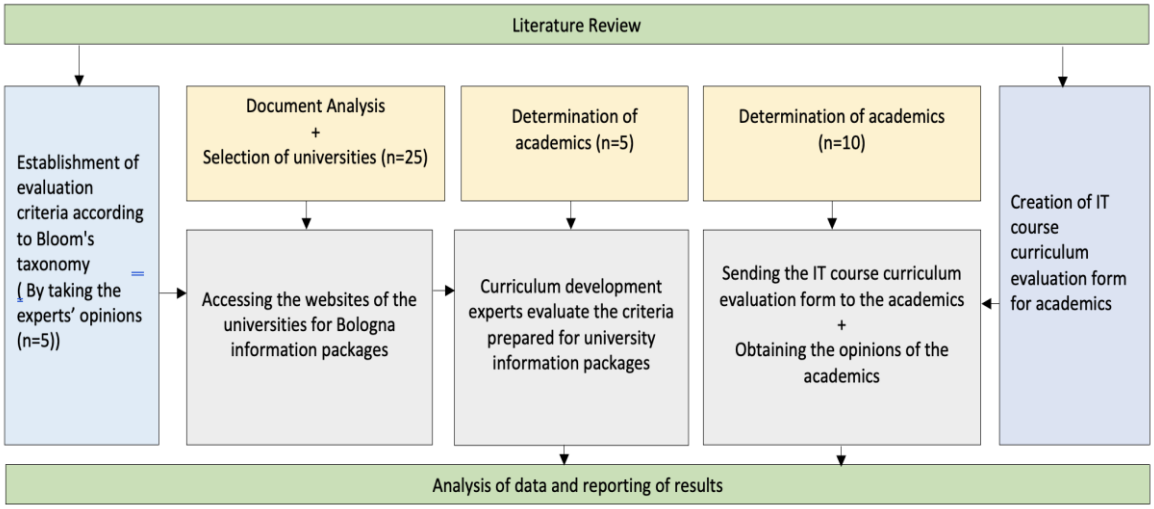

Figure 1. Research procedure

Data Collection

Bologna Information Packages for IT courses: We accessed IT course information packages on university websites related to the Bologna information system. This course is a compulsory, common course taught for 3 hours theoretically (5 ECTS) in the first semester in all undergraduate programs to train pre-service teachers. The content of the IT course renewed by CoHE (2021) includes the following topics: Computational thinking, problem-solving, algorithms and flowcharts, computer systems, software and hardware, operating systems, file management, utilities, word processing, presentation, computing, desktop publishing and database management programs, web design, informatics ethics, internet use in education, and effects of computers and the Internet on children/young people. In line with this framework, teacher training institutions create information technologies course information packages themselves. At the higher education level, training and seminars are given for the creation of course information packages for academics and academics of course create course information packages by writing the learning outcomes themselves.

Qualitative Eligibility Form for Learning Outcomes: This form was prepared by researchers for curriculum development experts to evaluate learning outcomes included in information technologies course information packages. Form consisted of three parts. The first part was aimed at determining the distribution of learning outcomes according to the steps (remembering, understanding, applying, analyzing, evaluating, and creating) in the cognitive dimension of the Revised Bloom's Taxonomy. The second part consisted of an area where specialists could score on a 7-point Likert-type scale ranging from 1- "Not completely appropriate" to 7- "Completely appropriate" to determine the qualitative appropriateness of learning outcomes based on certain criteria. Relevant literature was examined in detail to determine qualitative suitability criteria that learning outcomes should have (Bloom et al., 1956; EC, 2015; EQF, 2022; OECD, 2019; TQF, 2023). A total of 18 criteria were determined by taking the opinions of five field experts (two in the field of Curriculum and Instruction and one in the field of Computer and Instructional Technologies) Curriculum development experts were asked to give qualitative points to learning outcomes of information technologies course according to these criteria. An information guide was also prepared to guide curriculum development experts in filling out the form. The European Qualifications Framework User Guide was taken as a reference while creating this guide and the content of criteria was explained in the guide (EC, 2015). In addition, suitability of competencies to the technological pedagogical content knowledge (TPACK) model (Koehler & Mishra, 2008) was examined in light of Bloom's new taxonomy (Krathwohl, 2002). The TPACK model allows a course to be delivered by integrating technology into it (Santos & Castro, 2021). Apart from these standards, the "UNESCO Information Technology Competences Framework for Teachers" created by UNESCO (2018) to help teachers use information technologies effectively was also taken into account since these competencies were crucial for determining qualitative suitability criteria. In the last section of the form, there was a field where experts could write sample learning outcomes that would not meet criteria.

Evaluation Form for IT Curriculum: This form was also developed by researchers to obtain opinions of academics who taught or were teaching this course for evaluation of IT course curriculum in teacher education. The form consisted of two parts. The first part of the form included an informative text about the purpose of the research and questions about demographic information of participants (university, gender, title, age, and seniority). In the second part, there were seven open-ended questions for evaluation of IT course curriculum by teacher trainers. Opinions of three academicians (2 from the field of Curriculum and Instruction and 1 from the field of Computer and Instructional Technologies) were resorted to for creating questions in form and the form was finalized in line with the feedback of these experts. Whether survey questions were understandable or not was piloted on trainer (an academic who was giving an IT course) independent of the study group of the current study. The data obtained from this application were not included in the analysis as it was just for the revision purpose. The open-ended questions of form were as follows:

- What do you think about the adequacy of the duration of the IT course? Please explain.
- In your opinion, how should IT courses be delivered (face-to-face, distance education, or blended learning)? Please explain its reason.
- Which third-party software/programs should be given to students within the scope of IT courses in teacher education? Please explain.
- What are deficiencies you see in the IT course curriculum? Which learning outcomes, subjects, or contents can be added or removed? Please explain.
- What are general deficiencies or problems that you observed in the IT course? What are your suggestions for these deficiencies and problems? Please explain.
- How do you evaluate IT course curriculum in the context of Industry 4.0?
- How do you evaluate the Bologna Process for IT course? (In terms of creating learning outcomes, standardization studies, etc.)

Data Analysis

To ensure validity and reliability of the study, all ethical issues were taken into consideration. First, permission from the ethics committee and other relevant institutions was obtained for conducting the study. Then, the opinions of three academics were taken in the creation of both data collection tools and learning outcomes evaluation criteria. Two of experts had doctoral degrees in Curriculum and Instruction and the other one in Computer and Instructional Technology. In the study, the average of scores given by curriculum development experts for the qualitative appropriateness of learning outcomes was taken and results were tabulated and interpreted accordingly. A mean value close to 7 indicates that the qualitative suitability of learning outcomes according to the relevant criterion is high, while a value close to 1 indicates that it is weak.

The data obtained from the second form were analyzed through content analysis which allows one to look at the subject under consideration from an inclusive perspective (Kazu & Çam, 2019). In the process of analyzing the data, participants were coded independently of their personal information such as name, title, etc. and attention was paid to the principle of confidentiality in an ethical sense. The data obtained from the opinions of academics were coded by two independent experts, and similar codes were combined under relevant themes.

Findings

Evaluation of the qualitative suitability of IT course learning outcomes according to expert opinions.

The learning outcomes of IT course in education faculty programs of 25 universities were evaluated by curriculum development experts according to both Bloom's Revised Taxonomy and the qualitative appropriateness of learning outcomes. Table 2 shows average values of the qualitative suitability of objectives according to criteria.

Table 2: Distribution of averages of goals according to cognitive domain of the Revised Bloom's Taxonomy and qualitative suitability criteria

	Cognitive Domain							Qualitative criteria for learning outcomes																	
University	Remember	Understand	Apply	Analyze	Evaluate	Create	Total	Conformity to formal writing	Learner orientation	Relativity to need	Supporting affective characteristics	Clarity	Generality and limitation	Adjacency	Content-interlocking	Logical consistency	Observability-measurability	High-level learning	Incentives	Durability, functionality	Change openness-Timeliness	Educational buildability	Flexibility	Dynamism-continuity	Accessibility	Fusion	Total
U1	3	2	3	-	-	-	8	3.50	5.75	3.75	2.25	4.75	5.75	4.50	4.25	5.00	4.75	3.50		4.75	4.25	6.25	5.25	4.25	6.00	5.25	4.65
U2	2	-	5	-	-	-	7	3.25	5.25	3.25	2.50	4.25	4.25	4.25	3.25	3.25	4.50	3.50		3.50	3.75	5.00	4.75	4.00	5.25	5.00	4.04
U3	5	1	2	-	-	-	8	3.50	4.75	4.25	3.00	3.75	3.00	3.25	3.25	4.25	4.25	3.75		4.00	4.00	5.50	4.25	3.75	5.00	4.75	4.01
U4	2	1	4	-	-	-	8	1.50	2.25	3.25	2.75	3.25	3.25	2.25	3.25	3.50	2.75	2.50		2.50	4.50	4.75	4.25	3.50	4.75	3.75	3.25
U5	2	1	5	-	-		8	4.50	5.25	4.25	3.00	4.50	5.75	5.00	3.25	6.25	6.00	4.25		5.50	3.75	6.25	5.50	4.00	6.25	5.75	4.94
U6	4	-	1	-	-	-	5	1.50	2.75	2.75	2.50	3.75	2.25	2.25	3.50	5.50	4.25	2.75		3.75	3.75	5.50	2.50	3.25	2.75	3.00	3.24
U7	2	2	2	-	-	-	6	3.00	2.50	2.75	2.25	3.25	3.25	3.25	3.25	3.25	3.50	3.50		4.00	3.25	3.50	3.50	3.25	3.75	3.75	3.26

U8	2	2	5	-	-	-	9	3.50	4.00	3.75	2.50	3.50	4.25	4.25	4.75	5.25	3.75	3.25	4.25	3.25	4.50	4.25	4.00	4.25	4.50	3.99
U9	2	2	4	-	-	-	8	1.25	3.00	3.25	3.50	3.25	3.50	3.75	3.50	4.00	3.25	3.50	3.75	3.25	3.75	4.00	4.25	4.50	4.25	3.53
U10	13	-	8	-	-	-	21	3.25	4.75	4.25	3.50	4.75	4.75	4.75	4.75	5.25	4.50	4.25	5.25	4.75	5.75	5.00	5.75	5.75	6.00	4.83
U11	1	1	2	-	-	-	4	4.00	4.50	3.25	2.50	3.25	3.75	2.75	2.75	3.25	3.75	2.50	3.50	3.00	3.75	3.75	3.50	3.50	3.50	3.38
U12	4	1	4	-	1	-	10	3.75	5.75	5.50	3.25	3.75	3.75	4.25	4.50	3.50	4.25	3.25	3.50	4.25	4.50	4.25	3.25	5.50	5.25	4.22
U13	4	1	5	-	-	-	10	1.25	4.75	4.50	2.50	2.75	3.25	2.25	4.75	3.25	3.50	2.75	3.50	3.75	4.25	4.50	4.00	4.25	3.50	3.51
U14	2	-	1	-	-	-	3	1.50	2.75	2.25	0.75	1.50	1.75	1.75	1.50	2.50	2.50	1.75	2.25	2.75	3.00	2.75	2.75	2.75	3.50	2.24
U15	3	-	-	-	-	-	3	2.00	3.50	1.75	0.50	1.75	1.50	2.25	2.25	2.25	2.25	1.75	2.00	2.00	2.00	3.00	2.75	3.00	2.75	2.18
U16	2	-	-	-	-	1	3	3.25	4.25	3.25	1.25	2.75	3.25	2.25	2.25	2.50	2.50	2.00	2.50	2.50	2.75	3.25	3.25	3.50	3.50	2.82
U17	4	1	2	-	-	-	7	2.00	2.25	2.50	1.75	2.00	3.50	3.75	3.25	3.00	3.75	2.50	3.50	4.25	4.25	4.25	4.25	4.75	4.50	3.33
U18	2	1	3	-	-	1	8	1.25	3.25	3.25	3.00	3.25	2.75	3.25	3.50	3.25	4.50	4.75	5.00	5.25	5.25	4.75	5.00	5.50	4.25	3.94
U19	3	4	6	-	-	-	14	5.50	4.75	4.25	2.75	5.75	5.75	4.75	3.75	4.25	6.00	4.75	6.50	5.75	6.25	5.75	4.25	6.25	6.00	5.17
U20	-	3	6	-	-	-	9	4.75	5.25	4.25	1.00	5.00	5.25	4.50	5.50	5.25	5.50	3.50	4.75	5.50	5.50	5.50	4.25	6.50	5.25	4.83

U21	2	3	2	-	-	1	8	4.50	5.75	5.50	1.50	5.50	5.50	5.75	5.25	5.50	6.25	4.75	5.25	5.75	6.25	6.00	5.25	6.25	5.00	5.31
U22	-	2	2	1	-	-	5	3.75	5.50	3.25	2.50	4.25	4.25	4.25	3.25	3.25	4.75	4.00	3.75	4.50	4.50	5.00	4.25	4.75	4.25	4.11
U23	1	1	9	-	-	-	11	3.75	4.50	3.25	3.25	4.25	3.50	4.25	3.50	4.25	4.50	3.75	4.75	3.75	4.50	4.25	4.50	4.75	3.50	4.04
U24	-	2	5	-	-	-	7	5.25	5.75	3.00	2.50	4.75	3.50	3.75	4.50	4.75	5.75	4.75	5.50	5.25	6.25	5.50	5.25	5.25	5.25	4.81
U25	2	1	3	-	-	-	8	2.00	4.75	2.75	2.25	3.75	3.00	3.75	3.25	4.25	5.25	3.75	3.00	3.75	4.00	4.50	3.75	3.50	3.25	3.58
Total	2.68	1.28	3.56	.04	.04	.12	7.92	3.09	4.30	3.52	2.36	3.73	3.77	3.64	3.63	4.02	4.26	3.41	4.02	4.02	4.71	4.41	4.01	4.73	4.37	3.89

Table 2 shows that the number of learning outcomes in course information packages of universities for IT courses varied between 3 and 21 (M=7.92). It can be inferred that the number of learning outcomes was not evenly distributed according to universities. With regard to Bloom's revised domain taxonomy, findings indicated that learning outcomes were mainly at the application stage (M=3.56), while there were fewer learning outcomes in analyze (M=.04), evaluate (M=.04) and create (M=.12) steps. This finding also supports the results on the dimension of encouragement to high-level learning (M=3.41, SD=.92) as the qualitative measure and shows that learning outcomes of universities for high-level thinking skills related to IT courses were generally insufficient. The learning outcome "Evaluates the impact of Information Technologies on individuals" from a U5-coded university can be a reference finding that emphasizes high-level learning.

The average of overall qualitative suitability of learning outcomes of 25 universities according to all criteria was calculated as 3.89 (M_{min}=2.28, M_{max}=5.31, SD=.85). It is noteworthy that the lowest qualitative suitability averages with learning outcomes were 2.18, 2.24 and 2.82, and belonged to U15, U14, and U16 coded universities (n=3), respectively. It was determined that the measurement with the lowest mean of qualitative suitability for the cognitive domain was to support the affective characteristics of pre-service teachers (M=2.36, M_{min}=.50, M_{max}=3.25, SD=.82). This finding suggests that learning outcomes are cognitive domain-weighted, leading to weaker development of affective domain features.

In terms of measurement of suitability for formal writing, learning outcomes of IT courses of universities were quite inadequate (M=3.09, M_{min}=1.25, M_{max}=5.50, SD=1.31). Accordingly, this finding revealed that formal writing of learning outcomes was not appropriate in most universities. Following are some examples of learning outcomes that refer to this finding:

"*To learn the concepts of copyright and cybercrime*" *(U4)*

"*To comprehend in detail the basic hardware and software components and functions in a computer system*" *(U4)*

"*Learn the basic hardware and software components of a computer.*" *(U6)*

"*They are expected to design and evaluate ICT-supported teaching activities*" *(U14)*

Dynamism and continuity (M=4.01, SS=.75) and association (M=4.37, SD=.95) measurements of learning outcomes were higher than average scores. The highest mean of qualitative suitability was about accessibility (M=4.73, SD=1.14). Curriculum development experts' opinions displayed that learning outcomes in IT curriculum were dependent on need (M=3.52, SD=.91), content (M=3.63, SD=.96), adjacency (M=3.64, SD=1.05), and clarity (M=3.73, SD=1.08) criteria, and this showed that qualitative suitability for generality-limitation (M=3.77, SD=1.18) criterion was not met

sufficiently. Learning outcomes did not meet the needs of age, the renewed faculties of education were not interlocked with program content and intelligibility was weak. Findings also showed that the mean of qualitative suitability of accessibility (M=4.73, SD=1.14), educational formability (M=4.71, SD=1.18), and flexibility (M=4.41, SD=.93) criteria were higher. Below are examples of learning outcomes of universities with the highest average scores according to qualitative suitability criteria:

"*Prepares posters, banners, web pages, etc. using desktop publishing programs*" *(U23)*

"*It explains for himself and others what precautions he should take against the Internet.*" *(U20)*

"*Uses word processing, spreadsheet, presentation, and database programs for their own purposes*" *(U21)*

Findings on the opinions of the academics of the IT course curriculum

The first research question about the second purpose of the study was "What are the opinions of academics about the adequacy of the information technology course curriculum?". 7 participants stated that the time allocated to the information technologies course in the program was insufficient, and three participants stated that they found course hours sufficient. One academic who stated that hours of course were insufficient expressed this opinion as follows:

"I think HEI recommends that the topics in the content should be conveyed theoretically, considering a 3-hour duration sufficient. However, technology courses such as IT are practice-based courses, and this duration is definitely not enough for the specified content. For pre-service teachers to be able to practice, the duration of the course should be 4 hours at least, 2 hours theoretical and 2 hours practical" (P-8)

Concerning this research question, academics were asked to express their opinions about implementation methods of the course to identify how the IT course should be delivered. 6 (60%) of academics stated that courses should be given remotely (for the theoretical part) and face-to-face (for the practical part). The other 2 of them were in favor of face-to-face (for both theoretical and practical parts) and the rest 2 of them stated that it should be taught remotely (for both theoretical and practical parts). 9 of academics stated that the curriculum was partially sufficient and needed to be updated, while only one academic stated that it was sufficient. In addition, 9 academics reported that the IT course was necessary for professional development, while one academic reported that it was not.

Apart from its delivery method, academics emphasized that content on artificial intelligence (n = 7), Web 2.0 tools (n = 6), visual and video editing tools (n=4), robotics (n=4), MOOCs (n=2), cyber security (n=2), mobile learning (n=1), digital citizenship (n=1), and connectivity (n = 1) should be added to the IT curriculum. In reference to this finding, the opinion of trainers was as follows:

"*Video editing and visual editing, utilities in daily life, pdf editing, cutting, scheduling time, note-taking, exam reading, Zoom, and Google Meeting programs can be taught... Cybersecurity, robotics, and coding should also be taught; Massive Open Online Courses like Udemy and Udacity should be introduced.*" *(P-6)*

The second research question was "What are problems experienced in the application process of an information technologies course program according to the opinions of academics?". In line with the data obtained, these problems were determined as "lack of equipment and infrastructure", "crowdedness of classrooms", "student-based problems", and "inadequacy of applied activities". Opinions referencing these findings were as follows:

"*There are too many students in all departments in the faculty of education. I sometimes tell children that those who know this subject may not come that week... Because there is no cooler in the laboratory, it gets very hot and after a certain time the lessons faint... Physical conditions need to be improved. Class sizes need to be reduced...*"(P-6)

The third research question about the second purpose of this study was "What are opinions of academics on reflections of Industry 4.0 on IT curriculum?" form. Opinions of academics in this direction are related to and consistent with the finding that they should be added to the content in their answers to the second question. Most academics emphasized that there should be acquisitions and content related to artificial intelligence, machine learning, the internet of things, robotics, and coding in the curriculum.

"*This is a common deficit of education faculty programs ... For example, there is no elective course where new technologies are taught in detail and integrated with education. Artificial intelligence must be added, there can also be artificial intelligence-supported learning environments, robotic coding... Students should be enabled to experience technology in relation to their real lives...*" *(P-6)*

The fourth and last relevant research question to evaluate the adequacy of curriculum was "What are the opinions of academics about the adaptation of IT course curriculum to the Bologna Process?" The majority of the academics expressed the opinion that standardization should be realized in curriculum.

"*... Standardization is achieved by updating the program according to the results of stakeholder evaluations in certain periods. Common needs and assessments for this course for all faculties of education should be analyzed. Standardization efforts without the opinions of academics and students will not be productive.*" *(P-3)*

Results and Discussion

This study was conducted to evaluate the learning outcomes of the IT course in the curriculum of the faculties of education in line with the Bologna Process and expert opinions and to identify the adequacy of the curriculum by resorting to the opinions of the academics who were the practitioners of the course curriculum at 25 universities in Türkiye. After examining and collecting the IT course curriculums from the websites of the universities, the researchers sent these data to the curriculum development experts for the inspection of the qualitative suitability of the learning outcomes. The results revealed that the learning outcomes of the IT course were mainly at the knowledge and application levels according to Bloom's revised taxonomy and were insufficient for developing high-level thinking skills. In addition, the vast majority of learning outcomes were not at the desired level in terms of supporting the affective features of the pre-service teachers and formal writing standards. It is expected for learning outcomes to be clear, understandable, and observable as they are the desired characteristics that learners should gain for particular purposes.

Raible and Bastedo (2016) support this finding in their study stating that a learning outcome should be expressed in a clear and understandable way to ensure that it guides the learning process, and students understand and internalize it. In this regard, the quality element was poor in the examined curriculums with their poorly structured learning outcomes that did not meet systematic standards. It was observed that the learning outcomes were not sufficient in number to represent the content and scope of the course and did not have a balanced distribution. The guide prepared by the European Commission (2015) recommends that the learning outcomes for a course should be 10-12, but the findings of this study showed that the number of achievements in the IT curriculum in terms of both the high-level cognitive learning steps such as analysis, synthesis, and evaluation, and the affective domain steps were inadequate. This indicates that the learning outcomes in the curriculum were not evenly distributed and were not of proper quality. In addition to knowledge, affective characteristics such as belief and attitude are important elements for pre-service teachers to acquire technological skills (Taimalu & Luik, 2019). Therefore, it is important to cover affective features in learning outcomes. Since the attitude is also treated as a separate issue in the ISTE (2022) and TPACK standards, care should be taken to create gains, especially for the affective domain while organizing training programs in teacher training institutions. By increasing the affective skills in the technological achievements of the educational programs, the self-efficacy and thinking skills of the pre-service teachers can be strengthened. This is one of the effects of the affective field on the technological skills of pre-service teachers.

In the second stage of the study, the opinions of the academics who teach the IT course were taken and the curriculum was evaluated. In Türkiye, the IT course is given theoretically for 3 hours in teacher training programs. While the academics found the course hours insufficient, they pointed out that it would be an appropriate approach if

the theoretical part of the course was carried out through distance education and the practical part through face-to-face education. In the relevant literature, some studies have revealed that blended learning in higher education has positive effects (Parra-Gonzalez, et al. 2021) and increases students' confidence and motivation in the classroom (Awidi & Paytner, 2019). Similarly, Hendrik and Hamzah (2021) and Pattanaphanchai (2019) suggested that the use of the flipped learning method in programming lessons had a positive impact on student achievement.

As participants in the study, teacher trainers emphasized the addition of topics on novice technologies such as artificial intelligence, robotics,the internet of things, Web 2.0 tools, and video editing as content. With the development of technology, accredited studies are carried out in many countries to increase the adequacy of curriculums in the global sense. Program accreditation is vital for teachers to be ready for future technological applications and to improve their quality (Pedregosa, 2021). However, the crowdedness of the classes, the reluctance of the students, and the inadequate infrastructure and technological adaptation are other problems encountered in the implementation of the curriculum. Technology courses in teacher education programs have a responsibility to prepare students for changing society (Taimalu and Luik, 2019). With the deficiencies listed, it is a challenging process for pre-service teachers to get prepared for the classrooms of the future. However, the teacher trainers found the content of the IT course in the teacher training undergraduate programs updated in 2018 incomplete and reported that subjects such as artificial intelligence, the internet of things, and robotics should be added to the curriculum. From this point of view, it can be said that teacher curriculums should be constantly renewed, and infrastructure controls should be carried out frequently.

Most of the academics in the study stated that they had difficulty understanding the structure of the IT course in the context of the Bologna Process and in establishing the learning outcomes. In particular, they underlined the need to follow a more systematic approach in creating the learning outcomes of the course and to get support from the curriculum development units. In this respect, the necessity of standardization in learning outcomes for the Bologna Process draws attention. The curriculum aspect of the Bologna Process focuses on the transition to outcome-based and student-centered education curriculum (Dahl et al., 2009). This type of standardization will help higher education institutions achieve educational objectives in a short and direct way. In the study conducted by Groossman (2010), teacher educators expressed a positive opinion on national standardization. In this context, the study is consistent with the studies of Grossman (2010) and Altınkaynak (2016). On the other hand, the opinions of the academics who participated in the study noted that the qualitative inadequacy of the learning outcomes was due to the fact that the academics of the course did not have the necessary knowledge and skills in curriculum development and the course information packages were created in this direction. Standardization will enable accessibility to Industry 4.0 competencies through higher education and serve to the achievements of all universities. As a result, 21st-century thinking skills may better develop in students.

Studies arguing that the development of technology qualifications saves a positive effect on 21st-century thinking skills support this finding (Çiftçi et al., 2021; Smyrnova-Trybulska, 2021; Yang & McKenzie, 2018).

Recommendations

It is necessary to update the curriculum of Information Technologies courses in teacher training programs and to integrate current content such as artificial intelligence, the internet of things, and robotics in the context of Industry 4.0 into the curriculum. In particular, learning outcomes as one of the most critical elements of a program can be rearranged taking into account standards in this study. Courses in teacher education programs can be standardized in terms of learning outcomes as well as their content and made more systematic with practitioners' flexible learning approaches. In particular, hours of practice-oriented courses such as information technologies should be increased to provide equal opportunities to pre-service teachers and the infrastructure and capacity of laboratories should be strengthened to support students to benefit from these environments in the most effective way.

The current study has some limitations. Suggestions for these limitations are given below.

1. Teacher training curriculums should be updated frequently by evaluating the benefits of technology.

2. Personal training programs that increase technological competencies can be designed for both pre-service teachers and teachers.

3. For the curriculum to be prepared in the future, attention should be paid to writing affective gains as well as cognitive gains.

For researchers;

1. The number of experts and trainers participating was limited. In future research, more comprehensive findings can be reached by expanding the target group and supporting them with quantitative measurement tools.

2. The learning outcomes of only the IT course were examined in the scope of this study. In future studies, a broader framework can be offered by integrating it with other technology-oriented courses in teacher education.

3. This study focuses on learning outcomes. Other dimensions of curriculum can be examined more systematically by taking into account other curriculum evaluation models.

4. Compliance of learning outcomes with the Bologna Process and accreditation was evaluated solely based on the opinions of academics. A broader study can be carried out by taking the opinions of students, educators, and administrators at the same time.

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Genişletilmiş Türkçe Özet

Gelişen teknolojinin iş dünyasında nitelikli çalışan ihtiyacını artırması ile eğitim alanında hızlı bir dönüşüm ve gelişim sürecine başlamıştır. Öğrencilerden beklenen üstün bilgi işlemsel düşünme ve teknoloji yeteneğinin sağlanabilmesi için bu alanda etkin dijital yeterliliğe sahip öğretmenlere ihtiyaç duyulmasına sebebiyet vermiştir. Günümüzde özellikle öğrencinin merkeze alındığı eğitim yöntemlerinde teknoloji sınıf ortamına daha fazla entegre edilmeye çalışılmaktadır. Buda öğretmen eğitiminde teknoloji eğitiminin önemini arttıran en önemli faktörlerden biridir. Bu öneminin farkında olan pek çok ülke üniversite eğitiminde dijital yeterliliklerin arttırılması için bazı çalışmalar gerçekleştirilmiştir. Bunlardan biri de Avrupa Birliği (AB) ülkelerini kapsayan Bologna Sürecidir. Bologna Süreci; önce Avrupa'da bilgisayar ve internet altyapısı ile küreselleşmenin etkisi altında üniversite eğitiminin bir değişim ve yenilenme sürecidir. Bu yenilenme süreci temeli eğitim programlarında gerçekleşmektedir.

Eğitim programının en küçük yapı taşı olan kazanımlar ise bu sebeple dijital yeterliliklerle donatılırken aynı zamanda doğru ifade edilmiş bir şekilde aktarılarak üst biliş seviyesinde olmalıdır. Bu bağlamda durum çalışması olarak desenlenen bu araştırmanın iki amacı bulunmaktadır: Birincisi öğretmen eğitimin programlarında yer alan bilişim teknolojileri (BT) dersi öğrenme çıktılarının uygunluğunun program geliştirme uzmanlarının görüşlerine göre ortaya çıkartılmasıdır. İkincisi ise söz konusu öğretim programının yeterliliğine yönelik öğretim elemanlarının görüşlerine göre değerlendirilmesidir. Bu amaçlar doğrultusunda aşağıdaki sorulara yanıt aranmıştır:

1. Bloom'un Bilişsel Alan Taksonomisine göre BT öğretim programının öğrenme çıktılarının dağılımı nedir?
2. BT müfredatının öğrenme çıktılarının niteliksel önemi nedir?
3. Akademisyenlerin BT dersi öğretim programının yeterliliğine ilişkin görüşleri nelerdir?
4. Akademisyenlerin görüşlerine göre bilişim teknolojileri öğretim programlarının uygulama sürecinde yaşanan sorunlar nelerdir?
5. Endüstri 4.0'ın bilişim müfredatına yansımaları konusunda akademisyenlerin görüşleri nelerdir?
6. Bilişim Teknolojileri Öğretim Programının Bologna Süreci'ne uyarlanması konusunda akademisyenlerin görüşleri nelerdir?

Araştırmada tabakalı örnekleme yöntemi kullanılarak toplam yedi bölgeden Türkiye'deki 25 üniversitenin eğitim fakültesi programında yer alan BT dersi öğrenme çıktılarının niteliksel uygunluğu program geliştirme uzmanları (n =5) tarafından değerlendirilmiştir.

Standartlar oluşturulurken ilk etapta doküman incelemesi yöntemi gerçekleştirilmiştir. Böylelikle öğrenme çıktılarının sahip olması gereken kriterler belirlenmiştir. Bu kriterlere dair uzmanlar tarafından verilen frekanslar açıklanmıştır. Düzeyler belirlenirken yenilenmiş Bloom taksonomisi kullanılmıştır. Ayrıca programın değerlendirilmesinde BT dersini veren 10 akademisyenin de görüşü alınmıştır. Veriler "Öğrenme Çıktıları Niteliksel Uygunluk Formu" ve "BT Dersi Öğretim Programı Değerlendirme Formu" kullanılarak toplanmıştır.

Araştırma sonuçları BT dersine yönelik öğrenme çıktılarının çoğunun biçimsel uygunluk, gereksinimlerini karşılama durumu ve üst düzey düşünmeyi teşvik edicilik ölçütlerini karşılamadığını göstermiştir. Kazanımlarda yoğun olarak bilgi, beceri kapsamı yeterlikleri tespit edilmiş, iletişim ve sosyal yetkinliklerin bulunmadığı görülmüştür. Akademisyen görüşlerinden hareketle BT ders saatinin ve bu dersteki uygulamalı etkinliklerin yetersiz olduğu görülmüştür. BT öğretim programına yapay zeka, Web 2.0/3.0 araçları, robotik, kodlama, artırılmış/sanal gerçeklik gibi konuların entegre edilmesi gerektiği görülmüştür. Akademisyenlerin çoğunluğu en son 2018 senesinde güncellenen Öğretmen Yetiştirme Kurumlarının Eğitim Programındaki Bilişim Teknolojileri dersinin yenilenmesi gerektiğini düşünmektedir. Ayrıca uzmanların çoğunluğu Bologna Süreci bağlamında kazanımlarda standartlaşmaya gidilmesi gerektiğini belirtmiştir. Bu tip bir standartlaşma ile eğitim amaçlarına kısa yoldan ulaşabilmeyi sağlana bileceği belirtilmiştir. Çalışma sonucunda öğretmen yetiştirme kurumlarındaki BT derslerinin eğitim programlarının güncellenmesi ve Endüstri 4.0 bağlamındaki içeriklerin programlara entegre edilmesi gerekmektedir ayrıca Yenilenmiş Bloom Taksonomisinin üst basamakları da gözetilerek bir standarta bağlanması ile hem öğretmen adayları hem de öğretmenler için teknolojik yeterlilikleri artıran kişisel eğitim programları tasarlanması önerilmektedir.

Data Availability

The datasets generated during the current study are available from the corresponding author on reasonable request.

Researchers' Contribution Rate

All authors have participated sufficiently in the work to take public responsibility for the content, research design, analysis, methodology, data collection, resources, discussion, conclusion, writing - review & editing.

Ethics Committee Approval: The ethics committee approval for this study/reserach was obtained from Bartin University (2022-SBB-0109).

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A Qualitative Meta-Analysis of Kahoot! in Language Instruction

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Abstract

Mobile- and computer-based applications have become more prominent and popular since the COVID-19 pandemic. Digital tools have been used by teachers and students worldwide for educational purposes and in language classrooms. One such application is Kahoot!, which is an in-classroom or online testing and practice application released in 2013 and widely used in a variety of classrooms for entertaining practice for students, and a way for teachers to test students' gains. Even though Kahoot! is extensively used and researched in language teaching/learning contexts, a meta-analysis of studies with particular focus on qualitative findings has been out of radar. This proposal addresses this gap by offering an in-depth meta-analysis of qualitative studies and findings investigating the application. Research articles utilizing qualitative methods published between 2013, Kahoot!'s official beta release, and 2022 were gathered and analyzed to reveal trends, limitations, and gaps in the literature. The findings revealed that the majority of students and teachers who participated in Kahoot! quizzes reported positive sentiments, though several concerns were raised regarding their effective use. This analysis suggests that improving instructional effects in educational settings hinges upon well-informed decision-making processes, skilful classroom management, and proficient computer literacy. When strategically employed, these factors can significantly enrich educational practices.

Keywords: Kahoot!, computer-assisted language instruction, qualitative meta-analysis

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Introduction

The increasing popularity of Web 2.0 and information and communication technologies (ICT) has led to the widespread adoption of various digital tools and platforms in language education. These tools encompass Computer-Assisted Language Learning (CALL), Mobile-Assisted Language Learning (MALL), and assessments through applications and websites. They serve a range of purposes, including facilitating communication and online classrooms (e.g., Zoom, Teams, Cambly), providing self-practice and testing opportunities (e.g., Duolingo, Memrise, Elsa), and supporting in-classroom practice tests (e.g., Kahoot!, Socrative, and Quizziz).

One noteworthy educational application that gained popularity prior to the onset of the COVID-19 pandemic is Kahoot!. This versatile platform serves as an interactive testing game designed for both classroom and online use. Kahoot! serves a spectrum of purposes ranging from providing entertainment to facilitating the testing and practice of acquired knowledge. The application hosts an extensive array of tests that can be accessed and implemented by groups of up to 20 users in the free version and up to 50 users in the premium version. Additionally, users have the flexibility to create their own tests and adapt the assessments generated by other users to suit their specific groups. In the Kahoot! environment, participants are prompted to join the test using their mobile devices or computers. Once the test commences, participants can select the correct options using the application, which can be downloaded onto their mobile devices, in response to questions displayed via a screen or projector. The correct answers are scored by the application, taking into consideration how quickly the participants answered the questions. At the end of each test, a scoreboard is displayed, highlighting the top three participants while the statistics for the test are recorded and stored on the profile of the test moderator. The scoreboard displays the performance of each test-taker for each question, as well as the classroom percentages for each question individually.

Literature Review

Kahoot!

The application Kahoot! has been investigated in several studies in various contexts. Kahoot! was investigated in terms of its effects on Turkish learning motivation and success (Batıbay, 2019; Tıraşoğlu, 2019) among foreign learners in Türkiye. For English learning, Kahoot! has been investigated with an emphasis on the gamification and attitudes of teachers and students (e.g., Bozkurt Türk, 2019; Emecen, 2019; Nurhadianti & Pratolo, 2020; Puğ, 2020; Rahman et al., 2019; Ünal, 2018). Frequently, Kahoot! was studied and tested as a means of teaching, learning, and retention of vocabulary skills (see Bozkurt Türk, 2019; Emecen, 2019; Hamedi et al., 2022; Tıraşoğlu, 2019; Ünal, 2018) both in Turkish and English education.

As the main performers of the practice, the opinions of students and teachers were gathered and analyzed by the aforementioned researchers. The findings based on surveys and interviews reveal that both students and teachers believe that Kahoot! proved

to be a motivating, entertaining, engaging, and interactive means of practising their language skills. The study by Puğ (2020) showed that there was a correlation between students' proficiency and the positivity of their experience with Kahoot!. Puğ (2020) also found that teachers' preference to use the application was higher the younger they were. However, despite the overall positive results from the data gathered from participants, the results of the pre- and post-tests revealed a consistent lack of improvement in students' language achievements (Bozkurt Türk, 2019; Ünal, 2018) with one exception (Emecen, 2019), which showed that compared to the pre-tests, the control group's scores on a vocabulary retention post-test showed a sharper downward curve than those of the experimental group who practiced vocabulary through Kahoot! weekly in the classroom. Studies that performed experimental procedures in foreign-language classrooms using Kahoot! showed no statistically significant differences between the pre- and post-tests or in comparison with the control groups.

Previous Meta-Analyses of Kahoot!

Several meta-analyses (e.g., Wang et al., 2021) have been performed on Kahoot!, although no focus solely on qualitative findings was found in the literature.

Although several meta-analyses have been conducted on Kahoot! in the quantitative spectrum, there are no studies focusing solely on the qualitative findings of studies on the application. A qualitative meta-analysis can offer a concise and comprehensive picture of findings" on the subject investigated, providing researchers with brief but thorough evidence on the methods and procedures employed and the findings reached (Timulak, 2009, p. 591). Therefore, in addition to insights into quantitative findings, a qualitative meta-analysis of Kahoot! is also required. The following research topics for this study were resolved through a review of the qualitative literature.

1. What are the most frequent and salient findings of the Kahoot! as a language-testing instrument?

2. What suggestions can be offered to teachers for enhancing the Kahoot quiz experience and resolving any encountered challenges?

To this end, the present study aims to create a compilation of and analyze qualitative findings of completely qualitative studies, or qualitative methods and findings of studies in which a mixed-method approach was employed.

Method

For the present study, data were gathered from studies found within the EBSCOhost and Dergipark databases as well as with the assistance of Google Scholar. With the purpose of providing knowledge, the three tenets of qualitative analysis, the building, explication, and development of theories, identified by Schreiber et al. (1997) were followed. To

access articles that employ qualitative methods either mainly or as an additional asset, Boolean queries were used by the researchers.

Qualitative Meta-Analysis

The history of the meta-analysis method dates to the 17th century (O'Rourke, 2007). In essence, a meta-analysis can be described as "a way of quantifying replications of a study" (Fraenkel et al., 2012, p. 177) and aims to overcome the constraints inherent in individual studies. Although the majority of meta-analyses are created mostly in the quantitative category, they can also be performed on qualitative literature and findings to synthesize and review them. Guzzo et al. (1987) acknowledged that excluding or disregarding qualitative findings and reports could create a bias in scientific reports. Indeed, as meta-analyses are regularly performed with quantitative literature as the main consideration, qualitative studies are often neglected. This observation provides another impetus for the present study.

Selection of Studies

According to Timulak (2009), researchers should be mindful of their commitment to the subject and how it may influence study selection. Throughout every step of the process, the list of studies was reassessed to ensure that no relevant studies were missed, and no irrelevant studies were added to the database. Through compilation, synthesis, and explanation of the qualitative literature on Kahoot!, the aim of the present study was to contribute to the literature on Kahoot!.

The primary emphasis of this study lies in the realm of qualitative findings, encompassing both qualitative and mixed-method research studies with a qualitative orientation. The selected studies delved into the effects and attitudes of both students and teachers, experiments, interviews, and assessment processes related to language teaching and learning through the integration of Kahoot!. To ensure accurate search results, we focused on keywords entered into the search bars of various databases. The researchers utilized their experience and knowledge in testing, and also consulted relevant academic literature, when necessary, to gain valuable insights. The following keywords were chosen for the search:

- Kahoot (or) Kahoot!
- English (or) EFL (or) ESL
- Language teaching (or) Language learning
- Assessment (and/or) testing

As stated above, the inclusion criteria were employed to limit the search to qualitative findings. To this end, the following keywords were used when necessary:

- Qualitative

- Case Study
- Interview
- Field Study
- Ethnographic (or) Ethnography
- Focus Group
- Grounded theory
- Observation or observational
- Phenomenology, phenomenological (or) phenomenon

In the case of databases that allow for the search of qualitative literature, keywords to filter out non-qualitative studies were not used. Additionally, the references of studies that fit the criteria were reviewed for further studies that fit the standards. Using the keywords above, the Boolean query below is generated. "("Kahoot" OR "Kahoot!") AND ("English" OR "EFL" OR "ESL") AND ("Language teaching" OR "Language learning") AND ("Assessment" OR "testing") AND ("Qualitative" OR "Case Study" OR "Interview" OR "Field Study" OR "Ethnographic" OR "Ethnography" OR "Focus Group" OR "Grounded theory" OR "Observation" OR "Observational" OR "Phenomenology" OR "Phenomenological" OR "Phenomenon")".

Using this query, the researchers cautiously collected digital documents from publications that included the specified keywords. After careful examination and classification, papers were reviewed. Articles written in other languages were omitted from the list given the researchers' proficiency in English and Turkish. Articles examining Kahoot! in contexts other than language teaching were also removed. The remaining documents were then separated into groups according to their methodological approaches, separating those that utilized qualitative methods exclusively from those that included quantitative evaluation. Once the sorting sequence was completed, the articles that fit the target characteristics were organized into a dataset. The total number of articles proceeded with was 60.

A significant challenge encountered by researchers during the execution of a meta-analysis pertains to article selection. Instances may arise when researchers perceive the need to discriminate between well-and poorly designed studies. Nevertheless, as advocated by Fraenkel et al. (2012), we adopted an approach of equal weight to all studies during the initial query, with a subsequent judgemental review conducted.

Data Analysis

Once the scan was completed, the literature was analyzed. Initially, the methods and findings of each study were analyzed and synthesized individually. The relevant findings were then compared and contrasted in the categorized groups. To organize the articles,

a dataset on Google Sheets was created with columns for the publication year, type (qualitative or mixed method), aim, method, sample, summary of findings, and frequent themes. Before organization, each document was renamed with a corresponding number, which was inserted into the same rows as the articles. Figure 1 displays a section of the worksheet to better demonstrate the organization process.

Figure 1

Organizing Data Using Google Sheets

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	A	B	C	D	E	F	G	H	I
1	**Author/s**	**#**	**Type**	**Year**	**Aim**	**Method**	**Sample**	**Findings**	**Themes**
2		1	Discarded						
3	Şad & Özer	2	M	2019	report tea	case study,	88 TeCa	highly posit	entertainment educative, language retention +, repeat, revise,
4	Polat	3	Q	2019		phenomen	116 TeCa	majoirt stat	aparticipation motivation, concentration competition repetitic
5	Bicen & Kocak	4	M	2018	to determ	case study	65 TeCa	positive atti	entertainment, confidence, cognitive skills, + competition, mot
6		5	Discarded						
7		6	Discarded						
8		7	Discarded						
9	Nadeem & Alfa	8	Q	2020	investigate	action rese	70 f uni sts	positive eva	effective fedback, meta-cognitive skills, competition, motivatio
10	Verdiyanti	9	Q	2019	investigate	quali forma	single teacl	kahoot prov	effective feedback, classroom participation
11	Hadijah et al	10	Q	2020	This resea	sem structu	5 HiSchl sts	kahoot is pr	motivation , attention, entertainment, encourages interaction,
12		11							
13	Pahamzah et a	12	M	2021	kahoot co	action rese	26 uni sts	positively ef	entertainment, engaging,
14		13	Discarded						
15	Amin & Dahnia	14	Q	2021	sts attitud	interview	12 uni sts	positive atti	entertainment, interesting, short time for questions, internet a
16	Kurnia & Rahm	15	Q	2020	behaviour	case study	7 HiSchl sts	benefits and	entertainment, retention, short time for Qs, internet connectic
17	Putra et al	16	Q	2022	tudents' p	open ende	10 uni sts	benefits and	competition, encouraging, motivation, entertainment, attracts
18		17	Discarded						
19		18	Discarded						
20		19	Discarded						
21		20	Discarded						
22	Muhridza et al	21	Q	2018	observe th	interviews	29 uni sts	useful in ini	entertainment, competition, group mode helps cooperation, ir
23		22	Discarded						
24		23	Discarded						
25		24	Discarded						
26	Akkuş et al	25	Q	2021	measure t	case study	12 TeCa	positive atti	participation, repetition, motivation, attention, takes too muc
27		26	Discarded						
28	Uzunboylu et a	27	Q	2020	determine	sem structu	38 TeCa	candidates t	motivation, assessment, easy,

Following an intensive and meticulous process involving organization, coding, and the subsequent development of thematic structures, the data were deemed ready for analysis through the counting of codes.

Findings

The initial observations indicated a gradual increase in research focused on Kahoot! as a language-testing tool, a trend notably amplified by the global impact of the COVID-19 pandemic. Table 1 provides an examination of the accessed research articles, organized by their publication years, spanning from Kahoot!'s from 2013 to 2022.

Table 1

Number of Studies Accessed by Year of Publication

Year	2016	2017	2018	2019	2020	2021	2022	Total
N	1	1	4	9	15	19	11	60

Although no studies were found between 2013 and 2016, the number of studies has increased over the years. Upon analyzing the aims of the studies, it was found that a majority of them explored the views, attitudes, and experiences of the students. Of the 60 studies reviewed, only three delved exclusively into the perspectives and attitudes of teachers, while 11 focused on those of teacher candidates regarding the application. The majority of the studies (35 in total) focused on university students as their primary sample. In contrast, 12 studies predominantly involved high school students, and only two studies utilized elementary students as their main sample group. Among the studies with students as the primary focus, six also incorporated input from the teachers of students as an additional source of data. The studies usually focused on teacher and student perceptions, learning and engagement with Kahoot!, assessment of learning with Kahoot!, reading comprehension and vocabulary development as well as general effectiveness of Kahoot! use.

Considering the qualitative methods, the distribution is as follows: case study (n = 7), phenomenology (n = 7), action research (n = 6), descriptive qualitative (n = 30), and exploratory (n = 10). Qualitative data were collected using various methods: 39 interviews (including structured, semi-structured or focus group sessions), 15 observations, and 23 open-ended survey forms.

As for the contexts, it is evident that most of the studies were conducted in Indonesia, Türkiye and Malaysia. Specifically, Indonesia was the most frequent context with 27 studies conducted there. Türkiye followed with 11 studies, and Malaysia with 6 studies. Other countries included in the data were Iran with 2 studies, Korea with 2 studies, Vietnam with 2 studies, and Saudi Arabia with 2 studies. Additionally, single studies were conducted in Oman, Russia, Singapore, Taiwan, the UAE, and the UK.

Empowering Learning Through Kahoot!: Unveiling the Benefits

While examining and organizing the gathered studies, a wide range of findings emerged. These included the expected common trends and salient themes. This thorough analysis provides valuable insights into this subject matter.

Table 2

Beneficial Aspects of Kahoot!

Cognitive gains	*Affective gains*	*Social gains*
Vocabulary retention	Entertainment	Participation
Engagement	Decreased anxiety	Cooperation
Learning and comprehension	Increased motivation (e.g., through instant feedback)	*Competition*

Among the most frequent themes, the positive effects of Kahoot! on motivation were the most recurrent ones, appearing in the findings of 53 studies, which was roughly 80% of the studies. While demotivation also occurred within the findings, induced by technical issues, competition, lack of preparation on the part of the teachers, and other factors, it was not observed to be common, with only three instances observed. As per Saracoğlu and Kocabatmaz (2019), Kahoot! was often noted for its visually appealing interface, accompanied by music, competition, and interaction, which collectively served as attractive elements motivating students to actively participate in and prepare for the quizzes. Chen (2022) outlined several themes that contributed to the heightened student motivation facilitated by Kahoot!, including factors such as "novelty," "interest," "game-like" experiences, and the creation of a "good atmosphere" good atmosphere'(p. 1459). This motivation manifests in various forms and exerts a positive influence on other aspects. For instance, students' motivation to study is bolstered by Kahoot!, as reported by Alharthi (2020), who observed that lower-scoring students were motivated to enhance their performance. Likewise, a student from the study by Tao and Zou (2021) mentioned actively reviewing the material they anticipated might be covered in the quizzes to secure a higher score.

The articles revealed that students exhibited heightened motivation to actively participate, including those who were typically more reserved in the classroom. For instance, one study found that even a student who had a tendency to be distracted by their mobile phone and rarely participated in class was eager to take part in Kahoot! quizzes (Reynolds & Taylor, 2020). Another study reported similar observations, affirming that Kahoot! notably enhanced students' motivation to actively participate (Holbrey, 2020). Furthermore, Sercanoğlu et al. (2021) highlighted that along with improved learning motivation, there was a concurrent reduction in exam anxiety. Gamified elements of Kahoot! were attributed to this positive attitude shift. Alawadhi and Ayyash (2021) identified sub-themes of competition and enthusiasm that played a pivotal role in motivation. Students expressed those competitive aspects served as a powerful incentive for their studies, and seeing their names on the leaderboard further fuelled their motivation. It is worth noting that competition, as a theme, frequently intersects with motivation, as observed in several studies that report on the competitive elements of

Kahoot! quizzes (e.g., Hadijah et al., 2020; Saracoglu & Kocabatmaz, 2019; Sercanoğlu et al., 2021). It is also important to acknowledge that while less prevalent than positive findings suggest, competition also emerged as a recurrent negative theme. This theme, along with its particularly nuanced manifestations, is discussed in a separate section.

There was a noteworthy interplay between themes, with some occurring in tandem and mutually reinforcing one another, contributing to a positive learning environment. The correlation between themes is discussed in detail.

The second most prevalent theme that emerged from the qualitative findings of the reviewed studies was entertainment, with 41 instances of mention. Kahoot! received consistent praise for its entertaining attributes and was often praised as an effective gamification tool. The reasons for this entertainment, as shown by the data, were that it enabled learners to collaborate or compete with one another in an effort to win or appear on the leaderboard. Participants in the qualitative studies frequently mentioned that Kahoot! enabled them to learn while enjoying the gamified elements. The examined studies revealed that Kahoot! served as a source of motivation and entertainment for various capacities. Therefore, students who are more leaned towards edutainment may be motivated by Kahoot! quizzes. Moreover, these studies frequently underscored the significance of individual differences and the advantages of gamification. Similarly, Şad and Özer (2019) reported that a sense of entertainment had a substantial positive impact on formative assessment through Kahoot! particularly from an attitudinal perspective. This was predominantly attributed to Kahoot!'s gamified nature, particularly the competitive environment it induced, which not only motivated and entertained, but also actively engaged learners.

Kahoot! appears to serve a dual purpose, benefiting both learners and educators. Beyond its role in engaging learners and reinforcing language skills, Kahoot! is also praised for fostering a sense of healthy competition, encouraging interaction, and motivating students to study. For teachers, it proves to be a valuable tool that can help them assess and plan consecutive courses. For instance, in the study by Şad and Özer (2019), it was found that Kahoot! aided in reviewing previously taught subjects and allowed instructors to identify areas that may require further attention. Reports and feedback functions of Kahoot! empower educators to make timely adjustments to their teaching methods, ultimately enhancing their learning process.

Commonly stated, both by learners and instructors was how convenient Kahoot! was to use for both parties. Teachers can easily prepare, broadcast, and initiate tests within the classroom or use tests created by other users, while students with smartphones can easily download the application and enjoy the experience without having to log in using any credentials, requiring only the passcodes displayed on the main screen to enter. Twenty studies found that Kahoot! was an easy-to-use testing tool for both the undertaking and assessment processes, and convenience of use was the fifth most frequent theme. Both students and teachers frequently enjoyed Kahoot! for being an application that was practically easy to use, particularly in terms of unfamiliarity, because of its simple and

user-friendly layout. A significant number of students echoed this sentiment. For instance, Uzunboylu et al. (2020) specifically commended the software for its practicality and ease of interface. Polat (2019) reiterates this point by drawing upon the perspectives of candidate teachers. This idea is further supported by Nadeem and Alfalig (2020), who emphasize the usability of mobile device applications and claim that interacting with the quiz on their mobile devices made the process easier. In another example, Sercanoğlu et al. (2021) acknowledged a user-friendly interface as a noteworthy feature.

While anxiety was a prevalent theme due to the competitive aspects of Kahoot!, the fact that students could remain anonymous by using nicknames instead of their names mitigated such anxiety, as reported by Kim (2019), who revealed that students viewed anonymity as one of the advantages. Additionally, most studies indicate that the feeling of anxiety is reduced through Kahoot! quizzes. Rajabpour (2021) also highlighted anonymity as a beneficial feature that increases engagement and decreases anxiety. The ability for students to participate in quizzes anonymously also emerged as an entertaining mini-game students would play while participating. Students disguising themselves through nicknames appeared to be an enjoyable activity (Fajar & Wenni, 2019). As noted in the study by Rojabi et al. (2022), Kahoot! displayed the ability to keep learners engaged and motivated in an entertaining learning atmosphere, thereby decreasing their anxiety. Similarly, Thach and Diem (2022) reported that students found enjoyment in the anonymity offered by Kahoot! quizzes, stating that "leveraging anonymity as a game element attracted more people to play" (p. 150). Hadijah et al. (2020) noted that students felt comfortable being in control of the amount of interaction by joining quizzes anonymously. Furthermore, Licorish et al. (2018) reported that Kahoot! concentrated students' attention on the quiz topics and other students' opinions rather than encouraging them to compare their own results with those of their classmates. It was also mentioned that anonymity created an environment in which learners felt less exposed while answering questions.

Likely due to their entertaining and innovative nature, Kahoot! tests were viewed by students and teachers as engaging activities, helping even those who did not contribute much to the classes to become involved. Participants commonly stated that, with Kahoot!, they were motivated to perform the tests, and their passion for classes increased. The number of the theme "engagement" within the investigated studies was 18.

The competition that is present while playing Kahoot! quizzes was a frequently mentioned theme in a total of 33 studies. Most students and teachers praised the competitive elements and enjoyed them thoroughly. From an examination of the findings of the interviews with students from the study of Bicen and Kocakoyun (2018), the competitive atmosphere produced an array of positive emotions, notably enthusiasm, enthusiasm for class engagement, and willingness to attend class. Ebadi et al. (2021) reported that although most students found the competitive aspect of the game and their positive outcomes to be motivating and encouraging them to continue playing, it was also noted that students who struggled with English felt demotivated as they consistently observed other students answering questions more quickly and accurately, and they needed more

time to respond. Indeed, such experiences may motivate students to study further to achieve success. They also serve as early warnings for students whose English skills are too weak to study more.

The themes of cooperation and collaboration emerged consistently across multiple studies, underscoring their high importance, especially while playing in the team mode, where winning often hinges on effective interaction and discussion. Additionally, the theme of interaction featured prominently, praising *Kahoot!* for facilitating many opportunities for interactions among students, between students and teachers, and with the language features they were learning (e.g., Adhitama et al., 2022; Alfaruqy & Setyawan, 2021; Nurhadianti & Pratolo, 2020; Thach & Diem, 2022). *Kahoot!* was also observed to increase the concentration levels of the students during the classes so that they could correctly answer the questions and increase their scores.

Many of the qualitative findings emphasized that Kahoot! played a significant role in supporting students' learning and comprehension of language features, with this theme being separately mentioned in 18 studies. Throughout the analysis, a significant topic was that Kahoot! advanced students' processes of language acquisition in various ways. Along with its motivating role during the activity, Kahoot! was referred to as an effective tool for improving students' concentration, participation, retention, interaction, communication, cooperation, and collaboration within classrooms. However, a noteworthy finding by Mahbub (2020) indicated that students tended to focus more on the competitive aspect of the quizzes than on the actual questions or the learning process. Despite this, the element of competition was consistently and frequently mentioned as a motivator for students to pay closer attention to the language features being taught, driven by their desire to achieve higher scores. In contrast, a student participant from the study by Marsa et al. (2021) expressed feeling a sense of obligation to engage with the course content in order to be able to participate in Kahoot! quizzes. In another study by Fajar and Wenni (2019), participating students highlighted that an enjoyable classroom atmosphere generated when students engaged in a time-limited game of speed and precision was an advantage offered by the application. This encouraged them to approach learning activities with greater enthusiasm. Additionally, Nugroho (2021) reported that Kahoot! enhanced students' focus and quick thinking, thereby improving their reading comprehension skills and honing their ability to better understand content.

Kahoot! was tested and confirmed as a more effective way to conduct English vocabulary testing than conventional methods, and vocabulary retention appeared to be stronger when practiced through the application. The assistance provided by Kahoot! in enhancing the retention of acquired language skills, and features emerged as a prominent and frequently mentioned theme in both student and teacher interviews. Following classes, the implementation of Kahoot! was acknowledged as a promoter of memory and a means of repeating hard-to-understand tasks (Tao & Zou, 2021). The aggregation of findings also showed that the retention of subjects learned in class was stronger when the same subjects were tested using the Kahoot! in comparison to conventional testing methods. Similarly, findings from interviews conducted by Nurlaela

and Nawir (2020) illustrated that students found it more convenient to recall words they had practiced through Kahoot! quizzes. Moreover, Rojabi et al. (2022) provided an example of a student who reported the ease of use especially in terms of practicing grammar and vocabulary. To solidify this retention, the theme of repetition, identified as needing more emphasis, was frequently raised across the nine studies. A student from the study of Akkuş et al. (2021) specifically emphasized that through Kahoot! quizzes, they were able to reinforce their learning and retain what they learned.

In a comprehensive total of 21 studies, Kahoot! is directly mentioned as significantly boosting student participation through the combined features of competition, entertainment, and interaction. Students in Polat's (2019) study also stated that Kahoot! made them more dynamically involved in class, ensuring that everyone actively participated in classroom activities to excel in the quizzes. According to Nadeem and Alfalig (2020), Kahoot! helped students learn the material and engaged them through the quizzes. A participant in a study by Akkuş et al. (2021) stated that Kahoot! quizzes rendered classes more captivating, expressing a desire for integration into all the courses. Additionally, students noted that the quizzes sparked their interest in courses with which they were not typically motivated to engage, underscoring the motivational impact of Kahoot!. The introduction of new features in Kahoot! was also lauded by participants in the study by Ebadi et al. (2021).

Remarkably, several students from various studies lauded Kahoot! because of its ability to provide immediate feedback, a feature that is not readily achievable with traditional assignments or regular quizzes. A student from the study Nadeem and Alfalig (2020) highlighted the practical use of immediate feedback. This immediate feedback mechanism is considered highly beneficial. Supporting this, Kaur and Nadarajan (2020) emphasized this aspect, noting that students could effectively monitor their own learning progress. Additionally, Verdiyanti (2019) highlighted Kahoot!'s effectiveness in delivering feedback, both to students by indicating whether their answers were correct and to teachers by revealing the extent to which the classroom comprehended the content and identifying areas where individual students may have struggled. Importantly, Kahoot! offers teachers comprehensive quiz reports, detailing which questions posed the greatest challenge and which students may require additional assistance. This robust feedback system facilitates student self-assessment and teacher intervention, thus enhancing their learning experience. The acquisition and retention of course materials has emerged as one of the most frequently praised aspects of Kahoot! quizzes with 17 instances in separate studies. In one instance, a participant in Hadijah et al. (2020) stated that they found Kahoot! to assess vocabulary to be particularly intriguing and that they could enjoy the exam because it was distinct from the previous methods used.

These findings suggest that the use of Kahoot! could strongly benefit students in improving their learning experiences and the attention spans of the learners and improving the likelihood of what was learned in the long term.

Negative Experiences and Difficulties with Kahoot!

Most of the findings on Kahoot! appeared to point in a positive direction, difficulties with the process were also emphasized by the findings. The sources of the negative aspects of the application can be categorized into four groups: students, instructors, the application itself, and technical issues. To demonstrate this categorization more effectively, Table 3 shows each source of complications within dedicated columns:

Table 3
Potential Drawbacks of Kahoot!

	Student-induced problems	Teacher-induced problems	Problems with Kahoot!	Environmental & Technical problems
Individual	-Internet access and/or speed -Mobile device access or processing power -Digital literacy -Familiarity with Kahoot! -Blind guessing	-Digital literacy -Familiarity with Kahoot! -Technological "know-how" -Creating questions with a short timespan -Not allowing enough time for discussions	-Questions only displayed on the main screen	-Visibility due to display device -Slow or non-existent internet connection -Slow mobile devices
Disruptive	-Overexcitement -Noise -Announcing answers			

The student-sourced issues observed can be divided into two categories: those that affect the individual and those that disrupt the process and outcome. The student-sourced problems affecting individual students were the lack of Internet access, the absence or low processing power of mobile devices, a lack of digital literacy or familiarity with the application, and blindly guessing the answers to some questions. Issues that disrupted the order of the process and the outcomes were that (a) some students would become overexcited and loud, distracting others and (b) some students would loudly announce their answers to the classroom, defeating the purpose of the application. Problems caused by teachers consist of providing a short timespan for each question; therefore, the test as a whole, lack of familiarity with the application, and lack of technological "know-how." One problem arising from the application itself was that the questions were displayed only on the main screen and not on the individual devices used by the test takers, causing confusion or even failure. Another problem, that could not be attributed to the teachers, but was more of a technical one, was that the application would often be displayed via a projector, which could not be seen all the time by the students due to light conditions, lack of calibration, or complications with eyesight. While these issues can be solved to some extent by the teacher, they are not solely a teacher's responsibility or fault.

A significant issue reported by both students and teachers was the inconsistency in internet accessibility. This inconsistency not only posed challenges for students, but also had the potential to lead to unfairness in participation, ultimately resulting in decreased motivation and enjoyment. Moreover, students facing issues such as low battery capacity, slower mobile phones, or those without access to mobile devices may encounter difficulties or be unable to fully engage in Kahoot! quizzes. Additionally, considerations of screen brightness and visibility, particularly with projectors, were also highlighted by students as noteworthy factors. Students expressed concerns that Kahoot! consumed their Internet data quotas and posed challenges for those with slow Internet connections, as indicated by a participant from the study by Polat (2019). Additionally, one student pointed out that although the quizzes were intriguing, the network had to be stable for a fulfilling experience, based on the results reported by Amin and Dahnial (2021). Chen (2020) also reports concerns with internet connections and response speed. The interview subjects in Muhridza et al. (2018) acknowledged that having a poor Internet connection presented challenges.

Accessibility poses another challenge, rendering Kahoot! impractical in classrooms lacking projectors, large screens, or stable Internet connections. Although team games can mitigate this, requiring only one mobile device per group, schools with limited access to technological resources and a stable Internet connection may miss out on the benefits of Kahoot!. This issue is particularly prevalent in elementary schools. Problems with projectors were noted by Saracoglu and Kocabatmaz (2019), who mentioned that viewing the projected text was visually unappealing. Similarly, Akkuş et al. (2021) reported that students faced difficulties viewing questions on projections and providing answers via their phones, as the questions and related options were displayed solely on the projection or classroom screens. While Kahoot! effectively encourages student activity, participation, and interaction, and some students raise concerns about the noise it generates in the classroom. Şad and Özer (2019) cited a student who mentioned that they struggled to utilize the given response time owing to the noise level. To address this, they suggest establishing rules and politely instructing students to maintain decorum. Additionally, Holbrey (2020) noted that a significant number of students were distracted and bothered by noise from their peers. The level of students' technological proficiency and familiarity with using such applications may significantly influence their motivation to participate and engage in Kahoot! quizzes, as indicated by Chen (2020). In addition to students' proficiency, teachers' digital literacy also plays a crucial role, as they are typically responsible for creating and overseeing quizzes. This perspective, emphasized by Hadijah et al. (2020), places significant emphasis on the information and communication technology (ICT) skills of teachers. Muhridza et al. (2018) argued that students felt at ease with Kahoot! quizzes. This educator was noted to efficiently oversee the game, provide assistance with internet connectivity for those in need, and motivate teams to strive for higher scores.

A recurring concern raised by the students was the perceived shortage of time and opportunities to engage in discussions about their answers, including both correct and incorrect answers. According to an account provided by Pratolo and Lofti (2021), a

student participant raised an issue regarding the limited opportunity for direct discussion with the teacher. This student pointed out that, due to the timed nature of the game, most questions could not be adequately addressed within the given timeframe. While a lack of discussion about answers and mistakes emerged as a salient theme, it was more frequently noted that Kahoot! quizzes provided ample opportunities and encouragement for students to deliberate their responses. As a result, students found themselves more actively engaged with the material, driven by the competitive nature of Kahoot!. The fact that pupils felt obligated to have discussions with their peers served as an example. According to a study by Adhimata et al. (2022), Kahoot!'s competitive element has heightened students' interest in the subject matter since they are required to work together with one another. It is worth noting that this benefit appears to be particularly pronounced in the team game mode and may not be as visible in quizzes where all students participate as individuals. Fajar and Wenni (2019) made significant observations, noting that students who played individually often found themselves with few opportunities to discuss their answers. In contrast, in team mode, they had the chance to discuss with their teammates before finalizing their responses. This dynamic of interaction and discussion during the quiz was confirmed by the observations of Marbun and Harpain (2016).

The competition factor is also noted to potentially induce demotivation and anxiety among students. This arises from their desire to secure their position on the leaderboard once the quiz is concluded. In contrast, the theme of encouragement emerged distinctly on six occasions, signifying Kahoot!'s capacity to motivate students to actively participate and engage in studying to excel in the competition. However, the aspect of competitiveness might have a double-edged effect in this situation, which is imperative for teachers to acknowledge. Higher levels of demotivation and anxiety could make it more difficult for students to develop language skills and comprehension. This is particularly true when they find themselves without answers to the questions, yet still aspire to claim the top position. Naturally, the prospect of experiencing anxiety during a quiz can paradoxically serve as a source of motivation, compelling students to actively learn and commit language features to memory.

Additionally, Nadeem and Alfalig (2020) reported that students highly valued teachers pausing the quiz and taking the time after each question to facilitate discussions and explain the correct answers. These findings, drawn from both observations and students' opinions, underscore the critical role that during and post-quiz discussions play in the learning process and how they can significantly enhance the educational impact of the quizzes.

Discussion

As a rapidly developing method for testing, gamification using digitalized applications such as Kahoot! proved to be more effective than conventional methods in almost every aspect. While there are a plethora of questions on the minds of learners, teachers, parents, and education administrators, the technological methods are without a doubt

here to stay. In this study, qualitative findings from 2013, the date of the official release of Kahoot!, to 2022, were qualitatively analysed. Prior to initiating the analysis sequence, it was observed that the number of qualitative studies on the topic had been steadily growing, with only one study in 2016 and 11 studies by the end of 2022. The analysis was performed to answer the following research questions:

1. What are the most frequent and salient findings of the Kahoot! as a language-testing instrument?

2. What advantages and issues have users reported with the application?

As a result, all research questions were answered to some extent. The most commonly observed benefit of the application was that it promoted learners' motivation, retention, concentration, attention, participation, cooperation, and excitement. It was also discovered that learners were provided with entertainment, constructive competition, and a way to revise, recall, and test what they had learned through the modern, practical, digitalized, and interactive game-based testing application Kahoot!. Throughout the analysis, the most frequent and noteworthy finding for the researchers was that the participating students enjoyed Kahoot! and viewed it as an entertaining and exciting game, instead of a classroom task. The majority of studies stated that competition within the application was the main drive for participation. Knowing what they learn in the classroom will contribute to their success in Kahoot! tests, it is predicted that students will be more motivated to learn (and remember what they have learned) in the classroom. In addition, discussions taking place between questions between students were observed to be another major source for the clarification of subjects that students had not completely grasped. Therefore, if prepared with the required consideration and care and applied in the correct manner, with the additional incentive of rewards for winners, Kahoot! could be highly beneficial in ELT classrooms.

However, it should not be ignored that multiple complications were observed with Kahoot! caused by teachers, learners, the application, and the environment in which the tests were conducted. First, access to infrastructure, a stable Internet connection and the required devices, a computer for the teacher, a large screen or projector for display, and mobile devices are required for each classroom. Such facilities may not be available in all regions of the world, in all schools, or for all students. While the number of primary, middle, and high school students who own mobile devices may be higher than in the past decade, many teachers perceive smartphones in the classrooms as a distraction for the students, and this perception appears to become stronger with the age of teachers (O' Bannon & Thomas, 2014). Therefore, in order for a testing instrument such as Kahoot! to be implemented in EFL classrooms, both teachers and students are expected to be equipped with both the devices required and the will to use them for the purpose of education.

Although the competition that occurs during the tests is often observed to be constructive, pushing students to have the highest score, it was also referred to as a negative feature.

Some students were overwhelmed by the tension of appearing on the scoreboard, feeling anxious throughout the test. They would also become demotivated with each wrong answer, as they are shown the correct answer immediately after everyone has answered the particular question. Another issue that students complained of was that during the session, some students would become overexcited and disrupt the classroom or even loudly announce their answers with the excitement of the moment. There were also instances of students declaring that they would blindly guess the answers to questions that they could not answer. Such problems must be solved through cooperation between teachers and students in the classroom. Before the session begins, the teacher should assert that, just like any game, there are certain rules to follow and actions not to be performed.

In addition to problems with access to technological devices, multiple technical issues were reported by both parties. Most schools use projectors to display content in classrooms, although they are often not bright enough, particularly when there is plenty of sunlight entering the classroom, or not visible to everyone, especially students with visual impairments, hindering the visibility of the content displayed. A solution to this problem was provided by Kahoot! (Golubeva, 2021), allowing the users to choose to view the questions and the answers by toggling an option in the settings, although by default the question and multiple choices provided are only displayed on the main screen, while the mobile devices used by the test-takers serve only as remotes with no information about the questions. Again, the responsibility falls on the shoulders of the teachers to follow the updates of the application and notify the students of this option.

It is important to consider the critical value of time in education and the problems caused by its lack. Teachers and candidate teachers at times stated that Kahoot! tests take too much valuable time, and the time spent with the application was not fruitful because of student-sourced disruptions, such as announcing their answers or distracting others. Another issue concerning time was that many students thought that the time provided for each question was insufficient, causing them to either blindly guess their answers, not answer the questions, or become demotivated. While preparing the tests, teachers should consider how much time would be needed to answer each question and provide the required amount of time.

One major issue to highlight regarding the studies on Kahoot! is that many were conducted through interviews or observations on a one-shot basis. Consequently, prolonged engagement was lacking in many of these studies. Without such longitudinal evaluation, making sweeping generalizations about its effectiveness is challenging. Additionally, the absence of prolonged engagement hinders the collection of rich data and the attainment of a deep understanding of the subject. Reduced rapport with the participants, in turn, affects the ability to achieve a contextually rich understanding and comprehensive explanations.

Recommendations to teachers

A complete understanding of the dangers and requirements related to the integration of Kahoot! into the classroom setting should be given a high level of significance in the context of teacher education. The Kahoot! quiz is orchestrated by the teacher, who takes on a multifaceted role and needs to be skilled in managing multiple elements. First, it is crucial for teachers to manage the classroom atmosphere carefully when a Kahoot! quiz is taking place. This covers a wide range of duties, ranging from helping students connect to Kahoot! and ensuring the reliability of their connections to effectively facilitating team-building activities when some students may not have mobile devices with reliable connectivity. Additionally, it is crucial to maintain an atmosphere of discipline and foster an enabling yet competitive environment. To maximize engagement and involvement, the educator must ensure that the overall experience is visually and acoustically pleasing. Meticulous preparation of quiz questions that are targeted to meet students' developmental needs is crucial for the comprehensive development and retention of course materials. This includes prioritizing the comprehensive revision and retention of the learned language elements. In addition, it is the responsibility of the teacher to give time for discussions on students' responses, which encourages a higher level of comprehension and critical thinking. Equal significance should be placed on the review of the reports produced by Kahoot! following quizzes. Teachers can use these reports as helpful instruments for directing and enhancing their pedagogical approach in subsequent classes and Kahoot! quizzes. This continuous procedure should place noticeable emphasis on students experiencing difficulties and questions that pose noticeable challenges. In conclusion, it is encouraged that educators who incorporate Kahoot! into their instructional toolbox follow these essential guidelines. By doing so, they can create a rich learning environment that makes the most of this dynamic technology, thus enhancing their students' educational experiences.

Limitations

Systematic analysis of the data acquired throughout the course of this investigation was performed using a specific method. A carefully chosen set of keywords was used to accelerate the process of revealing significant themes in the findings of numerous studies. These keywords were deliberately chosen to act as navigational points, thereby guiding the researchers through a dense body of data. Although this method helped structure the review process, it is crucial to realize that it could also have some limitations. By design, the emphasis on particular keywords may have unintentionally affected the magnitude assigned to some themes. As a result, this methodological approach could have resulted in the under-representation of significant themes that the chosen keywords might not have been clearly conveyed. Because of this, despite the fact that the research was conducted thoroughly and methodically, this particular aspect of the technique needs to be taken into account and acknowledged as a potential limitation.

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Genişletilmiş Türkçe Özet

Mobil ve bilgisayar tabanlı uygulamalar, gün geçtikçe artan bir önem kazanmakta olup özellikle COVID-19 salgını sonrasında eğitim ve öğrenme alanlarında daha belirgin roller üstlenmişlerdir. Bu dijital araçlar, dünya çapında öğretmenler ve öğrenciler tarafından eğitimde, özellikle ve yoğunlukla da dil sınıflarında kullanılmaktadır. Bu uygulamalardan birisi de, 2013 yılında piyasaya sürülen ve çeşitli sınıf ortamlarında öğrencilere eğlenceli sınıf içi tekrar sağlanması ve öğrenci kazanımlarının takibi amaçları için yaygın olarak kullanılan sınıf içi veya çevrimiçi bir test ve alıştırma uygulaması olan Kahoot!'tur. Her ne kadar Kahoot!'un dil öğretimi bağlamlarında yaygın olarak kullanılmasına ve sıklıkla araştırılmasına rağmen, özellikle nitel bulgulara odaklanarak yapılmış çalışmalara ilişkin bir meta-analiz henüz yapılmamıştır. Bu çalışmada, Kahoot!'un ilk sürümünün çıkış yılı olan 2013 ile 2022 yılları arasında yayınlanmış nitel araştırma makaleleri bir araya getirilmiş ve literatürde yer alan eğilimler, kısıtlamalar ve eksiklikleri ortaya çıkarmak amaçlarıyla analiz edilmiştir. Çalışmada, dil öğretimi bağlamında Kahoot! ile ilgili tamamen nitel ve karma yöntem kullanan çalışmaların nitel bulgularına odaklanarak, toplam 60 nitel çalışmanın bulguları ile kapsamlı ve sistematik bir yaklaşım benimsenmiştir. Araştırmacılar, bahsi geçen nitel bulgulara erişebilmek amacıyla vaka çalışmaları, mülakatlar, etnografi ve fenomenoloji gibi nitel yöntemlere özgü anahtar kelimeler kullanmışlardır. Makaleleri yöntemsel yaklaşımlara göre sınıflandırarak tüm çalışmalara eşit davranmış ve belirlenen kapsamda değerlendirilebilecek çalışmaları analiz sürecine dahil etmiştir. Veri analizi stratejisi titiz bir çalışma ile yapılmış olup, alan yazını düzenlemek, sınıflandırmak ve takip etmek için bir Google E-Tablolar veri kümesi oluşturulmuştur. Bu yaklaşım, toplanan verilere kapsamlı bir değerlendirme ve karşılaştırma imkanı sunmuştur. Elde edilen bulgular, Kahoot! testleri kullanılarak yürütülen çalışmalara katılım sağlayan öğrenci ve öğretmenlerin çoğunluğunun olumlu görüş bildirdiğini, ancak bu testlerin etkili kullanımına dair bazı endişelerin dile getirildiğini ortaya koymuştur. Çalışma, Kahoot!'un motivasyon, eğlence, kullanım kolaylığı, rekabet, anonimlik, derse katılım, işbirliği, öğrenme, kavrama, kelime dağarcığı, anlık geri bildirim gibi olumlu etkilerin en yaygın temalar olduğunu ortaya koymuştur. 2016 ile 2022 yılları arasında Kahoot! ile ilgili yapılan çalışmalar incelendiğinde, özellikle öğrencilerin bakış açılarına odaklanan ve büyük çoğunluğu üniversite öğrencilerinden oluşan araştırmaların sayısının çoğunlukta olduğu görülmüştür. Öğrencilerin Kahoot!'u eğlenceli bir oyun olarak gördükleri ve öğrenme heveslerinin arttığına olan vurgunun sıklığı gözlemlenmiştir. Bununla birlikte, teknik aksaklıklar, bölünmeler ve Kahoot! testleri esnasındaki tartışmaların sınırlılığı gibi sorunlar da saptanmıştır. Çalışma, gelişmiş bir öğrenme deneyimi için bu sorunların ele alınmasının ve kullanımın ideal hale getirilmesinin önemini vurgulamaktadır.

Bu araştırmada, Kahoot! aracılığıyla eğitimin oyunlaştırılmasının artan popülerliğini tartışılmış ve bunun artan motivasyon, akılda kalıcılık ve öğrenci katılımı gibi faydaları vurgulanmıştır. Ancak teknolojiye erişim, sınıf içi aksaklıklar ve teknik sorunlar gibi sorunlar uygulamanın verimliliğini etkilemiştir. Bu analiz, eğitim ortamlarındaki

öğretimin iyileştirilmesinin doğru karar alma süreçlerine, yetkin sınıf yönetimine, ve nitelikli bilgisayar okuryazarlığına dayandığını göstermektedir. Araştırmacılar, Kahoot!'un potansiyelinden eksiksiz bir şekilde faydalanılabilmesi için öğretmen eğitimi, sınıf yönetimi ve Kahoot! testlerinin öğretmenler tarafından ders içeriğine ve hedeflerine uygun biçimde hazırlanması hususlarına önem verilmesine ihtiyaç duyulduğunu vurgulamışlardır. Bu faktörlerin uygun stratejilerle değerlendirilmesi, eğitim uygulamalarını önemli ölçüde zenginleştirebilir. Sonuç olarak, bu çalışma bağlamında Kahoot!'un öğretmenlerin sınıflara entegrasyonu, sınıf yönetimi, öğrenci iletişimi, disiplinli bir atmosfer oluşturma, dilbilgisi gelişimine uygun Kahoot! testleri oluşturma ve Kahoot! raporlarının öğretim yaklaşımlarını iyileştirmek amacıyla değerlendirilmesi önerilmektedir.

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Exploring Global Education in Early Childhood: Preschool Teachers' Perspective*

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Abstract

The need for education to emphasize global perspectives is evident as globalisation increasingly permeates our daily lives, cultural interactions and ethnic diversity gain prominence. This study aims to explore the role of global education in the preschool years. Specifically, the present study examines the perspectives of preschool educators. Using a basic qualitative research design, this study involved 36 preschool teachers from different cities in Turkey. Convenience sampling was used to form the participant cohort. Data collection consisted of a personal information survey and a carefully designed semi-structured interviewing protocol developed by the researchers. Content analysis using MAXQDA software was used to analyse the data. The results of the analysis revealed that the educators had foundational knowledge of the nature, content, pedagogical approaches and potential outcomes of global education in the context of early childhood education. At the same time, educators articulated potential challenges in implementing global education. They also identified potential needs for additional training and material support.

Keywords: Global education, global citizenship, preschool education, maxqda.

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Introduction

The evolution of information and communication technologies, the global climate crisis, and the issue of migration have led to increased interdependence among countries in various social, economic, and technological realms. Consequently, these developments necessitate the implementation of new regulations and updates across all sectors of society. The capacity of individuals to navigate this phenomenon, commonly referred to as globalization, demands a willingness to embrace transformation and necessitates updates in education to cultivate the skills required for the next century (Guo, 2014; Özdemir, 2011).

With the conceptualization of the 'butterfly effect,' denoting an event's occurrence at one end of the world affecting the other, the imperative of mutual communication and interaction among countries has arisen. Consequently, societies are compelled to collaborate and take collective action within the framework of global developments. In the realm of education, initiatives have been implemented to update programs and curricula, preparing individuals for the skills required in the future. Particularly aligned with the forces of globalization, the notion of 'global education' has surfaced. This educational approach aims to nurture global citizens equipped with essential social skills to appreciate diversity, collaborate effectively with individuals from different backgrounds (Merryfield & Kasai, 2004), cultivate critical thinking abilities to navigate through an inundation of information, and share their accrued knowledge. Global education, as articulated by Doğan (2011, p. 406), is an educational approach that seeks to cultivate and support 'global individuals'. These individuals are characterized by their capacity to design, plan, execute, and take responsibility for tasks. Moreover, they possess a researcher's mindset, engaging in questioning and criticism, contributing meaningfully, and demonstrating discernment in their preferences, rejections, and acceptances.

Literature Review

Recent decades have seen the emergence of significant social and environmental challenges, necessitating the development of an education model that fosters global, participatory, and critical citizenship. Consequently, global education has gained prominence as a response to this imperative, aiming to instill respect for human rights, cultural awareness, interdependence, and the promotion of global ethics. It also seeks to cultivate critical thinking and nurture individuals into globally responsible citizens by encouraging active participation for positive change. In this evolving landscape, educators are urged to embrace the role of global citizen educators. Their responsibilities include presenting diverse perspectives, modeling respect for differences, and prioritizing the development of critical thinking skills in shaping individuals' values and beliefs about the world (Kivistö as cited in Inka & Niina, 2013; Perez, Sánchez, & Fernández, 2020).

Recent studies have highlighted the critical need for an educational paradigm that addresses current global issues while equipping students with the skills to meet and solve

future challenges. According to Leite (2022), integrating sustainable development goals into educational frameworks offers a comprehensive approach to the development of critical and creative thinking skills, especially those skills that are essential for problem solving on a global scale. This integration provides a foundation for transformative education, emphasising the development of knowledge and skills necessary for global citizenship and sustainable living. Furthermore, the United Nations Educational, Scientific and Cultural Organisation (UNESCO) has emphasised the importance of education for sustainable development in ensuring global sustainability, stating that education systems should develop in a way that prepares individuals for the complexities and challenges of the contemporary world (UNESCO, 2021).

As agents of change, educators have a responsibility to create an environment that encourages open-mindedness and critical enquiry. Banks and Banks (2020) argue that multicultural education as an important component of global education promotes understanding of different perspectives and combats ethnocentric prejudices. Educators can incorporate multicultural principles into the curriculum to help students develop a more nuanced understanding of global interdependence and the ethical implications of their actions. This approach develops students' cognitive skills and prepares them to be proactive and responsible global citizens who can contribute to a more just and sustainable world.

When the literature is examined, many studies (Merryfield, 2000; Dyer, 2005; Özkan, 2006; Kaya & Kaya, 2012; Kaymakçı, 2012; Açıkalın, 2013; Ersoy, 2013; Inka & Niina, 2013; Guo, 2014; Günel, 2016; Jeong, 2017; Çolak, Kabapınar, & Öztürk, 2019; Perez, Sánchez, & Fernández, 2020; Mitchem, Shatara, Kim, & Gaudelli, 2020; Akhan & Kaymak, 2021) investigate teachers' or pre-service teachers' perspectives on global education. In the Turkish context, some studies (Ceylan, 2014; Güzelyurt et al., 2020) focused on examining preschool teachers' perspectives on global education within the framework of the concept of world citizenship by addressing different dimensions.

Increasing cultural interactions worldwide and in Turkey necessitate that children are prepared to easily engage with individuals from diverse cultures. Beyond mere acceptance and understanding of other cultures, it is crucial for children to acquire the skills to effectively cooperate with them. In light of this, educational strategies must be designed to equip children with the necessary skills to recognize, understand, respect, and collaborate with other cultures, while fostering awareness of global issues. The integration of these aspects into preschool education and the support provided to children in developing global citizenship skills constitute critical topics that merit discussion (Bell, Sigur & Kim, 2015).

The Purpose of the Study

This study aims to explore global education in the preschool period from the perspective of preschool teachers in all its dimensions. Aligned with this objective, this research seeks

answers to the following questions, aiming to uncover preschool teachers' perspectives on global education in the preschool period:

- How do preschool teachers define the relationship between globalization and education?
- How do preschool teachers conceptualize global education?
- What are preschool teachers' opinions regarding the themes and outcomes related to global education?
- What are preschool teachers' perspectives on the incorporation of global education into the preschool education program?
- What are preschool teachers' views on the knowledge, skills, and values that global education should encompass?
- How do preschool teachers assess their practices related to global education in their classrooms?
- What are preschool teachers' opinions on the challenges associated with global education?
- What are preschool teachers' views on the needs related to global education?

Method

This study, investigating global education in the preschool period from the perspective of preschool teachers, adopted a basic qualitative research design. In basic qualitative research, scholars emphasize how individuals construct realities and explore the meanings people ascribe to experiences, the construction of their world, and the interpretation of their lives (Merriam, 2018).

The Participants

In determining the study group for this research, 36 preschool teachers were recruited online through convenience sampling. Volunteers from various cities across different regions of Türkiye, including Adana, Antalya, Burdur, Bursa, Çanakkale, Denizli, Gaziantep, Kütahya, Giresun, Istanbul, Kahramanmaraş, Kırıkkale, Kırşehir, Malatya, Şanlıurfa, and Yozgat participated in the study. The demographic characteristics of the study group are detailed in Table 1.

Table.1

Characteristics of the Participants

Categories		n	%
Years of service	1-3 years	11	30,6
	4-6 years	3	8,3
	7-9 years	3	8,3
	9-11 years	6	16,7

	11 - + years	13	36,1
Membership status of a Non-governmental Organisation (NGO)	Yes	6	16,7
	No	30	83,3
Foreign language level	Basic	26	72,2
	Middle	10	27,8
Previously travelled abroad	Yes	6	16,7
	No	30	83,3
Internet usage status (daily average)	Less than 1 hour	4	11,1
	2-3 hour	14	38,9
	4-5 hour	14	38,9
	6+ hour	4	11,1
Status of using social media applications	1 application	3	8,3
	2 application	12	33,3
	3 application	19	52,8
	4 application	1	2,8
	5 application	1	2,8
Previous participation in an e-Twinning project	Yes	11	30,6
	No	25	69,4

Table 1 reveals key characteristics of the study group. Notably, 36.1% of the teachers had accumulated eleven or more years of service, while 83.3% were not affiliated with any non-governmental organization (NGO). Furthermore, 72.2% of the teachers possessed a basic-level proficiency in a foreign language, and 83.3% had not travelled abroad before. In terms of internet usage, 38.9% of teachers spentan average of 2-3 hours to 4-5 hours online. Additionally, 52.8% of teachers reported using three different social media applications. Finally, a substantial 69.4% of the teachers stated that they had not participated in any e-Twinning project before.

Data Collection Tools

A personal information form and a semi-structured interview form developed by the researchers were used as data collection tools in this study. The personal information form, which included questions about teachers' personal information, was prepared based on the literature and included years of service, non-governmental organization membership status, foreign language proficiency, foreign travel status, internet usage status, social media usage status, and participation in e-Twinning projects and it consists of seven questions. The semi-structured interview form consisted of nine questions prepared in line with the literature, allowing to reveal the thoughts of preschool teachers about global education in the preschool period. For validity and reliability of the form, it was presented to the opinion of two academicians who were experts in qualitative methods, one who is an expert in global education, and two academics who are experts in the field of preschool education. After completing the corrections of the form after expert opinion, the number of questions was increased to ten. To determine the comprehensibility of the questions in the form, a pilot application was carried out with

two preschool teachers, and then the questions were edited, and the form was given its final form. The form primarily comprises inquiries directed at teachers regarding their perspectives on globalization and global education. It seeks to understand the role of global education within the preschool education curriculum and the themes that can be integrated. Additionally, the form addresses the knowledge, skills, values, and achievements pertinent to global education. It also assesses teachers' self-perceived competence in implementing global education in their classrooms, as well as their reflections on the challenges and needs associated with this implementation.

Data Collection Process

To obtain the data for this research, the researchers first contacted the teachers personally. The scope of this research was explained, and information was given about the research and data collection process. Online interviews were requested with teachers who agreed to demonstrate volunteer work. The instructors were based in various locations across Türkiye. Online meetings were planned with people who requested online meetings (Zoom or Google Meet) according to the availability of the teacher and the researcher. Teachers who declined or were unavailable for online interviews were provided with the option to complete a written questionnaire. Subsequently, the written questionnaire was delivered to the teachers. Expanding data in writing has some outstanding aspects and limitations. While collecting written data provides the advantage of the interviewee's ability to think comprehensively and write it down as parts, giving better answers, it has a limitation in terms of missing stages or probing questions not being asked (Yılmaz & Altınkurt, 2011). Therefore, collecting written data from some research participants is acknowledged as a limitation of this study.

Data analysis

Content analysis was conducted on the data obtained in this research, which aimed to reveal the thoughts of preschool teachers about global education in the preschool period. The primary goal of content analysis is to elucidate and interpret the acquired data, uncovering the inherent meanings within (Yıldırım & Şimşek, 2018). Content analysis was conducted using the MAXQDA 2020 software program. MAXQDA is a software program that helps interpret and evaluate qualitative data. It also provides visual maps regarding the codes or themes obtained in line with the analyses carried out on the data (MAXQDA, 2022). In the present research, first of all, online interviews were transcribed. The researchers carefully examined the raw interview transcripts, identifying and categorizing recurring themes through coding. Upon reaching a consensus on the codes, the researchers derived themes from them. In this regard, it can be said that an inductive approach was used in the analysis of the data obtained.

Validity, Reliability and Ethics

Qualitative research is considered in terms of validity and reliability elements, such as credibility, transferability, consistency, and confirmability (Lincoln & Guba, 1986). In this study, to ensure reliability, teachers who voluntarily agreed to participate were informed

about the audio and video recording procedures, and their consent was obtained. Additionally, participants were assured that their personal information would remain confidential and that the collected data would be presented using coded identifiers (T1, T2, etc.). To collect data in this study regarding consistency, the form prepared based on the literature was presented to five academicians who were experts in the different fields, and expert opinions were obtained. In the transferability dimension, the literature was examined for the conceptual framework and discussion process of this study, and direct quotes from the interviews with teachers were presented in line with the purposes of this study. Expert opinions were sought to confirm the validity of data collection forms, codes, and themes in the research. In this regard, the raw data were read many times by the researchers and basic codes were determined. Then, it was examined whether there was a consensus on the data coded by the researchers. The codes for which consensus was reached were used as they were, and common codes were re-determined by re-reading the data on codes for which consensus could not be reached. The expressions used by teachers were classified based on similarities and themes were reached by naming the classifications (Patton, 2002). At the same time, the expressions used by teachers were directly included to support the themes. As a result, the findings were discussed and interpreted in the light of the literature.

Findings

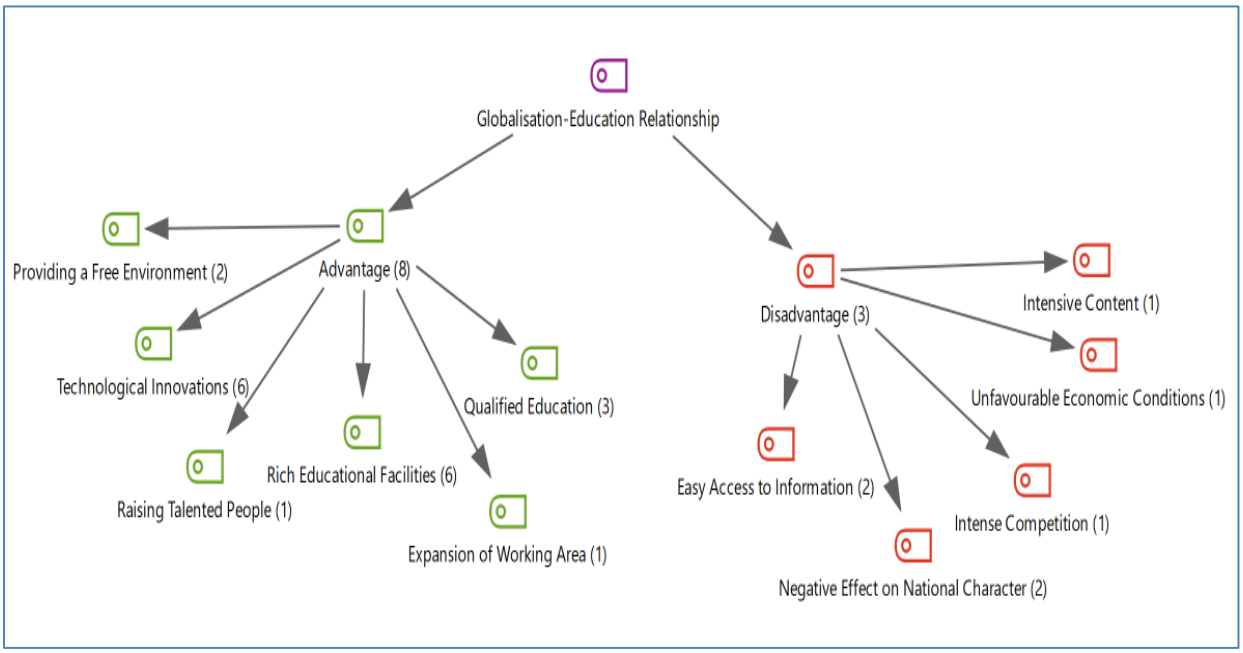
Teacher opinions in this section are presented in alignment with eight distinct sub-objectives. These sub-objectives encompass the following aspects: the relationship between globalization and education, the interpretation of global education, themes and accomplishments associated with global education, the integration of global education into the preschool education program, knowledge, skills, and values pertinent to global education, the proficiency of educators in global education, and challenges as well as needs in global education.

1. Teachers' Perspectives on the Relationship between Globalization and Education:

Figure 1 illustrates teachers' reflections on globalization in education and their perspectives on the relationship between globalization and education.

Figure 1.

Views of Teachers on the Relationship between Globalization and Education



When examining Figure 1, it is evident that teachers hold varied perspectives on the advantages and disadvantages of the relationship between globalization and education. Regarding advantages, teachers' opinions were categorized into codes representing rich educational opportunities, technological innovations, and enhanced educational quality, respectively, based on frequency.

Examples of teachers' positive perspectives include:

T5: 'In general, I find it positive that it diversifies educational opportunities and creates a freer environment'.

T4: 'It contributes to improving the quality of education and making education more scientific. It contributes to the training of more talented people as a result of the educational competition of countries'.

Conversely, concerning disadvantages, teachers' opinions frequently highlight concerns about the 'Negative impact on national character' and 'Easy access to information' in a negative context. Selected statements from teachers expressing these concerns are as follows:

T2: 'It negatively affects the national character of education'.

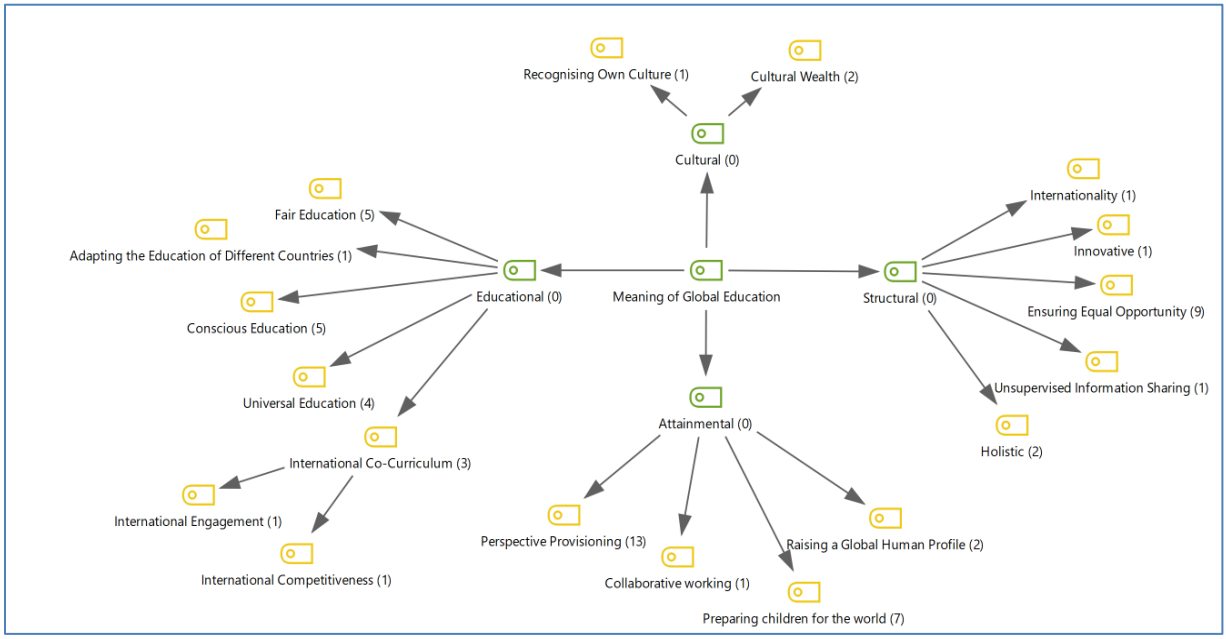
T32: 'As digital and social media reduce book reading and make it easier to access information, the form of research is decreasing. I think this situation may cause educational problems in the future.'

2. Teachers' Perspectives on the Meaning of Global Education:

Figure 2 illustrates the reflections of teachers regarding global education and their perspectives on the definition of global education.

Figure 2.

Teachers' Perspectives on the Meaning of Global Education



In Figure 2, teachers' perspectives on the meaning of global education are categorized into four distinct themes. Consequently, teachers commonly articulate their definition of global education through concepts, such as 'providing perspective,' 'equal opportunity,' 'preparing children for the world,' 'conscious education,' and 'fair education'.Selected statements from teachers illustrating these perspectives are as follows:

T8: 'Global education, in my opinion, means that every individual can receive education equally, regardless of physical or economic awareness.'

T34: 'Looking at the realities of the world from different perspectives and presenting and implementing rational and creative ideas.'

T1: 'To be educated with equal opportunities in terms of knowledge worldwide.'

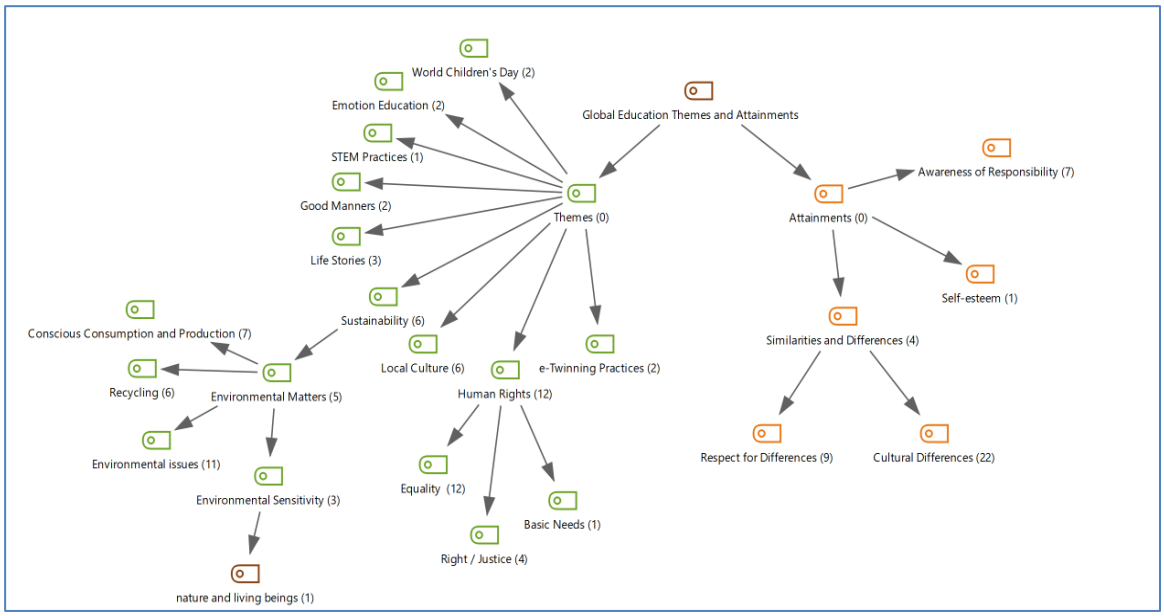
T3: 'I define it as people being more alert, more conscious, and more fair in education.'"

3. Teachers' Perspectives on Themes and Attainments in Global Education:

Figure 3 illustrates teachers' opinions regarding the themes and attainments they incorporate into their global education practices, as well as those they believe should be included in the program.

Figure 3.

Teachers' Perspectives on Themes and Attainments in Global Education



When examining Figure 3, teachers articulated their perspectives on the themes deemed essential in global education, such as human rights, sustainability, and local culture, emphasizing specific examples from their classroom practices. Selected statements from teachers exemplifying these views are as follows:

T5: 'We include the topics of equality, rights, justice, and integration with various cultures in our subjects, sometimes through stories and sometimes through drama.'

T29: 'I address environmental pollution, the deterioration of ecological balance, protection of resources, and equality between people within the scope of individual responsibility.'

Upon analyzing teachers' opinions in terms of frequency regarding the attainments that should be included in global education, Figure 3 illustrates their perspectives across dimensions, such as awareness of responsibility, similarities, and differences. Within this context, the codes for 'respect for differences' and 'cultural differences' are evident. Sample statements from teachers expressing these perspectives are presented below:

T7: 'We discuss how issues that are ordinary in our lives are perceived in different cultures.'

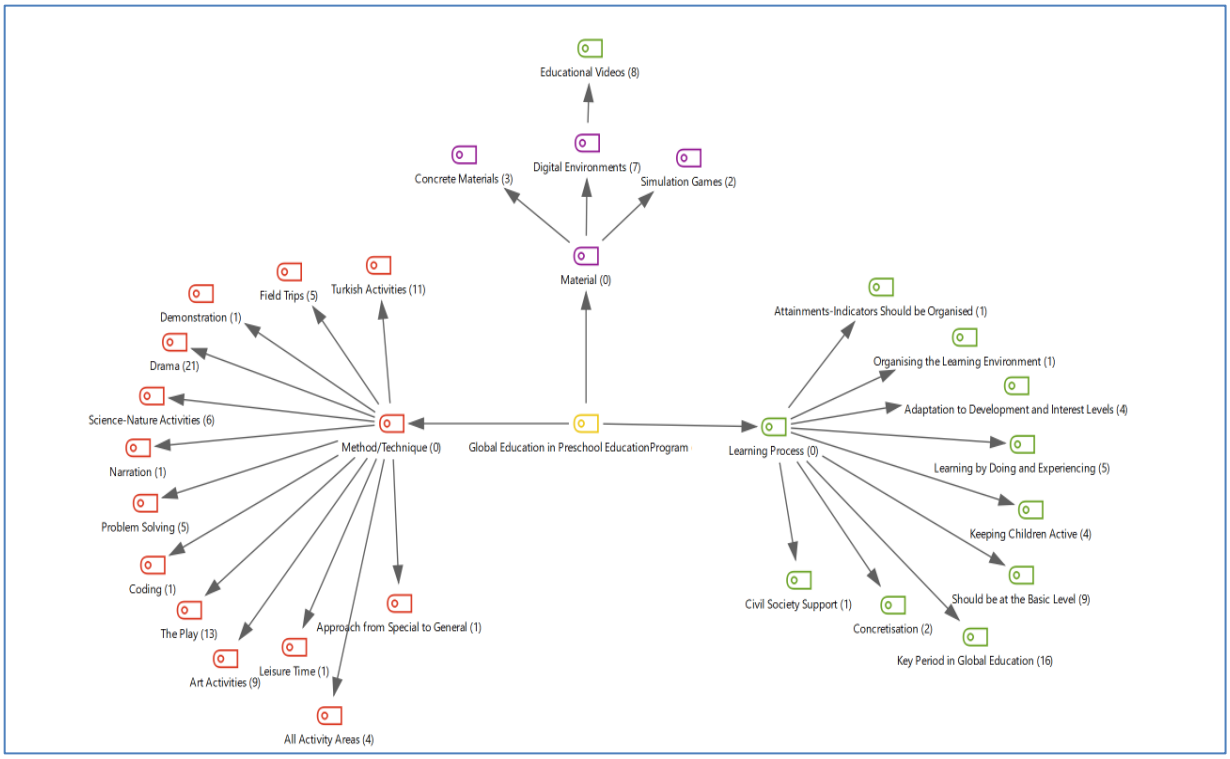
T20: 'In addressing environmental issues, we conduct activities with awareness of our responsibilities and what we can do for a greener and more livable world.'

4. Teachers' Perspectives on the Integration of Global Education into the Preschool Education Program

Figure 4 delineates teachers' views on how global education should be incorporated into the preschool education program.

Figure 4.

Teachers' Perspectives on the Integration of Global Education into the Preschool Education Program



When analyzing Figure 4, the positioning of global education within the preschool education program is observed to be categorized into three distinct dimensions. In the learning process dimension, teachers advocate for the foundational integration of global education at the preschool level, emphasizing the pivotal role of this period in global education. Additionally, they stressed the importance of children learning through hands-on experiences and activities. Simultaneously, teachers underscored the necessity for children to be actively engaged, adapting global education to their developmental levels and employing diverse methods, techniques, and materials in the teaching process. Illustrative examples from teacher statements include:

T14: 'I believe it should be at the basic level, especially to raise conscious children.'

T30: 'It can be expanded by incorporating more trips and observations, with drama and games also being employed frequently.'

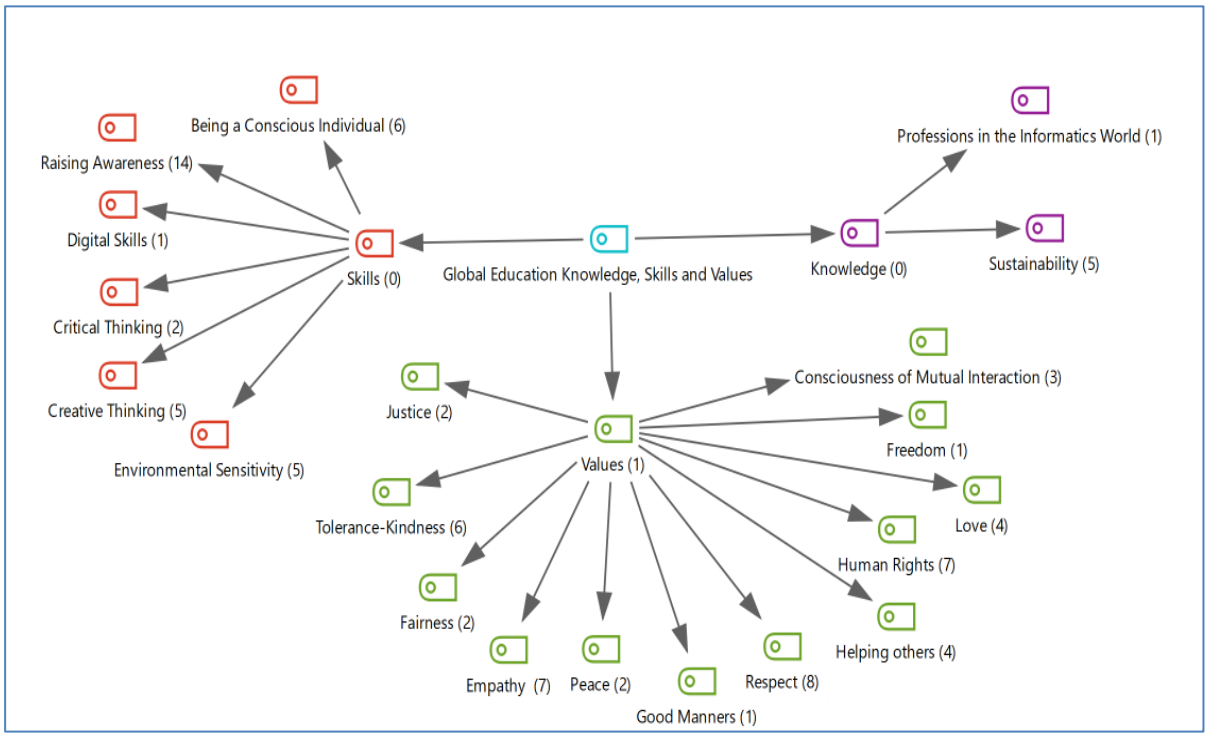
T12: 'I present various visuals and videos, followed by drama studies.'

5. Teacher Perspectives on the Knowledge, Skills, and Values that Global Education Should Instill in Preschool Education

Figure 5 illustrates teachers' opinions regarding the knowledge, skills, and values that should be encompassed by global education during the preschool period.

Figure 5.

Teacher Perspectives on the Knowledge, Skills, and Values that Global Education Should Instill in Preschool Education



Teachers emphasized that global education should encompass knowledge, skills, and values aimed at fostering awareness, sustainability, respect, empathy, and human rights. Representative opinions from teachers on this matter include:

T2: 'In this context, I expect that, as a result of the education to be given, children will be more conscious, have the right attitudes, and be fair individuals.'

T8: 'I believe that this education should primarily include situations aimed at making people aware that every person has equal rights, regardless of religion, language, race, economic and social level.'

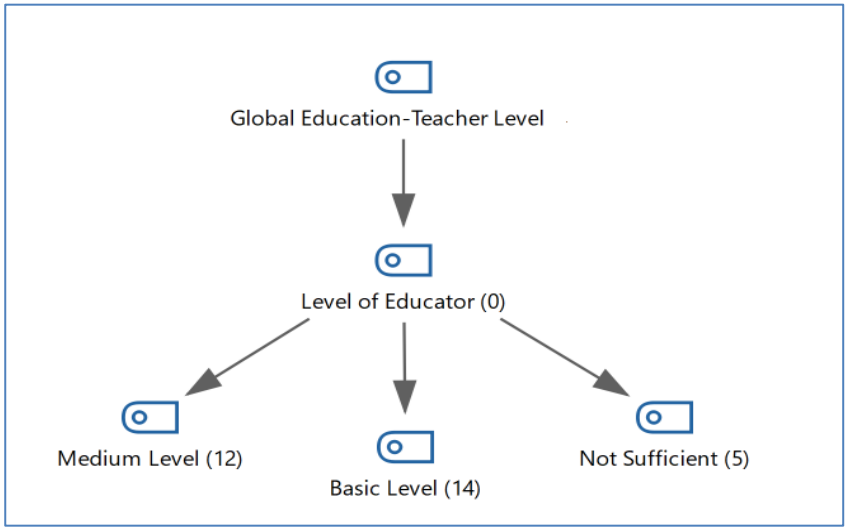
T11: 'It should include the ability to use technology correctly. It should also instill values of love and respect.'

6. Preschool Teachers' Self-Assessment of the Implementation of Global Education

Figure 6 delineates preschool teachers' self- assessment regarding the implementation of global education in their classrooms.

Figure 6.

Preschool Teachers' Self-Assessment of the Implementation of Global Education



Teachers predominantly characterized their proficiency in global education practices as basic or intermediate. Selected statements from teachers reflecting this self-assessment include:

T2: 'I perceive myself as inadequate.'

T5: 'I consider my proficiency to be at a very early stage, particularly concerning environmental and educational opportunities.'

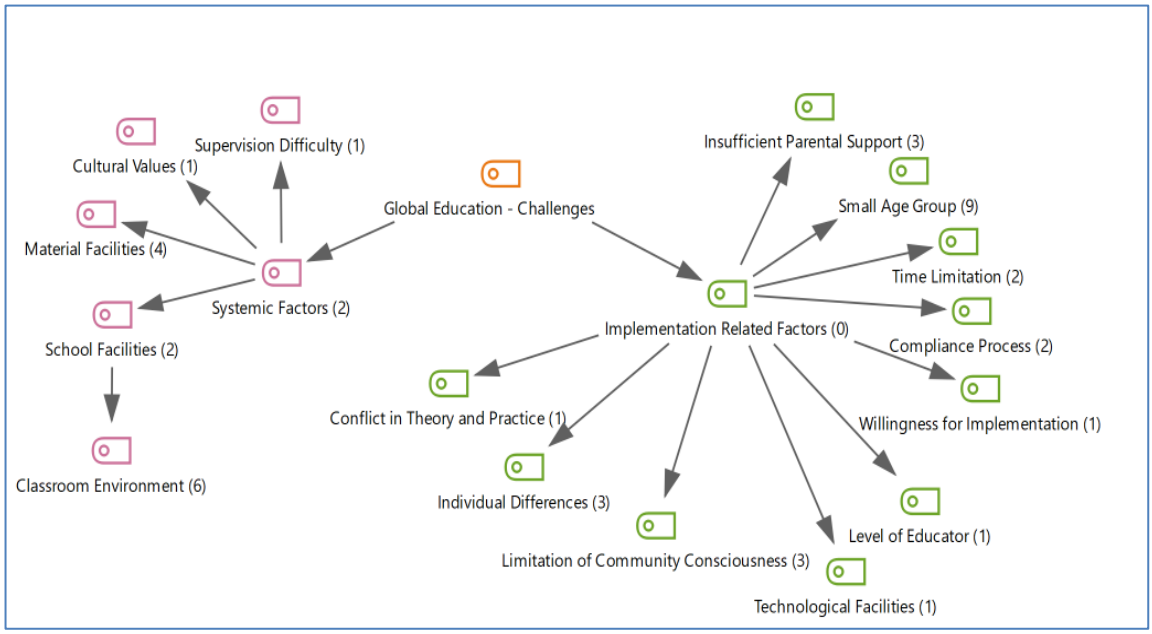
T21: 'While I recognize the need for improvement in terms of systematic methods, I feel well-equipped in terms of content and teaching methods.'

7. Teachers' Perspectives on Challenges in Implementing Global Education in Preschool

Figure 7 delineates teachers' perspectives on the challenges in implementing global education in preschools.

Figure 7.

Teachers' Perspectives on Challenges in Implementing Global Education in Preschool



In addressing the potential challenges encountered in implementing global education within preschool settings, teachers underscored various factors. These include challenges associated with the application, such as 'the small age group, limited social awareness, insufficient parental support, and time limitations. Additionally, challenges related to the system were emphasized, such as 'financial constraints, limitations in school facilities, and difficulties in control,' as indicated in Figure 7. Direct quotations from teachers' statements further illuminate these challenges:

T2: 'It may pose challenges if a child witnesses behaviors conflicting with those acquired at school within their family and environment.'

T8: 'There may be difficulties in accessing technological materials in the classroom.'

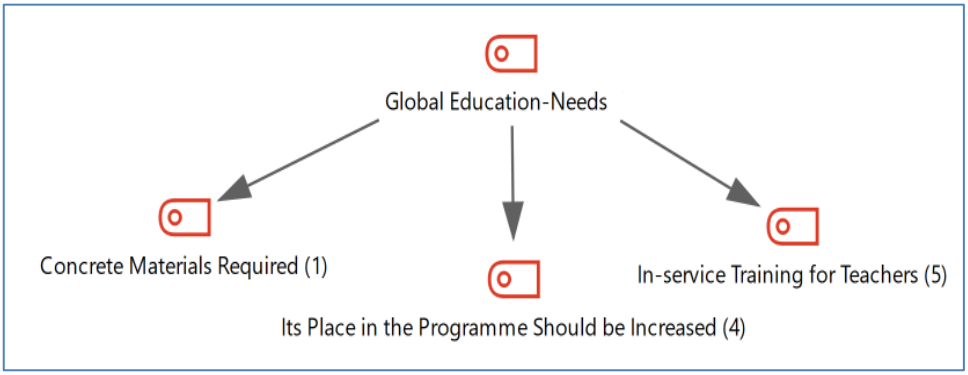
T14: 'Due to the small preschool age group, permanent learning may not be fully realized.'"

8. Teachers' Perspectives on Identified Needs in the Implementation of Global Education in Preschool

This section presents teachers' viewpoints on the anticipated needs that may arise during the implementation of global education within the realm of preschool education (Figure 8).

Figure 8.

Teachers' Perspectives on Identified Needs in the Implementation of Global Education in Preschool



In Figure 8, teachers, reflecting on potential needs for the implementation of global education in the preschool period, predominantly underscore the necessity for in-service training on this subject, an increased incorporation of global education into the preschool education program, and the provision of concrete materials pertaining to this domain. Several statements from teachers elucidated these perspectives:

T8: 'Although visual and auditory materials associated with global education are beneficial, the use of concrete materials is more advantageous for children. Hence, I consider it important and necessary for children to learn about this subject through tangible materials.'

T16: 'All teachers need to receive in-service training to heighten awareness on this issue.'

T35: 'The program lacks sufficient space or is almost non-existent for global education. This issue should be considered during program renewal.'

T36: 'As the initial stage of formal education, we find ourselves in a critical period for raising awareness about global education when children are most receptive. In-service training is essential to enhance teachers' competence in this regard.'"

Figure 9 presents a code cloud summarizing teachers' perspectives on global education. Upon examination, prominent concepts, such as 'Cultural differences,' 'Key period in global education,' 'Basic level,' 'Drama,' 'Play,' 'Perspective provisioning,' and 'Human rights' emerged in the teachers' statements about global education.

Figure 9.

Code Cloud Summarizing Teachers' Perspectives on Global Education

Discussion

In this study, an exploration of global education in the preschool period is presented through the lens of preschool teachers. This investigation addresses various dimensions, including the relationship between globalization and education, the essence of global education, themes, and attainments associated with global education, the integration of global education into the preschool education program, and the competencies encompassed within global education, focusing on knowledge, skills, and values. Additionally, the educators' proficiency levels, encountered difficulties, needs, and perspectives were examined, leading to data collection that underwent content analysis. The analysis adhered to eight distinct sub-objectives, delineating both the challenges and requirements.

Within the context of the findings, the perspectives of preschool teachers on the globalization-education relationship were categorized into advantageous and disadvantageous themes. The advantageous theme comprised codes, such as 'Rich educational opportunities,' 'Technological innovations,' and 'Qualified education'. Conversely, the disadvantageous theme featured codes emphasizing the 'Negative impact on national character' and 'Easy access to information' within a negative context.

Notably, the findings obtained in this study are consistent with the conclusions drawn from Özkan's (2006) research, wherein primary school teachers acknowledged the positive aspects of global education, such as human rights, equality, and environmental issues. However, similar to the current study, there was a consensus that limited attention was given to the unique facets of different beliefs or cultures in the educational discourse.

In consideration of teachers' varied opinions, encompassing both positive and negative perspectives, it is noteworthy that this dichotomy aligns with existing literature. Bennett's (1993) developmental model of intercultural sensitivity distinguishes between ethnocentric and ethnorelative stages. The ethnocentric stage encompasses denial, defense, and minimization of cultural differences, where individuals may reject, defend, or downplay cultural distinctions, resulting in an isolationist stance. Conversely, the ethnorelative stage reflects an openness to diverse cultures, marked by curiosity, the ability to view the world from different perspectives, and a respectful acknowledgment of differences.

Within the present study, teachers expressing concerns about the negative impact of global education on national character appear to align with the ethnocentric stage in Bennett's model. Preschool teachers' perspectives on global education were further categorized into four themes: structural, attainmental, educational, and cultural. These themes encompassed codes, such as 'Providing perspective,' 'Equal opportunity,' 'Preparing children for the world,' 'Conscious education,' and 'Fair education.'

Global citizenship, as described in the literature (Adams & Carfagna, 2006; Carlsson-Paige & Lantieri, 2005), involves equipping individuals with knowledge, skills, and attitudes to participate as citizens in a globalized world. Hanvey's (1976) definition of global education includes perspective consciousness, emphasizing awareness and appreciation for global elements. The findings suggest that preschool teachers possess a fundamental awareness and knowledge level concerning the meaning of global education. Teachers incorporated themes like human rights, sustainability, and local culture into their global education practices, with corresponding attainments focusing on awareness of responsibility, similarities, and differences.

In her study, Ceylan (2014) reported that teachers defined world citizenship as the recognition of equal rights and freedoms for all people, embracing democracy, and fostering respect, appreciation, acceptance, and tolerance of diverse races and cultures. Güzelyurt et al. (2020) highlighted the skills targeted by preschool teachers through world citizenship education, including sensitivity to differences, familiarity with various cultures and societies, respect for the values of other societies, and the cultivation of individual responsibility.

The teachers' opinions in this study regarding the themes and achievements of global education align with existing literature, suggesting a collective awareness and knowledge about the content of global education. Concerning the integration of global education into the preschool education program, teachers' perspectives coalesce around three

main themes. They advocate for its inclusion at the basic level, emphasizing active learning through practical experiences. Additionally, teachers stress the importance of adapting global education to children's developmental levels and employing diverse methods, techniques, and materials in the teaching process.

Ceylan (2004) echoed the sentiment that world citizenship should be part of the curriculum for preschool teachers, while Güzelyurt et al. (2020) identified various activities supporting world citizenship education, such as displaying visual cards depicting characteristics of different cultures and incorporating drama to introduce diverse cultural themes. Consistent with these findings, it can be inferred that teachers possess detailed insights into dimensions like the learning process, materials, methods, and techniques, which shape their expressed opinions.

Regarding the knowledge, skills, and values global education should impart, teachers emphasized the importance of cultivating awareness, sustainability, respect, empathy, and human rights. Collins (2008) underscores the significance of introducing world citizenship concepts to four-six-year-old children, emphasizing the importance of addressing basic needs, environmental concerns, diverse cultures, human rights, democracy, and global issues within their educational curriculum. A well-crafted global education curriculum, as highlighted by Burnouf (2004) and Cabezudo et al. (2012), imparts knowledge about these critical issues and prioritizes the development of global skills and competencies, such as interpersonal relations, self-awareness, empathy, emotional intelligence, cooperation, organizational abilities, and heightened sensitivity and respect for differences.

In light of this, it is evident that the teachers participating in the research possess a nuanced understanding of the knowledge, skills, and values expected from global education across various dimensions. However, their self-evaluation predominantly places them at basic and intermediate levels in terms of implementing global education practices.

Contrasting perspectives emerge in studies examining educators' views on global education. Çolak, Kabapınar, and Öztürk (2019) found that social studies teachers acquired elements of global citizenship or global education primarily through tools like books and visual resources (TV), lacking direct engagement with foundational sources. They noted limited information transfer on global education among the participants. Similarly, Inka and Niina's (2013) study on basic education teachers in Finland revealed limited knowledge about global education, especially among those who had no familiarity with global education methods.

Similar to the results in the literature, although there are teachers who stated that they have limited knowledge in the research, it can be said that the majority of teachers are at a good level regarding knowledge and awareness. In addition, it is understood from the teachers' statements that they have deficiencies and limitations in applying their knowledge systematically in the classroom. Regarding the challenges that may be

experienced in the implementation of global education in preschool education, teachers emphasized factors, such as "The small age group, limited social awareness, insufficient parental support and time limitation" regarding the application and systemic factors, such as "Financial possibilities, school facilities and difficulty in control." Inkaa and Niina (2013), in their study examining the opinions of basic education teachers regarding global education, stated that the teachers stated that the most important obstacle to the implementation of global education was time and materials. Similarly, Jeong (2017), in his study examining the perceptions of teachers in Association of Southeast Asian Nations (ASEAN) countries about global education, stated that teachers' perceptions of global education in different countries have changed, especially in countries, such as Cambodia and Thailand, there are challenges in this regard due to the lack of a national education budget and the intense workload of teachers. Singapore states that materials and information regarding global education are supported by the school and government and therefore they do not experience challenges. In this regard, it can be said that the teachers' views on the challenges that may be experienced in the implementation of global education are consistent with the results of the previous studies in the literature.

It was observed that teachers especially stated that the young age group was a difficulty. In this situation, it can be said that this is due to their limited awareness that global education can be handled according to age level and that global education given in early childhood can serve as the basis for subsequent global education (Bell, Jean-Sigur & Kim, 2015). To be active in making healthy choices and making effective decisions at various levels, children need to have an awareness and understanding of the global situation, developments, and trends, and in this regard, it is stated in the literature that teachers should first make efforts to develop their global awareness (Burnouf, 2004). Teachers emphasized that they needed in-service training on the possible needs of implementing global education in the preschool period, that the place of global education in the preschool education program should be increased, and that concrete materials were needed on this subject. Similarly, Jeong (2017) touched upon the need for training in global education for teachers working in ASEAN countries and stated that teachers need to learn effective and appropriate teaching methods in this regard. He also emphasized that governments in some ASEAN countries are working on providing in-service programs on these issues. Similarly, Ceylan (2014) emphasized that preschool teachers stated that they needed activities, such as meetings, seminars, courses, congresses, and conferences to prepare children to become world citizens. Within the scope of this research, it is seen that teachers need training in systematically applying global education-related practices. In general, the research findings can be interpreted as preschool teachers having a consciousness and awareness about global education in the preschool period, but they cannot fully put their awareness and knowledge into practice in a sufficient, regular, and systematic way.

Result and Recommendations

The present study aims to explore global education in the preschool period from the perspectives of preschool teachers. According to the findings obtained in this study, teachers acknowledge both the advantages and disadvantages of globalization. They define global education as encompassing concepts, such as 'Providing perspective, equal opportunity, preparing children for the world, conscious education, and fair education'. Themes within global education, including 'Human rights, sustainability, and local culture,' were identified, focusing on achievements emphasizing responsibility awareness, similarities, and differences.

Regarding the implementation of global education in the preschool period, teachers underscored the importance of it occurring at a basic level, considering preschool as a key period for global education. They highlighted the significance of experiential learning through drama, games, art activities, the use of digital media, and concrete materials in the teaching process. Teachers predominantly associated global education with concepts like 'raising awareness, sustainability, respect, empathy, and human rights.'

Self-assessments from teachers suggest that they perceive themselves as basic and intermediate in terms of implementing global education practices. Identified challenges in implementing global education include systemic factors, such as financial resources and school facilities, along with practical factors, such as the small age group, limited social awareness, insufficient parental support, and time constraints.

Teachers expressed the need for in-service training on the implementation of global education, an increased emphasis on global education in the program, and the requirement for concrete materials. Recognizing the evolving global landscape and the necessity for individuals to interact with diverse backgrounds, the paragraph concludes that meeting the knowledge and skill needs of preschool teachers is the first stage in achieving effective global education in early childhood. Teachers, as influencers in an institution, play a crucial role in shaping individuals' perspectives on the world and equipping them with the necessary skills and attitudes to navigate a globally interconnected world.

In the light of the research findings, it is advisable to design targeted in-service training programmes for preschool teachers to enhance their skills in the implementation of global education. Furthermore, a contribution to the literature can be achieved by researching and studying the systematic planning of global education in the preschool period, emphasizing an anti-tourism approach to the process. It is recommended that sample activity pools be developed and shared digitally or in print for use by teachers to support them in adapting their practice to the age and developmental characteristics of preschool children. Finally, to enrich the literature, a longitudinal study of the outcomes of preschool teachers' training in global education is considered valuable.

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Genişletilmiş Türkçe Özet

Son yıllarda yaşanan ciddi sosyal ve çevresel sorunlar küresel, katılımcı ve eleştirel bir vatandaşlık için yeni bir eğitim modeli talep etmektedir. Bu doğrultuda küresel eğitim bu talebi karşılamak için ön plana çıkmaktadır. Küresel eğitim, insan haklarına saygıyı, kültürel farkındalığı, karşılıklı bağımlılığı ve küresel etik anlayışı teşvik etmeyi ve bu doğrultuda dünya ile ilgili eleştirel düşünmeyi ve değişim için katılımı teşvik eder ve amaçlar. Bireyleri bu amaç doğrultusunda küresel sorumlu bir vatandaş olabilmelerinde eğitmeyi hedefler. Bu bağlamda gelecek, eğitimcilerin küresel vatandaş eğitimcisi olmasını gerektirmektedir. Küresel eğitim açısından eğitimcilerin görevi; bireylerde çeşitli ve yeni bakış açıları sağlamak, farklılıklara saygıyı model olarak sunmak ve dünyaya ilişkin değer ve inançları şekillendirmekte eleştirel düşünme becerisini ön planda tutmak olmalıdır (Kivistö'den aktaran Inka & Niina, 2013; Perez, Sánchez & Fernández, 2020).

Alan yazın incelendiğinde küresel eğitim bağlamında öğretmen veya öğretmen adayı görüşlerini inceleyen çalışmalar (Merryfield, 2000; Dyer, 2005; Özkan, 2006; Kaya & Kaya, 2012; Kaymakçı, 2012; Açıkalın, 2013; Ersoy, 2013; Inka & Niina, 2013; Guo, 2014; Günel, 2016; Jeong, 2017; Çolak, Kabapınar & Öztürk, 2019; Perez, Sánchez & Fernández, 2020; Mitchem, Shatara, Kim & Gaudelli, 2020; Akhan & Kaymak, 2021) bulunmaktadır. Türkiye'de okul öncesi öğretmenlerinin küresel eğitime ilişkin görüşlerini dünya vatandaşlığı eğitimi kapsamında farklı boyutlarda inceleyen (Ceylan, 2014; Güzelyurt vd., 2020) birtakım çalışmalara rastlanmıştır.

Dünyada ve Türkiye'de gittikçe artan kültürel etkileşimler, çocukların diğer kültürlerden gelen insanlarla kolaylıkla etkileşime geçmeye hazır olmalarını gerektirmektedir. Diğer kültürleri kabul etme ve anlamanın ötesinde, iş birliği yapma becerilerinin kazanılması elzemdir. Bu bağlamda eğitimin farklı kültürleri tanıma, anlama, saygı duyma ve onlarla iş birliği yapmanın ötesinde küresel konulara yönelik farkındalık kazandırma açısından çocukları gereken becerilerle donatma konusunda düzenlenmesi gerekmektedir. Bu konuların okul öncesi eğitime nasıl dahil edilebileceği ve çocukların küresel vatandaşlık becerileri kazanmaları konusunda nasıl desteklenebileceği tartışılması gereken konulardandır (Bell, Sigur & Kim, 2015). Bu bilgiler doğrultusunda okul öncesi dönemde küresel eğitimin nasıl olması gerektiğine yönelik okul öncesi öğretmenlerinin bakış açılarını öğrenmenin hem gelecekteki araştırmalar açısından hem de eğitim politikalarının düzenlenmesinde yol gösterici olacağı düşünülmektedir. Araştırmanın amacı okul öncesi öğretmenlerinin okul öncesi dönemde küresel eğitime yönelik bakış açılarını ortaya koyabilmektir. Bu amaçla hazırlanan araştırmada aşağıdaki sorulara yanıt aranmıştır:

- Okul öncesi öğretmenleri küreselleşme-eğitim ilişkisini nasıl tanımlamaktadır?
- Okul öncesi öğretmenleri küresel eğitimi nasıl tanımlamaktadır?
- Okul öncesi öğretmenlerinin küresel eğitime ilişkin temalar ve kazanımlar hakkındaki düşünceleri nelerdir?

- Okul öncesi öğretmenlerinin küresel eğitimin okul öncesi eğitim programındaki yerine ilişkin düşünceleri nelerdir?
- Okul öncesi öğretmenlerinin küresel eğitimin içermesi gereken bilgi, beceri ve değerler hakkındaki düşünceleri nelerdir?
- Okul öncesi öğretmenleri küresel eğitime ilişkin sınıflarında yaptıkları uygulamalar konusunda kendilerini nasıl değerlendirmektedir?
- Okul öncesi öğretmenlerinin küresel eğitime ilişkin zorluklar hakkındaki düşünceleri nelerdir?
- Okul öncesi öğretmenlerinin küresel eğitime ilişkin ihtiyaçlar hakkındaki düşünceleri nelerdir?

Araştırma temel nitel araştırma olarak planlanmıştır. Temel nitel araştırmada araştırmacılar, bireylerin gerçekleri nasıl inşa ettikleri üzerine odaklanmakta, insanların deneyimlere ne anlam kattığı, dünyalarını nasıl inşa ettiği ve yaşamlarını nasıl yorumladığı ile ilgilenmektedir (Merriam, 2018). Araştırmanın çalışma grubunun belirlenmesinde kolay ulaşılabilir durum örneklemi ile Türkiye'nin farklı bölgelerinde yer alan şehirlerde görev yapan gönüllü katılım gösteren 36 okul öncesi öğretmenine online ortam kullanılarak ulaşılmıştır.

Araştırmada veri toplama aracı olarak araştırmacılar tarafından geliştirilen kişisel bilgi formu ve yarı yapılandırılmış görüşme formu kullanılmıştır. Okul öncesi öğretmenlerinin okul öncesi dönemde küresel eğitime yönelik düşüncelerini ortaya çıkarmayı amaçlayan araştırmada elde edilen veriler üzerinde içerik analizi yapılmıştır. İçerik analizinde amaç elde edilen verilerin tanımlanması ve bu verilerin içerisinde var olan anlamların ortaya çıkarılması çabasıdır (Yıldırım & Şimşek, 2018). İçerik analizi, bir analiz programı olan MAXQDA 2020 paket programı ile gerçekleştirilmiştir.

Araştırma sonuçlarına göre okul öncesi öğretmenleri küreselleşmenin avantajları ve dezavantajları olduğunu, "Perspektif sağlamak, fırsat eşitliği, çocukları dünyaya hazırlamak, bilinçli eğitim ve adil eğitim" olgularını ise küresel eğitimin tanımı olarak belirtmişlerdir. Küresel eğitim kapsamında ele alınabilecek temalar "İnsan hakları, sürdürülebilirlik ve yerel kültür" şeklinde belirtilirken, küresel eğitimde yer alması gereken kazanımlara yönelik ise sorumluluk bilinci, benzerlik ve farklılıklar unsurlarının daha ön plana çıktığı görülmüştür. Okul öncesi dönemde küresel eğitimin ne şekilde yer alması gerektiğine ilişkin ise öğretmenler "Okul öncesinde temel düzeyde yer alması, okul öncesinin küresel eğitim için kilit dönem olduğu, küresel eğitim ile ilgili çocukların yaparak-yaşayarak öğrenmesinin" önemli olduğunu belirtmiş, öğretim sürecinin ise drama, oyun ve sanat etkinlikleri gibi tekniklerle ve dijital ortam ile somut materyal kullanımı ile yürütülmesi gerekliliğine dair görüşlerini belirtmişlerdir. Küresel eğitimin ne tür bilgi, beceri ve değerler kazandırması gerektiğine dair öğretmen görüşlerinde ise çoğunlukla "Farkındalık kazandırma, sürdürülebilirlik, saygı, empati ve insan hakları" kavramları yer almıştır. Öğretmenler sınıflarında küresel eğitimin uygulanması

noktasında çoğunlukla temel ve orta düzey olarak kendilerini tanımlamışlardır. Öğretmenler küresel eğitimin uygulanması noktasında yaşanabilecek zorluklar olarak "Maddi olanaklar, okulun olanakları ve denetim güçlüğü" gibi sistemsel etkenlere ve "Yaş grubunun küçük olması, toplum bilincinin sınırlılığı, ebeveyn desteğinin yetersizliği ve zaman sınırlılığı" şeklinde uygulamaya ilişkin etmenleri vurgulamışlardır. Son olarak öğretmenler okul öncesi eğitimde küresel eğitimin uygulanmasına ilişkin öğretmenlerin hizmet içi eğitime ihtiyacı olduğunu, küresel eğitimin programdaki yerinin artırılması gerektiğini ve somut materyallerin gerekli olduğunu ihtiyaçlar bağlamında belirtmişlerdir.

Araştırma sonuçları doğrultusunda küresel eğitimin uygulanmasına ilişkin okul öncesi öğretmenlerine bir hizmet içi eğitim planlanmasının faydalı olabileceği söylenebilir. Bunun yanı sıra alan yazında okul öncesi dönemde küresel eğitime ilişkin sistematik, planlı ve turizm karşıtı yaklaşım olarak sürece yayılması noktasında nasıl planlanabileceğine ilişkin araştırma ve çalışmalar yapılarak alan yazına katkı sağlanabilir. Okul öncesi dönemde çocukların yaş ve gelişim özelliklerine uygun şekilde öğretmenlerin uyarlamalarını yapabilmeleri amacıyla örnek etkinlik havuzları oluşturularak öğretmenlerin kullanımına açık şekilde dijital veya basılı olarak paylaşılabilir. Son olarak okul öncesi öğretmenlerine yönelik okul öncesi dönemde küresel eğitim ile ilgili bir hizmet içi eğitimin çıktılarının uzun vadeli olarak incelenmesinin alan yazın için faydalı olabileceği düşünülmektedir.

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Design and Use of a Mobile Game Developed to Raise Environmental Awareness in Secondary Schools

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Abstract

This design-based research aims to develop, improve, and evaluate a mobile game to improve secondary school students' environmental awareness. The research was conducted with 74 sixth-grade students and four teachers at a secondary school in Bursa during the 2022-2023 academic year. The environmental awareness scale, observation notes, and semi-structured interview forms were used as data collection tools. The results showed a significant difference between the scores in the pre-test and post-test in favour of the post-test. The developed mobile game significantly affects environmental awareness. The observation and interview data were analyzed using cyclic coding and thematic analysis methods. Three themes named "the effects on motivational processes," "the effects of structuring of knowledge," and "the effects of environmental awareness" emerged. Findings showed that the game mechanics included in the developed mobile game positively affected the "autonomy and self-efficacy" of the intrinsic motivation elements of the students to achieve their individual goals. Findings also revealed that the mobile game improves students' feelings of attention, interest, satisfaction, and confidence. In addition, it has been found that students structure their knowledge by resorting to reflection with the score table and instant feedback mechanisms in the mobile game.

Keywords: Digital game design, environmental education, mixed method, mobile game, mobile learning.

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Introduction

Numerous studies emphasize the inevitability of incorporating educational software into education (Chen et al., 2020; Jagušt et al., 2018; van Roy & Zaman, 2018; Xi & Hamari, 2019). To benefit permanent learning, it is seen that various computer software is used in educational platforms (O'Rourke et al., 2017) with digital games being a notable example. Games with designed game mechanisms in digital environments to support users' academic and cognitive development are defined as "educational digital games" (Lameras et al., 2017). Digital games are used in science and many other areas of education. Designing teaching materials enriched with digital game technologies and providing guidance to science teachers also increases students' interest and curiosity in this course. Digital games contribute to concretizing abstract concepts and offer students more immersive learning environments within educational settings.

When the studies in which digital games are used in different areas of education are examined, a consistent trend emerges wherein incorporating these games into lessons positively affects students' different abilities and characteristics. For example, Chittaro and Sioni (2015). The findings of the studies conducted by Chittaro and Buttussi (2019) and Peng, Lin, Pfeiffer, & Winn (2012) showed that simulation and video games provide positive results on the self-efficacy of undergraduate and graduate students. Similarly, in another study conducted with undergraduate students, Kim, Schmierbach, Bellur, Chung, Fraustino, Dardis, and Ahern (2015) found that mobile game design significantly affected undergraduate students' autonomy. On the other hand, Frost, Matta, and Maclvor (2015) stated an inconsistent and complex relationship between the dynamics of playing mobile games in classes and students' motivation for the lesson and mentioned a non-significant relationship between the two.

Showing that students playing mobile games at different educational levels exhibit more autonomous behaviour compared to students not playing (van Roy & Zaman, 2019) and finding that mobile games have a significant effect on the satisfaction of these students' self-efficacy needs through quantitative and qualitative methods (Xi & Hamari, 2019). Studies (Jagušt et al., 2018; van Roy & Zaman, 2018) emphasize that digital games provide an advantage to students by increasing their academic success and positively affecting their motivation. Students express that they experience short-term satisfaction in the interviews, as they are rewarded when they know the answers to the questions while playing digital games. For example, as a result of their research with undergraduate students, Calvo-Ferrer (2018) stated that the rewards these students received while playing games and the satisfaction they felt immediately afterwards positively affected their instant learning outcomes. Very similar to this finding, All, Plovie, Nu˜nez Castellar, and Van Looy (2017); Bowen (2014); and Erhel & Jamet (2013) emphasized that instant feedback mechanisms in digital games have a positive effect on students' deep learning, self-efficacy and self-regulation skills.

Bandura (1982), regarded as the pioneer of Social Cognitive Theory, highlights the constructive impact of mobile games on shaping individuals' concepts such as self-

regulation and self-reflection. Middleton, Hall, and Raeside's (2019) research findings align directly with Bandura's theory, reinforcing the positive role of mobile games in this regard. The study of Chen, Lu, De, and Cheo (2019) emphasizes that adding questions at different difficulty levels to digital games positively contributes to students' self-regulation skills. Kara (2021) suggested that digital games to be used in education should have different difficulty levels and that these levels should be listed from simple to complex.

Theoretical Framework

Social Learning Theory, Social Cognitive Theory, Goal Setting Theory, ARCS Model, and Self-Determination Theory, which also include behavioural mechanisms, are used in robust game designs (Bandura, 1982; Locke, 1968; Özdamlı, 2018; Ryan & Deci, 2020; Skinner, 1953). In developing game interventions, serious games are required to contain the elements of attention, interest, confidence, and satisfaction. In developing the mobile game in the research, ARCS (Attention, Relevance, Confidence, Satisfaction) Motivation Model elements, which are important determinants of success goals, were considered (Keller, 1987). Another issue considered when designing a mobile game is that the game has difficulty levels, in line with the goal-setting theory (Locke, 1968). According to self-determination theory, clear and relevant goals support the need for competence and autonomy (Bandura, 1982; Ryan & Deci, 2020). In this context, care has been taken to develop a game presenting clear objectives to effectively complete the streaming experience. It is aimed to enable students to pursue course content through intrinsically rewarding experiences (Csikszentmihalyi, 2014).

Problem Statement

In order to create a sustainable society, individuals at an early age should be given a sense of social responsibility for the environment. Environmental education for secondary school students contributes to building a sustainable future by strengthening the environmental awareness of both individuals and society. Several studies (Alp & Coskun Onan, 2023; Daglı & Yazıcı, 2021; Douven et al., 2014; Ducrot et al., 2015; Hamid et al., 2017; Tokmak et al., 2023) suggest using digital comics, drama method, life-based learning approach and social media in lessons to improve environmental awareness. In these studies, it is emphasized that teachers should use these digital tools in lessons to develop environmental awareness and thus be able to integrate environmental concepts with different disciplines.

An analysis of the iTunes App Store shows that 60% of the most downloaded educational applications target primary school and kindergarten-age children (Noorhidawati et al., 2015). It is thought that an application that will be prepared by experts in terms of content, pedagogy and software in accordance with the concepts and acquisitions in the science course for middle school students is missing. According to Topuz and Kaptan (2017), since the most important criterion in digital mobile application design is the

target audience, experts are needed to address the developmental characteristics of the learner's age and the achievements in the learning field as a whole.

Upon reviewing the literature, it appears that utilizing mobile games designed for schools, particularly for environmental awareness, is not widely accepted. Studies have found that mobile games are primarily used for leisure purposes by families and children (Ince, 2022). While there is a significant amount of research on the impact of mobile games on academic achievement, problem-solving, collaborative learning, and motivation (Altınpulluk, 2021; Chen, 2018; Chen et al., 2022), there appears to be a lack of studies exploring the effects of mobile games on environmental awareness. The research questions on Stages 1 and 2 are as follows:

Stage 1 (Design-based research):

The research questions for Stage 1 are:

1. How appropriate is the mobile game to the cognitive and developmental level of students?

2. How can the developed mobile game be improved?

Stage 2 (Sequential explanatory mixed research):

The research questions for Stage 2 are:

1. Is there any difference between the students' pre and post-test scores from the Environmental Awareness Scale?

2. What are the teachers' opinions about mobile games?

3. What are a student's opinions on mobile games?

Method

Within the scope of this research, there are four purposes of this research. These purposes are to design, improve, and evaluate a mobile game to develop environmental awareness, and to reveal the effects of this mobile game on environmental awareness.

This research was carried out in two stages. Design-based research with a pragmatic approach was used in the first research stage. Design-based research (DBR) is a cyclic approach aiming to create an innovative learning environment or theory based on a design founded on a theoretical framework. This process involves discussions and input from stakeholders in the relevant context (Cobb et al., 2003). This research method has been recommended recently due to its effectiveness in short-term projects (Pool & Laubscher, 2016) and its suitability for technological interventions (Zheng, 2015). The DBR method was chosen for this study due to its suitability for online learning conditions,

flexibility in research procedures, and ability to provide contextualized data through multiple tools (McKenney & Reeves, 2013).

The mixed method is considered an approach requiring the researcher to think objectively, subjectively, inductively, and deductively within a study (Morgan, 2007). In the second stage, a mixed method was chosen to ensure that the findings obtained from quantitative and qualitative data collected during the design and use of mobile games to create environmental awareness can be compared and integrated. This design allows for practical analysis and interpretation of the data. The study used a sequential explanatory mixed design (Creswell & Plano Clark, 2011) to explain generalizations obtained from the environmental awareness scale with qualitative data. It is possible to identify explanatory situations that demonstrate quantitative research results through the chosen design. Thus, it aims to identify the similarities and differences between the results obtained from qualitative and quantitative data (Yıldırım & Şimşek, 2018). It is thought that it is essential to use development, one of the prominent functions/justifications of the mixed method, by the nature of this research. What is meant by the concept of improvement is the use of one method to improve another. The quantitative data in this research will enable the creation of data collection tools and processes of the qualitative method. Expanding is another function of the mixed method that stands out in this research. By the holistic nature of the mixed method, this study corresponds to the expansion function by conducting research with different methods of developing, improving, and evaluating mobile games to improve environmental awareness. The data collection process can be seen in Table 1.

Table 1.

Application Process-sequential Explanatory Mixed Pattern

Data Collection Tools	Intervention	Data Collection Tools	Intervention	Data collection tools
Environmental Awareness Scale Pretest	Using the Mobile Game	Observation Interview	Using the Improved Mobile Game	Environmental Awareness Scale Posttest

The concept of "association" is important in integrating quantitative and qualitative data, especially in descriptive and exploratory designs (Creswell & Plano Clark, 2011). In the explanatory design, the qualitative phase follows the quantitative phase, and qualitative data supports the quantitative data (Creswell, 2003). The contribution of the methods to each other occurs in the realization of the next stage. In this type of research, it is necessary to relate different stages to each other and to build the bridge properly in presenting the findings (Yıldırım & Şimşek, 2018). In this study, qualitative and quantitative data were collected to support each other. Table 2 presents the design-based research steps used in the data collection process:

Table 2.

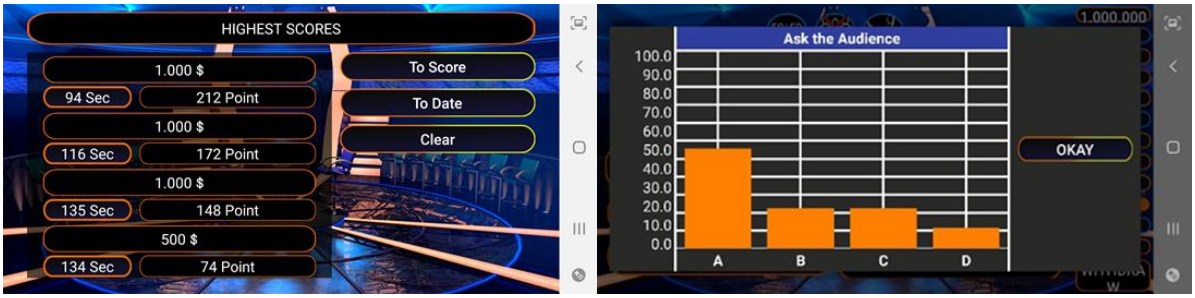
Design-Based Research Steps in the Data Collection Process

1. Analysis Phase	Literature review Creation/development of data collection tools Obtaining information from teachers about sixth-grade students' cognitive and affective development characteristics.
2. Design Phase	"Who wants to be a millionaire?" Developing the scenario of the game Testing workflow and prototype applications (UI-user interface design and UX-user experience design) Codes of the game's interface in Java and C++ languages in Android Studio Completion of device-specific testing, performance, and usability tests
3. Improvement Phase	Testing of the draft design by five teachers Conducting semi-structured interviews with teachers Testing the draft design in a sixth-grade branch Conducting semi-structured interviews with students Improving the mobile game based on feedback
4. Implementation Phase	Application of the Environmental Awareness Scale as a pre-test Use of the improved version of the mobile game by students Application of the Environmental Awareness Scale as a posttest Semi-structured teacher and student interviews
5. Analyzing Data	Analyzing and reporting data

Mobile Game Design

The mobile game created in the study is aimed at students to question the causes and consequences of environmental problems, to gain knowledge and skills about biodiversity, and endangered creatures and what needs to be performed to protect these living species, and sensitivity to environmental problems caused by human activities, and the solution of these problems. The interface of the developed game is presented in Figure 1.

Figure 1.
Mobile Game Interfaces



"Who wants to be a millionaire?" there are 110 questions in the question pool of the mobile game. A total of 12 questions were randomly presented to the player: four easy, four medium, and four difficult level questions, respectively. As the player progresses, the points he earns also increase. The player has the right to connect by phone once, the right to eliminate two wrong choices once, and the right to ask the audience once. Not every wild card right leads to the correct answer. If desired, the scores in the game can be accessed. Regarding the questions in the game content, Table 3 below shows how many questions are included in each part of the unit according to their difficulty levels:

Table 3.
Distribution of Questions by Difficulty Levels and Units

	Easy Number of Level 1 Questions	Medium Number of Level 2 Questions	Difficult Number of Level 3 Questions
Part 1 of the Unit	9	10	9
Part 2 of the Unit	10	15	10
Part 3 of the Unit	5	5	5
Total	24	52	24
Question Pool	110		
Number of Questions to be Selected in the Quiz Competition	4	4	4

The developed mobile game overlaps with the following main objectives of the Science Curriculum (2018): 1. To provide basic knowledge about environmental sciences, 2. To produce solutions to the problems encountered in the process of exploring nature and understanding the relationship between humans and the environment, 3. To realize the mutual interaction between the individual, environment and society; to develop awareness of sustainable development regarding society, economy and natural resources, 4. To arouse interest and develop attitudes towards events occurring in nature and its immediate surroundings.

Research Group

The research was conducted with 74 students (36 boys, 38 girls) and four teachers (two science teachers, two information technologies teachers) studying in two 6th grade branches of a public secondary school in Bursa in the 2022-2023 academic year. The average age of the teachers is (40) and the average age of the students is (10.25).

Data Collection Tools

Researcher Observation Form

In this study, one of the authors completed the observation form as a participant observer. The form was designed to observe the experiences and behaviors of 6th grade students before, during and after playing the mobile game developed about environmental awareness in the Science course. There are 20 items in the observation form prepared by the first researcher after receiving expert opinions from five academicians.

Semi-Structured Interview Form

Interview forms were created to determine how to improve the developed mobile game, students' wishes to use the mobile game, and teacher and student opinions regarding the mobile game. The teacher interview form consists of 7 questions and the student interview form consists of 5 questions. For the validity of the prepared semi-structured interview forms, opinions were received from six people, including teachers, graduate students, and academicians. Expert opinion support was received from other science teachers at the secondary school where the data were collected, other doctoral students at the faculty of education, and faculty members who are experts in their fields.

Environmental Awareness Scale

The Environmental Awareness Scale was used (Erten, 2000) as a quantitative data collection tool to examine the environmental awareness levels of 6th-grade students. The scale consists of 19 items on attitudes towards the environment, 17 on environmental knowledge, and 19 on behaviours aimed at protecting the environment. The statements on the scale are on a 5-point scale from positive to negative (Completely agree, Agree, Slightly agree, Disagree, Completely disagree).

Data Analysis

Quantitative data was collected from 6th-grade students both before and after using a mobile game designed for environmental awareness. Qualitative data, including interview and observation data, was collected during and after students played the mobile game. The qualitative data was analyzed using the cyclic coding and thematic analysis methods described by Braun and Clarke (2006). To protect student privacy, code names were used instead of real names for the nine students in the group where qualitative data was collected. The Results and Discussion sections provide a holistic interpretation of the answers to the research questions, as per the nature of the sequential mixed design used in this study.

Credibility and Ethics

For the validity and reliability of the data in the study, Miles and Huberman's (2017) concepts of "objectivity", "reliability", "transferability", "internal validity" and "suitability for use" were taken as a basis. Care was taken to ensure that the design used in the research

was compatible with the research purpose. The information obtained through observation was confirmed through interviews. In addition, expert review, long-term interaction, depth-oriented data collection, getting feedback from the participants, and triangulation were used. After analyzing the data, the transcripts of the interviews were presented to the participants before proceeding to the coding stage. After the data analyses were carried out, the results of the study were shared with the participants, parents, and administrators.

Quantitative Results

The fact that the data of the participant group to which the Environmental Awareness Scale was applied was not normally distributed necessitated non-parametric tests. Wilcoxon Signed Ranks test was used to reveal whether there was a significant difference between the participants' answers to the Environmental Awareness Scale before using the mobile game developed to raise environmental awareness at the secondary school level and the answers they gave after using it (Table 4). According to the results of the Wilcoxon Signed Ranks test, a significant difference was detected between the scores of the students in the pre-test ($\bar{X}$ =160) and post-test ($\bar{X}$ =206) in favour of the post-test [z=-5.929, p<.001]. The fact that the difference scores are in negative ranks, in favour of the initial measurement, shows that the developed mobile game significantly affects environmental awareness.

Table 4.
Wilcoxon Signed Rank Test Results

	Sign	N	Mean Rank	Sum of Ranks	z	p
Post-test-pre-test	Negative ranks	14[a]	20.50	287	-5.929	<.001
	Positive ranks	60[b]	41.47	2488		
	Ties	0[c]				

*a.posttest<pretest
b.posttest>pretest
c.posttest=pretest

Qualitative Results

The themes explained in this section were obtained through semi-structured interview forms and researcher observation forms. In direct quotations, the abbreviations of student interview form (SIF) and teacher interview form (TIF) were used. As a result of the cyclic coding, themes such as the effects of mobile games on motivational processes, effects on structuring knowledge, and effects on environmental awareness emerged. Themes are presented to the reader, supported by direct quotations. The "effects on motivational processes" theme consists of two categories. Categories and codes belonging to the theme are shown in Figure 2.

Figure 2.
Categories and Codes Related to the Theme of Effects on Motivational Processes

The category of effects on achieving individual goals consists of autonomy and self-efficacy codes. Teacher 1 emphasized the autonomy code with the following words: "One of the most positive aspects of this game is that it allows students to determine their own goals. Since students receive instant feedback, they can take responsibility for their learning" [Teacher 1, TIF]. Student 2 revealed his self-efficacy for achieving his individual goals with the following words:

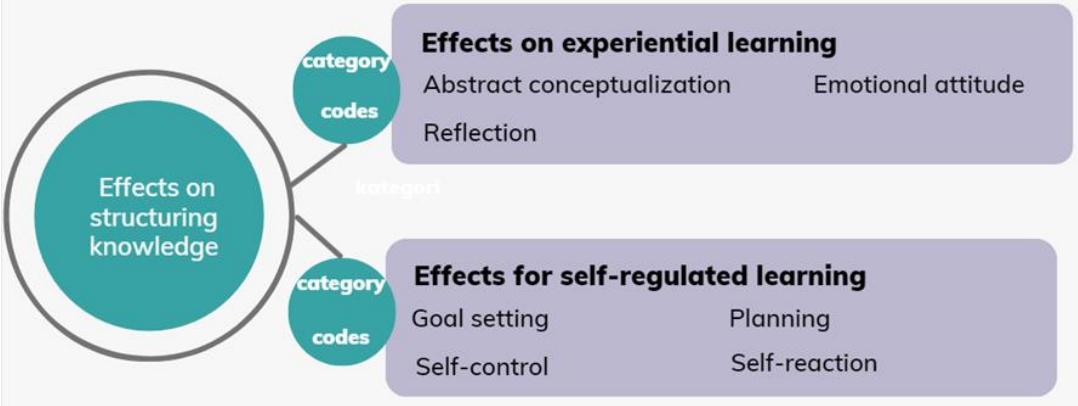
When I downloaded the game to my phone, I did not think I would love it this much. The screen, visuals, and questions were very original. I am shocked. When I saw the first question, my biggest goal was to advance in the game. I wanted to play again and again, become a millionaire many times, proudly show my scoreboard to everyone, and prove my success in this course. As I played the game, my confidence increased. I have the intelligence to achieve my goal. I keep my knowledge fresh by practising [Student 2, SIF].

The effects category for positive reinforcement includes attention, interest, satisfaction, and confidence codes. Student 7 stated that progressive questions increased his attention with the following words: "As I progressed in the game, I was wondering how difficult the next question might get. At that moment, it was as if I was in another universe, and I was paying all my attention to the question in front of me." [Student 7, SIF]. The following words of Student 5 are the source of the interest code: "The reward of becoming a millionaire at the end increased my interest in the game even more. I also love this unit" [Student 5, SIF]. Student 1 points to the satisfaction code with the following words: "No game has ever made me this happy and satisfied. The scoring table and reward make the game even better. It increases my desire to learn" [Student 7, SIF].

Categories for the effects on structuring knowledge are divided into effects on experiential learning and self-regulated learning (Figure 3). The codes in the category of effects on experiential learning were determined as abstract conceptualization, emotional attitude, and reflection. Touching on the role of reflection in structuring knowledge, Teacher 2's words are as follows:

"Based on my observations while playing the game, I can say that this mobile game provides the necessary environment for students to reflect on what they have learned. A detailed score table in the game supported students in developing awareness of their thinking system. Proceeding in line with instant feedback mechanisms, students organized and rediscovered their own knowledge and decision-making skills." [Teacher 2, TIF].

Figure 3.
Categories and Codes Related to the Theme of Effects on the Structuring of Knowledge



The effects category for self-regulated learning consists of goal setting, planning, self-control, and self-reaction codes. It is thought that the statement "I was happy that they developed the possible strategies necessary to win the game before their other friends, determined their own goals for learning and strived for this" corresponds to the goal setting code [Teacher 1, TIF]. The importance of planning for self-regulated learning is emphasized by Teacher 3 with the following words: "I witnessed the students who made plans to use this joker right from the following question before starting the game and saw the last question" [Teacher 3, TIF]. In self-regulated learning, student performance in structuring knowledge appears to be related to self-control. Teacher 3 said: "They implemented what they planned at the beginning of the game and continued the game by learning from their past mistakes, which enabled them to succeed." [Teacher 3, TIF]. The following words of Student 7, who is thought to resort to avoidant reactions in self-regulated learning, are the source of the self-reaction code:

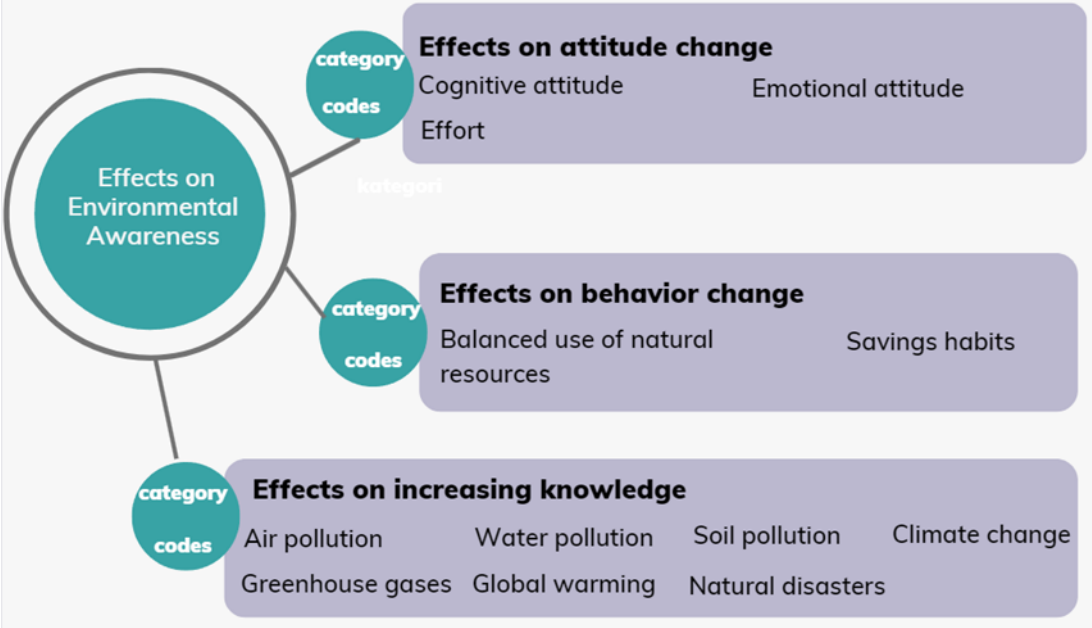
"Previously, I used to use my wildcard right when I was first unsure. I have now decided not to use my right to at least two wild cards until the last three questions. I stopped marking the answer given by my friend, who I think is knowledgeable. "I no longer think of asking the audience because they might give the wrong answer when I ask them."

Under the theme of effects on environmental awareness, there are three categories: effects on attitude change, effects on behaviour change, and effects on increasing knowledge (Figure 4). Effects on attitude change were determined as cognitive attitude,

emotional attitude, and effort. Student 8's words, which are the source of the cognitive attitude code, are presented below:

"The questions in the game reminded us that we should be aware of a disaster such as an earthquake. I now know that our country is in the Alpine-Himalayan earthquake zone, meaning we may face an earthquake anytime. Learning the lie, cover, trap and hold movements is vitally important. We should avoid objects such as windows and cabinets that could collapse on us. We should not use the elevator or the stairs. We must wait for the earthquake to end to leave the building" [Student 8, SIF].

Figure 4.
Categories and Codes Related to the Theme of Effects on Environmental Awareness



Among the participating students, some expressed their feelings, such as empathy and anger towards possible situations that may arise due to events in human-environment relations. Student 9 expressed his emotional attitude towards environmental awareness with the following words: "I felt sorry for endangered creatures. I now know that humans, like dinosaurs, may one day disappear from the face of the earth. "People who pollute nature with toxic gases and waste and cut down trees make me very angry." [Student 9, SIF]. Some of the students seem to effort for environmental protection. "We must stop the unconscious consumption of water resources. We should not run water unnecessarily while brushing our teeth and washing our hands. "From now on, if garbage is thrown on the beach while walking by the sea, I will collect it" [Student 3, SIF].

The effects on behaviour change category consist of codes for balanced use of natural resources and savings habits. Student 1 points out the balanced use of natural resources with the following words: "I learned that without the resources that people need to live,

such as water and clean air, the human species will disappear like the mammoths. After playing the game, I told him we should install a solar panel in the house, and my family said yes, too." [Student 1, SIF]. It was revealed that some of the students developed savings habits after using the mobile game. "If we go to bed early, we will not waste electricity. I will not dry my hair with a dryer in hot weather. I will ensure the windows are closed if the air conditioning is on. I will not run the air conditioner if unnecessary" [Student 6, SIF].

The codes belonging to the impact category for increasing knowledge are divided into seven: air pollution, water pollution, soil pollution, climate change, greenhouse gases, global warming, and natural disasters. The following words of Student 1 can be presented as an example data source for the air pollution code: "After playing this game, I learned that air pollution causes serious respiratory diseases such as asthma and lung cancer" [Student 1, SIF]. Student 7 reveals that he is informed about water pollution with the following words: "After playing this game, I learned that the waste oils we pour into sinks also pollute the water" [Student 7, SIF]. The words of Student 3, who emphasizes climate change, are as follows: "Rise in sea water level, melting of glaciers and scorching weather are the harbingers of climate change" [Student 3, SIF]. The direct quote, "I learned by using my wildcard right in the game that global warming is one of the factors that threaten biodiversity," is the source of the global warming code [Student 8, SIF]. The following words of Student 5 are the source of the natural disasters code: "It is important to be informed when dealing with natural disasters. In this game, we learned the duties of organizations such as AFAD. You should not go out to the balcony during an earthquake. We learned what should be in the earthquake kit" [Student 5, SIF].

Discussion, Conclusion and Recommendations

Observation of a statistically significant difference between the scores of students on the Environmental Awareness Scale before and after using a mobile game developed to promote environmental awareness shows that the mobile game has a significant effect on environmental awareness. It is thought that our study contributes to the literature by presenting the effects of a well-designed mobile game on students in quantitative and qualitative ways to promote environmental awareness.

Within this study's scope, it has been determined through qualitative analysis that using a mobile game designed to raise environmental awareness in secondary school impacts students' motivational processes, knowledge structuring, and environmental awareness. Using the developed mobile game enriched the understanding of student motivation and provided implications for new-generation learning applications. In the qualitative findings, firstly, the role of the game mechanics designed to perform the learning tasks on the motivational processes of the students' autonomy and self-efficacy (Bandura, 1982), which are internal motivation elements to achieve their individual goals, was discovered. This result is in line with studies that found that simulation and video games provide positive results on the self-efficacy of undergraduate and graduate students

(Chittaro & Sioni, 2015; Chittaro & Buttussi, 2019; Peng et al., 2012). Previous studies have shown that the reported game design affects undergraduate and graduate students' self-efficacy. The significant (Kim et al., 2015) and non-significant effects (Frost et al., 2015) on students' autonomy have revealed the inconsistent and complex relationship of game dynamics with motivation. Our findings are consistent with a study that revealed through quantitative and qualitative means that undergraduate students exhibit autonomous behavior after feeling competent (van Roy & Zaman, 2019). Additionally, this study's findings extend the study's findings, which reported a significant effect of gamification elements on the satisfaction of internal needs, such as autonomy and self-efficacy of adult game users, with qualitative elements in a different age group (Xi & Hamari, 2019).

Secondly, in the qualitative findings, the role of the game mechanics designed to perform learning tasks on attention, interest, satisfaction, and confidence towards positive reinforcement, which Skinner (1953) emphasized with the reinforcement theory, was discovered in motivational processes. These four elements also presented through direct quotations in the findings section, are also ARCS Model elements (Keller, 1987). Many participants stated that the mobile game, which included questions of increasing difficulty, increased their attention and satisfaction. Within the framework of motivation theories (e.g., ARCS Model), it was once again confirmed by the qualitative data in this study that satisfaction, goal-oriented success expectations, and confidence are closely related to self-efficacy (Bandura, 1982).

This research expanded the implications of research using the ARCS Motivation Model in the evaluation of serious games. For example, Calvo-Ferrer (2018) found the positive impact of game rewards and instant gratification on undergraduate students' learning outcomes. Similarly, the qualitative data in this study revealed that secondary school students developed attention, interest, satisfaction, and confidence, while the quantitative data revealed that they developed environmental awareness. In addition, this study supports the conclusion that the use of attention, interest, satisfaction, and confidence elements in gamification in the programming course revealed a significant difference in favor of the experimental group (Özdamlı, 2018). However, the findings of this study do not align with another study that found no significant impact of game design on satisfaction (Frost et al., 2015).

Thirdly, abstract conceptualization, emotional attitude, and reflection towards experiential learning attract attention to the qualitative findings. Previous studies have reported the effects of instant feedback mechanisms embedded in digital games on deep learning, self-efficacy, and self-regulation (All et al., 2017; Bowen, 2014; Erhel & Jamet, 2013). The findings, which revealed that students structured their knowledge by resorting to reflection with the scoreboard and instant feedback mechanisms in the designed mobile game, expanded the results of previous studies.

Fourthly, in the qualitative findings, the emphasis on goal setting, planning, self-control, and self-reaction was discovered among the self-regulated learning elements. Our

findings once again revealed the role of concepts such as self-regulation and self-reflection, which Social Cognitive Theory also refers to, in structuring knowledge through mobile games (Bandura, 1982; Middleton et al., 2019). The findings from this study's qualitative analysis that difficulty level placement in game-based learning supports self-regulation are compatible with the findings reported in the research of Chen et al. (2019).

Fifthly, qualitative findings emphasized that the designed mobile game positively changed students' cognitive attitudes, emotional attitudes, and behavioral actions related to environmental awareness. As presented in the direct quotations in the findings, students have developed a cognitive attitude towards disasters such as earthquakes and an emotional attitude with feelings such as empathy and anger towards the negative consequences that may arise in human-environment interaction, such as the extinction of living species. Considering the student quotes that directly indicate that they are aware of the environment and willing to take action, it is a remarkable result that the students using mobile games are trying to protect the environment.

The sixth result in the qualitative findings is that behavioural changes occurred in the students who used the developed mobile game regarding the balanced use of natural resources and savings habits. No study with a similar finding has been found in the literature. The seventh result in the qualitative findings is that students using mobile games increase their knowledge about air pollution, water pollution, soil pollution, climate change, greenhouse gases, global warming, and natural disasters and develop environmental awareness. Our research results coincide with Douven et al.'s (2014) studies reporting the positive effect of educational mobile games in solving water resources-related problems. Similarly, our findings of participants who developed solutions to avoid polluting water and made some decisions in their lives after learning the causes of water pollution support the study of Ducrot et al. (2015). However, these two studies were designed for adults to raise awareness about water pollution.

In previous studies, it was recommended to use digital comics, drama method, life-based learning approach, and social media in lessons to develop environmental awareness (Author & X, 2023; Daglı & Yazıcı, 2021; Hamid et al., 2017; Tokmak et al., 2023). The scenario of the developed mobile game provided students with the opportunity to set their own goals. This result highlighted the use of a mobile game based on quizzing to support students' need for autonomy (Ryan & Deci, 2020). Based on all the quantitative and qualitative results obtained from this study, the following suggestions can be made to other researchers:

1.This research showed that students enjoyed mobile games that included detailed score tables more. The development and use of such games by Science teachers can be widespread.

2.The results of this research show that students solve questions at different levels, with difficulty levels increasing from accessible to difficult, with a higher motivation. Mobile games are designed with these features.

3.Sixth-grade students participating in the data collection process within the scope of this research were pleased with the science teachers' use of this mobile game in classes to improve environmental awareness and its effective integration with information technologies, and they expressed this in the interviews. Based on these results, in-service training can be given to our teachers on how to play such mobile games in classes, and science teachers can be encouraged to use such digital teaching tools in their classes.

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Authors' Contribution: 1. Author: 65%, 2. Author: 20%, 3. Author: 15%

Conflicts of Interest

The author has no conflicts of interest to declare that are relevant to the content of this article.

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Genişletilmiş Türkçe Özet

Bu araştırmanın amacı, öğrencilerin çevre bilincini geliştirmek için bir mobil oyun tasarlamak, iyileştirmek, değerlendirmek ve oyunun çevre bilincinin gelişimi üzerindeki etkisini araştırmaktır. Araştırma, 2022-2023 eğitim-öğretim yılında Bursa'da bir devlet ortaokulundaki 74 altıncı sınıf öğrencisi ve dört öğretmenin katılımıyla yürütülmüştür. Tasarlanan mobil oyunda dörder adet kolay, orta ve zor düzey soru oyuncunun karşısına 110 soruluk bir oyun havuzundan rastgele çıkmaktadır. Oyuncunun bir kez telefon ile bağlanma, bir kez iki yanlış seçimi eleme ve bir kez seyirciye sorma hakkı vardır. Her joker hakkı doğru cevaba götürmemektedir. İstenildiği takdirde oyundaki puanlara ulaşmak mümkündür. Veri toplama aracı olarak çevre bilinci ölçeği, gözlem notları ve yarı yapılandırılmış görüşme formları kullanılmıştır.

Çevre bilincinin teşvik edilmesine yönelik geliştirilen bir mobil oyunun kullanılması öncesi ve sonrası öğrencilerin Çevre Bilinci Ölçeği'nden aldıkları puanlar arasında istatistiksel olarak anlamlı bir farklılığın gözlenmesi, mobil oyunun çevre bilinci üzerinde anlamlı etkisinin olduğunu göstermektedir. Çalışmadaki gözlem ve görüşme verileri döngüsel kodlama ve tematik analiz yöntemleri kullanılarak analiz edilmiştir. "Motivasyonel süreçler üzerindeki etkiler", "bilginin yapılandırılması üzerindeki etkiler" ve "çevre bilinci üzerindeki etkiler" olmak üzere üç tema ortaya çıkmıştır. Geliştirilen mobil oyunun kullanılması, öğrenci motivasyonunun anlamlandırılmasını zenginleştirmiş ve yeni nesil öğrenme uygulamaları için çıkarımlar sağlamıştır. Bulgular, geliştirilen mobil oyunda yer alan oyun mekaniklerinin öğrencilerin bireysel hedeflerine ulaşmalarında içsel motivasyon unsurlarından "özerklik ve öz yeterliliği" olumlu yönde etkilediğini göstermiştir. Nitel bulgularda ikinci olarak, öğrenme görevlerini gerçekleştirme amacıyla kurgulanan oyun mekaniğinin, Pekiştirme Teorisi ile vurgulanan olumlu pekiştirmeye yönelik dikkat, ilgi, memnuniyet ve güven üzerindeki etkilerinin motivasyonel süreçlerdeki rolü keşfedilmiştir. Nitel bulgularda üçüncü olarak, deneyimsel öğrenmeye yönelik soyut kavramsallaştırma, duygusal tutum ve yansıtma dikkat çekmektedir. Ayrıca öğrencilerin mobil oyundaki puan tablosu ve anlık geri bildirim mekanizmaları ile yansıtma yoluna başvurarak bilgilerini yapılandırdıkları tespit edilmiştir.

Nitel bulgularda dördüncü olarak, öz düzenlemeli öğrenme unsurlarından hedef koyma, planlama, öz kontrol ve öz tepki vurgusu keşfedilmiştir. Bulgularımız, Sosyal Bilişsel Teori'nin de atıfta bulunduğu öz düzenleme ve öz yansıtma gibi kavramların mobil oyun aracılığıyla bilginin yapılandırılmasındaki rolünü bir kez daha ortaya koymuştur. Beşinci olarak, nitel bulgular tasarlanan mobil oyunun öğrencilerin çevre bilinci ile ilgili bilişsel tutum, duygusal tutum ve davranışa yönelik eylemlerinde olumlu yönde değişiklikler meydana getirdiğini vurgulamıştır. Bulgularda doğrudan alıntılarda sunulduğu gibi öğrenciler, deprem gibi felaketlere karşı bilişsel tutum, canlı türlerinin yok olması gibi insan-çevre etkileşiminde ortaya çıkabilecek olumsuz sonuçlara karşı empati ve öfke gibi hisleriyle duygusal tutum geliştirmişlerdir. Çevre konusunda bilinçlendiğini ve harekete geçmek için istekli olduğunu belirten öğrenci alıntılarından da yola çıkıldığında, mobil oyunu kullanan öğrencilerin çevreyi koruma çabası içinde olmaları dikkat çekici bir sonuçtur. Nitel bulgulardaki altıncı sonuç, geliştirilen mobil oyunu kullanan öğrencilerde

doğal kaynakların dengeli kullanımı ve tasarruf alışkanlıkları konularında davranış değişikliklerinin meydana gelmesidir. Yedinci sonuç, mobil oyunu kullanan öğrencilerin hava kirliliği, su kirliliği, toprak kirliliği, iklim değişikliği, sera gazları, küresel ısınma ve doğal afetler konularında bilgilerinin artması ile birlikte çevre bilinci geliştirmeleridir. Geliştirilen mobil oyunun senaryosu, öğrencilere kendi hedeflerini belirleme olanağı sağlamıştır. Bu sonuç, öğrencilerin özerklik ihtiyacının desteklenmenin bir yolu olarak bilgi yarışına dayanan bir mobil oyunun kullanılmasının altını çizmiştir.

Bu araştırmanın sonuçları, öğrencilerin içinde detaylı "en yüksek puan tablosu" barındıran mobil oyunlardan daha çok keyif aldıklarını göstermiştir. Bu tür oyunların fen bilimleri öğretmenleri tarafından geliştirilip kullanılması yaygınlaştırılabilir. Bir diğer dikkat çekici sonuç, zorluk seviyesi kolaydan zora doğru artan farklı seviyede soruları, öğrencilerin daha yüksek bir motivasyonda tamamladıklarının ortaya konulmasıdır. Fen bilimleri dersindeki eğitsel mobil oyunlar bu özelliklere uygun olarak tasarlanmalıdır. Araştırmadaki katılımcı öğrenciler, çevre bilincini geliştirmeye yönelik olarak fen bilimleri öğretmenlerinin derslerde bu mobil oyunu kullanmalarından ve bilişim teknolojileri ile etkili biçimde bütünleştirilmelerinden hoşnut olmuş, bunu yapılan görüşmelerde dile getirmişlerdir. Bu sonuçlardan hareketle, öğretmenlerimize bu tür mobil oyunları derslerde nasıl tasarlayacakları yönünde hizmet içi eğitimler verilebilir ve fen öğretmenlerinin derslerinde bu tür dijital öğretim araçlarını kullanmaları özendirilebilir.

Anahtar Kelimeler: Çevre eğitimi, dijital oyun tasarımı, karma yöntem, mobil oyun, mobil öğrenme.

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Thinking like a nurse: the power of drama on nursing students' professional education and communication skills

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Abstract

Various educational methods are used in nursing education to develop the knowledge and skills suitable for the profession. Drama is a teaching technique that aims for students to acquire knowledge, skills, and understanding about human relations by using game techniques. This study was conducted to determine the power of drama on nursing students' professional education and communication skills. This study was carried out using a phenomenological method with nursing students comprising the five focus groups. During focus interviews, 28 students answered whether through drama-method learning experience and drama has affected personal development. The content analysis method was used in the interpretation of the data. As a result of the content analysis conducted in this study, four main themes and nine subthemes were determined. Themes are; 1. Learning (effective learning, learning by having fun); 2. Confidence (improvement in self-confidence, improvement in creativity); 3. Sufficiency (taking responsibility, collaborating); 4. Communication (empathy, awareness, socialization). This study showed that education through the drama method improves the learning of nursing students. Education through the drama method enables nursing students to learn effectively. This research has provided valuable information on the use of drama method.

Keywords: Nursing education, Interactive education, Drama, Learning, Communication, Nursing students

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Introduction

Nursing education requires a curriculum covering the cognitive, affective domain, and psychomotor learning fields of students (Dikmen et al., 2016; Kılıç, 2018). The aim of nursing education is to train professional members who access can information and use it for the benefit of the individuals they care for (Fancourt & Finn, 2019). It also aims to develop empathy and communication, problem-solving, and critical-thinking skills (Çulha, 2019; Fancourt & Finn, 2019).

Various educational methods are used in nursing education to develop the knowledge and skills suitable for the profession (Akbaba & Özbıçakçı, 2021; Çulha 2019). Among the most effective educational methods in developing the cognitive and psychomotor behaviors of students are interactive methods that enable them to actively participate in the learning process (Aslan, 2018; Çulha 2019). One of these methods is the drama method. Drama is the portrayal of a concept, behavior, idea, experience, or event in a play or game by using theater techniques. As a teaching method, drama is an active way of learning that includes purpose, content, learning process, and assessment sections (Aydıner, 2014; Hagler, & Morris, 2021).

Drama can provide nursing students a real-life-like clinical setting. Students are involved in a clinical scenario sometimes as actors and sometimes as the audience. They can gain a unique experience and empathy by portraying many roles such as patient, caregiver, and nurse (Jefferies et al., 2021; Saxton & Miller, 2013). Previous studies examining the experiences of learning with the drama method have reported that students developed a sense of empathy by playing various roles such as patient, nurse, patient relative (Arveklev et al., 2018). The studies have demonstrated that drama contributes to self-learning in nursing students, enables them to explore their lack of knowledge and develops their critical thinking and communication skills and provide with the role of professional nursing (Arveklev et al., 2018; Günay & Kılınç, 2018; Lewis et al., 2013; Molu, 2019; Reams & Bashford, 2011).

In many of the nursing schools in Turkey, nursing education is carried out with "classical education" method (Günay & Kılınç, 2018). Classical education system is a method during which the teacher is active and the student is passive (Karadağ et al., 2013). The fact that the classical education system is based on knowledge transfer, it does not adequately develop students' critical thinking, decision making and problem solving skills (Kanbay et al., 2017). Active learning methods, on the other hand, will have a positive impact on the quality of learning by using active learning strategies that guide students to learn, enable them to take responsibility, develop their thinking skills and motivate them in the educational process (Filiz & Dikmen, 2017). Nursing educators have difficulty in finding teaching methods that enable students to understand the connection between theoretical courses and clinical practice (Crookes et al., 2013). Qualified theoretical education is the way to send the students to the clinic adequately and equipped (Gemuhay et al., 2019). Drama enables students to acquire knowledge, skills and attitudes before they encounter patients and clinical experience (Sayar & Çapık, 2021).

Helps to reduce students' anxiety and increase their sense of confidence. (Buxton, 2011). The use of the drama method in nursing education may help students to implement theoretical knowledge in practice (Halabi et al., 2012; Morrison et al., 2013; Lepp et al., 2011). Drama in nursing education has been studied in different specialties. There is no evidence examining its effect in Child Health and Disease Nursing education. The aim of this study was to evaluate its effect on both professional training and communication skills of students in Child Health and Disease Nursing education.

Method

Research design

This study was carried out using a phenomenological method, a qualitative research design. Phenomenology is an appropriate method for examining the learning experiences of nursing students through the drama method. There are a number of theoretical frameworks that can guide qualitative research in analysing data in line with the researcher's aims and objectives. One of these is phenomenology. The aim of this study is to explore students' experiences. Therefore, the study was conducted in a phenomenological pattern. This study is based on the Consolidated Criteria for Reporting Qualitative Research, (COREQ) guidelines.

Participants

The study was conducted between February and May 2019, with sixth semester nursing students who attend the Child Health and Diseases Nursing courses at the nursing faculty of a university in the east of Turkey. Data were collected through the focus-group interview technique.

Nursing education process in Turkey is designed to be at least four years with students completing total 4600 h of theoretical and practical experience. Nursing students take the pediatric nursing course in the third year, in the sixth semester. The researchers obtained the names and e-mail addresses of the students taking the pediatric nursing course from the school administration. An announcement about the study was made to the students who were taking this course through e-mail. The students were informed of the purpose and scope of the study. They were asked whether they wanted to take part in the study or not. The study sample consisted of 32 students who responded to the announcement. The researchers wrote the names of the voluntary students on a piece of paper and put them in an envelope. Then, the students were divided into 5 focus groups by drawing lots (three focus groups consisted of 6 students and two focus groups consisted of 7 students). During the study, four students withdrew from the study for personal reasons. As a result, a total of 28 students participated in the study, four in one focus group and six students each in the other focus groups. Data saturation was reached with 28 students.

In qualitative research, data collection continues until satisfactory data are obtained. In determining the sample size in this study, a sampling approach was used that required researchers to continue collecting data until sufficient sizes were reached to answer the research question through repetitive processes (Corbin & Strauss, 1990; Boddy, 2016).

The inclusion criteria;

•Speaking Turkish,

•Taking the course of Child Health and Disease Nursing nursing.

Drama Practice

For the drama performance, the subjects in the Child Health and Diseases Nursing curriculum were determined by the researchers. These subjects were: children with Type 1 diabetes and their families, children with chronic renal failure and their families, children with cancer and their families, child abuse, children living and working on the streets, and nursing approaches. Each of these subjects was written on a paper and placed in an opaque envelope. One student from each focus group drew out a paper from the envelope and determined the subject of his/her group.

The students were asked to write a scenario that would reflect the subject and nursing care. After determining the subjects to be presented by the students, they had four weeks' preparation time. Each group was given an average of six hours of counseling by the researchers. Students were also allowed to call the researchers at any time for counseling. The focus groups worked for, on average, 30 hours on preparation and play rehearsals. The researchers evaluated the students' scenarios by reading and watching the rehearsals before the performance and made suggestions. Drama practices were held during extracurricular hours and students were not paid for their performances. At each stage in the drama preparation, the first researcher (UG) advised three of the focus groups, and the second researcher (SD) advised two of the groups. Researchers have been trained in qualitative research and have experience in this field. The researchers ensured that every student played an active role in the drama performance of their group.

The students played their roles amateurishly, and they did not receive help from any professional (e.g., an actor). The roles played by the students were generally a patient, nurse, student nurse, child, mother, father, sibling, neighbor, teacher, doctor, or nurse trainer. The audience consisted of the students in the other focus groups. The focus-group interviews were held after the performances in the classroom where the performances were presented. The flowchart of the study is shown in Table 1.

Table 1. Flow Chart of the Research

1- Focus group meeting with the advisor
•Giving counselling on access to resources (library, web bases, nongovernmental organizations, and hospitals etc.) on the identified topics.
•The advisor's reporting the size of the topic and his/her expectations about it.
•Answering the questions of the focus group.
2- Focus group 1st meeting
•The election of the group leader by the students and division of labor.
•Conducting the first studies on the scenario about the topic.
3- Focus group meeting with the advisor
•Analyzing the written scenarios.
•Giving the necessary suggestions and corrections.
4- Focus group 2nd meeting
•Provision of equipment and costumes to be used in the drama performance.
•Performing rehearsals for the drama performance.
•Students' sharing feedback and suggestions for drama among themselves.
5- Advisor and focus group meeting
•Preview of the drama performance by the advisor.
•Advisor's submission of his/her opinions and suggestions about the preview.
•Criticizing the performance with the group.
6- Drama Performance
•Focus group's performing the drama.
7- Receiving feedback from the audience after the performance
8- Focus group interviews with the group who performed the drama

Data collection

The data were collected through the focus-group interview method and audio recordings. During the interviews, the nursing students were asked two basic questions "Can you explain your through drama-method learning experiences?, Can you explain how drama has affected your personal development?." to learn about their experiences in learning through drama and how they felt drama had helped them. Follow-up questions (such as "could you explain this a little more?" or "what exactly do you mean?") were asked to expand on the answers. The interviews lasted for at least 50, and at most 75, minutes. The interviews were conducted after each play by the researcher responsible for the group's preparation. The other researcher participated in the interviews as an auditor and observer. Researchers avoided using guiding, judgmental attitudes and statements during the interviews.

Drama rehearsals, drama presentations and focus group interviews were conducted in the laboratory environment of the faculty of nursing. The laboratory environment has a capacity of approximately 30 students and there are tables and chairs in a U shape

where students can see each other easily. Again in this environment, there are many materials such as patient beds, models, screens, medical supplies, and blackboards. The laboratory is located in a bright, sunny and quiet part of the faculty.

Data analysis

The data were evaluated using the qualitative content analysis method in four stages. Content analysis is a research technique used to obtain reproducible and valid results related to the content of the data (Graneheim & Lundman, 2004). In the first stage, the researchers transcribed the audio recordings independently, then transcribed and read them repeatedly. In the second stage, the researchers independently coded the same, similar and different statements. In the third stage, the researchers made a session and compared the statements they had coded. This comparison found the coding study of both researchers to be the same. In the last stage, the coded data were combined, and the main themes and subthemes of the research were determined (Corbin & Strauss, 1990; Graneheim & Lundman, 2004). After all the focus interviews were completed, the transcripts of the interviews were read to the participants and their consents were obtained.

Reliability

The criteria of verifiability, reliability, transferability and credibility of the research findings were met (Polit & Beck, 2010). The interviews were conducted by the first author. To ensure reliability, the interviews were audio-recorded and transcribed verbatim. All authors contributed to data analysis to ensure internal validity. To ensure verifiability, data analysis was carried out separately by two researchers and findings were discussed in regular meetings. In addition, extracts from the participants' speeches were included in the findings. In order to ensure transferability, the socio-demographic characteristics of the participants were defined and an attempt was made to explain the method and the findings in detail.

Ethical considerations

Ethical approval (2019/4–33) from X University, Health Sciences Non-Invasive Clinical Research Ethics Committee and the permission of the Faculty of Nursing were obtained before starting the study. The participants were informed about the structure, purpose, and procedures of the study. In addition, they were told that voice recordings would be made, and the information collected during the interviews would be used only for scientific purposes. Verbal and written permission were obtained from the students who wanted to participate in the study.

Findings

The average age of the students was 21.2 years old, all were third-year undergraduate nursing students, and 20 of them were female. As a result of the content analysis conducted in this study, four main themes and nine subthemes were determined: (1) Learning: Effective learning, Having fun while learning; (2) Confidence: Improvement in self-confidence, Improvement in creativity; (3) Sufficiency: Taking responsibility and Collaborating; (4) Communication: Empathy, Awareness and Socialization (Table 2).

Table 2. The main and sub-themes of the study

Main Themes	Sub-Themes
•Learning	Effective learning Having fun while learning
•Confidence	Improvement in self-confidence Improvement in creativity
•Sufficiency	Taking responsibility Collaborating
•Communication	Empathy Awareness Socialization

Theme 1: Learning

The students stated that the drama method made a positive contribution to the learning process. They said that, compared to the classical learning method, it allowed them to be active, learn during the process, and have fun while learning. They also said that their learning improved and what they learned was more permanent. The subthemes of this chapter were determined to be effective learning and having fun while learning.

Subtheme 1: Effective learning

The students stated that they conducted more research in order to convey every aspect of the subject to the audience. They said they reached the related cases and conducted interviews to learn about the process of the disease and the problems patients experienced. The students said it was more effective to define the subject through drama.

As one student explained:

"The drama method enabled us to learn in multiple dimensions. We prepared all the aspects of the subject we presented. We learned extensively about the disease and

nursing care. We played the role of a sick child or their parents. This method attracts visual attention and is very permanent." (Drama group 2, student 4)

Another student said:

"I used to read only the lecture notes before. I used to forget most of what I read after the exam. While preparing for the drama presentation, we researched a lot of resources and interviewed the patients. The information became much more permanent and comprehensive since we got the knowledge through research." (Drama group 3, student 1)

A third student said:

"As well as learning the subject that I prepared through drama very well, I learned the subjects that my friends presented very well. I wish all the courses were taught this way." (Drama group 2, student 5)

Subtheme 2: Having fun while learning

All the students who participated in the study stated that they had never had such a fun learning experience. The following are some of the students' comments:

"We had so much fun during the rehearsals. We laughed a lot about ourselves and our friends. It was a lot of fun." (Drama group 3, student 3)

"I never thought I could have so much fun during the stage of preparation. It is both surprising and fun to see a quiet friend acting." (Drama group 2, student 4)

Theme 2: Confidence

Subtheme 1: Improvement in self-confidence

Students stated that they improved their assertiveness with the drama method, and it helped them approach patients in the clinic with more confidence. Their discovery of their talents and success improved their self-confidence. The following are some of the students' comments on this subtheme:

"I couldn't believe myself. I never thought I would play the role of a man in front of so many people. But I realized I could act." (Drama group 3, student 5)

"I can't talk much in a crowded environment. I'm ashamed. I saw that now I can talk. Thanks to drama, I have improved my self-confidence." (Drama group 4, student 3)

"Before the show we were concerned about whether we would succeed or not. But we saw that we could. Our self-confidence has improved." (Drama group 2, student 4)

Subtheme 2: Improvement in creativity

The students put a lot of effort into making effective presentations. They prepared various costumes, wrote scripts, and thought about how to make the best presentation. This contributed to the development of their creativity. One student commented:

"We thought about how to describe leukemia in the best way with our group. Then we decided to become blood cells. We prepared costumes representing various blood cells." (Drama group 1, student 1)

Another student said:

"We thought about how to demonstrate child abuse in relation to each other. We decided to perform a play in the play." (Drama group 5, student 1)

Theme 3: Sufficiency

Nursing students stated that participation in this learning process increased responsibility, cooperation and productivity.

Subtheme 1: Taking responsibility

Students stated that they took responsibility for learning and teaching through drama. They stated that they tried various scenarios and games in order to convey the subject in the best way. One student commented:

"The sense of responsibility also develops a lot. To our friends, to ourselves, and to you Mr./Mrs. Everyone tried to fulfill their responsibilities. For example, everyone gathered at the time we set for rehearsals." (Drama group 4, student 1)

Subtheme 2: Collaborating

The students collaborated to present the play in the best way. Some of the students commented:

"First we got rid of 'I' in the group and became 'we.' We collaborated. One fulfilled the lack of the other." (Drama group 1, student 5)

"We all tried to do our best; everyone did their best for it. While preparing our game, we tried to reach new resources. We rehearsed during the day, and at night we prepared educational material for the play." (Drama group 2, student 7)

Theme 4: Communication

They expressed that the drama method helped them to better understand the feelings of a sick child and his/her family. In addition, the students stated that their interaction and communication with each other increased during the drama preparation process.

Subtheme 1: Empathy

The students were of the opinion that the drama method had a positive contribution to the development of empathy. In order to better convey the subject, they interviewed and observed related cases. They tried to understand the feelings of a patient and their family and the difficulties they encounter. The students played sick children and their families during the plays. They put themselves into their shoes and understood how they feel.

A student from the group that presented a child with chronic renal failure (CRF) and their family commented:

"I played the child with CRF through the drama method. I understood what he or she was feeling, what he or she was going through. From now on, I can communicate more comfortably with these children. I can take care of them." (Drama group 2, student 5)

Subtheme 2: Awareness

The students had little knowledge about nongovernmental organizations providing support for children with chronic illnesses and their families. The students conducted miscellaneous research on the subjects they were going to present, and their awareness of nongovernmental organizations and their activities increased.

The opinion of one student:

"I really didn't know about the Foundation for Children with Leukemia; I didn't even know that it helps poor families who have children with cancer. However, now I know." (Drama group 1, Student 4)

The statement of a student who interviewed children working on the street:

"Now I see a child selling handkerchiefs on the street from a different aspect. He or she is an abused child." (Drama group 5, Student 4)

Subtheme 3: Socialization

While preparing for the plays, the students improved their friendships by communicating and collaborating in groups for all parts of the process. Two students said:

"I know my friends better now. I wasn't this close with my friends before drama. We got closer and closer day by day." (Drama group 2, student 1)

"We had long phone calls, texted each other, communicated constantly to achieve the best." (Drama group 1, student 2)

Results and Discussion

The results of this study show that education through drama contributes to on nursing students' professional education and communication skills. The findings of previous studies on drama's effect on learning support the findings of this study study (Arveklev et al., 2018; Sayar & Çapık, 2021).

Nursing education through drama provides holistic and experiential learning in contrast to the classical method (Morrison et al., 2013; Rankin & Brown, 2016). The literature reports that nursing students often have difficulty in criticizing and applying theoretical knowledge (Benner et al., 2010; Crookes et al., 2013; Günay & Kılınç, 2018; Riksaasen Hatlevik, 2012). In learning through drama, students can develop critical-thinking and problem-solving skills by linking the information they obtain from many different resources. At the same time, they have the opportunity to implement theoretical knowledge through role playing, observation, and experience (Aydıner, 2014). In a study, nursing students stated that drama helped to concretize the theoretical course content, facilitated learning, and forced students to be active and participate in the learning process (Arveklev et al., 2015). In a similar study, in a study using enriched learning methods with active participation, it was found that the self-confidence of nursing students who took pediatric courses increased and their anxiety decreased (Acar et al., 2022). The synergic effects of the role of peers and teamwork are another factor in the development of a positive learning environment through drama. Research has shown that peer support and teamwork contribute to social learning, empathy, transferring information to other students, giving feedback, and improving communication skills (Ramm et al., 2015).

In this study, the nursing students stated that they had fun while learning and did not get bored during the learning process. In classical education, the instructor is active and the student is passive, which negatively affects the student's desire to learn (Karadağ et al., 2013). Students gain more experience from activities they personally participate in and enjoy. This also gives them the opportunity to express their feelings (Nakiboğlu, 2020).

Learning styles are among the factors that affect creativity (Xing et al., 2018). In this study, students said that drama improved their creativity. Nursing students wrote scripts for their drama performances and discussed how to present the topic in the most effective way. They also designed costumes and created various educational materials. All of these activities are likely to have an impact on the development of their creativity. Previous studies have also found that drama education has positive effects on critical thinking and creativity (Çulha, 2019; Xing et al., 2018).

In this study, the students stated that drama had a positive effect on their taking responsibility and cooperating with each other. Through the drama method, students have the responsibility of both actively learning and transferring what they have learned. They are also responsible to each other for presenting their performance in the best way possible. Therefore, it is thought that students develop the skills of taking responsibility

and cooperating with their group. All of these characteristics of drama can also contribute to the development of students' self-confidence and competence. In a study conducted by Buxton (2011), it was found that drama develops self-confidence in nursing students.

Empathy is a basic skill for all nurses (Mirzaei et al., 2020; Williams & Stickley, 2010). Drama provides the opportunity for nursing students to develop empathy and the ability to communicate with patients (Arveklev et al., 2018; Benner et al., 2010; Crookes et al., 2013; Morrison et al., 2013). In this study, the nursing students stated that drama helped them understand the feelings of the patients and their families and establish effective communication with them. Arveklev et al. (2015) found that the students in their study learned how to communicate with patients through the dialogue in their plays. The students in this study also said that their awareness improved by meeting with children and families with different diagnoses and visiting nongovernmental organizations. This improved both their empathy and awareness. In the literature, it has been found that education through drama increases the self-awareness of nursing students and increases their self-awareness as well as their personal and professional development (Gałązka & Trinder, 2018; Jefferies et al., 2021).

Limitation and Strengths

The study is the first drama study in our country that evaluates learning through drama in Child Health and Disease Nursing education. It is a study that examines both the professional learning and personal development of students in depth. This study also has some limitations. In the research, only the experiences of students who performed drama in focus group studies were included. Viewers' opinions are not reflected.

Conclusion and Recommendations

This study showed that education through the drama method improves the learning of nursing students. It was found that, with drama, the students' skills of responsibility, cooperation and creativity improved. Students also had the opportunity to have a positive experience before the encounter with the patient by improving empathy and communication skills owing to the roles they played. The awareness of the students improved as they interviewed real resources (patient, children living / working on the street, etc.). Thus, drama is an effective learning method that teaches learning in different ways and contributes to the preparation of nursing students for the clinic. The use of the drama method in nursing education should be expanded and supported.

In addition, it can be proposed to be carried out in different subject areas at undergraduate and postgraduate level. The experiences and ideas of the audience can also be incorporated into the studies to be carried out.

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Genişletilmiş Türkçe Özet

Hemşirelik eğitimi, öğrencilerin bilişsel, duyuşsal alan ve psikomotor öğrenme alanlarını kapsayan bir müfredat gerektirir. Hemşirelik eğitiminin amacı, bilgiye ulaşabilen ve bunu bakım verdiği bireylerin yararına kullanabilen meslek üyeleri yetiştirmektir. Ayrıca empati ve iletişim, problem çözme ve eleştirel düşünme becerilerini geliştirmeyi amaçlar.

Hemşirelik eğitiminde mesleğe uygun bilgi ve becerileri geliştirmek için çeşitli eğitim yöntemleri kullanılmaktadır. Bu yöntemlerden biri de drama yöntemidir. Drama, hemşirelik öğrencilerine gerçek hayat benzeri bir klinik ortam sağlayabilir. Öğrenciler klinik bir senaryoya bazen oyuncu bazen de izleyici olarak dahil olurlar. Hasta, bakıcı, hemşire gibi birçok rolü canlandırarak benzersiz bir deneyim ve empati kazanabilirler. Drama yöntemiyle öğrenme deneyimlerini inceleyen önceki çalışmalar, öğrencilerin hasta, hemşire, hasta yakını gibi çeşitli rolleri oynayarak empati duygusu geliştirdiklerini bildirmiştir. Dramanın hemşirelik öğrencilerinde kendi kendine öğrenmeye katkı sağladığı, bilgi eksikliklerini keşfetmelerini sağladığı, eleştirel düşünme ve iletişim becerilerini geliştirdiği ve profesyonel hemşirelik rolünü kazandırdığı gösterilmiştir.

Türkiye'deki hemşirelik okullarının birçoğunda hemşirelik eğitimi "klasik eğitim" yöntemi ile yürütülmektedir. Klasik eğitim sisteminin bilgi aktarımına dayalı olması, öğrencilerin eleştirel düşünme, karar verme ve problem çözme becerilerini yeterince geliştirmemektedir. Hemşirelik eğitimcileri, öğrencilerin teorik dersler ile klinik uygulama arasındaki bağlantıyı anlamalarını sağlayacak öğretim yöntemleri bulmakta zorlanmaktadır. Öğrencileri kliniğe yeterli ve donanımlı göndermenin yolu nitelikli teorik eğitimden geçmektedir. Hemşirelik eğitiminde drama yönteminin kullanılması, öğrencilerin teorik bilgilerini pratikte uygulamalarına yardımcı olabilir. Drama yoluyla eğitim, hemşirelik öğrencilerinin kliniklerde yaşadığı sorunları azaltabilir. Bu çalışma, dramanın hemşirelik öğrencilerinin mesleki eğitim ve iletişim becerileri üzerindeki gücünü belirlemek amacıyla yapılmıştır.

Bu çalışma nitel bir araştırma deseni olan fenomenolojik yöntem kullanılarak gerçekleştirilmiştir. Çalışma, Şubat-Mayıs 2019 tarihleri arasında, Türkiye'nin doğusunda yer alan bir üniversitenin hemşirelik fakültesinde Çocuk Sağlığı ve Hastalıkları Hemşireliği dersini alan altıncı dönem hemşirelik öğrencileri ile yürütülmüştür. Veriler odak grup görüşmesi tekniği ile toplanmıştır. Öğrencilere çalışmanın amacı ve kapsamı hakkında bilgi verilerek çalışmaya katılmak isteyip istemedikleri sorulmuştur. çalışmaya bir odak grupta dört, diğer odak gruplarda altışar öğrenci olmak üzere toplam 28 öğrenci katılmıştır.

Drama Uygulaması için Çocuk Sağlığı ve Hastalıkları Hemşireliği müfredatında yer alan konular araştırmacılar tarafından belirlenmiştir. Bu konuların her biri bir kağıda yazılmış ve opak bir zarfın içine yerleştirilmiştir. Her odak gruptan bir öğrenci zarftan bir kâğıt çekerek kendi grubunun konusunu belirlemiştir. Öğrencilerden konuyu ve hemşirelik bakımını yansıtacak bir senaryo yazmaları istenmiştir.

Veriler odak grup görüşmesi yöntemi ve ses kayıtları yoluyla toplanmıştır. Görüşmeler sırasında hemşirelik öğrencilerine drama yoluyla öğrenme deneyimlerini ve dramanın kendilerine nasıl yardımcı olduğunu hissettiklerini öğrenmek için "Drama yöntemiyle öğrenme deneyimlerinizi açıklayabilir misiniz?, Dramanın kişisel gelişiminizi nasıl etkilediğini açıklayabilir misiniz?" şeklinde iki temel soru sorulmuştur. Takip soruları ("bunu biraz daha açıklayabilir misiniz?" veya "tam olarak ne demek istiyorsunuz?" gibi) cevapları genişletmek için sorulmuştur.

Veriler nitel içerik analizi yöntemi kullanılarak dört aşamada değerlendirilmiştir. İlk aşamada, araştırmacılar ses kayıtlarını bağımsız olarak kopyalamış ve tekrar tekrar okumuşlardır. İkinci aşamada aynı, benzer ve farklı ifadeleri kodlamışlardır. Üçüncü aşamada araştırmacılar bir oturum yaparak kodladıkları ifadeleri karşılaştırmışlardır. Bu karşılaştırmada her iki araştırmacının kodlama çalışmasının aynı olduğu görülmüştür. Son aşamada ise kodlanan veriler birleştirilerek araştırmanın ana temaları ve alt temaları belirlenmiştir. Tüm odak görüşmeler tamamlandıktan sonra, görüşmelerin transkriptleri katılımcılara okunmuş ve onayları alınmıştır.

Bu çalışmada (1)Öğrenme: Etkili öğrenme, Öğrenirken eğlenme; (2) Özgüven: Özgüvende gelişme, Yaratıcılıkta gelişme; (3) Yeterlilik: Sorumluluk alma ve İşbirliği yapma; (4) İletişim: Empati, Farkındalık ve Sosyalleşme olmak üzere dört ana tema ve dokuz alt tema belirlenmiştir. Bu çalışmanın sonuçları, drama yoluyla eğitimin hemşirelik öğrencilerinin mesleki eğitimlerine ve iletişim becerilerine katkıda bulunduğunu göstermektedir. Dramanın öğrenme üzerindeki etkisine ilişkin önceki çalışmaların bulguları bu çalışmanın bulgularını desteklemektedir.

Drama yoluyla hemşirelik eğitimi, klasik yöntemin aksine bütüncül ve deneyimsel öğrenme sağlar. Drama yoluyla öğrenmede öğrenciler birçok farklı kaynaktan edindikleri bilgileri ilişkilendirerek eleştirel düşünme ve problem çözme becerilerini geliştirebilirler. Yapılan bir çalışmada hemşirelik öğrencileri dramanın teorik ders içeriğinin somutlaştırılmasına yardımcı olduğunu, öğrenmeyi kolaylaştırdığını ve öğrencileri aktif olmaya ve öğrenme sürecine katılmaya zorladığını belirtmişlerdir. Benzer bir çalışmada, aktif katılımlı zenginleştirilmiş öğrenme yöntemlerinin kullanıldığı bir çalışmada, pediatri dersi alan hemşirelik öğrencilerinin özgüvenlerinin arttığı ve kaygılarının azaldığı tespit edilmiştir. Drama ile akranların rolü ve ekip çalışmasının sinerjik etkileri de bir diğer faktördür. Araştırmalar, akran desteği ve ekip çalışmasının sosyal öğrenmeye, empati kurmaya, diğer öğrencilere bilgi aktarmaya, geri bildirim vermeye ve iletişim becerilerini geliştirmeye katkıda bulunduğunu göstermiştir.

Bu çalışmada hemşirelik öğrencileri öğrenirken eğlendiklerini ve öğrenme sürecinde sıkılmadıklarını belirtmişlerdir. Klasik eğitimde eğitmen aktif, öğrenci pasiftir ve bu durum öğrencinin öğrenme isteğini olumsuz etkiler. Öğrenciler kişisel olarak katıldıkları ve keyif aldıkları etkinliklerden daha fazla deneyim kazanır.

Öğrenme stilleri de yaratıcılığı etkileyen faktörler arasındadır. Bu çalışmada da dramanın öğrencilerin yaratıcılıklarını geliştirdiği belirlenmiştir. Hemşirelik öğrencileri

drama performansları için senaryolar yazmış ve konuyu en etkili şekilde nasıl sunacaklarını tartışmışlardır. Ayrıca kostümler tasarlamış ve çeşitli eğitim materyalleri oluşturmuşlardır. Tüm bu etkinlikler yaratıcılıklarını geliştirmiştir.

Çalışmada öğrenciler, dramanın sorumluluk alma ve işbirliği yapma becerileri üzerinde olumlu bir etkisi olduğunu belirtmişlerdir. Drama yöntemi sayesinde öğrenciler hem aktif olarak öğrenme hem de öğrendiklerini aktarma sorumluluğuna sahip olabilir. Ayrıca performanslarını en iyi şekilde sunma konusunda da birbirlerine karşı sorumludurlar. Dolayısıyla öğrencilerin sorumluluk alma ve gruplarıyla işbirliği yapma becerilerini geliştirdikleri düşünülmektedir. Dramanın tüm bu özellikleri öğrencilerin özgüven ve yeterliliklerinin gelişmesine de katkı sağlayabilir.

Empati, tüm hemşireler için temel bir beceridir. Drama, hemşirelik öğrencilerine empati ve hastalarla iletişim kurma becerisi geliştirme fırsatı sunar. Bu çalışmada hemşirelik öğrencileri, dramanın hasta ve ailelerinin duygularını anlamalarına ve onlarla etkili iletişim kurmalarına yardımcı olduğunu belirtmişlerdir. Bu çalışmadaki öğrenciler ayrıca farklı tanılara sahip çocuklar ve ailelerle tanışarak ve sivil toplum kuruluşlarını ziyaret ederek farkındalıklarının arttığını belirtmişlerdir. Bu da hem empatilerini hem de farkındalıklarını geliştirmiştir. Literatürde drama yoluyla eğitimin hemşirelik öğrencilerinin öz farkındalıklarını artırdığı, kişisel ve mesleki gelişimlerinin yanı sıra öz farkındalıklarını da artırdığı tespit edilmiştir.

Çalışmamızda sadece odak gruplarda drama yapan öğrencilerin deneyimlerine yer verilmiştir. Seyircilerin görüşleri yansıtılmamıştır. Bu da çalışmamızın sınırlılığını oluşturmaktadır.

Bu çalışma, drama yöntemi ile eğitimin hemşirelik öğrencilerinin öğrenmelerini geliştirdiğini göstermiştir. Drama ile öğrencilerin sorumluluk, işbirliği ve yaratıcılık becerilerinin geliştiği tespit edilmiştir. Öğrenciler ayrıca oynadıkları roller sayesinde empati ve iletişim becerilerini geliştirerek hasta ile karşılaşmadan önce olumlu bir deneyim yaşama fırsatı bulmuşlardır. Gerçek kaynaklarla (hasta, sokakta yaşayan/çalışan çocuklar vb.) görüştükleri için öğrencilerin farkındalıkları gelişmiştir. Dolayısıyla drama, öğrenmeyi farklı yollarla öğreten ve hemşirelik öğrencilerinin kliniğe hazırlanmasına katkı sağlayan etkili bir öğrenme yöntemidir. Hemşirelik eğitiminde drama yönteminin kullanımı yaygınlaştırılmalı ve desteklenmelidir.

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