



## EXPERIENCES OF QUALIFIED TEACHERS OF THE FUTURE IN THE SCOPE OF AN INTERNATIONAL ETWINNING PROJECT

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### Abstract

The aim of robust social learning networks such as eTwinning, which is a part of Erasmus internationality programs, is to foster and promote the creation and development of awareness for respect, tolerance, and understanding by ensuring the integration of young people from different countries and cultures through dialogue. Phenomenological research design, one of the qualitative research methods, was used in this research in which the experiences of teacher candidates regarding the eTwinning project were analyzed. The focus of the transnational collaboration was that student teachers from different cultures use eTwinning's secure and safe digital platform, Twinspace, to contribute to their cultural, personal, and professional development and competences through eTwinning activities. The study group of the research represents 30 (4 males, 26 females) student teachers studying in Turkey (2 universities), Italy (1 university), Germany (1 university), and France (1 university). Participants were between the ages of 18-24. A semi-structured interview form (Google Form) developed by the researchers was used as the qualitative data collection tool. The content analysis method was used for data analysis. The student teachers researched, analyzed, and compared their teacher training systems of the four project countries, to identify the skills and cultural differences required as a pre-service primary school teacher in the 21st century.

**Keywords:** eTwinning, 21st-century skills, pre-service teacher, transnational collaboration.



## INTRODUCTION

Initial Teacher Training stands for one of the most crucial stages of teachers' career-long professional development, and it represents the entry point into the continuum of teacher education. It aims to provide future teachers with competences supporting "their capacity to lead and facilitate successful student learning" (European Commission, 2015, p. 10).

Training of qualified teachers is mostly the responsibility of teacher training institutions or organizations. As these institutions train teachers who will train qualified manpower and who will adapt to society and develop society itself, the success of teacher training is directly related to the quality of faculty members (EUA, 2018; 2019; Milner, 2021).

While trainees may seem preoccupied with course content and classroom management, educators must ensure that these future teachers acquire the skills to help them move beyond core pedagogic concerns and adapt to a world where disruptions and innovative approaches through technology become the rule rather than the exception (Ryan et al., 2020; Grossman, 2021). In short, future teachers should be equipped with the knowledge and skills to work in an increasingly multicultural, digitalized school able to pivot to synchronous and asynchronous modalities (Rowan et al., 2021). To this end, two academic researchers from Turkey started an eTwinning project called "Qualified Teachers of the Future" and formed a team with two professors from Palermo, Italy, and Stuttgart, Germany, and two teacher educators from northern France. Prior to this project, academic researchers from Turkish and Italian Universities ran the eTwinning ITE project "What kind of World Do We Want?" which started in October 2021 involving 13 prospective teachers. This first project allowed the professors and student teachers to get to know each other and learn how to manage the eTwinning Live platform and the Twinspace. Indeed, this first experience led the way to a second project involving more professors, ITE ambassadors and future teachers to experiment with new collaborative tools and transnational processes. In this context, primary school student teachers researched and compared the teacher training systems of the countries involved in the project to discuss the effects of the skills and cultural differences that classroom teacher candidates in the 21st century in the teaching profession require. As a result of this project carried out on the eTwinning platform online, student teachers from different cultures came together digitally for a common project to cooperate among cultures. The academic team observed and coached the student teachers as they developed their digital skills and identified what skills and competences are needed for teachers in the 21st century. Using project-based learning, student teachers researched, analyzed, and determined the necessary criteria for teachers at primary education levels in four different countries (Turkey, France, Italy, and Germany). The experience confirms that initial intercultural competence is essential for undertaking international collaborative projects such as this eTwinning ITE project. It also validates the need for blending professional preparation of primary school teachers. The very first results emphasize the importance of equipping students with 21st-century skills and the important role eTwinning plays in this challenge.

## Literature

The 21st-century global citizen is defined as having "high-tech skills, broad interdisciplinary knowledge about the contemporary world, flexibility, and world-mindedness" (Kirkwood, 2001, p. 14). For this reason, some skills that individuals should have are discussed in different studies (Partnership 21, ISTE). Castek et al. (2007) emphasize that the competencies to be possessed in the 21st century are the steps to a successful future in a global society. Educators are researching on how they can prepare students for the next decades of the 21st century, and especially "how will the citizens of the future be?" Current research investigates how intercultural project studies can contribute to the question (Camilleri, 2016). As stressed by Darling-Hammond (2006), Initial Teacher Education must be powerful enough to break student teachers' conditioning – helping them understand that teaching is different from what they remember from being students. Thus, future teachers need effective guidance to come to terms with the increasing rate of change and find their way in this complex world (Darling-Hammond, 2006; Popova et al., 2022).



According to the latest report of UNESCO (2021, p. 86), “21. Considering the changing conditions, contexts, learning environments, and diversity of learners in 21st-century education, it is mentioned how the teaching profession should be in pre-service and in-service periods. Especially in recent years, it has become important for senior teachers at all levels of education and new teachers to produce projects. One of the online platforms where these projects can be done is eTwinning.” Launched in 2005 as the main movement of the e-learning Program of the European Commission, eTwinning has been integrated into the “Lifelong Learning Programme” since 2007. The program is run by the Central Support Service (CSS) in Brussels, and managed by the European Schoolnet, an international collaboration of 38 European Ministries of Education that develops education for schools, teachers, student teachers, and students throughout Europe. Intercultural, transnational projects involving eTwinning help increase interaction and direct communication among participants and help them gain intercultural perspectives. When eTwinning was launched, it aimed to provide “school matching” as an opportunity for all young people to learn and practice information and communication technology (ICT) skills and to promote awareness of the multicultural European model of society (Făt, 2012).

eTwinning has been funded by the European Commission under the Erasmus+ program since 2014 (Kearney & Gras-Velasquez, 2015). It is well-known as a safe and good starting point for strategically planned long-term cooperation between schools, including student exchange in the future under the Erasmus+ mobility program (Gajek, 2018). eTwinning is a web-based, networked social learning management platform where teachers, school administrators, and students in schools all over Europe can meet safely online, communicate and collaborate to realize projects as part of their curricula. eTwinning guides teacher educators in the early stages of their education to develop future-qualified teachers in many fields (<https://www.etwinning.net/en/pub/benefits/learning-opportunities/teacher-training-institutes.htm>). Teachers, teacher candidates, and teacher educators who are registered members of the platform can carry out various projects collaboratively. European projects between institutes, which include the creation of an eTwinning collaboration project with student teacher trainers from one or more institutes in Europe by an Initial Teacher Education (ITE) trainer, enable trainees to become increasingly autonomous through project-based learning. The final stage is when pre-service teachers responsible for their students’ design and implement their own projects under the guidance of their trainers and/or peers from Europe. This shift to flexibility and autonomy is reassuring for students who can succeed under the helpful guidance of their instructors or peers.

eTwinning contributes to the development of participants' ICT skills and language skills (Demir, 2019), the development of high-level skills such as creativity, teamwork, decision making and problem-solving (Avcı, 2021), and the increase in interest in technology (Çetin Cengiz and İzci, 2021). Teachers and ITE trainers increase their pedagogical and technological knowledge and competencies and develop innovative perspectives (Acar & Peker, 2021; La Marca & Gulbay, 2021). Collaborative tasks in projects not only encourage student teachers to develop the professional skills they need to set precise goals, be extremely specific in planning, programming and documenting their work, but also in with teamwork, more specifically listening to the perspectives, perspectives and suggestions of international partners (Tonner-Saunders & Shimi, 2021). They also support the development of soft skills, such as international teamwork, which includes respect, understanding, kindness, and consideration. Project-based problem-solving and troubleshooting are also experienced through time management, addressing technical issues, and mirroring each country's goals and perspectives.

Earlier studies about eTwinning have laid the foundation for research. Manfredini (2007) finds that eTwinning is an opportunity for students to get to know new cultures, for teachers to increase their motivation for new approaches in education, and to continue their professional development. Demir (2019) carried out a project between Turkey and Azerbaijan with eTwinning, revealing that participants improved in subjects such as English language skills, increased their ability to use Information Technologies, improved their intercultural communication skills, values education, and established good friendships. Research conducted by Sergeant, Balçın, and Yılmaz (2021) about eTwinning with science teachers determined teachers participated in these project studies to teach



activity-based lessons and contribute to their professional development. All of these findings show that eTwinning activities allow undergraduate students, particularly future teachers, to act from a common EU perspective.

Indeed, through eTwinning, pre-service teachers can explore and apply project teaching as well as multi-disciplinary work that helps them develop deep content knowledge as well as critical thinking, creativity, and communication skills. eTwinning is important for all the reasons mentioned above: versatility, flexibility, innovation, differentiation, self-empowerment, peer collaboration, interculturality, multilingualism, open-mindedness, skills development and recognition, and European partnerships. All pupils in primary, secondary and higher education can benefit from eTwinning. In-service teachers and educators can teach and learn through the platform. However, it would be unfair to limit the benefits of eTwinning to education and training, as its scope goes far beyond that. eTwinning also contributes to the championing of European values such as European citizenship, and UNESCO values such as inclusion, diversity, and environmental sustainability. Digital education is undoubtedly an asset. For various political, social and/or economic reasons, not all children can meet their European friends face-to-face. eTwinning helps overcome these barriers as it facilitates collaboration and cultural exchange while having fun. Aligned and anchored in each country's curriculum, eTwinning projects offer a real-world, authentic application of what pupils are learning in the classroom. It is no exaggeration to say that eTwinning makes school happiness a reality for every child, teenager, and young adult.

In addition, the latest Erasmus+ plans and budgets (2021-2027) encourage and facilitate blended, short-term mobility/travel projects that bridge gaps between various social, cultural, and national communities. Indeed, "Incorporating international placements into the curriculum means more than just offering credit hours. It means making culture a part of the lessons that students will take at home" (Masel Walters, Garii, & Walters, 2014). Promoting virtual, mixed and physical settlements through eTwinning and Erasmus+ mobility trips equips students to experience different cultures and to deal with multilingualism and multiculturalism at home and then through travelling. These intercultural skills should be part of the qualifications of any future qualified teacher.

Before student internships abroad, eTwinning provides future mobility candidates with important online training, not only by sharing didactic, pedagogical, and disciplinary content but also by discussing themes of interculturality, otherness, or multilingualism to deflate stereotypes with colleagues abroad. As stated by Masel Walters, Garii, and Walters (2014), training should also continue during and after placement. An online platform is a unique tool that can accompany students through their mobility projects and help them prepare for multi-class situations on their own (Walters, Garii & Walters, 2014).

Under the Erasmus+ plan (2021-2027), eTwinning will contribute to creating and expanding the European Education Area, the strengthening of European citizenship, the universal values of tolerance and fraternity, and the strengthening of ties between school communities, both locally and internationally (<https://erasmus-plus.ec.europa.eu/programme-guide/part-b/key-action-1/mobility-school>).

As Tutkun and Aksoyalp (2010, p. 361) state as a result of their research, in the 21st century, teaching will be a specialized profession; their findings emphasize the teacher training system must be at an international level and teachers must be trained in an understanding of intercultural education and building a democratic society. As Vanderberghe (2002) maintains, it is very important for teachers to communicate with their colleagues on both professional and social issues.

Considering that learning and teaching activities take place in a social context resulting from interaction, pre-service teachers must be able to analyze and evaluate different cultures so they can teach pupils 21st-century skills. The aim of social learning networks such as eTwinning, part of Erasmus, is to support the creation and development of awareness of respect, tolerance, and understanding by ensuring young people from different countries and cultures are integrated through



dialogue. To this end, the 30 primary school pre-service teachers involved in the four-country transnational Qualified Future Teacher Project, carried out on eTwinning, researched, and designed activities to help them identify skills and competences that the qualified teacher of the future should have. The project, which lasted for 6 months, investigated the experiences of teacher candidates graduating from different countries according to different teacher training systems. The academic framework surrounding the project evaluated the project's process and results. For this purpose, answers to the following problems and sub-problems were researched:

What is the experience of pre-service primary school teachers participating in an international eTwinning project?

1. What are the views of pre-service teachers about participating in the eTwinning project?
2. What are the opinions of pre-service teachers about the primary school teacher training systems of the countries involved in the project?
3. What are the opinions of pre-service teachers about the skills and competencies that should be possessed in the 21st century?

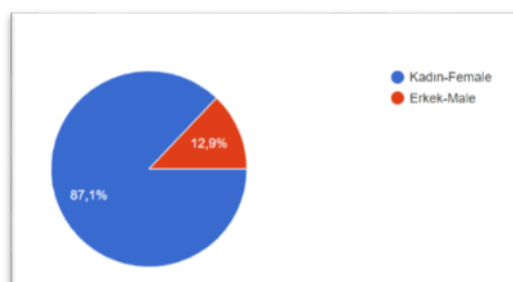
## METHOD

### Model of the Study

Phenomenological research design, one of the qualitative research methods, was used in this research in which the experiences of teacher candidates regarding the eTwinning project were examined. Phenomenology is the description of a phenomenon in terms of the experiences of a particular group. Researchers try to reach the life world of each participant. The phenomenological research method asks each participant to describe their own experiences in their own terms (Christensen, Burke Johnson & Turner, 2015, p. 408-409). The researcher collects data from people who have experienced the phenomenon and develops a unified definition of the essence of the experience for all individuals. This definition includes “what” they experience and “how” they experience it (Moustakas, 1994). In this research, we aimed to express the experiences and perspectives of pre-service teachers who participated in the eTwinning project for the first time to take part in an international online project. We put forward the experiences of student teachers by collaborating in transnational teams and discussing the teacher training systems of different countries and the skills that a teacher should have in the 21<sup>st</sup> century.

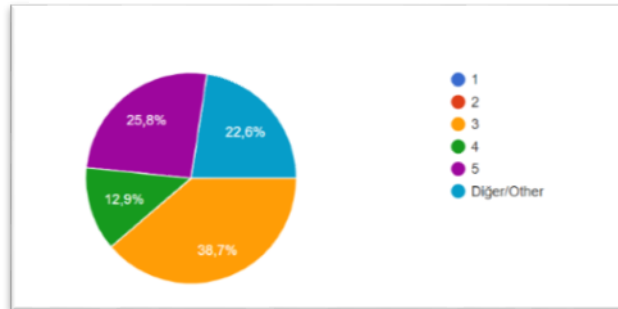
### Study Group

The study group of the research consisted of 30 (4 male, 26 female) students studying in Turkey (2 universities), Italy (1 university), Germany (1 university), and France (1 university). Figure 1 (see below) was conducted with the classroom teacher candidates. Participants were between the ages of 18-24. Participants 1-2-3-4-5 represent the grade level the pre-service teacher is studying. The participants were students attending the classroom who had not been involved in an eTwinning project before (Figure 2). There were 3rd- and 4th-grade student teachers from Turkey, and 5th-grade students from France, Germany, and Italy. In Turkey, primary school classroom teaching is completed in education faculties in a period of four years, and four of the participants in the other countries, except Turkey, were students who took part in the project within the scope of an unfinished degree thesis. Participants' digital competencies were generally at intermediate and higher levels (Figure 3).

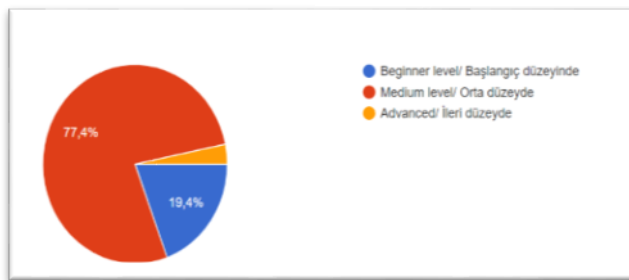




**Figure 1.** Gender distribution of participants



**Figure 2.** Distribution of participants by grade level



**Figure 3.** Participants' digital competencies

### Research Instruments and Procedures

*Semi-Structured Interview Form:* In the study, a semi-structured interview form developed by the researchers was used as a qualitative data collection tool. According to Merriam (2018), semi-structured interview forms allow participants to express the world they perceive with their own thoughts. In this study, it was deemed appropriate to use the semi-structured interview form as a data collection tool because how the study group perceived their experiences was analyzed based on their own statements. For the content validity of the form, opinions were received from five field experts working in the classroom teaching department. As a result of these expert opinions, it was found that the questions were understandable and suitable for the research purpose. In addition, the activity examples prepared by the pre-service teachers as mixed, transnational teams throughout the project also contributed to the research. Open-ended questions prepared for the sub-problems within the scope of the research are as follows:

**Table 1.** Questions


Subproblem Topics	Interview Questions
What are the opinions of pre-service teachers about participating in the eTwinning project?	What did you gain from taking part in the eTwinning project? What do you think about this project?
What are the opinions of pre-service teachers about the primary school teacher training systems of the countries involved in the project?	What did you learn about the entry requirements to the primary school teaching program in countries (Turkey-Italy-France-Germany)?
What are the opinions of pre-service teachers about the skills teachers should have in the 21st century?	What do you think are the skills and competencies that a primary school teacher should have in the 21st century?

### Research Procedure

The research process is detailed below. You can follow the online process by clicking the links here.



**Table 2.** Research process

Tasks	Descriptions
1. <b>First Meeting</b>	An online meeting with project partners
2. <b>Second Meeting</b>	Planning the project and assigning tasks
3. <b>Registration</b>	Each teacher trainer made preservice teachers a member of the portal by getting approval from their respective National Support System.
4. <b>Permission Documents</b>	Permission documents were sent to preservice teachers, who were asked to sign. Each teacher trainer collected the documents of their own country and forwarded them to the project coordinators
5. <b>Meeting Activity</b>	All teacher trainers and preservice teachers introduced themselves on a Padlet by adding a photo and introductory comments ( <a href="https://padlet.com/umitizgi1/TR_FR_IT_GE">https://padlet.com/umitizgi1/TR_FR_IT_GE</a> )
6. <b>Videos</b>	Each preservice teacher talked about himself/herself (via Vimeo, Flipgrid). Each country's group prepared a video promoting their university (in English). These introductory videos were shared on a Padlet. ( <a href="https://padlet.com/umitizgi1/promotionalvideos_universities">https://padlet.com/umitizgi1/promotionalvideos_universities</a> )
7. <b>Project Logo</b>	Pre-service teachers prepared a logo for the project. The logos prepared by each country were subject to voting. Voting was done with a Google Form, and the project logo was determined.
	
<b>Figure 4.</b> Project logo chosen by the votes of teacher candidates	
8. <b>Task 1: Teacher Training Systems of Each Country</b>	Transnational groups were formed from all participating countries. <b>Group 1:</b> The group researched the <i>teacher training system</i> of <b>Turkey</b> . <b>Group 2:</b> The group researched the <i>teacher training system</i> of <b>Italy</b> . <b>Group 3:</b> the group researched the <i>teacher training system</i> of <b>France</b> <b>Group 4:</b> The group researched the <i>teacher training system</i> of <b>Germany</b> .
9. <b>Task 2: Valuable Educator of Each Country</b>	Transnational groups were formed from all participating countries. Each group prepared presentations reflecting the cultural characteristics of their assigned countries and discussed their reflections on education. For this activity, each group prepared a video that introduces the life and contributions of a significant educator from the specified country. Group 1: The group identified and introduced an educator in <b>Turkey</b> . Group 2: The group identified and introduced an educator in <b>Italy</b> . Group 3: The group identified and introduced an educator in <b>France</b> Group 4: The group identified and introduced an educator in <b>Germany</b> .
10. <b>Task 3: 21st-Century Skills of Teachers</b>	Each country's group prepared <u>videos</u> or <u>animations</u> describing the skills to be acquired in the 21st century as a prospective primary education teacher. The images of the activities performed by the pre-service teachers within the scope of three main tasks are presented in Figures 8-11.
11. <b>Closing Meeting</b>	A final online meeting was held to evaluate the project process. Pre-service teachers were asked to reflect on and share their experiences and feelings.

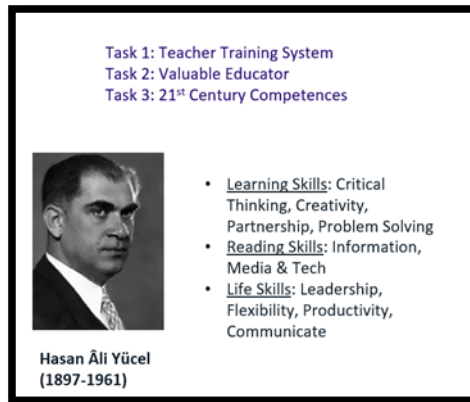



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12.	<b>Google Form</b>	Participants were asked post-project interview questions (with Google form)
13.	<b>Dissemination</b>	An Erasmus+ meeting was held in Italy with all teacher educators. Some preservice teachers attended online; some face-to-face.

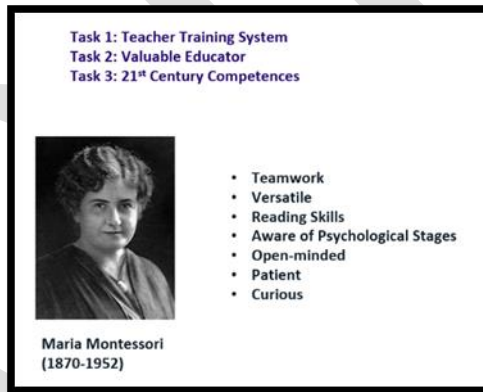
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The images of the activities performed by the pre-service teachers within the scope of three main tasks are presented in Figures 4-7 (see below). Country groups consisting of transnational teams researched the life of an important educator for one of the countries in the project and prepared animation and videos. They prepared content such as biographies, education, background using digital tools for their presentations about teaching skills and competencies that are important in the 21st century.

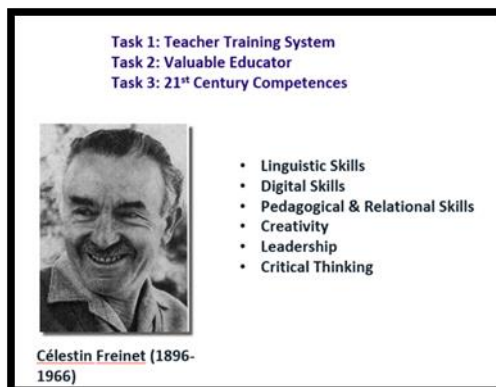


**Figure 4.** The educator mixed group, “Hasan Ali

researched by the first Yücel: Turkey.”

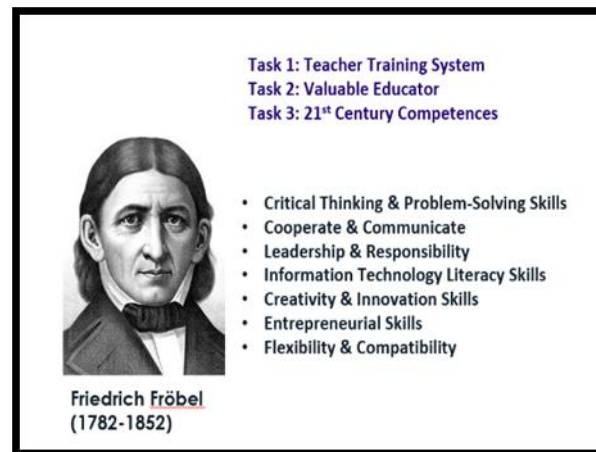


**Figure 5.** The educator researched by the second mixed group, "Maria Montessori: Italy."



**Figure 6.** The educator researched by the third mixed group, "Célestin Freinet: France."





**Figure 7.** The educator researched by the fourth mixed group, "Friedrich Fröbel: Germany."

### Data Analysis

Content analysis was used in the analysis of the qualitative data obtained from the interviews. Content analysis gathers similar data within the framework of certain themes and organizes and interprets them in a way that the reader can understand (Yıldırım & Şimşek, 2006). The data obtained from the interviews were analyzed according to the determined themes and codes, and direct quotations were included from time to time.

Validity strategies used in qualitative studies were taken into account according to the research of Joseph Maxwell (2005, cited in Christensen, Burke Johnson & Turner, 2015). In the study, researcher diversity was taken into account for descriptive validity, and therefore more than one researcher (6 teacher educators) was included in the study. Having multiple researchers prevents a single researcher from reflecting their point of view. We provided data diversity by using multiple data sources – all the activities prepared by pre-service teachers (interview questions, infographics equipped with Web 2.0 tools, animations, and PowerPoint presentations). All researchers contributed to the collection, analysis, and interpretation of data for researcher diversity. Interpretive validity, that is, whether the analyses were the same from the perspective of the participants, was shared and discussed with the participants. The statements of the participants were presented by making direct quotations. For reliability, the coders shared the analyses by meeting at regular intervals. Continuous comparison of codes and data was made. The reliability among coders was calculated according to Miles and Huberman's (1994) formula and was determined to be 92%.

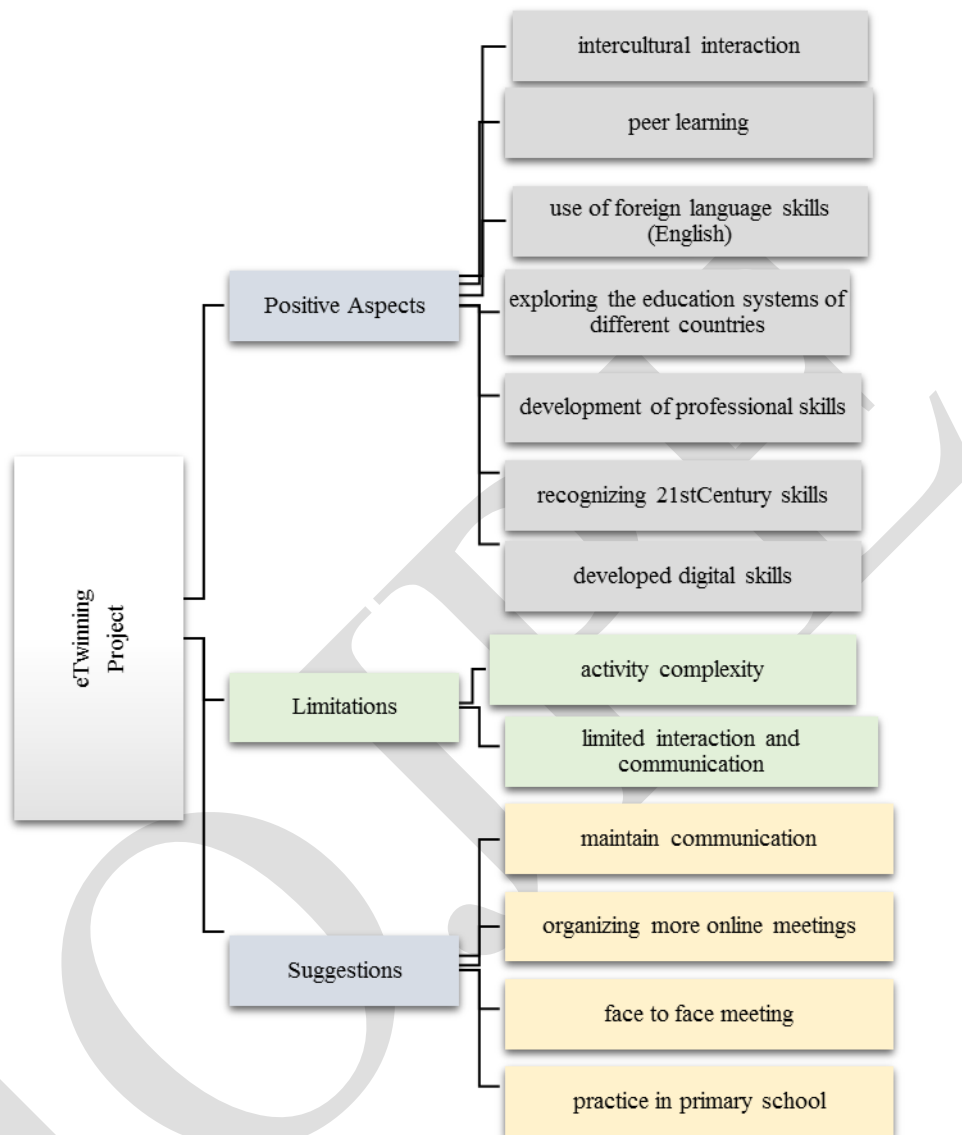
### Ethics and Conflict of Interest

The data used in this study were collected anonymously as directly identifying information was never obtained or used. Also participating in the google form was ensured voluntarily. "The research was approved by Mersin University Social and Human Sciences Ethics Committee in line with the decision numbered and date 01/08/2022-305." We, as the authors of this article, have acted in accordance with ethical rules at all stages of the research, and there is no conflict of interest among the authors.

## RESULTS

### First level subtitle about the research question

Within the scope of the first sub-problem, the opinions of pre-service teachers about participating in the eTwinning project were examined.



**Figure 8.** Opinions of teacher candidates about the eTwinning project.

As Figure 8 shows, the views of the pre-service teachers about participating in the eTwinning project were gathered under three main headings: “positive aspects,” “limitations,” and “recommendations.” Participants mentioned the positive aspects of participating in the eTwinning project, especially by mentioning the importance of skills such as the recognition of these 21<sup>st</sup>-century skills: creative thinking, critical thinking, developing problem-solving skills, empathy, cooperation, and teamwork. Also, for the topic “advanced digital skills” (they stated they gained experience using these Web 2.0 tools: Padlet, Google Meet for the first online meeting, Canva for infographics, Flipgrid for University videos, Powerpoint for the presentation of the teaching system, Sketches for the logo, Moviemaker for the video of the educator's country, Google docs, and Zoom for complete project teleconferencing.

Some of the participants' views on the *positive effects* of the project are as follows:



K1: *“It allowed me to look at the teaching profession from a different perspective with students from other countries.”*

K2: *“I learned different things about the teacher training system in several countries. Also discovered other cultures and people.”*

K4: *“This project offers me new information that can be used in the business world; it is a very constructive experience for me on a personal, **educational and professional** level. I developed my language and **digital** knowledge, **creativity**, and ability to work in a team in a **multicultural** context. Thanks to the exchange with the students of the universities of Turkey, France, Italy, and Germany, I got to know new ideas, approaches, and experiences within the logic of practice and **peer learning** thanks to the didactic activities.”*

K5: *“The eTwinning project represents for me one of the important and preparatory stages of my educational path: to question oneself and to learn to communicate and interact with others means to grow; facing challenges and solving them is a tremendous personal wealth.”*

K10: *“Working in collaboration with friends from different cultures has been an important experience for me.”*

K12: *“It was important to monitor the teaching profession through different education systems and to carry out studies on this subject.”*

K20: *“This project aimed to compare different education systems of European countries. We analyzed the teacher training processes of the relevant countries. We researched and identified the skills that 21st-century teachers should have. I think that the ‘Qualified Teacher of the Future’ project also aims to improve our empathy capacity.”*

Some of the participants' views on the **limitations** of the project and **suggestions** are as follows:

K4: *“This project introduced me to people from Europe; the theme was quite complex, but we finally succeeded.”*

K24: *“Maybe we can keep the project duration longer in order to develop the project in the future. More videoconferencing, I think, will be more interactive and important for learning.”*

K5: *“Currently, in projects within the scope of eTwinning ITE, teacher candidates should be able to practice with pupils in schools. However, since it was our first project, our activities were limited to teacher candidates only. This is among the goals of teachers. It is one of our main targets in future projects as well.”*

K15: *“Maybe to be able to meet in one of the candidate countries for an international weekly meeting among future teacher candidates.”*

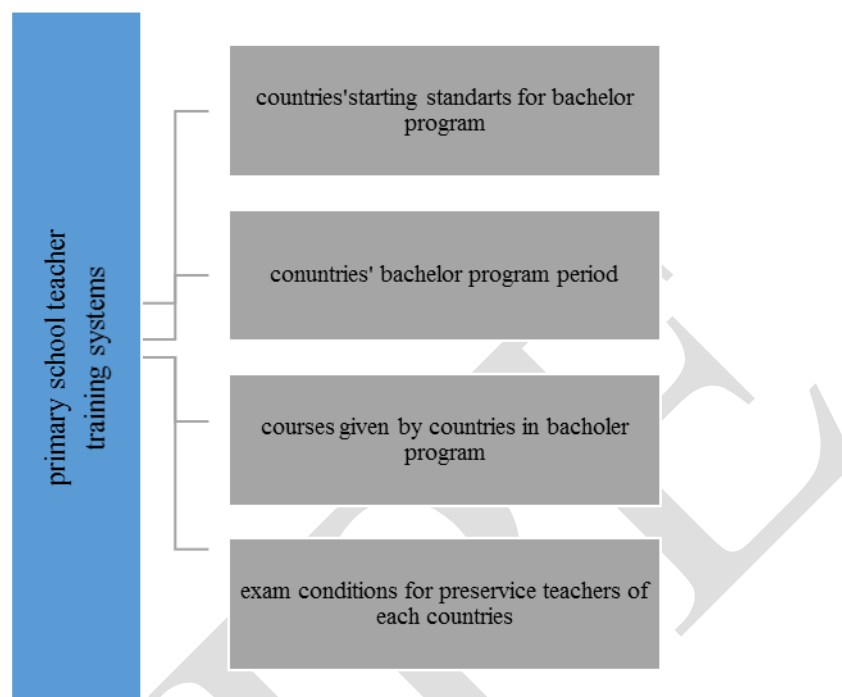
K16: *“I would like to stay in touch with the project participants to exchange ideas and advice for our future career as teachers.”*

The participants stated that with this project, 21st-century skills were developed in different fields, and especially their examination of different education systems contributed to their personal and professional development. This situation can be considered as an indication that the project has achieved its purpose. Regarding the limitations of the project, they cited the complexity of the process for them and the fact that it proceeds in an online platform instead of face-to-face. Regarding future projects, they suggested the realization of the project in a situation where they can actively participate and work face-to-face. In this context, considering the suggestions of the participants, the project founders decided to participate in the Erasmus blended mobility project for the spring term of 2023.

**Second level subtitle about the research question**



Within the scope of the second sub-problem, the views of teacher candidates about the primary school teacher training systems of the countries involved in the project were examined.



**Figure 9.** Opinions of Teacher Candidates About Teacher Training Systems.

As Figure 9 shows, the views of pre-service teachers about teacher training systems are gathered under five main headings: These five headings are countries' bachelor program starting standards, countries' bachelor program completion standards, countries' bachelor program period, the courses given by countries during their bachelor program, and the exam conditions for preservice teachers of each country. Participants generally stated that pedagogical education is compulsory for a bachelor program in primary school education in all countries participating in the project and that they can step into the primary school teaching profession after the final exam at the end of the theoretical and practical training.

Some of the participants' views on the countries' starting standards for bachelor programs are as follows:

*K12. "Turkey: Preservice teachers have to complete 240 ECTS in 4 years and fulfill the graduation requirements of their universities. After graduation, they have to take the **KPSS exam**, which includes general culture, talent, field, and educational sciences. Interviews are held after a certain score is obtained from the KPSS exam. Teachers go through the nomination process before embarking on their first teaching career through written and oral examinations.*

*Italy: The primary education course lasts for 5 years and has a limited number of students, so you can access this course through a **national entrance examination**. The final exam at the end of the five-year course has the value of a state exam, which ensures that all disciplines found in kindergarten and primary school are taught. Germany: It is divided into 2 phases: a higher education course and practical pedagogical training in school classrooms. The basic entry requirement for teacher training courses is a higher education entry qualification obtained after 13 years of schooling and passing the secondary school leaving certificate examination. Education for primary school teachers lasts 3.5 years at university. I am French, so there is nothing new in the French primary school teaching program!"*



Some of the views of the participants about the bachelor programs of the countries are as follows:

K5. *“I learned that to become a teacher in Italy, you have to enter a 5-year curriculum and you have a limited number of places.”*

K12. *“Germany: Education for primary school teachers takes 3.5 years at university”*

K13. *“Turkey: teachers of the future will graduate within 4 years.”*

Some of the views of the participants on the courses given by the countries during their bachelor program are as follows:

K6. *“Pedagogical education is compulsory in most countries. Most of the theoretical and practical training must be completed in the country. Theoretical and practical training should be completed.”*

K2. *“Turkey: The courses given in education faculties consist of three parts: **general culture, talent, field, and educational sciences.**”*

K4. *“Italy: The five-year course combines the **theoretical approach** of the courses and the **practical approach** through workshops and internships.”*

K8. *“Germany: Teacher training in Germany is structured in two phases: - **University-based study** and - partially **supervised pedagogical training** in school classes (so-called *Referendariat*) lasting from one to two years.”*

The opinions of the participants on the **exam conditions** for preservice teachers of countries are as follows:

K7. *“In most countries, there is some kind of **final exam** to be able to teach, to become a primary school teacher.”*

K10. *“The education systems of Turkey and France are **similar in terms of exams and interviews.**”*

K14. *“Many countries have a **difficult educational process.** Teacher candidates have **many qualifying exams** to take and many steps to take.”*

K16. *“To be a primary school teacher in Turkey, it is necessary to take the **KPSS exam.**”*

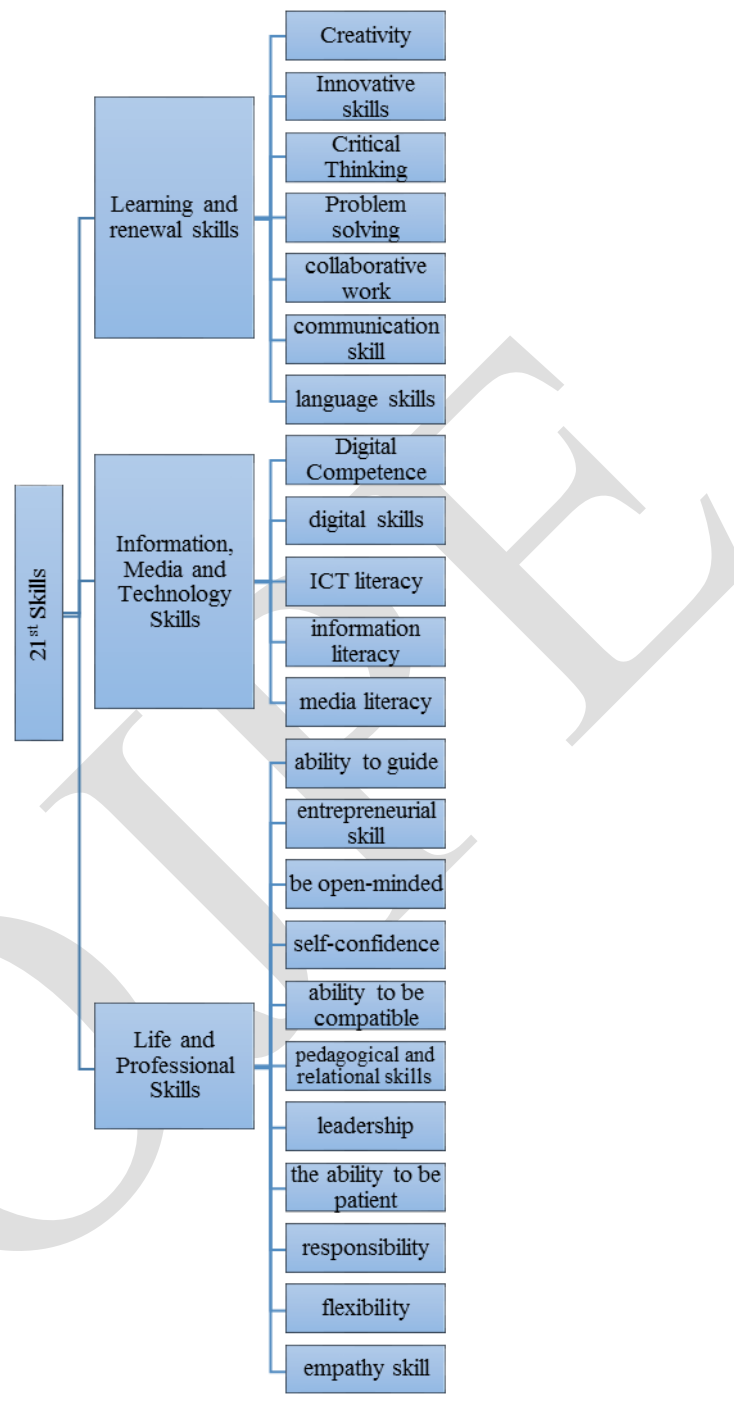
K10. *“The **most detailed** of these education systems belongs to **France.** There are many **written and oral exams** you take. Mainly your **French language skills** and **math skills** are important. You also need to know **a language** other than your mother tongue.”*

With this project, it is seen that teacher candidates' ideas about teacher training systems in Italy, Turkey, Germany, and France are formed. This is an indication that the project has achieved its goals. Teacher training systems of countries; It was evaluated within the scope of student selection and training process and the conditions for teachers' appointment to the profession, and the evaluation of similarities and differences between countries was reflected in the views of the participants.

### **Third-level subtitle about the research question**

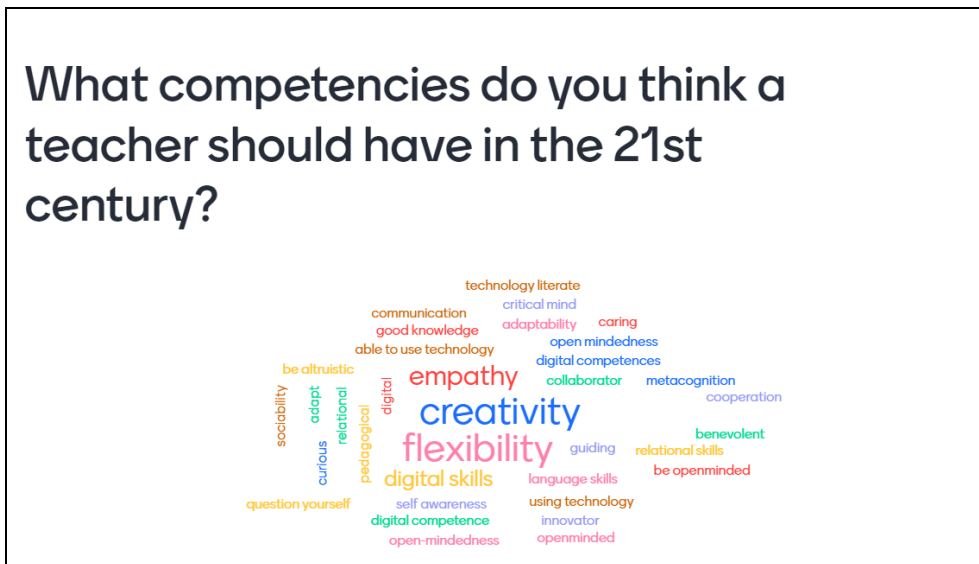
Within the scope of the third sub-problem, the views of pre-service teachers about the 21<sup>st</sup> skills that primary school teachers must have were examined.

Figure 10 shows the opinions of pre-service teachers about the 21st skills that primary school teachers should have gathered under three main headings: learning and renewal skills; information, media and technology skills, and life and professional skills. Among these main categories, pre-service teachers expressed different opinions under the category of life and professional skills the most. In addition, when the activities carried out by the pre-service teachers as mixed groups were examined, the first group (see Figure 4) gathered the skills that teachers should have in the 21st century under three main headings in detail.



**Figure 10.** Opinions of teacher candidates about the 21<sup>st</sup> skills that primary school teachers should have were examined.

These headings parallel interview question analysis. Groups 2, 3, and 4 also defined 21st-century skills. However, instead of categorizing these skills, they mentioned some of them (see Figure 5-6-7). In addition, at the closing meeting at the end of the project, pre-service teachers were asked about the skills they should have in the 21st century through Mentimeter. Pre-service teachers shared their views with a word cloud. Here, pre-service teachers especially emphasized creativity, empathy, flexibility, and digital skills (See Figure 11).



**Figure 11.** Voting results of teacher candidates on 21st century-skills

The skills that teachers should have in the 21st century are expressed by the participants as follows.

*K24. “Many qualities are necessary to be a teacher, like for example **patience** because every student have their own struggle and not showing a great amount of patience will put a lot of stress on them, and we show them a good role model. Knowing to question ourselves is great quality too because it allows us to advance in our experience in the teaching field and be more adaptable. We must invest ourselves in school life to give the student an environment that gives them the desire to learn and to be here, indeed **attitude is everything**”.*

*K11. “Skills a teacher must have in the 21st century: **linguistic skills**, digital skills, pedagogical and relational skills, creativity and innovation skills, leadership and responsibility skills, critical thinking and problem-solving skills, ability to cooperate and communicate, information technology literacy skills, entrepreneurial skills, flexibility, and compatibility skills”.*

*K4. “I think that the skills a teacher should have in the 21st century are: **digital skills**, relational and interpersonal skills, empathic and creativity skills”.*

*K30. “The skills and competencies that are important are creativity, partnership, productivity, and the ability to follow technological developments. The criteria to be a qualified teacher should be flexible”.*

*K22. “Critical thinking, creativity, cooperation, communication, knowledge literacy, media literacy, technology literacy, flexibility, leadership, enterprise, productivity and social skills. It seems that the teacher should be equipped with versatile and continuous self-improvement, reading, researching, using technology well, and gaining 21st Century-Skills.”*

One of the most important aims of the project is to raise awareness of 21st century-skills by prospective classroom teachers and to be instrumental in the development of these skills. 21st century-skills are defined and classified differently by different groups. Partnership for 21st Century-Skills (P21), En Gauge North Central Regional Educational Laboratory (EnGauge/NCREL), Assessment and Teaching of 21st Century-Skills (ATCS), National Educational Technology Standards (NETS/ISTE), European Commission (EC), Organization For Economic Cooperation and Development (OECD) are some of the institutions and organizations that have worked on the identification and classification of 21st century-skills (Koltuk & Kocakaya, 2015). When the studies are examined, it is seen that many studies have been done especially on P21. The main skills defined by P21 are divided into 3 groups. These are “Learning and Renewal Skills, Information, Media and Technology Skills, Life and Vocational Skills”. Among these, creativity and renewal, critical thinking and problem solving,



communication, and cooperation sub-skills are in Learning Renewal Skills; information literacy, media literacy, information and communication technologies, (ICT) literacy in Information Media and Technology Skills; flexibility and adaptability, entrepreneurship and self-direction, social and intercultural skills, productivity and accountability, leadership and responsibility are also included in Life and Professional Skills. It can be considered among the positive contributions of the project that the participants included all of their P21 skills in their opinions.

## **Conclusion**

The European Union Council Recommendation on Key Competencies for Lifelong Learning (2018) states it is more necessary than ever to invest in basic skills, and that quality education supported by extra-curricular activities contributes positively to the development of competencies. In addition, the Council emphasized that innovative teaching practices must be explored for an increasingly mobile and digital society, stressing the importance of developing more flexible learning environments compatible with the needs of society able to respond to crises of disease and war. The rapidly changing world conditions have led to transformations in learning environments as well as in many other fields. Learners and teachers are the most important actors in this transformation (Dağhan, Nuhoglu Kibar, Menzi Çetin, Telli, & Akkoyunlu, 2017). Innovations in teaching practices include using digitalization best practices for transnational collaboration and communication, particularly at the primary school level, when pupils are beginning to learn about the world around them. Project-based learning, Universal Design for Learning (UDL), and Social and Emotional Learning (SEL) are important learner-centered frameworks for 21st-century skills and competencies for both pupils and student teachers preparing for their careers. Innovative theories such as these, combined with innovative digital collaboration such as eTwinning are models for educators all over the world to foster global citizenship while at the same time improving skills such as listening, reading, writing, and collaborating.

Our research shows, the EU's eTwinning platform is one of the most effective, secure, safe virtual learning environments to prepare teachers, student teachers, and pupils for the demands of the fast-paced and ever-changing 21st century. The social constructivist methods, techniques, and digital tools used in eTwinning projects align with the important digital transformation in education (Gençtürk, Başar, Toktay, Yayğaz & Küçüksüleymanoğlu, 2021). Our research updates and validates Velea's (2011) conclusion that teachers' competencies improved through transnational learning technologies by connecting with eTwinning's over 1 million users. Educators and students mastered digital competencies, experiencing the strengths and limitations of online transnational collaborative projects. For future teachers, such collaboration leads to international connections and networks they will take with them as they become teachers and are able to rapidly find partners for future projects. In addition, our research validates Sammorda's (2021) theory that eTwinning projects should be handled in multicultural contexts, not limited to simply using communication technologies to practice a foreign language but to practice the process of solving difficult problems with global importance, providing crucial added value because it comes in the first stages of future teachers' education. Our findings from interviews with student teachers participating in the project validate Gazjek's (2018) theory that the eTwinning experience online is so pervasive and transformational that people may not even realize the changes in their beliefs and attitudes towards openness to other cultures, social inclusion, and tolerance. While these results may not be apparent, they represent an important foundation for student teachers.

In conclusion, since the integration process of digital online collaborative educational approaches such as eTwinning into Professional educational faculties and teacher training universities curricula is new, studies conducted with pre-service teachers at the university level must be continued.

Our findings validate earlier and current eTwinning research showing that eTwinning has positive effects on the professional development of teachers, their professional skills, and the development of students. Acar (2021) concluded that classroom teachers who completed eTwinning projects improved international competencies, learned Web 2.0 tools, became inspired by innovative





approaches to teaching, and inspired their pupils to see themselves as global citizens apart from regional identities.

The contribution of eTwinning projects in gaining vital professional skills has shown itself in our project with Turkey, Italy, France, and Germany. Student teachers increased digital competencies, evaluated transnational communication and collaboration, and established networks they can use over their careers. We stand with Gülbay (2018), finding that eTwinning contributes to increasing teachers' leadership skills, cooperation, motivation, and social skills, as well as increasing their pedagogical knowledge.

### **The following suggestions are for researchers who will conduct research on this subject:**

1. Teachers have to guide their students according to the conditions of the 21st century. For this reason, the selection and training of people who will choose the teaching profession, that is, teacher candidates should be in accordance with the conditions of the century. The courses given in universities may need to be revised when necessary according to the requirements of the century. The authorities responsible for the education systems of the countries should take the necessary precautions in this regard.
2. In the education of pre-service teachers in universities, the education-teaching process should be planned by considering skills such as problem-solving, creativity, critical thinking, and empathy. It should be ensured that they take part in projects that are more practical than theoretical. It should be ensured that the awareness of teacher candidates about the rapid transformations in education should be increased. It should be ensured that teacher candidates follow not only the education systems of their own countries but also the developments in the whole world. Because, in the conditions of the present century, teachers should be able to train and guide their students according to 21st-century skills.
3. There is a need for more practical projects such as eTwinning, where there will be intercultural interaction, in order to develop the skills that teacher candidates should have.
4. International publications on eTwinning have been increasing in recent years. The number of master's theses and articles published in this field is limited. In this sense, in-depth studies are needed. It is very important for the education systems of the future to understand the eTwinning pedagogy well and to analyze and deal with its reflections all over Europe (Kampylis et al., 2012).
5. In future research, in-depth studies should be planned with teachers and students who have not taken part in the eTwinning project before. Research can be conducted on the benefits and problems experienced by such projects for both teachers and students.
6. ITE studies at universities should be increased. Comprehensive studies can be designed in which especially professors in education faculty, teachers, and teacher candidates can be involved. Its effects on primary school students should be investigated.
7. eTwinning projects should be done across different age groups, starting from pre-school to higher education. By considering qualitative and quantitative research designs together, in-depth analyzes can be made using mixed designs.

### **The limitations of the research and potential for further study**

Because our project and research were conducted completely online with student teachers who had no access to pupils in schools, the research is limited to the first of two ITE eTwinning models: student-teacher-to-student-teacher transnational projects. In future projects, carrying out projects in internship schools with pupils shows much promise and potential. Therefore, this project can be expanded to embrace the ITE eTwinning second model (student teacher-pupil) (<https://school-education.ec.europa.eu/tr/about/initial-teacher-education-page>).

### **Ethics and Conflict of Interest**



The authors declare that the study has not unethical issues and that research and publication ethics have been considered carefully. The research was conducted with ethical principles of the Human Research Ethics Committee of Mersin University (05.07.2022 - 01/08/2022-305). The authors declared no potential conflicts of interest.

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