

Telecollaboration in English Language Teacher Education: A Systematic Review

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Abstract

Telecollaboration practices enable geographically dispersed participants to interact with each other through synchronous or asynchronous computer-mediated communication tools. Telecollaboration plays a significant role in learning cultural differences, raising awareness, and training language teachers by improving intercultural communicative competence (ICC) and language skills. With this role in mind, this paper aims to present a systematic review of the telecollaboration studies conducted within the scope of English language teacher training programs between 2018 and 2022 by analyzing twenty up-to-date and peer-reviewed articles according to the steps of the systematic review study. Along with the differences among study aims and designs, it is found that the findings of the reviewed studies can be grouped under three main themes, which are the benefits of telecollaborative exchanges, the drawbacks associated with telecollaboration and suggestions for further telecollaborative projects. Accordingly, some implications are provided for integrating telecollaboration into language teacher education programs.

Keywords: telecollaboration, virtual exchange, teacher education, systematic review

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Introduction

Language teachers are essential in the development and future direction of Computer Assisted Language Learning (CALL) since the tools and applications used in the language teaching classroom are based on their decisions and visions (Hubbard, 2008). Therefore, the technology or computer-mediated communication (CMC) tools, channels, and platforms used by teachers play significant roles in students' learning. At this point, it is crucial to train language teachers with the required skills to meet the needs of the students in the technology age. O'Dowd (2015b) asserts that the new trend in online communication tools and intercultural exchanges has affected the training processes of prospective teachers. Accordingly, Müller-Hartmann (2006) suggests that teachers can develop their knowledge regarding technology and intercultural communicative competence (ICC) by participating in telecollaborative projects conducted in higher education settings. In this regard, different projects were conducted to improve the collaboration among pre-service teachers, teachers, and experts through virtual exchange programs. To exemplify, the VALIANT (Virtual Innovation and Support Networks for Teachers) project was developed to address the professional needs of teachers working in rural areas with the help of online international professional networks (Flogie et al., 2021). The project results showed that pre-service teachers were able to develop their teaching, digital, and intercultural competence skills while teachers gained new perspectives about curriculum, their teacher identities, and teaching practices. In addition, Evaluating and Upscaling Telecollaborative Teacher Education (EVALUATE) and Evidence-Validated Online Learning through Virtual Exchange (EVOLVE) projects explored the virtual exchange practices and research in different teacher education contexts (O'Dowd, 2021a). Thus, planning and designing language teacher education programs with technology integration have come to the fore.

Concerning the scope of telecollaboration, Helm (2015) defines it as “the practice of engaging classes of geographically dispersed learners in online intercultural exchange using Internet communication tools for the development of language and/or intercultural competence” (p. 197). Likewise, Müller-Hartmann (2006) acknowledges that “telecollaboration is the best way to facilitate the development of ICC” (p. 67). In line with this statement, O'Dowd (2015b) argues that telecollaboration or online intercultural exchange (OIE) connecting people from different parts of the world helps participants to improve their intercultural competence and foreign

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language skills by enabling them to engage in collaborative tasks and project works via online communication tools.

O'Dowd (2015a) specifies that various terminologies are used in the literature to refer to telecollaboration, and some of which are "Online Intercultural Exchange, Virtual Exchange, Collaborative Online International Learning, and Telecollaboration" (p. 63). In parallel with these labels, it is observed that online intercultural exchange is used by Chun (2015) and Üzümlü et al. (2020) for telecollaboration, while virtual collaboration is preferred by Bueno-Alastuey et al. (2018). Further, studies by Dooly and Sadler (2020) and O'Dowd et al. (2020) use telecollaboration and virtual exchange. O'Dowd (2021b) refers to different models and virtual exchange projects in his study. As a result, it can be concluded that many different terms are used to define telecollaborative practices.

As for telecollaborative learning, it is described as "an embedded, dialogic process that supports geographically distanced collaborative work through social interaction, involving a/synchronous communication technology so that participants co-produce mutual objective(s) and share knowledge-building" by Sadler and Dooly (2016, p. 402). At this point, learning in virtual exchange practices is equipped with cultural and social diversities. That is why Guth and Helm (2012) remark that a sociocultural perspective is needed for learning, and language learning occurs in a social context that is based on interaction and collaboration. Similarly, Dooly and Sadler (2013) emphasized that for learning to take place, the knowledge should be shared and constructed collaboratively among the teachers and student-teachers in a socially and culturally situated learning environment. When all of these views are considered, it is anticipated that telecollaboration is a prominent term in English language teacher training because of the opportunities it provides for teachers and students who do not have the chance and time to study abroad.

However, participating in or designing a telecollaboration practice includes many variables, and the products of a project may not always result positively because of some challenges and misunderstandings. Concerning this, Çiftçi and Savaş (2018) underline that it is not easy to find a middle ground among the stakeholders in telecollaboration because of the multicultural nature of the virtual exchange practices. Therefore, it can be regarded that teachers are one of the most responsible parties in this cycle since their actions and decisions are crucial for implementing the projects. In this vein, Müller-Hartmann (2006) claims that telecollaborative projects involving international participants require teachers to cope with uncertain, complex, unique, and unstable classroom dynamics. Hence, planning and designing procedures of telecollaborative practices are essential for the success of the projects. Likewise, O'Dowd (2015b) underscores the importance of designing a telecollaborative activity that has four aspects in order to end up with a productive project at the end of the process. First, telecollaborative activities should address the intercultural aspects in practice and theory while dealing with online tools. Second, telecollaboration should use collaborative tasks among students and teachers as much as possible. Third, activities should refer to long-term aims rather than being planned for a short period of time. Lastly, the participants who actively engage during the telecollaboration should be the students, not the teacher.

O'Dowd (2021b) refers to different models of virtual exchange, which are telecollaboration, e-tandem learning, transnational, and the Cultura model by underlining the diversities among these models in terms of their aims, tasks, and approaches. In this vein, he remarks that the telecollaborative model of virtual exchange aims for intercultural learning by enabling learners to identify the differences between their cultures via discussions. Zak's (2021) study reveals that Collaborative Online International Learning, e-tandem, virtual teams, Online Intercultural Exchange, Global Online Learning Exchanges, telecollaboration, and Soliya are some models of virtual exchange. Further, it is claimed that universities use different names for their programs to create their virtual exchange models, confusing the field of virtual exchange.

The integrative literature review by Zak (2021) investigates existing virtual exchange programs, models, and related learning outcomes. Accordingly, it is found that virtual exchange programs contribute to learning the language, developing international cultural competence, and building peace among communities. Another systematic review study is conducted by Wu (2021) to reveal the contributions of telecollaboration projects on language teachers' professional development. The findings of telecollaborative studies gather around six themes, and it is concluded that telecollaborative teacher learning is vital for equipping teachers with new competencies and then enabling them to transfer these competencies to their teaching contexts and students. However, the recent review studies conducted in the field of telecollaboration have revealed that there is no review study, to the best of the researcher's knowledge, focusing on the benefits of telecollaboration on teacher candidates' language and professional development.

Considering all of these, this study aims to present a systematic review of the studies on telecollaborative exchange projects and practices implemented in language teacher education programs between 2018 and 2022. With this purpose in mind, two main research questions are addressed in the study:

1. What are the main characteristics of telecollaborative exchange studies implemented in English language teacher training programs between 2018 and 2022?
 - a) What are the aims of the telecollaboration studies conducted in English language teacher training programs in the last five years?
 - b) What are the designs of the telecollaboration studies conducted in English language teacher training programs in the last five years?
 - c) What are the online tools and instruments used in telecollaboration studies conducted in English language teacher training programs in the last five years?
2. What are the emerging themes according to study findings published on telecollaborative exchange programs in English language teacher training programs between 2018 and 2022?

Methodology

The present study was designed following the steps suggested for systematic review studies. A systematic review study was defined as "a review of research literature using systematic and explicit, accountable methods" by Gough et al. (2012, p. 2). Further, systematic review studies were regarded as "important contributions to accumulating knowledge" by Gough et al. (2012, p. 12). Therefore, it would be crucial to define and follow some pre-determined procedures while conducting a systematic review to synthesize the studies and develop a comprehensive final report. Torgerson (2003) stated that conducting a systematic review study should not be perceived as a mechanical procedure because specific skills and practices should be embedded in the interpretation phase of the results to conduct systematic reviews. In this regard, the present study was designed as a systematic review to contribute to the practitioners' and teacher educators' knowledge about implementing telecollaborative practices in language teacher education programs to enhance prospective teachers' intercultural and professional skills.

Jesson et al. (2011) specify that six steps must be followed while conducting a systematic review study. In the first step, the researchers are expected to develop a protocol including the study's scope, method, inclusion, and exclusion criteria. As for the second phase, the databases and sources should be scanned, and the relevant studies should be chosen according to the criteria specified in the first step. Then, the studies should be sorted out by assessing their qualities. Next, the data should be extracted in accordance with the pre-designed extraction criteria. In the following step, the studies should be synthesized, and lastly, a detailed and thorough report should be written regarding the format of a systematic review. In light of these steps, it was decided to focus on telecollaboration studies conducted in English language teacher training. Later, some keywords were specified in order to be able to scan the most relevant studies in this field; so, the keywords such as *telecollaboration*, *virtual exchange*, and *online intercultural exchange* were used interchangeably during the searching process, and the phrases such as *telecollaboration in English language teacher education*, *virtual exchange in English language teacher training* and *telecollaborative exchanges in English language teacher education* were typed into the search engines of the databases.

Consequently, studies dealing with teacher education contexts were included in the study. However, to narrow the scope of the study, the studies conducted with the participation of in-service teachers and teacher trainers were excluded, and the studies concentrating on only pre-service teachers were included in the present study. The indexes of the articles served as an inclusion or exclusion criterion; thus, the articles published in certain international indexes were included. In this regard, the articles published in prestigious international databases suggested by Uysal (2012), such as Scopus and ERIC, were included in the review. In addition, empirical studies instead of conceptual or theoretical ones were included in the study. Lastly, up-to-date and peer-reviewed articles were incorporated in the study, meaning that the year of publication was another exclusion criterion. Thus, the empirical and peer-reviewed studies published in international databases between 2018 and 2022 were included in the final report. As a result of these inclusion and exclusion criteria, the list and frequency of journals used in this systematic review were presented in Table 1 below (see Appendix A for details).

Table 1*List and frequency of Journals Used in the Systematic Review*

Journal	<i>f</i>
Computer Assisted Language Learning	3
Language Learning and Technology	3
ReCALL	3
European Journal of Language Policy	2
Teaching and Teacher Education	2
Innovation in Language Learning and Teaching	1
Interactive Learning Environments	1
International Journal of Multicultural Education	1
Technology, Pedagogy and Education	1
TESL-EJ	1
TESOL Journal	1
TESOL Quarterly	1

As per the data analysis, qualitative content analysis was chosen since it enables categorizing the data into codes, themes, or patterns by interpreting the results (Bengtsson, 2016). Schreier (2014) lists eight steps of qualitative content analysis, starting from identifying the research question to interpreting the findings. After identifying the research question, the material is selected, and a coding frame is developed. Later, the data is categorized into smaller units of meaning by trying out and evaluating this frame. Accordingly, the data is coded, and interpretations are drawn based on the findings. The findings of the reviewed studies were analyzed in line with these steps in the present study.

Findings

In the present study, 20 up-to-date and peer-reviewed articles were analyzed, and the findings were presented by considering two main research questions. The main characteristics of the articles were reviewed, and then the findings were presented in three sub-sections to answer the first research question. As for the second research question, the result sections of these 20 research articles were analyzed to develop relevant emerging codes and themes.

Descriptive Findings of the Reviewed Studies

Study Aims

It is observed that most studies focused on the contribution or positive effects of telecollaborative exchanges on teacher candidates' skill and competence development in different aspects. Further, pre-service teachers' perceptions regarding the uses, challenges, or benefits of telecollaborative practices were investigated in some of the studies. In addition, some studies, such as Dooly and Sadler (2020) and Loranc-Paszyk et al. (2021), concentrated on pedagogical designs and practices used in telecollaborative projects, while a group of studies, such as O'Dowd et al. (2020) and Üzümlü et al. (2019), adopted a critical perspective in the process of dealing with the virtual exchange practices and projects (see Appendix B for details). In line with the aims of telecollaboration practices, the studies were conducted with the participation of pre-service teachers from different countries, as seen in Table 2.

Table 2*Telecollaboration Contexts in the Reviewed Studies*

Country	<i>f</i>
The USA	10
Poland	6
Germany	5
Spain	4
Turkey	4

Country	<i>f</i>
Israel	2
Russia	2
China	1
Colombia	1
Czech Republic	1
Finland	1
Hong Kong	1
Mexico	1
Slovenia	1
Sweden	1

Study Designs

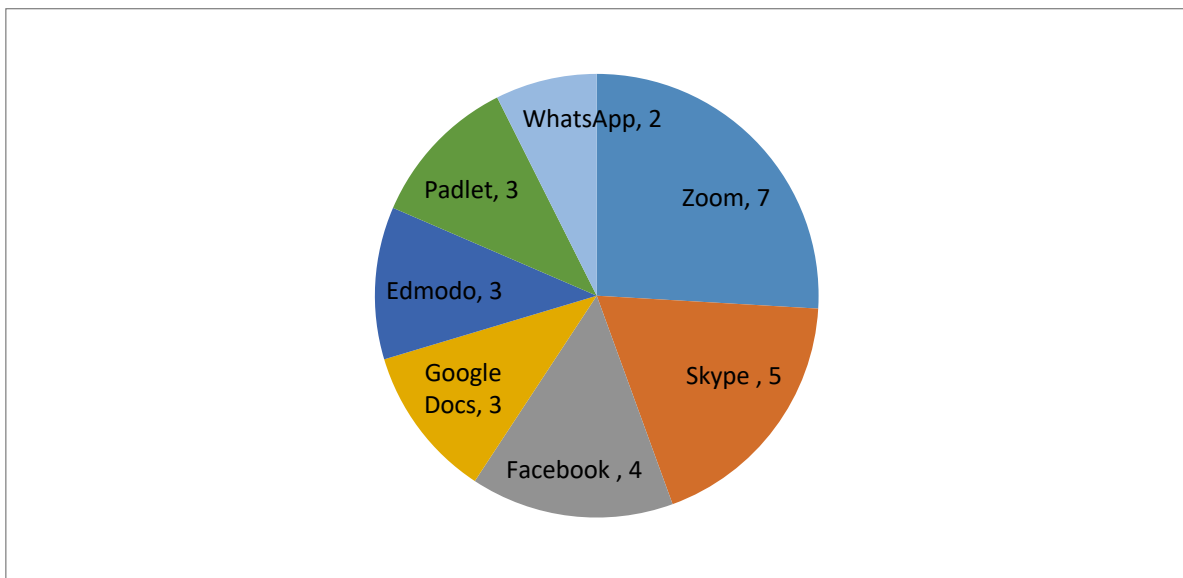
The systematic review of 20 studies revealed that different research methods were used while designing telecollaboration studies, and data collection tools varied in accordance with the approaches adopted in the studies. Accordingly, twelve studies were conducted using different types of qualitative research designs such as case study, ethnography, and action research. While seven studies followed mixed-methods study design, only one collected quantitative data (see Appendix C for details).

Online Tools and Instruments

Based on the study designs and data collection tools, different synchronous or asynchronous computer-mediated communication tools were used in the reviewed studies. The analysis of online tools used in telecollaborative practices indicated that Zoom, Skype, Facebook, Padlet, Google Docs, Edmodo, and WhatsApp were the tools preferred in the reviewed studies, as shown in Figure 1 below (see Appendix C for details).

Figure 1

The Number of Online Tools Used in the Reviewed Studies



Emerging Themes of Telecollaboration Study Findings

Concerning the second research question, the findings of the studies included in this revision were analyzed and then categorized under three main themes, as shown in Table 3 below.

Table 3*Emerging Codes and Themes in Systematic Review Studies*

Themes	Codes
Benefits of telecollaborative exchanges	Awareness
	Pedagogical skills
	Communicative skills
	Intercultural communicative competence
Drawbacks associated with telecollaboration	Personal growth
	Technical problems
	Emotional problems
	Linguistic problems
	Limitations of asynchronous CMC
Suggestions for further telecollaborative practices	Pressure of synchronous meetings
	Designing telecollaboration projects with multiple components
	Integrating telecollaboration into teacher education
	Using various medium of interaction

The findings of the reviewed studies revealed that most of the studies referred to the contributions of telecollaboration on participants' development or improvement in many different regards, such as enhancing communication skills, gaining awareness, and improving pedagogical skills; therefore, the first emerging theme was defined as the benefits of telecollaboration. The second theme was based on the challenges associated with telecollaborative practices since it was observed that participants in some of the studies mentioned the problems or difficulties they were confronted with during the telecollaborative exchanges. A few studies touched upon what should be changed or included in future telecollaborative exchanges, which led to the identification of the third emerging theme as the suggestions for further telecollaborative projects.

To begin with the first emerging theme, it was seen that telecollaborative exchanges enabled participants to gain awareness in different regards, such as interculturality, cultural differences, pedagogical mentoring, critical and social issues. To exemplify, Dugartsyrenova and Sardegna (2019) found that telecollaborative exchanges enabled prospective English language teachers to gain intercultural awareness about cultural values, differences, and traits. Similarly, O'Dowd et al. (2020) concluded that telecollaborative practices allowed pre-service teachers to gain more awareness about pedagogical mentoring, especially with the help of critical incidents occurring during the exchanges. Üzümlü et al. (2019) stated that the telecollaboration project empowered pre-service teachers to improve their ICC and to gain awareness regarding critical issues and conversations in multicultural education, such as power, equity, gender, and social justice. Similarly, pre-service teachers gained awareness about social and cultural issues like gender inequality, multiculturalism, and cultural marginality with the help of telecollaboration experiences (Eren, 2021). Besides, Üzümlü et al. (2020), found that teacher trainees could get a notion of the differences between cultures in terms of values and perspectives thanks to the telecollaborative project. Therefore, the participants could improve their critical cultural awareness since they were exposed to various topics related to education, gender, religion, and language. The study by Viáfara González (2020) revealed that telecollaborative exchanges helped student teachers to become aware of diversities in languages and ideologies. Lastly, according to the findings of Waldman et al.'s (2019) study, it was found out that telecollaboration practices helped pre-service teachers to gain intercultural competence and awareness by enabling the participants to feel motivated toward intercultural projects.

Further, the review study displayed that student teachers could develop pedagogical skills in their fields and technology. For example, Bueno-Alastuey et al.'s (2018) study indicated that pre-service teachers could improve their skills regarding knowledge exchange and collaborative practices thanks to telecollaborative activities. Besides, it was found that telecollaborative projects helped pre-service teachers to gain experience with various technological tools, which enabled them to develop their TPACK competencies. In a similar vein, the findings of Lenkaitis' (2020) study showed that the exchange practices enabled participants to teach English by using virtual exchanges and to learn more about learner errors. Therefore, the participants could enhance their knowledge of linguistic features and the use of technology with the help of virtual exchanges. Along with those skills and competencies, Wach et al. (2022) found that telecollaboration granted pre-service language teachers to improve their grammar teaching techniques. Finally, Waldman et al.'s (2019) study revealed that pre-service teachers gained digital pedagogical skills with the help of telecollaboration.

Along with these, telecollaboration was beneficial for participants' improvement of language and communication skills. For instance, Dugartsyrenova and Sardegna's (2019) study showed that Russian pre-service teachers regarded telecollaborative exchanges as beneficial for their language and communication skills development. Likewise, Eren's (2021) study indicated that telecollaboration contributed to pre-service English teachers' ICC development.

Additionally, some studies concluded that telecollaborative exchange practices and experiences helped participants to improve themselves professionally. For example, the participants in Dooly and Sadler's (2020) study grasped the importance of taking the initiative and working collaboratively. Thus they could bridge the gap between theory and practice. Further, the participants could co-construct and transfer their knowledge better thanks to online dialogic learning opportunities provided by telecollaboration and other online learning activities. Similarly, student teachers in Hilliker's (2020) study could put theory into practice, overcome stereotypical ideas about various language learners, and establish relationships between language and culture with the help of the telecollaboration experiences. Finally, Loranc-Paszyk et al.'s (2021) study showed that the virtual exchange project enabled teacher candidates to broaden their perspectives about language, teaching practices, and communication by contributing to their professional development and helping them to gain a holistic perspective on language teaching and reflected on their teaching pedagogies.

It is undeniable that virtual exchange practices contributed to participants' personal growth by affecting their motivation, self-confidence, autonomy, collaboration, and metacognitive skills. For instance, Dooly and Sadler's (2020) study revealed that student teachers become more autonomous during the project by taking responsibility for their learning. Besides, Garcia-Esteban et al. (2019) noticed that telecollaboration contributed to participants' motivation, responsibility for their future professions, and autonomous learning abilities, such as setting goals and planning their learning activities. Likewise, Pflingstorn et al. (2019) concluded that telecollaboration influenced pre-service teachers' metacognitive abilities by helping them gain self-confidence and collaborative working skills. The findings of Grau and Turula's (2019) study also showed that pre-service teachers perceived telecollaboration experiences as an opportunity for social encounters and emotional involvement. According to Kurek and Müller-Hartmann's (2019) findings, it was observed that teaching presence in the virtual exchanges contributed to the participants' social, cognitive, and learning presences in different ways. It was also found that the tasks designed by the teacher trainees during the virtual exchanges helped them to develop a learning presence while working in collaboration with their partners. Üzümlü et al. (2020) remarked that at the end of the project, student-teachers have become more open and willing to learn new concepts and ideas about the other culture. Lastly, Hilliker and Loranc (2022) found that virtual exchange experiences enabled teacher candidates not only to improve their 21st century skills like virtual interaction, collaboration, social responsibility, and impact but also to enhance their intercultural sensitivity.

The second theme revealed the drawbacks associated with telecollaboration, such as problems and limitations the participants experienced related to the tools or the nature of communication. For instance, in Dugartsyrenova and Sardegna's (2019) study, it was observed that some student teachers referred to technical problems with telecollaboration practices, such as uploading or updating the online tool. In addition, some participants mentioned emotional problems experienced during the virtual exchange practices. To exemplify, according to Dugartsyrenova and Sardegna's (2019) study, participants felt overwhelmed or anxious during the recordings. Similarly, Fuchs' (2019) study indicated that a high number of participants in the telecollaborative project caused some participants to feel overwhelmed in responding to the messages from their partners in the other university. Regarding linguistic challenges, Viáfara González's (2020) study showed that Colombian pre-service English teachers were concerned about their accents and language abilities.

Furthermore, limitations of asynchronous communication were mentioned in the study conducted by O'Dowd et al. (2020), and the findings showed that some linguistic problems or cultural misunderstandings might occur when participants were required to communicate via asynchronous channels. On the other hand, the study by Üzümlü et al. (2019) revealed that synchronous meetings could cause some pressure on participants since a second chance would not be provided for the reformulation or re-editing of the posts and entries. So, this study indicated that pre-service teachers avoided discussing sensitive and critical topics such as government or religion, especially when communicating via synchronous channels. It was easier for them to comment on critical topics through asynchronous communication tools. Besides, the use of generic, personal, and indefinite pronouns in questions posed during synchronous and asynchronous communication revealed that pre-service teachers used personal and moral positioning strategies and used biased or stereotypical language from time to time, mentioning diversities among communities.

As for the last theme, the suggestions for the designs of telecollaborative projects could be salient for further research and practice. To illustrate, pre-service teachers in Dugartsyrenova and Sardegna's (2019) study recommended that a different CMC tool with different task designs, including visual components, should be used in the upcoming telecollaboration projects. However, they were content with the setup, support, and implementation procedures during the project. Further, pre-service teachers showed positive inclinations toward using online collaborative practices in their future careers in Waldman et al.'s (2019) study, which could indicate designing and implementing further virtual exchange projects among institutions at higher education levels. Finally, Wach et al.'s (2022) study revealed that email exchanges were not preferred by the students taking part in the telecollaboration project, and they suggested the use of different modes of communication instead of emails.

Discussion

The present study aimed to present a systematic review of the studies conducted on telecollaborative practices implemented in language teacher education programs. The study investigated the aims, designs, and tools used in telecollaborative studies within the scope of the first research question. To begin with the aims of the reviewed studies, the synthesis of twenty studies affirmed that most focused on positive results or the success of virtual exchange practices. For instance, the findings of Fuchs' (2019) study were in line with this result because student teachers focused on the positive sides of telecollaboration tools rather than the disadvantages in their reflections. In this sense, it was observed that many studies (e.g., Dooly & Sadler, 2013; Dugartsyrenova & Sardegna, 2019; Hilliker, 2020; O'Dowd et al., 2020; Schenker, 2012; Üzümlü et al., 2019; Üzümlü et al., 2020; Viáfara González, 2020; Waldman et al., 2019) referred to positive influences of telecollaboration on raising participants' awareness regarding intercultural learning, cultural diversities, and critical issues. Further, it was observed that telecollaborative exchanges led to a change in student teachers' perceptions in different aspects, such as adopting new perspectives for negotiating their self-perceptions of (non)nativeness (Viáfara González, 2020) or taking more responsibility for their learning which led to student agency and learner autonomy (Grau & Turula, 2019). Accordingly, it can be concluded that participants mostly had positive perceptions about telecollaboration, but individual or contextual factors may also affect the outcomes of the studies.

Regarding the designs of the studies, the present study revealed that most of the studies adopted qualitative research design. This finding was supported by Zak (2021), who concluded that most of the studies followed qualitative research design, specifically case study design. That is why further empirical quantitative and mixed-method studies should be conducted, and the type of qualitative studies should be diversified. Chun (2015) also remarked that researchers should adopt comprehensive approaches and perspectives while designing telecollaborative projects. Thus, data should be collected using various tools such as interviews, questionnaires, observations, and ethnographic data. Accordingly, it was concluded that four criteria were critical for a telecollaborative project to produce successful results, which were setting achievable objectives, planning each step in detail, organizing exchange model according to student needs, and pursuing student exchanges to prevent misunderstandings and avoid stereotypes. Therefore, it can be recommended to implement further studies using different research methods and tools.

As per the communication tools, reviewed studies noted the significance of using different synchronous and asynchronous communication tools during telecollaboration practices. In accordance with this, Dugartsyrenova and Sardegna (2019) proposed that telecollaborative exchange practices should integrate not only audio or video but visual and multimodal components should also be included in these practices. Considering the challenges participants might face within telecollaborative projects, synchronous communication tools could be addressed as a way to overcome difficulties. In this regard, O'Dowd (2021a) specified that using synchronous communication tools helped students overcome communication problems. That is why further studies should integrate different CMC tools into teacher education programs to present various communication techniques to pre-service teachers before their careers. Further, these projects should use synchronous and asynchronous communication tools as much as possible to address different learning techniques and characteristics.

The second research question investigated the emerging themes in the reviewed studies. Accordingly, it was observed that virtual exchange practices were beneficial in terms of supporting participants' ICC and language skills development (Dugartsyrenova & Sardegna, 2019; Guth & Helm, 2012; Hilliker & Loranc, 2022; Lenkaitis, 2020; Sardegna & Dugartsyrenova, 2021; Üzümlü et al., 2019; Wach et al., 2022; Waldman et al., 2019). These findings were consistent with Müller-Hartmann's (2006) study which showed that telecollaborative projects helped the pre-service and in-service foreign language teachers gain ICC skills and become intercultural speakers. In line with this, Coutinho (2016) put forward that learners could develop their linguistic or communication skills

and gain autonomy while engaging in experiential learning activities during telecollaboration. Further, Helm (2015) specified that telecollaboration projects were beneficial in various regards, like developing pragmatic competence, intercultural or multimodal communicative competence, improving language or literacy skills, gaining autonomy, and increasing motivation. In a similar sense, the telecollaborative project by Sadler and Dooly (2016) with the participation of two universities over twelve years disclosed that telecollaborative exchanges contributed to the development of student-teachers' knowledge like language learning and communication skills by motivating them to take part in collaborative activities. Therefore, it can be asserted that telecollaboration exchanges would be beneficial for improving learners' intercultural and interpersonal communication skills along with linguistic abilities. In this regard, integrating telecollaborative projects into language teacher training programs would help trainees to enhance their professional and personal teaching abilities. Therefore, teacher educators should be aware of the importance of intercultural exchanges in training student teachers (Helm, 2015).

The current study indicated that linguistic or technical problems occurred because of the limitations of the communication tools and emotional reasons. This finding was also reported by O'Dowd and Eberbach (2004), who noted that various problems might occur during telecollaboration exchanges, such as misunderstandings or organizational issues. At this point, Schenker (2012) underscored that further telecollaborative projects should be designed by considering the challenges experienced and confronted in previous studies. Thus, further telecollaborative projects can be designed by paying attention to the problems, failures, and challenges experienced by other researchers and participants in previous studies. In this regard, O'Dowd and Ritter (2006) argued that individual factors, classroom dynamics, socio-institutional elements, and interactional patterns can be the reasons behind the failure and misunderstandings in a telecollaboration exchange. Therefore, all the possible dynamics and factors influencing the success of the telecollaboration exchanges should be discussed and planned in detail before running the project.

Concerning the suggestions mentioned in the reviewed studies, collaboration should be emphasized among all aspects involved in virtual exchange programs or projects. In this regard, further studies should integrate different CMC tools into teacher education programs to present various communication techniques to pre-service teachers before their careers. At this point, telecollaborative exchange projects can be helpful in terms of exposing prospective language teachers to diversities among cultures, learners, and traditions in geographically different teaching environments. Likewise, O'Dowd et al. (2020) stated that telecollaborative exchanges helped the participants to become aware of the significance of critical incidents for learning and the importance of cultural differences, group identity, and collaboration. At this point, the two-year-long telecollaborative project conducted by Dooly and Sadler (2013) with the participation of prospective language teachers revealed the significance of collaboration among teachers not only in a school environment but also in geographically distant locations. Moreover, the results obtained from Sadler and Dooly's (2016) longitudinal project can be interpreted as an essential indication showing the necessity of running student-centered telecollaborative projects by increasing cooperation among student-teachers and making both teachers and student-teachers aware of their responsibilities in this process. In this sense, Çiftçi and Savaş (2018) suggested that telecollaborative practices should focus on developing telecollaboration in the long run, or there should be a particular focal point in future virtual exchange projects. Finally, Müller-Hartmann (2006) concluded that after gaining experience with the difficulties, complexities, and benefits telecollaborative projects, teachers had started to develop similar telecollaborative projects as well, which can be regarded as a promising start for the improvement and extension of telecollaborative projects around the world.

Conclusion

In the present study, twenty articles published in international databases were analyzed by following the steps of the systematic review. When the studies' aims, designs, and tools are reviewed, it was observed that despite the slight differences among studies, most of them revealed the benefits or positive effects of telecollaborative exchanges on student teachers' language or communication development. Further, the synthesis of study findings indicated that along with the benefits, some studies referred to challenges or difficulties experienced during virtual exchange experiences. Then, some remarkable suggestions were provided for further studies for designing or conducting a telecollaborative project. Accordingly, telecollaboration can be regarded as an opportunity for student teachers to improve themselves professionally and personally, and it should be an integral part of teacher training programs.

Concerning the study's limitations, it was restricted to twenty research articles published in the last five years. The articles were only concerned about the telecollaboration projects run in teacher education programs.

That is why it can be suggested that further studies can focus on the development or effects of telecollaboration exchanges regarding the perceptions of in-service teachers working at K-12 or other higher education levels to compare the effects of telecollaborative practices on different age groups and proficiency levels. Finally, it could be beneficial to investigate the influence of virtual exchange programs on EFL learners' language skills development to identify whether language learners could enhance their communication and language skills with the help of intercultural exchanges.

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İngilizce Öğretmeni Eğitiminde Uzaktan İş Birliği: Sistemik Bir İnceleme

Öz

Uzaktan iş birliği uygulamaları, coğrafi olarak dağınık katılımcıların eş zamanlı veya eş zamansız bilgisayar aracılı iletişim araçları aracılığıyla birbirleriyle etkileşim kurmasını sağlar. Uzaktan iş birliği, kültürlerarası iletişim yeterliliğini ve dil becerilerini geliştirerek kültürel farklılıkların öğrenilmesinde, farkındalığın artırılmasında ve dil öğretmenlerinin yetiştirilmesinde önemli bir rol oynamaktadır. Bu rol göz önünde bulundurularak, bu makale 2018 ve 2022 yılları arasında İngilizce öğretmeni yetiştirme programları kapsamında yürütülen uzaktan iş birliği çalışmalarının sistemik bir incelemesini sunmayı amaçlamaktadır. Bu doğrultuda yirmi güncel ve hakemli makale sistemik inceleme çalışmasının adımlarına göre analiz edilmiştir. Çalışmalar amaçları ve araştırma desenleri yönünden farklılık göstermelerinin yanı sıra, incelenen çalışmaların bulgularının uzaktan iş birliği projelerin faydaları, uzaktan iş birliği ile ilgili dezavantajlar ve daha sonraki uzaktan iş birliği projeleri için öneriler olmak üzere üç ana tema altında gruplandırılabilceği bulunmuştur. Buna göre, uzaktan iş birliğinin dil öğretmeni eğitim programlarına dâhil edilmesi için bazı çıkarımlarda bulunulmaktadır.

Anahtar kelimeler: uzaktan iş birliği, sanal iletişim, öğretmen eğitimi, sistemik inceleme

Appendices

Appendix A: The List and Frequency of Journals Used in the Systematic Review

Journal	Frequency	Author(s)
Language Learning and Technology	3	Fuchs (2019) Grau & Turula (2019) Kurek & Müller-Hartmann (2019)
Computer Assisted Language Learning	3	Eren (2021) Viáfara González (2020) Sardegna & Dugartsyrenova (2021)
ReCALL	3	Dooly & Sadler (2020) Üzüm, Akayoglu & Yazan (2020) Wach, Zhang & Nichols-Besel (2022)
European Journal of Language Policy	2	Pfingsthorn, Kramer, Czura & Stefl (2019) Waldman, Harel & Schwab (2019)
Teaching and Teacher Education	2	Hilliker & Loranc (2022) Lenkaitis (2020)
Innovation in Language Learning and Teaching	1	Dugartsyrenova & Sardegna (2019)
Interactive Learning Environments	1	Garcia-Esteban, Villarreal & Bueno-Alastuey (2019)
International Journal of Multicultural Education	1	Üzüm, Yazan, Avineri & Akayoglu (2019)
Technology, Pedagogy and Education	1	Bueno-Alastuey, Villarreal & García Esteban (2018)
TESOL Journal	1	Loranc-Paszyk et al. (2021)
TESOL Quarterly	1	O'Dowd, Sauro, & Spector-Cohen (2020)
TESL-EJ	1	Hilliker (2020)

Appendix B: Aims and Participants in Reviewed Studies

Author(s)	Aim	Participants
Bueno-Alastuey et al. (2018)	to explore the effect of telecollaboration on pre-service teachers' TPACK competence	55 pre-service teachers from Spain
Dooly & Sadler (2020)	to develop a pedagogical design centred on telecollaboration, flipped and in-class materials	51 student-teachers from the USA and Spain
Dugartsyrenova & Sardegna (2019)	to explore pre-service teachers' uses, recommendations and perceptions on telecollaboration exchanges	14 pre-service teachers from Russia and the USA
Eren (2021)	to explore the effect of telecollaboration project on pre-service teachers' critical intercultural competence development	50 pre-service English teachers from Turkey and five instructors from Turkey, Finland, Poland and Slovenia
Fuchs (2019)	to investigate how student teachers perceive the processes and products in a telecollaborative project	73 graduate student teachers from Germany and Hong Kong
Garcia-Esteban et al. (2019)	to explore the influence of telecollaboration on pre-service teachers' LtL competence	100 pre-service teachers from Spain
Grau & Turula (2019)	to investigate pre-service teachers' beliefs, attitudes and perceptions regarding the telecollaboration experiences	41 pre-service teachers majoring in TEFL from Poland and Germany
Hilliker (2020)	to investigate the influence of virtual exchanges on student teachers' coursework	20 undergraduate or graduate TESOL teacher candidates from the USA and EFL learners from Mexico
Hilliker & Loranc (2022)	to explore the contribution of virtual exchange project on teacher candidates' 21 st century skills development	47 teacher candidates from US and language learners from Turkey
Kurek & Müller-Hartmann (2019)	to find out how teaching presence affects EFL teacher trainees' learning in a blended virtual exchange project	73 teacher trainees in MA TESOL teacher training programmes from Germany and Poland
Lenkaitis (2020)	to investigate the effect of SCMC-based virtual exchange on teacher candidates' teaching skills development	15 TESOL teacher candidates from the US and EFL learners
Loranc-Paszylk et al. (2021)	to investigate teacher candidates' reflections about pedagogical practices in a virtual exchange project	16 teacher candidates from Poland and US
O'Dowd et al. (2020)	to investigate the effect of telecollaborative exchanges on pedagogical mentoring practices	39 MA/BA students enrolled in teacher training programs from Israel, Spain and Sweden
Pfingsthorn et al. (2019)	to explore pre-service teachers' perceptions, intrinsic motivation levels, professional identity developments and challenges regarding telecollaboration	134 EFL student teachers from Poland, Germany and the Czech Republic
Sardagna & Dugartsyrenova (2021)	to investigate the kinds of intercultural learning moves and discussion questions performed by pre-service foreign language teachers	28 pre-service foreign language teachers from Russia and US
Üzüm et al. (2019)	to explore how pre-service teachers engage in critical discussions during synchronous and asynchronous exchanges	48 pre-service teachers from Turkey and the USA
Üzüm et al. (2020)	to investigate whether telecollaborative project improves teacher trainees' ICC	48 teacher trainees from Israel and Germany
Viáfara González (2020)	to explore the effect of telecollaboration on pre-service teachers' reconstruction of self-perceived (non)nativeness	8 pre-service teachers from Colombia
Wach et al. (2022)	to investigate pre-service language teachers' grammar instruction techniques	41 pre-service language teachers from US, Poland and China
Waldman et al. (2019)	to explore pre-service teachers' readiness for teaching EIL through telecollaboration	100 pre-service teachers from Turkey and the USA

Appendix C: Designs, Data Collection and Online Tools Used in Reviewed Studies

Author(s)	Study Design	Data Collection Tools	Online Tools
Bueno-Alastuey et al. (2018)	qualitative study	questionnaire, telecollaboration transcripts and written reflections	Skype and Debut Video Capture Software
Dooly & Sadler (2020)	qualitative classroom ethnography	video recordings of discussions, self/peer evaluations and individual/group reflections	Skype, blogs, Thinglink, Powtoon, Teammates
Dugartsyrenova & Sardegna (2019)	mixed method	online questionnaire, individual reflections, voiced-based forum, transcriptions of oral post and discussions	Voxopop
Eren (2021)	convergent mixed methods design	scale, weekly posts and interactive discussions	Edmodo and Zoom
Fuchs (2019)	case study and ethnographic research	reflections, social media post and surveys	Facebook, Skype, WeChat, and WhatsApp
Garcia-Esteban et al. (2019)	mixed method	pre and post questionnaires and reflection essays	e-mail, Wiki, Blog, Google Docs
Grau and Turula (2019)	grounded theory	observations, surveys and reflective essays	Padlet, Screencast-o-matic, Google Hangouts, Facebook, Windows Movie Maker and WeVideo
Hilliker (2020)	case study	journal entries	Zoom
Hilliker & Loranc (2022)	qualitative study	reflection questionnaires and video recordings	Zoom and Google Suite
Kurek & Müller-Hartmann (2019)	action research	surveys, learner portfolios, video transcripts and critical incidents	Padlet, Google Docs, Zoom
Lenkaitis (2020)	mixed method	Zoom recordings, surveys and reflections	Zoom
Loranc-Paszyk et al. (2021)	qualitative study	open-ended questions and interviews	Zoom
O'Dowd et al. (2020)	mixed method	chatscripts, discussions, student portfolios, critical reflections, written interactions, audio and video recordings	Moodle, Google Docs and WhatsApp
Pfingsthorn et al. (2019)	quantitative data	Questionnaire	Facebook, forums, wikis, Chat and teleconferencing tools
Sardagna & Dugartsyrenova (2021)	qualitative study	oral posts	Voxopop
Üzüm et al. (2019)	qualitative study positioning theory	discussion board posts, student teacher reflections and video conference transcripts	Edmodo, Skype and Google Hangout
Üzüm et al. (2020)	qualitative inquiry approach	weekly online discussion board posts and post-project reflections	Edmodo
Víafara González (2020)	qualitative approach	questionnaires, interviews, chats, calls and reflections	Facebook and Skype
Wach et al. (2022)	mixed method	e-mails and surveys	e-mail exchanges and Qualtrics
Waldman et al. (2019)	mixed method	pre and post self-report questionnaires, reflection essays and collective products	Flipgrid, Padlet, About.me., Moodle, Unicko