BOĞAZİÇİ UNIVERSITY JOURNAL OF EDUCATION

BOĞAZİÇİ ÜNİVERSİTESİ EĞİTİM DERGİSİ

Vol. 40-2(3)
2023

BOĞAZİÇİ UNIVERSITY JOURNAL OF EDUCATION
BOĞAZİÇİ ÜNİVERSİTESİ EĞİTİM DERGİSİ

ISSN: 2822-5600
e-ISSN: 2822-5597

VOLUME 40-2(3)
2023

CONTENTS

Boğaziçi University Journal of Education Volume 40-2(3) 2023

Telecollaboration in English Language Teacher Education: A Systematic Review
Derya Coşkun 1

Exploring Teacher Motivation to Implement After an Online Professional Development by Using Expectancy-Value-Cost Theory
Gamze Alp, Selçuk Doğan, Ümran Yazıcılar Nalbantoğlu, and Nihan Ağaçlı Doğan....17

Active Learning-Based Children's Rights Education for Primary School Teacher Candidates
Tuğçe Nur Karataş and Ayşe Öztürk 33

Teaching Teamwork: Online Technical Writing Courses with Engineering Students
Bernadette Longo and Neslihan Önder Özdemir 49

BOĞAZİÇİ UNIVERSITY JOURNAL OF EDUCATION
2023, Vol. 40-2, No. 3
https://doi.org/10.52597/buje.1153468

Telecollaboration in English Language Teacher Education: A Systematic Review

Derya Coşkun[a]

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

Article info

Received: 23.08.2022
Revised: 09.04.2023
Accepted: 21.05.2023
Published online: 29.12.2023

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

[a]*Süleyman Demirel University, Department of Foreign Language Education, deryacoskun.dry@gmail.com, ORCID: 0000-0001-6044-6109*

To cite: Coşkun, D. (2023). Telecollaboration in English language teacher education: A systematic review abstract. *Boğaziçi University Journal of Education*, *40-2*(3), 1-15. https://doi.org/10.52597/buje.1153468

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 Üzüm 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	*f*
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-Paszylk 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 Üzüm 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	*f*
The USA	10
Poland	6
Germany	5
Spain	4
Turkey	4

Country	*f*
Israel	2
Russia	2
China	1
Colombia	1
Czech Republic	1
Finland	1
Hong Kong	1
Mexico	1
Slovenia	1
Sweden	1

Study Designs

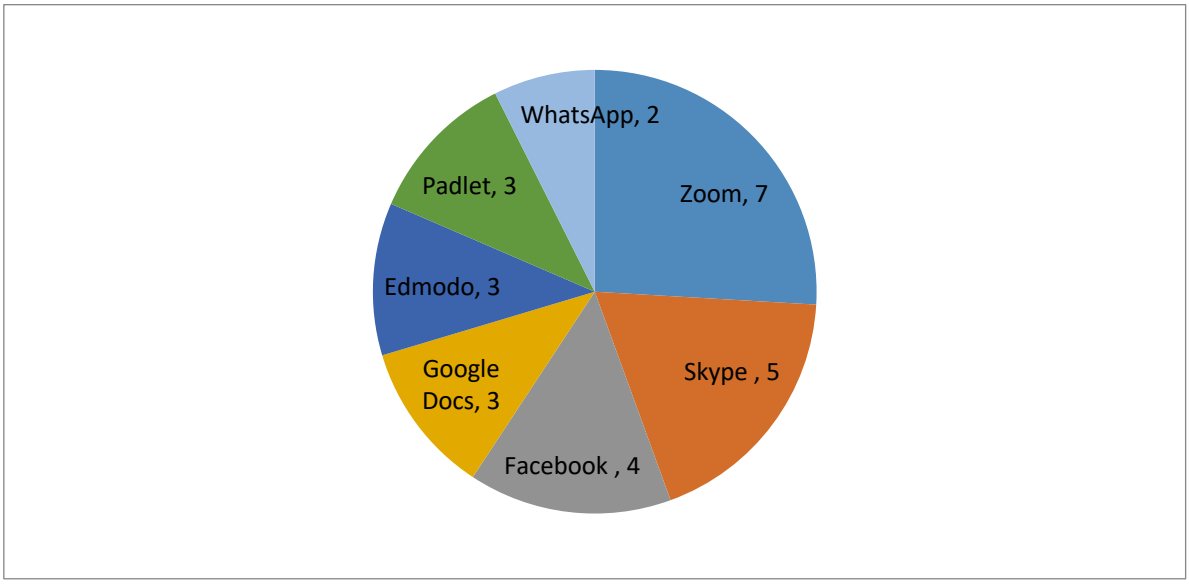
The systematic review of 20 studies revealed that different research methods were used while designing telecollaboration studies, and data collection tools varied in accordance with the approaches adopted in the studies. Accordingly, twelve studies were conducted using different types of qualitative 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
	Personal growth
Drawbacks associated with telecollaboration	Technical problems
	Emotional problems
	Linguistic problems
	Limitations of asynchronous CMC
	Pressure of synchronous meetings
Suggestions for further telecollaborative practices	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. Üzüm 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, Üzüm 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-Paszylk 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, Pfingsthorn 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. Üzüm 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 Üzüm 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; Üzüm et al., 2019; Üzüm 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; Üzüm 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.

References

Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *NursingPlus Open*, *2*, 8–14. https://doi.org/10.1016/j.npls.2016.01.001

Bueno-Alastuey, M. C., Villarreal, I., & García Esteban, S. (2018). Can telecollaboration contribute to the TPACK development of pre-service teachers?. *Technology, Pedagogy and Education*, *27*(3), 367–380. https://doi.org/10.1080/1475939X.2018.1471000

Chun, D. M. (2015). Language and culture learning in higher education via telecollaboration. *Pedagogies: An International Journal*, *10*(1), 5–-21. https://doi.org/10.1080/1554480X.2014.999775

Coutinho, M. (2016). Using a telecollaboration exchange Web 2.0 in a second language classroom. *US-China Education Review A*, *6*(10), 603–609. https://doi.org/10.17265/2161-623X/2016.10.004

Çiftçi, E. Y. & Savaş, P. (2018). The role of telecollaboration in language and intercultural learning: A synthesis of studies published between 2010 and 2015. *ReCALL, 30*(3), 278–298. https://doi.org/10.1017/S0958344017000313

Dooly, M., & Sadler, R. (2013). Filling in the gaps: Linking theory and practice through telecollaboration in teacher education. *ReCALL*, *25*(1), 4–29. https://doi.org/10.1017/S0958344012000237

Dooly, M., & Sadler, R. (2020). "If you don't improve, what's the point?" Investigating the impact of a "flipped" online exchange in teacher education. *ReCALL*, *32*(1), 4–24. https://doi.org/10.1017/S0958344019000107

Dugartsyrenova, V. A., & Sardegna, V. G. (2019). Raising intercultural awareness through voice-based telecollaboration: Perceptions, uses, and recommendations. *Innovation in Language Learning and Teaching, 13*(3), 205–220. https://doi.org/10.1080/17501229.2018.1533017

Eren, Ö. (2021). Raising critical cultural awareness through telecollaboration: insights for pre-service teacher education. *Computer assisted Language Learning*, 1–24. https://doi.org/10.1080/09588221.2021.1916538

Fuchs, C. (2019). Critical incidents and cultures-of-use in a Hong Kong–Germany telecollaboration. *Language Learning & Technology, 23*(3), 74–97. http://hdl.handle.net/10125/44697

Garcia-Esteban, S., Villarreal, I., & Bueno-Alastuey, M. C. (2019). The effect of telecollaboration in the development of the Learning to Learn competence in CLIL teacher training. *Interactive Learning Environments*, 1–14. https://doi.org/10.1080/10494820.2019.1614960

Gough, D., Oliver, S., & Thomas, J. (2012). Introducing systematic reviews. In D. Gough, S. Oliver & J. Thomas (Eds.), *An introduction to systematic reviews* (pp.1–17). Sage.

Grau, M. K., & Turula, A. (2019). Experiential learning of telecollaborative competences in pre-service teacher education. *Language Learning & Technology, 23*(3), 98–115. http://hdl.handle.net/10125/44698

Guth, S., & Helm, F. (2012). Developing multiliteracies in ELT through telecollaboration. *ELT journal*, *66*(1), 42–51. https://doi.org/10.1093/elt/ccr027

Helm, F. (2015). The practices and challenges of telecollaboration in higher education in Europe. *Language Learning & Technology*, *19*(2), 197–217. http://llt.msu.edu/issues/june2015/helm.pdf

Hilliker, S. (2020). Virtual exchange as a study abroad alternative to foster language and culture exchange in TESOL teacher education. *TESL-EJ, 23*(4), 1–13.

Hilliker, S. M., & Loranc, B. (2022). Development of 21st century skills through virtual exchange. *Teaching and Teacher Education*, *112*, 1–8. https://doi.org/10.1016/j.tate.2022.103646

Hubbard, P. (2008). CALL and the future of language teacher education. *CALICO Journal, 25*(2), 175−188.

Jesson, J., Matheson, L., & Lacey, F. M. (2011). *Doing your literature review: Traditional and systematic techniques*. Sage.

Kurek, M., & Müller-Hartmann, A. (2019). The formative role of teaching presence in blended Virtual Exchange. *Language Learning & Technology, 23*(3), 52–73. http://hdl.handle.net/10125/44696

Lenkaitis, C. A. (2020). Teacher candidate reflection: Benefits of using a synchronous computer-mediated communication-based virtual exchange. *Teaching and Teacher Education*, *92*(2020), 1–9. https://doi.org/10.1016/j.tate.2020.103041

Loranc-Paszylk, B., Hilliker, S. M., & Lenkaitis, C. A. (2021). Virtual exchanges in language teacher education: Facilitating reflection on teaching practice through the use of video. *TESOL Journal*, *12(*2), 1–15. https://doi.org/10.1002/tesj.580

Müller-Hartmann, A. (2006). Learning how to teach intercultural communicative competence via telecollaboration: A model for language teacher education. In J. Belz & S. Thorne (Eds.), *Internet-mediated intercultural foreign language education* (pp. 63–84). Heinle & Heinle.

O'Dowd, R. (2015a). Supporting in-service language educators in learning to telecollaborate. *Language Learning & Technology*, *19*(1), 63–82. http://llt.msu.edu/issues/february2015/odowd.pdf

O'Dowd, R. (2015b). The competences of the telecollaborative teacher. *The Language Learning Journal, 43*(2), 194–207. https://doi.org/10.1080/09571736.2013.853374

O'Dowd, R. (2021a). Virtual exchange: moving forward into the next decade. *Computer Assisted Language Learning*, *34*(3), 209–224. https://doi.org/10.1080/09588221.2021.1902201

O'Dowd, R. (2021b). What do students learn in virtual exchange? A qualitative content analysis of learning outcomes across multiple exchanges. *International Journal of Educational Research*, *109*, 1–13. https://doi.org/10.1016/j.ijer.2021.101804

O'Dowd, R., & Eberbach, K. (2004). Guides on the side? Tasks and challenges for teachers in telecollaborative projects. *ReCALL, 16*(1), 129–144. https://doi.org/10.1017/S0958344004000217

O'Dowd, R., & Ritter, M. (2006). Understanding and working with 'failed communication' in telecollaborative exchanges. *CALICO Journal, 23*(3), 623–642.

O'Dowd, R., Sauro, S., & Spector-Cohen, E. (2020). The Role of Pedagogical Mentoring in Virtual Exchange. *TESOL Quarterly*, *54*(1), 146–172. https://doi.org/10.1002/tesq.543

Pfingsthorn, J., Kramer, C., Czura, A., & Stefl, M. (2019). The formation of professional identity and motivation to engage in telecollaboration in foreign language education. *European Journal of Language Policy*, *11*(2), 143–165. https://doi.org/10.3828/ejlp.2019.10

Sadler, R., & Dooly, M. (2016). Twelve years of telecollaboration: What we have learnt. *ELT Journal*, *70*(4), 401–413. https://doi.org/10.1093/elt/ccx070

Sardegna, V. G., & Dugartsyrenova, V. A. (2021). Facilitating pre-service language teachers' intercultural learning via voice-based telecollaboration: The role of discussion questions. *Computer Assisted Language Learning*, *34*(3), 379–407. https://doi.org/10.1080/09588221.2020.1871028

Sauro, S., Flogie, A., Gutierrez, B. F., Martinc, U., Nicolaou, A., O'Dowd, R. & Zemljak, D. (2021). *Developing virtual innovation and support networks for in-service and pre-service teachers*. VALIANT. https://valiantproject.eu/wp-content/uploads/2023/07/LiteratureReview_WP1_Final_23.pdf

Schenker, T. (2012). Intercultural competence and cultural learning through telecollaboration. *CALICO Journal*, *29*(3), 449–470. https://doi.org/10.11139/cj.29.3.449-470

Schreier, M. (2014). Qualitative content analysis. In U. Flick (Ed.), *The Sage handbook of qualitative data analysis* (pp. 170–183). Sage.

Torgerson, C. (2003). *Systematic reviews*. Continuum International Publishing Group.

Uysal, H. H. (2012). The critical role of journal selection in scholarly publishing: A search for journal options in language-related research areas and disciplines. *Journal of Language and Linguistic Studies,8*(1), 50–95.

Üzüm, B., Akayoğlu, S., & Yazan, B. (2020). Using telecollaboration to promote intercultural competence in teacher training classrooms in Turkey and the USA. *ReCALL, 1*, 1–16. https://doi.org/10.1017/S0958344019000235

Üzüm, B., Yazan, B., Avineri, N., & Akayoğlu, S. (2019). Preservice teachers' discursive constructions of cultural practices in a multicultural telecollaboration. *International Journal of Multicultural Education*, *21*(1), 82–104. http://dx.doi.org/10.18251/ijme.v21i1.1777

Viáfara González, J. J. V. (2020). Prospective English teachers re-examining language ideologies in telecollaboration. *Computer Assisted Language Learning, 33*(7), 732–754. https://doi.org/10.1080/09588221.2019.1590419

Wach, A., Zhang, D., & Nichols-Besel, K. (2022). Grammar instruction through multinational telecollaboration for pre-service teachers. *ReCALL*, *34*(1), 4–20. https://doi.org/10.1017/S0958344021000112

Waldman, T., Harel, E., & Schwab, G. (2019). Extended telecollaboration practice in teacher education: Towards pluricultural and plurilingual proficiency. *European Journal of Language Policy*, *11*(2), 167–185. https://doi.org/10.3828/ejlp.2019.11

Wu, S. (2021). Unpacking themes of integrating telecollaboration in language teacher education: a systematic review of 36 studies from 2009 to 2019. *Computer Assisted Language Learning*, 1–23. https://doi.org/10.1080/09588221.2021.1976800

Zak, A. (2021). An integrative review of literature: virtual exchange models, learning outcomes, and programmatic insights. *Journal of Virtual Exchange*, *4*, 62–79. https://doi.org/10.21827/jve.4.37582

İngilizce Öğretmeni Eğitiminde Uzaktan İş Birliği: Sistematik 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 arttırılmasında 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 sistematik bir incelemesini sunmayı amaçlamaktadır. Bu doğrultuda yirmi güncel ve hakemli makale sistematik inceleme çalışmasının adımlarına göre analiz edilmiştir. Çalışmalar amaçları ve araştırma desenleri yönünden farklılık göstermelerinin yanı sıra, incelenen çalışmaların bulgularının uzaktan iş birlikçi projelerin faydaları, uzaktan iş birliği ile ilgili dezavantajlar ve daha sonraki uzaktan iş birliği projeleri için öneriler olmak üzere üç ana tema altında gruplandırılabileceği 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, sistematik 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, Akayoğlu & 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-Paszylk 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' 21st 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
Sardegna & 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-Paszylk 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
Sardegna & 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
Viáfara 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

BOĞAZİÇİ UNIVERSITY JOURNAL OF EDUCATION
2023, Vol. 40-2, No. 3
https://doi.org/10.52597/buje.1343047

Exploring Teacher Motivation to Implement After an Online Professional Development by Using Expectancy-Value-Cost Theory

Gamze Alp[a], Selçuk Doğan[b], Ümran Yazıcılar Nalbantoğlu[c] and Nihan Ağaçlı Doğan[d]

Abstract

This case study investigated the variations in teacher motivation to implement an instructional design model (Understanding by Design, UbD) after a seven-week online professional development (PD). Data were collected through a motivation scale and formative and summative reflection forms. Based on the quantitative results, teachers had high task value but differed in terms of their expectancy of success. Our qualitative findings produced two significant perceived costs behind doubted ability beliefs: First, teachers expressed difficulties in integrating the elements of the UbD into the centralised national curriculum, which they found to be intensive and confusing. Second, the lack of on-the-job support after PD programs negatively impacted teachers' expectancy of success. This study emphasises the importance of considering teachers' expectancy of success and task value before, during, and after PD programs, highlighting the need for tailored support and activities to enhance teachers' motivation and successful implementation of new learning in their classrooms.

Keywords: expectancy-value-cost theory, online learning, professional development, teachers' motivation, understanding by design

Article info

Received: 14.08.2022
Revised: 30.10.2023
Accepted: 30.11.2023
Published online: 29.12.2023

Introduction

One of the goals of professional development (PD) for teachers is to equip them with essential skills and knowledge so that their classroom practice improves, which leads to increased, positive student outcomes (Darling-Hammond et al., 2017; Desimone, 2009). The PD literature is replete with PD evaluation studies of different types reporting their effects on teachers' knowledge and skills (Dogan et al., 2016; Philippakos & Voggt, 2021), self-efficacy (Colognesi et al., 2020; Mouza et al., 2022; Nevenglosky, 2018), and teaching and instructional practices (Palermo & Thomson, 2019; Sandholtz & Ringstaff, 2016). Collectively, existing research shows that PD featured with a focus on content, pedagogy, active learning with prolonged duration, and alignment with schools' and teachers' goals could facilitate changes in various teacher outcomes (Darling-Hammond et al., 2017; Desimone, 2009).

On the other hand, one important, often neglected outcome of PD efforts on the teacher's side is their motivation to implement their learning in their setting with their students (Kennedy, 2016; Opfer & Pedder, 2011). It is a fact that teacher motivation has a key function in shaping what they will do after PD (Osman & Warner, 2020). Following a PD program, some teachers use their learning with excitement and consistently use it after the program. While some teachers rarely use their learning and never give it a try. Educational leaders often demand (and sometimes have concerns about) maximising using new professional learning in teachers' classrooms. Therefore, understanding the underlying reasons for the variation in teachers' implementation is essential to plan and facilitate PD activities.

[a]*Corresponding author, Independent researcher, alpgamzee@gmail.com, ORCID: 0000-0002-8406-7987*
[b]*Georgia Southern University, Elementary and Special Education, sdogan@georgiasouthern.edu, ORCID: 0000-0002-0527-8453*
[c] *Oldendorff Carriers, umranyazicilar@gmail.com, ORCID: 0000-0002-5535-9075*
[d]*Georgia Southern University, Leadership, Technology, and Human Development, nagaclidogan@georgiasouthern.edu, ORCID: 0000-0003-2000-4183*

To cite: Alp, G., Doğan, S., Yazıcılar Nalbantoğlu, Ü., & Ağaçlı Doğan, N. (2023). Exploring teacher motivation to implement after an online professional development by using expectancy-value-cost theory. *Boğaziçi University Journal of Education*, *40-2*(3), 17-32. https://doi.org/10.52597/buje.1343047

A comprehensive look at the extant studies shows that three constructs are interrelated in terms of teacher motivation to implement: teachers' willingness to apply their learning, their perceived value if they apply their learning, and the extent to which they believe they will find it helpful and useful in applying (e.g., Abrami et al., 2004; Emo, 2015). According to these three dimensions, teachers are more likely to implement if the possibility of achievement is high (expectancy of success), the perceived value of that implementation is much (task value), and the advantages of that implementation outweigh the costs (Barron & Hulleman, 2015; Eccles & Wigfield, 1995; Watt & Richardson, 2008).

Current and previous studies on teacher motivation focus primarily on their motivation during teaching (Kudo & Goda, 2020) or on the relationship with student outcomes (Bardach & Klassen, 2021). Most studies embrace teacher motivation as a factor in using technology or integrating technology into their classroom (e.g., the use of social media by Hashim and Carpenter (2019)). As Han et al.'s (2016) comprehensive review concludes, there are five areas where research on teacher motivation has been conducted: influencing factors influencing teacher motivation; teacher motivation and teaching effectiveness; teacher motivation and student motivation; teacher motivation research in different disciplines; and instruments for assessing teacher motivation. However, a specific focus on teachers' had experiences after a PD activity has been lacking, and what we have so far doesn't address motivation to implement teacher learning. The accomplishment of any PD efforts depends on the teacher's motivation to implement (Osman & Warner, 2020), which is considered a starting point for any research endeavours. It is also crucial to study this area because more motivated teachers are more likely to go beyond the learning they develop in a PD program (Hodkinson & Hodkinson, 2004). We need to explain teachers' motivated behaviours after PD, as described mostly by their belief about their skills, the purpose of why they behave like that, and the cost of their efforts (Barron & Hulleman, 2015; Eccles & Wigfield, 1995; Watt & Richardson, 2008). Therefore, through this study, we introduce a case of examining the motivation to implement science teachers who attended an online PD.

Evaluating teacher motivation in the PD context is also important because stakeholders and policymakers often question the value of PD activities in terms of time spent, efforts made, and the monetary resources available (Bümen & Uslu, 2020). If "it is not worth it," PD activities, despite being well-designed, become to have a mediocre reputation. Knowing teacher motivation is also important to avoid budget loss and time waste. If we know teachers' perceived value of their professional learning, we can design PD activities accordingly, and education leaders help teachers spend their time wisely.

Purpose and Research Questions

The purpose of this study was to explore teacher motivation to implement what they learned after they attended an online PD program within the scope of the expectancy-value-cost (EVC) theory. The study also sought an explanation as to what type of perceived cost teachers have that prevents them from implementing new learnings. This was not an intervention study and, although some teachers may have implemented their new learning after PD, the degree of implementation after PD was not the focus of the study. We focused only on the examination of motivations for implementation. Two research questions guided our efforts:

(1) What was the teacher motivation to implement after they completed a seven-week-long PD program?

(2) What costs were perceived by teachers who participated in PD as barriers to implementing what they had learned?

In an effort to shed light on the teacher's motivation during and after PD in this multi-stage online learning program, we employed an iterative data collection procedure.

Theoretical Perspective

Expectancy-value-cost Theory

Before implementing what they learn in a PD program, teachers think about their expectancies, values, and perceived costs (Barron & Hulleman, 2015; Eccles & Wigfield, 1995). The expectation-value theorists posit that "individuals' choice, persistence, and performance can be explained by their beliefs about how well they will do on the activity and the extent to which they value the activity" (Wigfield & Eccles, 2000, p. 68). Recently, this theory has been used with its dimensions: expectancy for success, task value, and cost (Barron & Hulleman, 2015; Osman & Warner, 2020).

Expectancy for Success. The likelihood of success in a particular task is defined as success expectations (Wigfield & Cambria, 2010). Expectancy beliefs for teachers are intimately tied to their motivation to learn within a PD program and their motivation to implement PD into practice subsequently (Henze et al., 2009). Teachers who think of themselves as successfully implementing what they learned through PD might implement more new teaching methods than those with low-ability beliefs (Thomson & Kaufmann, 2013). In other words, the inquiries made by teachers about their ability to implement (Can I do it?) what they have learned during PD determines their motivations about expectations for success (Henze et al., 2009; Thomson & Kaufmann, 2013). Previous studies showed that through PD programs with increased focus on teachers' beliefs, expectancy of success can be improved (Abrami et al., 2004; Xie et al., 2017).

Task Value. Task value is defined as the value assigned to a task as a result of subjective evaluations of the importance of a task (Eccles & Wigfield, 1995; Watt & Richardson, 2015). Task value is characterised mainly by four kinds: attainment, intrinsic, utility, and cost by Eccles and her colleagues. We will briefly define the first three in this section. Then, we explain the cost in more detail.

Attainment value is the importance of success in any individual task and refers to the idea that individuals validate various aspects of a task before being involved (Wigfield & Cambria, 2010). Teachers' implementation of what they have learned at the end of PD is closely related to their intrinsic motivation (Kennedy, 2016). Utility value is expressed as the usefulness of a task (Barron & Hulleman, 2015). In other words, the extent to which a task is effective in achieving a future goal determines its utility value (Pintrich & Schunk, 2002). Even if the task does not have a positive value for an individual, because he thinks that task will facilitate their work in the future, it is related to its utility value. When teachers find the skills they have developed and the methods they learned useful for their future teaching processes, their extrinsic motivation increases.

Overall, task value involves making sense of teachers' behaviours by focusing on what is important to them (Hwang et al., 2018). In general, it is known that teachers prefer to complete tasks that are aligned with their career goals and that have high added value (Gaines et al., 2019, Muwonge et al., 2017). However, it is seen that even teachers who value development in tasks supportive of their goals do not fulfil that task when they do not feel adequate for the skills in this task (Lai, 2019).

Cost. Recently, in the expectancy-value theory, the cost has been considered a third dimension (e.g., Flake et al., 2015; Osman & Warner, 2020). It corresponds to the effort and time that a person must give to complete the task (Eccles & Wigfield, 2002; Wigfield & Cambria, 2010). Cost is negatively correlated with the other three task value components (Hulleman et al., 2008).

Before teachers work on a particular task, they evaluate their perceived cost with the question "Is it worth the effort and time I spend?" The perceived cost is impacted by teachers' perceptions that putting what they have learned in PD into practice is time-consuming, exhausting, difficult, and unpleasant (Beymer et al., 2022). When individuals who believe that their task can be completed successfully and whose task value is high think that the perceived cost is heavy, their motivation also decreases (Osman & Warner, 2020).

Online Professional Development

Online learning is an intentional mix of synchronous and asynchronous online learning, also known as bichronous learning (Martin et al., 2020). It is different from blended learning in which face-to-face and online components blend. The definition that was coined in detail by Martin et al. (2020, para. 6) is:

> "blending of both asynchronous and synchronous online learning, where students can participate in anytime, anywhere learning during the asynchronous parts of the course but then participate in real-time activities for the synchronous sessions"

For the asynchronous part, email exchanges, discussions, recorded videos, quizzes, and new/updates can be used. For the synchronous part, the options might include instant and live meetings and chats including video and audio with interactive elements. There are PD studies integrating both asynchronous and synchronous components reporting positive results, such as improved teachers' content and pedagogy knowledge (Magidin de Kramer et al., 2012) and their satisfaction (Bragg et al., 2021) when coupled with effective PD design elements that took context into account (Nalbantoğlu, et al., in press).

In addition, there are studies using the EVC theory to examine teacher motivation to implement in the PD context. In a scale-development study, Osman and Warner (2020) collected data from teachers who attended three different PD programs. The focus was not on the online learning experience. The researchers reported that the teachers who participated in the two-day training were more motivated to implement than the teachers in the summer institute. In Bümen and Uslu's (2020) study, teachers who attended different PD opportunities at different times (only specified with the content in this study) were selected in terms of their motivation to implement after they complete any PD activity (mostly one-shot training or webinars). The researchers found that teachers who attended museum education training had higher expectancy for success; those who completed interactive whiteboard workshops had lower motivation to implement. Critically analysing these studies shows the inadequacy in terms of focus on a specific program or aspect of PD programs. Still, little is known about teacher motivation after a particular PD that includes both synchronous and asynchronous activities for teachers. It might produce similar results as the other types and formats of PD with face-to-face components. However, adding a research base and empirical evidence on online PD is important since the number of studies using both synchronous and asynchronous activities has been gradually increasing. We need to know if they motivate teachers to implement what they learn in their classrooms.

Our Professional Development Program

With an intentional blend of synchronous and asynchronous activities with a support mechanism (i.e., facilitation), our PD program included (1) Content focus: Understanding by Design (UbD), a curriculum development framework by Wiggins and McTighe (2005) to design unit plans for enduring understanding and transfer. (2) Collaboration: Teacher teams worked together to design a unit plan (asynchronous and synchronous). (3) Active learning: Teachers created learning materials (synchronous). Teachers were engaged in the fundamentals of the UbD through interactive videos with open-ended and multiple-choice questions embedded (asynchronous). (4) Span of time and duration: Seven-week long program with three synchronous weeks and four asynchronous weeks. Total contact time was between 25-30 hours. (5) Feedback and facilitator support: During the synchronous sessions, facilitators (designers and PD experts) guided the unit design and the group work activities with prompts and feedback. The facilitators also provided feedback on unit plans asynchronously four times during the program. (6) Best examples and their analysis: Used cases and sample unit plans were provided (asynchronous). Sample unit plans were also discussed and analysed during the sessions (synchronous). Appendix A contains a summary of the activities in our learning management system (LMS) used by the teachers during the PD, related to the six dimensions mentioned above. Appendix B is an example of how we received teachers' reflections and UbD plans through the LMS.

Methodology

Design and Participants

We used a case study (Creswell, 2012) to explore the motivation of science teachers in one school to implement what they learned after PD. While we considered the school and teachers as cases, our analysis was based on teacher motivation to apply what they had learned during the PD. We used quantitative data sources as well as qualitative to examine the case in depth as suggested by Yin (2014). Quantitative data were mainly collected to explore teachers' motivation to implement, while qualitative data were collected to enlighten the details and contextually sensitive evidence for the quantitative findings (Creswell & Plano Clark, 2018). The participants were 40 science teachers (nine male) working in four different schools at different grade levels (19 in middle school and 21 in high school).

Instruments

Expectancy-value-cost in Professional Development Scale

Osman and Warner (2020) created the first scale (EVC-PD scale) to measure teachers' expectancies, values, and perceived costs of implementing what they learned in PD. In short, the scale measures "teachers' motivation to implement a PD experience" (p. 4.) through three dimensions, with three items each. Sample questions from the EVC-PD are, respectively: "I am confident I can do what was asked of me in this professional development," "I am excited to put this training into practice," and "I have to give up too much to put this training into practice" The items are in six-Likert type ratings ranging from strongly disagree to strongly agree. To fit our context, we used the validated and translated version of the EVC-PD scale by Bümen and Uslu (2020). They found high

coefficients of reliability for each dimension (.91, .86, and .80). The scale can be used either with three separate dimensions (first-order, as composites) or with one unifying construct (latent variable, second-order) of teacher motivation to implement. In this study, we chose the first use to provide a big picture of participating teachers' degree of motivation to implement.

Formative Reflections During the Professional Development

Formative reflections (FR) were the first form administered three times just after the participants completed a milestone (a two-week period of the program). The open-ended questions in the FR) asked teachers about their own judgement of their efforts and progress in their learning and motivation. One sample question from the FR was, "How do you design your individual UbD plan [after watching the PD videos and working with the facilitators]", "What do you need to improve your individual plan?"

Summative Reflection After the Professional Development

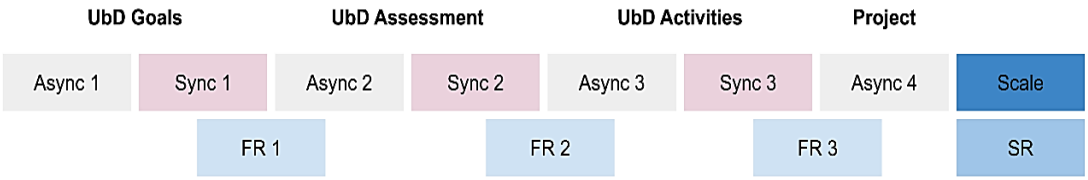
Summative Reflection (SR) was the second form that was administered at the end of the program after they submitted their final project to the learning management system. The questions in the summative and third formative reflections were different. Summative reflective questions aimed at teachers' general perceptions of the program. However, the last FR focused more on their efforts in the last two weeks. The open-ended questions in the SR asked teachers about their own judgement of their efforts and progress in learning and motivation. A sample question from the SR was "Where will UbD be for your school in the future? Where should it be? Do you want to take an active or leading role in your school's UbD plans?"

Data Collection

Our data collection included both during and after the PD program. Figure 1 shows at what point we collected data from the teachers.

Figure 1

Professional Development Process and Data Collection



Data Analysis

For the quantitative analysis, because our goal was to provide a general picture of teacher motivation to implement in terms of the EVC theory, we used descriptive statistics (averages and standard deviations) and scatter plots. The scores from each subscale of the EVC-PD scale were summed and reported.

We used the thematic analysis proposed by Braun and Clarke (2006) for the qualitative analysis. We analyzed the teachers' reflections using deductive and inductive coding. We developed an initial coding list that integrates the definitions and examples of expectancy-value theory (Abrami et al., 2004; Andersson & Palm, 2018; Flake et al., 2015; Osman & Warner, 2020; Wigfield et al., 2009). First, our deductive coding was based on analyses of teachers' responses about their degree of motivation, as well as expectancy and value beliefs, to implement UbD design principles into their lesson plan design process. Expectations for implementation and non-implementation, pertaining to motivation and expectancy, and different value beliefs that were given to open-ended questions in the reflections were categorized. For example, the following teacher quote was categorized as the teacher experiencing a utility value in the UbD design principles: 'In addition to its [UbD's] contributions to students' making meaning and using knowledge, the UbD also provides teachers with a great space to use their creativity and continuously supports their development.' When we captured different codes from the initial code

list, we used coding inductively and returned them to the literature to identify their categories. For example, we identified many perceived cost dimensions specific to Türkiye and its research context.

Credibility and Trustworthiness

To enhance validity and trustworthiness, the study used several techniques by considering the framework of Lincoln and Guba (1985) for triangulation, peer debriefing, and member-checking. First, we triangulated the scale and several reflections to gather in-depth data for our research questions. We also looked for common concepts across both sets of findings (qualitative and quantitative) to gather data on similar concepts during the quantitative and qualitative data collection. Second, we used a member-checking strategy to ensure the accuracy of the data and qualitative analysis. The first two researchers analyzed the qualitative data separately, and intermittent meetings were held to discuss and agree on the codifications without consensus. The last two researchers reviewed the whole coding process for peer debriefing. Last, we discussed together the whole steps of the data analysis to provide validation for all decisions.

Findings

Teachers' Motivation to Implement After PD

For the quantitative results, the average points and standard deviations of the quantitative results are listed in Table 1. Collectively, the dimensions of the EVC-PD scale provided a big picture of teachers' decisions and the extent to implement the UbD model in their own classrooms. Variations in the scores suggest that teachers' motivation to implement differs across teachers. Based on the results, the expectancy for success and the task value were closer to the highest point of six, which indicates that the teachers in our PD program had a high expectancy for success and high task value toward the UbD curriculum development model. The teachers believed that they could successfully use this model in their planning. They also felt that this model would be useful.

Table 1

Descriptive Statistics from the EVC-PD Scale

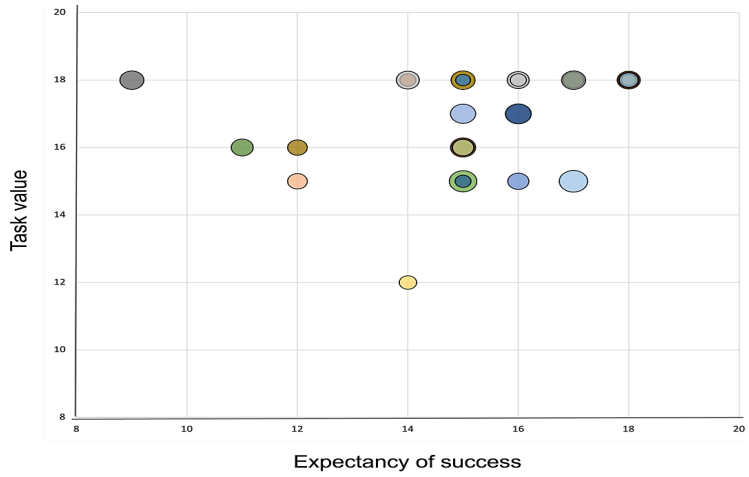
	Average	Standard Deviation
Expectancy for success	5.08	0.16
1) I am confident that I can do what was asked of me in this PD	4.97	0.89
2) I believe I can be successful applying this PD	5.27	0.69
3) I know that I can effectively put into practice the things in this PD	5	0.83
Task value	5.62	0.02
4) I am excited to put this PD into practice	5.60	0.62
5) Participating in this PD will help me in my job	5.62	0.65
6) It is important to me to apply what I learned in this PD	5.63	0.56
Cost	3.5	0.98
7) I have to give up too much to put this into PD practice	4.06	1.44
8) Applying this PD will require too much effort	4.06	1.24
9) Applying this PD will be too stressful	2.40	1.33

For cost, the points were lower than the first two dimensions. Ideally, lower points in the cost dimensions are expected because of the nature of the written items. The average cost dimension was 3.5, which indicates a moderate level of belief that using this model requires sacrifice. Supporting this argument, the average of item 9 "Applying this PD will be too stressful" was 2.4 out of 6, indicating that most of the teachers do not believe that using the UbD model will make them feel stressed. On the other hand, Items 7 and 8 were relatively higher than Item 9. This might show that the teachers felt that they needed to put a lot of effort into learning this model.

To analyse the relationship between the three dimensions of the EVC-PD scale, we created a scatterplot shown in Figure 2. The x-axis (horizontal) is the expectancy value, the y-axis (vertical) is the task value, and the size of the bubbles is the perceived cost of the teachers. Figure 2 is a representation of the extent to which the teachers varied along these three dimensions after participating in our PD program. The axes and the sizes display the total points in the corresponding dimensions.

Figure 2

The Interrelationship Between the Dimensions of Teacher Motivation to Implement in a PD



A visual analysis of Figure 2 showed that the majority of the participants were in the upper half of the expectancy of success and the task value. The quantitative data showed that the teachers in the program had high task value but differed in expectancy of success. The qualitative data from repeated reflections confirmed the variability of success expectancy in the left and right upper half of Figure 2. When our participants first heard that they would be participating in our PD program, they were confident in their ability to design plans with the UbD, although they had little hesitation about what they could do. They said that they felt particularly confident about creating knowledge and skills objectives in the UbD plans. However, as meaning-making and creating transfer goals were new to the teachers, we found that their beliefs about their abilities increased throughout the PD. Some of them believed that UbD would be essential for the future and they were very motivated to implement UbD principles in their classrooms. On the other hand, some teachers were undecided in their belief that they would be successful in implementing what they had learned.

> When I first heard this opportunity, I had questions. “Can I do it?” “How can I do it?” However, now I believe that I can implement it gradually. As I was engaged in the learning process and attending the sessions, I didn’t realise how the time passed. The pre-recorded videos, live sessions, and the feedback… They were all effective. [P7, SR].

> I have questions, but I hope they will all go away when I start implementing them. I would like to play an active role in UbD implementation, but first I need to try and implement it. I am still struggling to decide the right and best way to do this. It takes time to learn all these concepts, I think. [P32, SR].

When analysed in terms of task value, almost all teachers agreed on the high value of the task (see Figure 2). Through reflections, we identified three different reasons for the high task value presented by the quantitative data: (1) attainment value (perceived importance), (2) utility value (possible outcomes) and (3) intrinsic value (interests). Teachers valued the task of designing with the UbD because it aligned with their teaching philosophy and past experiences. In particular, teachers mentioned that they were used to writing knowledge and skills objectives in the UbD and had done so in previous plans. In addition, the fact that the UbD helps students to make connections to everyday life was very much in line with teachers' teaching philosophies and they attached particular importance to the UbD in this respect.

> I felt comfortable when creating transfer goals because I designed STEM courses before. I think the purpose of transfer goals is to blend maths, science, and engineering and integrate them in real-life. [P 25, FR 2].

Teachers who evaluated the usefulness of the UbD in planning their lessons reflected on possible outcomes related to enhancing and supporting student learning. For instance, Participant 7 revealed the utility value of the possible outcomes of the UbD when he said “*I believe we will see the positive effects of UbD when*

we begin implementing Backward Design and performance tasks. [P 7, SR]". These outcomes were possible perceptions of the contribution of the UbD to student learning as they had not yet implemented their plans.

In addition, the qualitative reflections helped us to deepen the high task value on the EVC PD scale in terms of intrinsic value. For example, the reflection data showed that the powerful elements of the PD, such as active group work, interactive videos, and facilitator support, were the reason why teachers had a task value even though they had not yet implemented the plans ([P 30, FR 3]).

> At first it's hard to create transfer goals and understanding, but the feedback I got in the live sessions, the sample UbD plans and the facilitation support during the group work was important. There are a lot of moving parts and you have to think from different perspectives, which is challenging. It's good to have examples and support from the facilitators. [P 30, FR 3].

Given that teachers' intrinsic motivation is also part of task value, we found that they were willing to learn during the PD and to implement what they had learned afterwards. For example, most teachers indicated that they would like to be involved in an active and leading role in planning lessons with UbD. In addition, some teachers had a meaningful intellectual engagement and many teachers attended this training from a lifelong learning perspective. Even some of the teachers who are in the Ph.D. studying process have a high intrinsic value of UbD planning because they want to do in-depth research on this topic.

Perceived Cost Dimensions

The cost was almost identical across the points in the upper half in Figure 2. These teachers believe that the UbD model will add value to their teaching and are aware of the effort involved. However, as the diameters of the bubbles were not very different, as can be seen in Figure 2, we used the reflections for detailed findings on teachers' perceived costs. In terms of perceived costs, the qualitative analysis focused on three dimensions: (1) task effort costs and (2) challenges (outside effort costs). These dimensions and their associated codes are presented in Table 2.

Table 2

Definition of Perceived Cost Dimensions and Related Codes

Perceived cost Dimensions	Definition	Codes
Task effort cost	The amount of effort required to engage in a task	Being able to action research Required practice and implementation the UbD Need for understanding the philosophy of UbD Being unfamiliar with UbD elements
Outside effort cost (Challenges)	Perceptions that other activities they do will make it more challenging to put forth effort on the focal task.	Existing curriculum structure Requiring time for the effective implementation Lack of required teacher support mechanism

Firstly, teachers associated their success in planning UbD and implementing UbD elements with having a researcher role. This was because they felt that designing quality UbD plans required not only strong subject knowledge, but also following current research findings so that they could easily design their activities about everyday life ([P 3, FR 1]). In addition, while some teachers had high expectations of success due to their mastery of the UbD philosophy (see the results for perceived expectations of success), others stated that they needed to learn more about it and that they should make an effort to do so. This was because of the UbD rhetoric to which they were not accustomed.

> I need to try it out and must read more. I realised that teachers' experience and knowledge are important in designing lessons. It's not just teachers' content/subject-matter knowledge… As teachers read more and learn more, it becomes easier… [P 3, FR 1].

> UbD has its own language and terminologies so it takes time to get familiar with them. What does understanding mean? Transfer? It's hard. It's a learning curve. But I will get it. [P2, FR3].

Secondly, we found that challenges as outside effort costs were the qualitative code that illuminates the largest part of the reasons for the quantitative result. The current curriculum structure was one of the main challenges for the perceived cost to teachers. In particular, the very limited course time of the Turkish high school curriculum made teachers reluctant to implement UbD, which aims at deep learning of understanding and teachers feel that adapting the existing curriculum to UbD principles requires extra effort. They also stated that they would need to invest time and effort in finding a solution for how it could be integrated with other teaching models they had already implemented.

> I found it difficult to understand the learning objectives. I think this is because I was so focused on the national standards that I missed how transfer, skills, knowledge and understanding differed from our own standards. [P1, FR3].

> Our school also runs a program called DLA (Digital Leaders Academy). We are making plans there too. I hope it will not be a waste of time, like transferring what is in DLA to UBD, transferring what is in UBD to DLA. I don't think I'm qualified to be a pioneer yet. [P2, SR].

In addition to the existing curriculum structure, 13 out of 30 teachers expressed uncertainty about implementing the UbD and stated that they needed time to do that. For example, the statement of P24: "*First of all, I need time. Time is very important to create in-depth activities related to our content*" was one of the examples of time needed to implement the UbD. Teachers who indicated that they needed time to effectively implement what they had learned from PD also expected support. They expected on-the-job support where new knowledge is learned, in some activities such as peer support during the implementation in the classes and receiving feedback from experts ([P32, SR]).

> I wish we had the experts during and after the implementation. We are just taking baby steps. We need someone to guide us and correct our mistakes. [P32, SR].

Discussion

The quantitative data showed that the teachers in our online PD had high task value but differed in their expectancy of success. In simple terms, the first group of teachers (upper right quarter in Figure 2) say “I can do this and I will benefit from it” similar to the results in Palermo and Thomson (2019). On the other hand, the second group (upper left quarter in Figure 2) stated, ‘I do not think I can do this effectively, but I wish I could because it could really help, ’ as in Lai (2019). We can explain the higher task value of teachers for two reasons. First, the UbD model is a complicated design model that responds to teachers’ need for design instructions that focus on enduring understanding and transfer (Wiggins & McTighe, 2005). They felt and believed that using the UbD would help because even the basic premises of the UbD would enhance their classroom practices. The teachers were aware of the usefulness of the task (i.e., learning UbD) (Barron & Hulleman, 2015). To achieve the task, they made persistent efforts (Guo et al., 2015) because they thought the UbD would facilitate their classroom work in the future (Pintrich & Schunk, 2002).

Second, the activities in the PD program were well grounded in research and practitioners’ work that contributed to teachers’ understanding of the UbD model (Nalbantoğlu et al., in press). The hands-on activities and discussion-based group works motivated the teachers extrinsically (satisfaction of learning a new, innovative model as a reward and recognition from the school) (Eccles & Wigfield, 2002). As the program was developed based on teachers’ needs, they also had higher task value. Teachers completed the activities aligned with their professional career goals with some added values (Gaines et al., 2019; Muwonge et al., 2017). In addition, our qualitative findings from the teacher reflections confirm this potential reason. Most teachers attributed the increase in the initial low expectation of success to the powerful elements (facilitation support, active learning, and expert feedback) of our PD program. These powerful elements in PD may have served as stepping stones for teachers' expectation of success and task value by strengthening the link between theory and practice.

We can also discuss the varying levels of expectancy-value in the participating teachers from the premises of expectancy for success. The second group described above (see Figure 2) believes that implementing the UbD model would be valuable, but they do not believe in their ability, which is similar to the results of Thomson and Kaufmann (2013). Lack of confidence and questioning their ability by asking “can I do it?” made teachers unmotivated to implement the UbD model. This knowledge has implications for the design and implementation of PD. First, PD designers should consider integrating particular activities to increase teachers’ beliefs about implementing new learning. Enhancing the emphasis on particular learning would help them succeed (evidenced in Abrami et al., 2004). Therefore, during PD activities, teachers should be encouraged to practice

their learning, receive feedback on their efforts, and be provided with a roadmap for implementation. Moreover, researchers should not simply ask teachers to use their learning. During and just after a PD event, a closer examination must be conducted to explore teachers' expectancy of success. One way to achieve this goal is to collect data during PD and measure the changes to investigate trends in this variable. One recommendation for future research is to ask teachers to write learning journals with prompts (aligned with the EVC theory) as they engage in PD activities.

The dimensions of the EVC-PD scale provided a big picture of the teachers' decisions and showed varying extents of the implementation of the UbD model. These differences might be helpful to consider because the variation would occur as teachers implement the UbD model in their classrooms. Exploring the extent to which the UbD model was used in the classroom is not the goal of this study. However, quantifying the levels of motivation to implement is helpful for us to know their motivated decision-making just after PD (a proxy for the effect of PD).

We found that the expectancy for success was high after the PD. Teachers are aware of the value of the model. Beyond their intentions, they were motivated to apply their learning. Similarly, the value for implementing the UbD model was scored high, showing that they "buy in" the UbD model and see the benefits of the model for their schools, classrooms or themselves. Not surprisingly, teachers who reported that the UbD model was compatible with their teaching philosophies and past experiences had a higher task value similar to Abrami et al., (2004) and Emo (2015).

Perceived Costs Related to Study Context

Iterative reflections revealed that some of the perceived costs reported were behind their low expectations of success. Some of the teachers stated that the centralised national curriculum was intensive and they were confused about how to integrate the understanding and transfer goal elements of UbD. They had limited time to complete all the content and were not sure how and to which extent they could implement the curriculum as they were working with unfamiliar elements of the UbD. For this reason, these teachers felt that they needed time to internalise their practices. This finding supports Andersson and Palm (2018), who state that new teaching practices need time to be used to become established and to develop the motivation to implement them. Therefore, supporting teachers with useful information on how to use new knowledge in their context can increase their motivation by reducing barriers to implementation.

The second perceived cost was related to the lack of support on the job after PD programs (left alone during implementation). Although our teachers stated that they learned through productive activities during the PD, they stated that they were left alone and sought support after the PD. This result confirms several studies (Andersson & Palm, 2018; Beymer et al., 2022) that have found that excessive workload, combined with a lack of collegial support in practice and insufficient support from the administration, affects the implementation of new learning. Our findings suggested that teachers needed the support of colleagues to internalise what they had learned in PD. This finding is not surprising given that studies have reported that teachers who are supported by their colleagues are positively motivated to practice (Colognesi et al., 2020; Sandholtz & Ringstaff, 2016). Furthermore, our teachers who reported high perceived costs requested not only colleague support but also on-the-job support from experts after PD. In other words, one of the barriers for teachers to implement what they have learned is that they are not sure what and how to apply it in the real context. Therefore, we argue that potential costs are eliminated when teachers receive expert feedback on their post-PD practice, highlighting studies (Colognesi et al., 2020, Philippakos & Voggt, 2021) that report that teachers' belief in their performance can be increased through follow-up work related to on-the-job support. In sum, lack of time and support as barriers to changing teachers' lesson planning habits is not a new finding. This can be seen as a reason for the increase in perceived costs. In conclusion, following the suggestion of Nevenglosky (2018), we believe that another issue that future PD designers should consider is providing teachers with the necessary resources and support when it comes to using new lesson planning methods.

To sum up, the perceived cost of using the UbD model exists as a stand-alone dimension and is meaningfully different than the expectancy of success and the task value (Osman & Warner, 2020). Thinking of these two dimensions (task value and expectancy of success) in isolation doesn't add to our discussion but together with cost, it provides more perspective of teachers' beliefs. In our study, the teachers perceived a high sense of value in the UbD model and a low sense of stress in implementing the model. These teachers will possibly use the model in their classrooms. On the other hand, some teachers after the PD had a high degree of value yet a low degree of effort and sacrifice. These teachers may implement the UbD model differently. As exemplified by

Osman and Warner (2020), the teachers in our PD understand the potential usefulness of using the UbD model for their students and themselves. Thus, they will overcome difficulties, such as time commitments and heavy workloads, and stay motivated to apply their UbD learning. Future studies can explore this relationship further with more participants using the same EVC-PD scale. Researchers also dive deeper into examining how cost interplays with task value using interviews and class observations. Moreover, measuring the perceived cost of implementation can guide PD designers to consider their options, such as the intensity of active learning opportunities or the duration of PD activities.

Limitations

Several limitations to this study must be emphasised. First, our data came from a group of motivated teachers who voluntarily attended our PD. Since their motivation was both internal (for personal and professional goals) and external (support from their schools), the EVC-PD scale didn't produce diversified results (we had only two main categories). PD providers and researchers should consider the potential driving forces, such as willingness when designing PD activities. Our working group wasn't counted as a diverse group that represents a general population, either. They were teachers who were working at similar schools with similar expectations. Qualitative studies investigating teacher-related variables that encourage or hinder teacher motivation to implement are also needed.

Second, although we attempt to deepen the generalisable data generated by the EVC-PD scale through iterative reflection, we acknowledge the limitations of this reflection, such as the lack of probes and social desirability bias. Teachers might be inclined to present themselves in a favourable light or conform to perceived norms and expectations, leading to responses that align with social desirability rather than objective reality. Therefore, in future studies, we recommend researchers to support reflections with interviews and observations to overcome the limitations of the scale.

Despite these limitations, this study makes important contributions to the literature. It provides an overview of EVC theory in the real PD context and it has highlighted the limitations of the scale to measure the teachers' motivation after PD programs. Unfortunately, the EVC-PD scale alone is not sufficient to measure teachers' motivation to implement. Other analyses may also benefit from using a mixed research perspective, to discuss how teachers' motivation to implement varies according to seniority, seniority, branch, type of school and the type of PD program attended, and to define the perceived costs that prevent implementation of what has been learned. In this context, this study contributed to the literature by elaborating on the perceived cost dimension of the EVC-PD scale.

Code of Ethics

Ethical approval was granted by the Georgia Southern Institutional Review Board on August 15, 2023 (protocol number H23327) upon the application of the second author.

References

Abrami, P. C., Poulsen, C., & Chambers, B. (2004). Teacher motivation to implement an educational innovation: Factors differentiating users and non-users of cooperative learning. *Educational Psychology, 24*(2), 201–216. https://doi.org/10.1080/0144341032000160146.

Andersson, C., & Palm, T. (2018). Reasons for teachers' successful development of a formative assessment practice through professional development–a motivation perspective. *Assessment in Education: Principles, Policy & Practice*, *25*(6), 576–597. https://doi.org/10.1080/0969594X.2018.1430685.

Bardach, L., & Klassen, R. M. (2021). Teacher motivation and student outcomes: Searching for the signal. *Educational Psychologist*, *56*(4), 283–297. https://doi.org/10.1080/00461520.2021.1991799.

Barron, K. E., & Hulleman, C. S. (2015). The expectancy-value-cost model of motivation. In J. D. Wright (Ed.), *International encyclopedia of social and behavioral sciences* (pp. 503–509). Elsevier. https://doi.org/10.1016/B978-0-08-097086-8.26099-6.

Beymer, P. N., Ponnock, A. R., & Rosenzweig, E. Q. (2022). Teachers' perceptions of cost: Associations among job satisfaction, attrition intentions, and challenges. *The Journal of Experimental Education, 1–22. https://doi.org/10.1080/00220973.2022.2039997*.

Bragg, L. A., Walsh, C., & Heyeres, M. (2021). Successful design and delivery of online professional development for teachers: A systematic review of the literature. *Computers & Education, 166*, 104–158. https://doi.org/10.1016/j.compedu.2021.104158.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://www.tandfonline.com/doi/abs/10.1191/1478088706qp063oa.

Bümen, N., & Uslu, Ö. (2020). Adaptation of the expectancy-value-cost for professional development scale into Turkish. *Gazi University Journal of Gazi Education Faculty, 40*(3), 905–942. https://doi.org/10.17152/gefad.787116.

Colognesi, S., Van Nieuwenhoven, C., & Beausaert, S. (2020). Supporting newly-qualified teachers' professional development and perseverance in secondary education: On the role of informal learning. *European Journal of Teacher Education*, *43*(2), 258–276. https://doi.org/10.1080/02619768.2019.1681963

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Pearson.

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research*. Sage Publications.

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development*. Learning Policy Institute.

Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher, 38*(3), 181–199. https://doi.org/10.3102/0013189X08331140.

Dogan, S., Pringle, R., & Mesa, J. (2016). The impacts of professional learning communities on science teachers' knowledge, practice and student learning: A review. *Professional Development in Education, 42*(4), 569-588. https://doi.org/10.1080/19415257.2015.1065899

Eccles, J. S., & Wigfield, A. (1995). In the mind of the actor: The structure of adolescents' academic achievement related-beliefs and self-perceptions. *Personality and Social Psychology Bulletin*, *21*(3), 215–225. https://doi.org/10.1177/0146167295213003.

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology*, *53*(1), 109–132. https://doi.org/10.1146/annurev.psych.53.100901.135153.

Emo, W. (2015). Teachers' motivations for initiating innovations. *Journal of Educational Change, 16*(2), 171–195. https://doi.org/10.1007/s10833-015-9243-7.

Flake, J. K., Barron, K. E., Hulleman, C., McCoach, B. D., & Welsh, M. E. (2015). Measuring cost: The forgotten component of expectancy-value theory. *Contemporary Educational Psychology*, *41*, 232–244. https://doi.org/10.1016/j.cedpsych.2015.03.002.

Gaines, R. E., Osman, D. J., Maddocks, D. L. S., Warner, J. R., Freeman, J. L., & Schallert, D. L. (2019). Teachers' emotional experiences in professional development: Where they come from and what they can mean. *Teaching and Teacher Education, 77*, 53–65. https://doi.org/10.1016/j.tate.2018.09.008.

Guo, J., Marsh, H. W., Parker, P. D., Morin, A. J., & Yeung, A. S. (2015). Expectancy-value in mathematics, gender and socioeconomic background as predictors of achievement and aspirations: A multi-cohort study. *Learning and Individual Differences, 37*, 161–168. https://doi.org/10.1016/j.lindif.2015.01.008.

Han, J., & Yin, H. (2016). Teacher motivation: Definition, research development and implications for teachers. *Cogent Education*, *3*(1), 1217819. https://doi.org/10.1080/2331186X.2016.1217819.

Hashim, A. K., & Carpenter, J. P. (2019). A conceptual framework of teacher motivation for social media use. *Teachers College Record, 121*(14), 1–18. https://doi.org/10.1177/016146811912101405.

Henze, I., Van Driel, J., & Verloop, N. (2009). Experienced science teachers' learning in the context of educational innovation. *Journal of Teacher Education*, *60*(2), 184–199. https://doi.org/10.1177/0022487108329275.

Hodkinson, P., & Hodkinson, H. (2004). The significance of individuals' dispositions in workplace learning: A case study of two teachers. *Journal of Education and Work*, *17*(2), 167–182. https://doi.org/10.1080/13639080410001677383.

Hulleman, C. S., Durik, A. O., Schweigert, S. A., & Harackiewicz, J. M. (2008). Task values, achievement goals, and interest: An integrative analysis. *Journal of Educational Psychology, 100*(2), 398–416. https://psycnet.apa.org/doi/10.1037/0022-0663.100.2.398.

Hwang, M. Y., Hong, J. C., & Hao, Y. W. (2018). The value of CK, PK, and PCK in professional development programs predicted by the progressive beliefs of elementary school teachers. *European Journal of Teacher Education, 41*(4), 448–462. https://doi.org/10.1080/02619768.2018.1471463.

Kennedy. (2016). How does professional development improve teaching? *Review of Educational Research, 86*(4), 945–980. https://doi.org/10.3102/0034654315626800.

Kudo, Y., & Goda, Y. (2020, December). Synchronous distance learning for ımprovement of elementary school teachers' motivation to teach English. In *2020 IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE)* (pp. 797–802). Japan. https://doi.org/10.1109/TALE48869.2020.9368315.

Lai, Y. (2019). Accounting for mathematicians' priorities in mathematics courses for secondary teachers. *The Journal of Mathematical Behavior*, *53*, 164–178. https://doi.org/10.1016/j.jmathb.2018.08.001.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry.* Sage.

Magidin de Kramer, R., Masters, J., O'Dwyer, L. M., Dash, S., & Russell, M. (2012). Relationship of online teacher professional development to seventh-grade teachers' and students' knowledge and practices in English language arts. *The Teacher Educator, 47*(3), 236–259. https://doi.org/10.1080/08878730.2012.685795.

Martin, F., Polly, D., & Rithzaupt, A. D. (2020, September 8). *Bichronous online learning: Blending asynchronous and synchronous online learning.* Educause Review. https://er.educause.edu/articles/2020/9/bichronous-online-learning-blending-asynchronous-and-synchronous-online-learning

Mouza, C., Mead, H., Alkhateeb, B., & Pollock, L. (2022). A virtual professional development program for computer science education during COVID-19. *TechTrends, 66*, 436–449. https://doi.org/10.1007/s11528-022-00731-y.

Muwonge, C. M., Schiefele, U., Ssenyonga, J., & Kibedi, H. (2017). Determinants of persistence among science teacher-trainees: Examining the role of self-efficacy, task value, and academic hope. *Journal of Science Teacher Education*, *28*(6), 522–548. https://doi.org/10.1080/1046560X.2017.1379860.

Nalbantoğlu, U. Y., Dogan, S., Korkmaz, Z. S., & Agaclı Dogan, N. (in press). The effects of online professional development on teachers: Perceived barriers to teach online. *Journal of Educators Online.*

Nevenglosky, E. A. (2018). *Barriers to effective curriculum implementation* [Unpublished doctoral dissertation]. Walden University.

Opfer, V. D., & Pedder, D. (2011). Conceptualizing teacher professional learning. *Review of Educational Research*, *81*(3), 376–407. https://doi.org/10.3102/0034654311413609.

Osman, D. J., & Warner, J. R. (2020). Measuring teacher motivation: The missing link between professional development and practice. *Teaching and Teacher Education*, *92*, 103064. https://doi.org/10.1016/j.tate.2020.103064.

Palermo, C., & Thomson, M. M. (2019). Large-scale assessment as professional development: Teachers' motivations, ability beliefs, and values. *Teacher Development*, *23*(2), 192–212. https://doi.org/10.1080/13664530.2018.1536612.

Philippakos, Z. A., & Voggt, A. (2021). The effects of distant professional development model on second grade teachers' instruction and students' quality of procedural papers. *Reading and writing*, *34*(7), 1791–1822. https://doi.org/10.1007/s11145-021-10120-1

Pintrich, P. R., & Schunk, D. H. (2002). *Motivation in education: Theory, research, and applications*. (2nd ed.). Prentice Hall.

Sandholtz, J. H., & Ringstaff, C. (2016). The influence of contextual factors on the sustainability of professional development outcomes. *Journal of Science Teacher Education*, *27*(2), 205–226.https://doi.org/10.1007/s10972-016-9451-x

Thomson, M., & Kaufmann, E. (2013). Elementary teachers' views of their science professional development attendance: An expectancy-value approach. *Eurasia Journal of Mathematics, Science and Technology Education, 9*(1), 45–58. https://doi.org/10.12973/eurasia.2013.915a.

Watt, H., & Richardson, P. W. (2008). Motivations, perceptions, and aspirations concerning teaching as a career for different types of beginning teachers. *Learning and Instruction, 18*(5), 408–428. https://doi.org/10.1016/j.learninstruc.2008.06.002.

Watt, H., & Richardson, P. W. (2015). Teacher motivation. In J. D. Wright (Ed.), *International encyclopedia of the social & behavioral sciences* (pp. 64–71). Elsevier. https://doi.org/10.1016/B978-0-08-097086-8.26082-0

Wigfield, A., & Eccles, J. S. (2000). Expectancy–value theory of achievement motivation. *Contemporary Educational Psychology, 25*(1), 68–81. https://doi.org/10.1006/ceps.1999.1015

Wigfield, A., Tonks, S., & Klauda, S. L. (2009). Expectancy-value theory. In K. R. Wenzel, & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 77–104). Routledge.

Wigfield, A., & Cambria, J. (2010). Students' achievement values, goal orientations, and interest: Definitions, development, and relations to achievement outcomes. *Developmental Review*, *30*(1), 1–35. https://doi.org/10.1016/j.dr.2009.12.001.

Wiggins, G., & McTighe, J. (2005). *Understanding by design*. ASCD.

Xie, K., Kim, M. K., Cheng, S. L., & Luthy, N. C. (2017). Teacher professional development through digital content evaluation. *Educational Technology Research and Development, 65* (4), 1067–1103. https://doi.org/10.1007/s11423-017-9519-0.

Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). Sage Publications.

Çevrimiçi Bir Mesleki Gelişim Sonrasında Öğretmenlerin Uygulama Motivasyonlarının Beklenti-Değer-Bedel Teorisini Kullanarak Keşfedilmesi

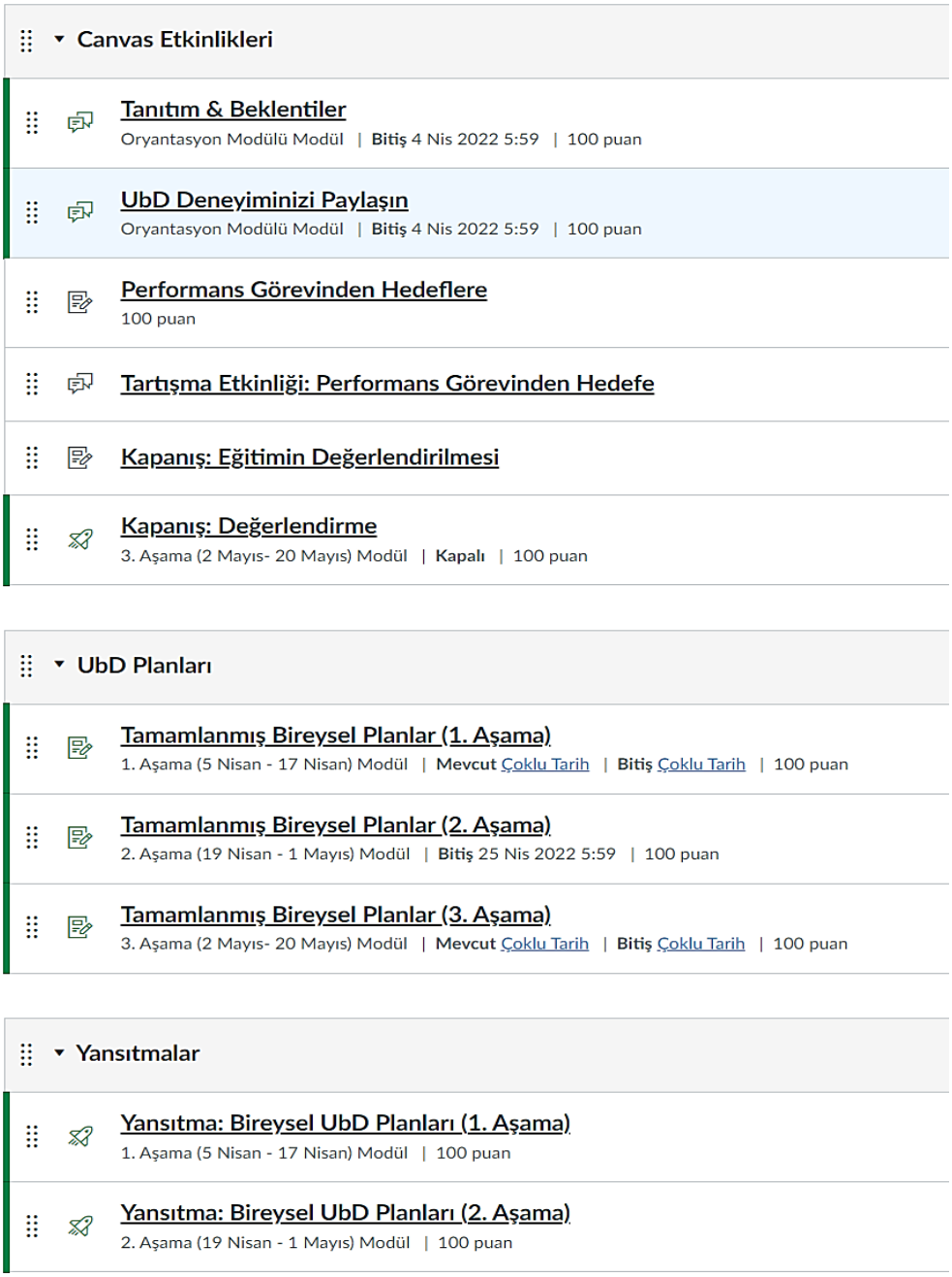
Öz

Bu vaka çalışması, yedi haftalık çevrimiçi mesleki gelişim (MG) sonrasında öğretmenlerin bir öğretim tasarımı modelini (Tasarımla Anlama, TA) uygulamaya yönelik motivasyonlarındaki değişimleri araştırmıştır. Veriler bir motivasyon ölçeği ile biçimlendirici ve özetleyici yansıtma formları aracılığıyla toplanmıştır. Nicel bulgulara göre, öğretmenler yüksek görev değerine sahiptir ancak başarı beklentileri farklılık göstermektedir. Nitel bulgular, şüphe duyulan yetenek inançlarının ardında iki önemli algılanan bedel ortaya çıkarmıştır: İlk olarak, öğretmenler TA'nın unsurlarını yoğun ve kafa karıştırıcı buldukları merkezi ulusal müfredatla bütünleştirmede zorlandıklarını ifade etmişlerdir. İkinci olarak, MG programlarından sonra iş başında desteğin olmayışı öğretmenlerin başarı beklentilerini olumsuz etkilemiştir. Bu çalışma, öğretmenlerin başarı beklentilerini ve görev değerlerini MG programları öncesinde, sırasında ve sonrasında dikkate almanın önemini vurgulayarak, öğretmenlerin motivasyonunu ve yeni öğrenilenleri sınıflarında başarılı bir şekilde uygulamaları için özel destek ve faaliyetlere duyulan ihtiyacı ortaya koymaktadır.

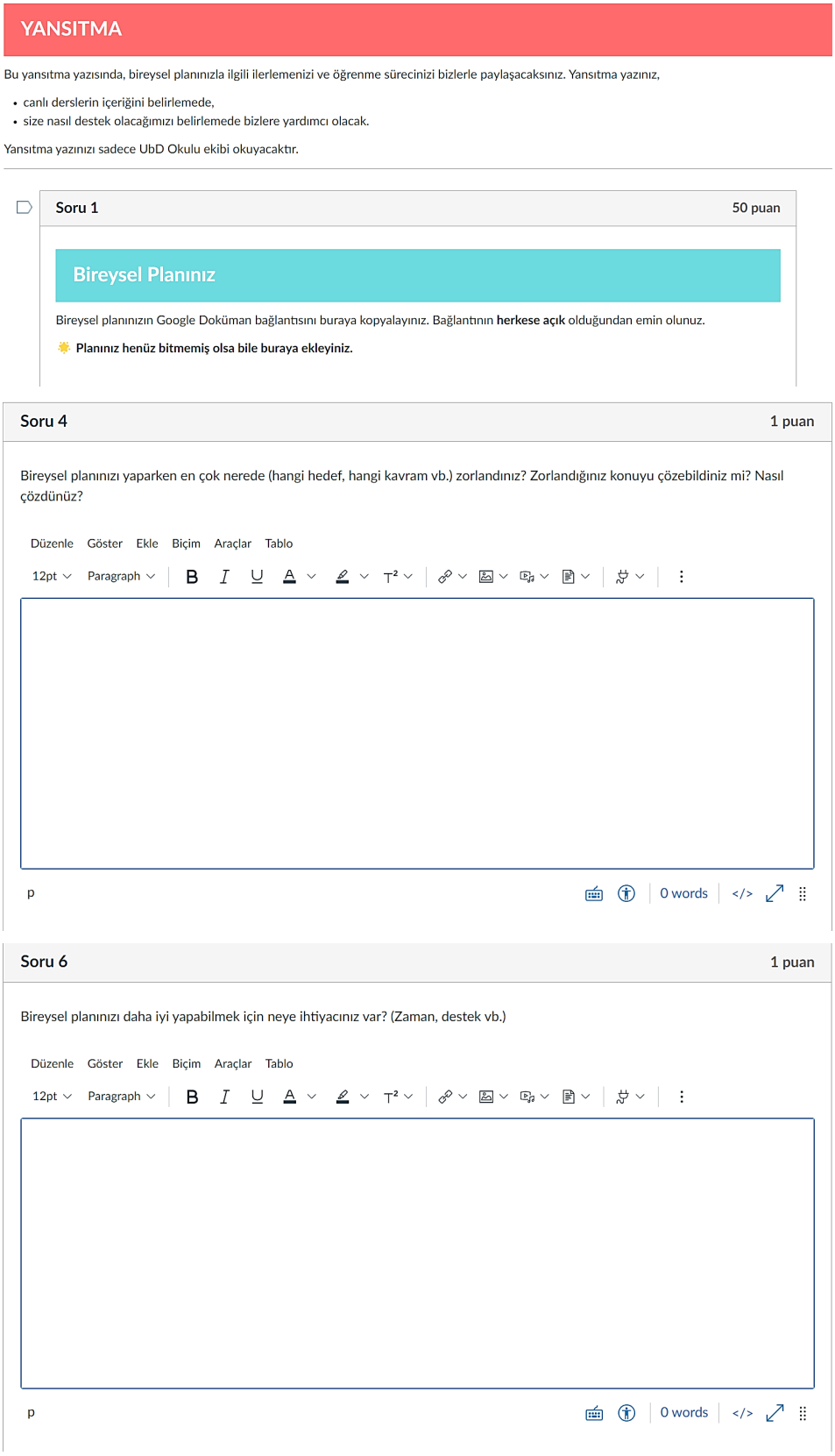
Anahtar kelimeler: beklenti-değer-bedel teorisi, çevrimiçi öğrenme, mesleki gelişim, öğretmen motivasyonu, tasarımla anlama

Appendices

Appendix A: A Summary of the Activities in PD Program



Appendix B: Examples of Reflection Questions in LMS



BOĞAZİÇİ UNIVERSITY JOURNAL OF EDUCATION
2023, Vol. 40-2, No. 3
https://doi.org/10.52597/buje.1381341

Active Learning-Based Children's Rights Education for Primary School Teacher Candidates[a]

Tuğçe Nur Karataş[b] and Ayşe Öztürk[c]

Abstract

This study investigated the effect of children's rights (CR) education on the understanding and attitudes of primary school teacher candidates regarding CR through active learning-based implementations. Explanatory sequential design was employed in the study. The quasi-experimental design with non-equivalent pre-test-post-test control group and case study were employed. Experimental implementations were conducted with 72 third year teacher candidates. The experimental group was trained for 13 weeks by employing the Active Learning-Based Children's Rights Education Curriculum (ACREC) developed in the study and the traditional teaching method was used in the control group. In the qualitative phase, semi-structured interviews with 12 teacher candidates were carried out. The findings revealed that post-test scores showed significant difference in favour of the experimental group, and that the development of understanding was higher in this group. The ACREC was found to contribute to teacher candidates in the context of understanding, attitudes, behaviours and professional development concerning CR.

Keywords: children's rights education, active learning, curriculum development, classroom teaching, teachers training

Article info

Received: 25.10.2023
Revised: 06.12.2023
Accepted: 06.12.2023
Published online: 30.12.2023

Introduction

Children's rights (CR) are defined as a subset of human rights with particular attention to children's rights to protection against any harmful action and to an adequate standard of living (Öztürk, 2019). CR aim to protect children from abuse and harm, meet the needs that are basic to existence such as health, education and shelter and provide them with the opportunity to be raised under emotionally appropriate conditions (Nelken, 1998). These rights play a pivotal role in their growing-up as physically, mentally and psychologically healthy individuals (Akyüz, 2021). Various documents have been published to assure the children of these rights, which are crucial for them, throughout history. Of these, the United Nations Convention on the Rights of the Child (UNCRC) is presently the most widely ratified international document that defines CR and the most complete statement of their rights (Flower, 2007). The Convention set out a clear mandate for guaranteeing opportunities for CR to be respected, protected and ensured by contracting states on an international scale (Landsown et al., 2014). However, there are certain ongoing challenges to the implementation of CR (Todres & Kilkelly, 2022). Children's rights education (CRE) is of great importance in the realization of these rights. The CRE encompasses educational implementations where children's rights are exercised (Howe & Covell, 2007), and aims to educate children on its principles and provisions (Covell et al., 2010). The CRE is based on the principles that children have rights, that they should learn about their rights and that they should be given opportunities to utilize and defend their rights (Save the Children, 2006). This educational process includes recognizing the rights through practices in certain environments where CR are respected (Howe & Cowell, 2007). Teachers are the most important actors in the realization process of the CRE. In this process, they assume numerous duties such as solving the problems arising in the process by teaching and maintaining children's rights (Öztürk et al., 2019). However, teacher's lack of knowledge, skills, attitudes regarding the CRE pose significant problems in the failure to realize the CRE effectively (Howe & Covell, 2007; Kılıç & Öztürk, 2018; Lansdown et al., 2014; Öztürk et al., 2019; Öztürk & Kalender, 2021; Robson, 2016; Rudduck & Flutter, 2000). This situation highlights the necessity to educate teacher candidates about the CR in pre-service teacher training process (Dağlı, 2015; Öztürk et al., 2019). Studies to be commenced at younger levels is of importance in terms of the acquisition of values in rights education

[a] *This article is based on the master's thesis of the corresponding author.*
[b] *Corresponding author, Ministry of National Education, tugceekaratas@hotmail.com, ORCID: 0000-0002-1324-8684*
[c] *Gaziantep University, Primary Education, ozturkayse@gantep.edu.tr, ORCID: 0000-0001-9279-1716*

To cite: Karataş, T. N., & Öztürk, A. (2023). Active learning-based children's rights education for primary school teacher candidates. *Boğaziçi University Journal of Education*, *40-2*(3), 33-47. https://doi.org/10.52597/buje.1381341

(Anglin, 1992; Starkey, 1991), it is particularly significant that this training is provided to prospective classroom teachers who will serve at primary school level, where the CR is effectively taught formally. In addition, examining the classroom teacher training program in Turkey, it has been seen that there are no courses defined by the Council of Higher Education regarding the CR and CRE. In this respect, further studies are required in order to provide an insight into the realization of the CRE in classroom teachers training programs. The CRE entails certain skills such as learning the rights by experience, acquiring democratic participation and social skills, and in this regard, active learning practices gain increased significance in this process. Active learning-based practices are based on the active participation of students in the learning process, as opposed to passively receiving information from the teacher (Prince, 2004). In active learning process, students generate ideas, solve problems and exercise what they have learned (Silberman, 1996). In general, this process includes developing students' science process skills, involving students' higher-order thinking skills and placing a greater emphasis on children's own exploration of their beliefs, values and attitudes related learning (Wilke, 2003). All these skills are of great importance for the CRE and related studies have been conducted in the literature. Accordingly, in their study carried out as an action research, Hassi et al. (2015) intended to teach the CR to students at secondary schools through drama technique; however, Mtukwa (2010) examined how process drama method could be used as a medium for educating junior school learners about their rights. In their study, Covell and Howe (1999) tried to educate primary school students about children's rights through active participation-based practices and Sever Serezli et al. (2023) employed problem-based learning to teach university students about the CR. Topçu (2019) carried out implementations to raise awareness and develop attitudes concerning the CR among primary school students via creative drama method; however, Çarıkçı (2019) intended to conduct certain practices based on the same purpose through active learning. Öztürk (2019) carried out the CRE implementations including active learning with pre-school teacher candidates and Uçuş (2013) aimed to provide knowledge and raise awareness regarding the CR through the CRE program, which includes active learning methods, with primary school students. In the same vein, Kent Kükürtcü (2019) carried out the CRE implementations with pre-school students through activities and Torun and Duran (2014) conducted the CR implementations to develop attitudes among primary school students via games. When these studies are generally evaluated, it is observed that it has been focused on students at primary and secondary schools. According to the body of literature reviewed, no study on the CRE through active learning-based practices for pre-service teachers has been encountered. In this context, this study is thought to provide an insight into how to carry out the CRE through active learning methods, to form a basis for curriculum development studies to make the CRE more effective and to contribute to the filling of the gap in the relevant literature. In light of preceding discussion, the present study is purposed to examining the effect of active learning-based CRE on the understanding and attitudes of primary school teacher candidates regarding the CR.

Method

Research Design

This research, which is designed to investigate the effect of the CRE on the understanding and attitudes of primary school teacher candidates regarding the CR through active learning-based implementations, conforms to explanatory sequential design, one of mixed research methods. To this end, quantitative data are collected and analysed first, then qualitative data are collected and analysed based on quantitative data in order to elaborate the quantitative findings. The quasi-experimental design with non-equivalent pre-test-post-test control group (Cohen & Manion, 1994) was employed in the quantitative phase of this research. Two branches at the third-year level in a state university in Turkey were randomly assigned to one control group and one experimental group. In the research, the experimental group was given the CRE with Active Learning-Based Children's Rights Education Curriculum (ACREC) and the control group was given the CRE based on traditional method for 13 weeks. Scale for the Attitude towards Children's Rights (SACR) and the Evaluation Form for the Development of Understanding on Children's Rights (EF) were administered to both groups as pre-test and post-test. The qualitative phase of the research, however, aligned with case study (Creswell, 2014). In this respect, semi-structured interviews were conducted with 12 primary school teacher candidates selected through criterion sampling, one of purposive sampling methods among the students in the experimental group. In these interviews, where the Interview Form on the Effectiveness of the Curriculum and Individual Development (IF) was used, it was aimed to elaborate the effectiveness of ACREC and to gain an insight into the acquisitions of primary school teacher candidates within the context of the CRE.

The Study Group of the Research

The Study Group of the Quantitative Phase of the Research

The study group of the quantitative phase of the current research consisted of 72 primary school teacher candidates studying at the third-grade level in a state university. Of the students, 36 were in the experimental group, and the remaining 36 were kept in the control group. The ages of the subjects in the control group ranged between 19-21, and 23 were female and 13 were male. In the control group, however, the ages of the students ranged between 19-22, and 25 were female and 11 were male. None of the primary school teacher candidates had previously received any training on the CRE and had not conducted individual studies with the purpose of gaining knowledge.

The Study Group of the Qualitative Phase of the Research

The study group of the qualitative phase of the research was determined among the pre-service teachers in the experimental group through criterion sampling, one of purposive sampling methods and 12 primary school teacher candidates constituted the study group of the qualitative phase of the research. In the selection of the subjects constituting the study group, it was determined as a criterion that they participated in all the implementations within the scope of Active Learning-Based Children's Rights Education, that four of them had low level of academic achievement, that other four of them had medium level of academic achievement and that the remaining four of them had high level of academic achievement and, finally, that they voluntarily took part in the interview. In accordance with these criteria, the study group consisted of 5 male and 7 female students aged between 19-21.

The Construction Process of the ACREC

In the first step, needs analysis studies were carried out. In that sense, the general objectives and achievements of ACREC were determined based on the results of needs analysis and expert opinions. The plans were submitted to the expert opinion and the necessary corrections were made. The second step was the implementation process. The pilot study was conducted and the program was finalized. The activities carried out within the scope of ACREC are presented below on the order of weeks:

Week 1

The activity entitled Umbrella of Rights was oriented to target pre-service teachers to develop understanding and attitudes towards the importance of the CRE. In the first step, where educational games were utilized, the students were given small papers and asked to write down and pin what they understood when the puppet baby's umbrella brought to the class was called the CR. Based on the pinned papers, the CR was defined through question-answer technique. In the second step, it was aimed to raise awareness by carrying out a large group discussion on the importance of the CR. By the end of the activity, the students evaluated what they had acquired in the context of the development of understanding and attitudes towards the CR and its importance.

Week 2

The activity titled Let's Stop the Violation aims to raise awareness of the pre-service teachers on the violation of the CRE and to gain an understanding of what to do when faced with the violation of the CR. In the first step, the subjects were divided into groups and the case studies were individually studied and it was followed by a whole class discussion. In this process, it was ensured that the teacher candidates developed awareness regarding the violation of the CR. In the second step, the students discussed what to do when faced with the violation of the CR through question-answer technique. Finally, the students were asked to prepare posters in accordance with the content of the activity.

Week 3

The activity entitled I Have the Convention aims to provide an understanding of the UNCRC and its principles and an attitude towards its importance. In the first step, a puzzle activity was held in order to introduce the UNCRC to teacher candidates and provide information on its content. The importance and necessity of the UNCRC was discussed. In the second step, the basic principles of the UNCRC were studied using educational games. During the evaluation process, the concept map was developed and shared.

Week 4

The activity titled We Classify the Rights aims to provide an understanding of the classification of the UNCRC to the teacher candidates. In the first step, the Jigsaw technique was used with the purpose of classifying the rights in the UNCRC and of determining the articles to which the rights are adhere based on this classification. In the second step, the pre-service teachers were requested to create a concept map that includes the information they have learnt. Thus, all groups were provided with an understanding concerning the classification of the rights. Finally, a general evaluation of the activity was made through question-answer technique.

Week 5

The activity titled Education for Every Child aims to provide an understanding and attitude towards the right to education, the importance and necessity of the right to education. In the first step, pre-service teachers worked in groups on a case study regarding the right to education and shared out. In the second step, studies oriented at the right to education and at its importance were conducted using station technique. At the end of the activity, a general evaluation was made through question-answer technique.

Week 6

In the activity entitled The Most Fundamental Right: Living, educational games, question-answer technique, newspaper publishing and discussion, among active learning methods and techniques, were used. The purpose of this activity is to provide an understanding of the right to life and an attitude towards its importance. Besides that, it is aimed to raise awareness that there is a hierarchy of rights in terms of their importance.

Week 7

The activity titled Warm Housing and Food aims to develop an understanding regarding the right to life such as shelter and food and to raise awareness of its importance to the pre-service teachers. During the activity process, educational games, question-answer technique, animation and photo frames that are among active learning methods and techniques were utilized. Through these activities, it is attempted to raise awareness towards the right to life and its importance among pre-service teachers.

Week 8

The event entitled A Game Story aims to aid the pre-service teachers to acquire an understanding and attitude towards the children's right to game, rest and leisure and their importance in a child's life. In the first step, the painting "Children's Games" by Pieter Brueghel was addressed within the context of CR to game, rest and leisure through photo-picture description. Accordingly, it was ensured that the pre-service teachers developed an attitude towards the right to game and leisure by focusing on how children might feel when they were deprived of this right. In the second step, the class was divided into groups of 5 students and evaluations within the scope of CR to game, rest and leisure were made using story completion technique. An evaluation of the activity was made via question-answer technique regarding what was learnt in the activity and the changes in per-service teachers' views.

Week 9

In the activity titled I Have an Idea, active learning method and techniques such as educational game, question-answer, role-play and large group discussion were used. Through this activity, it is aimed to develop an attitude towards the understanding and importance of CR to participate, express their feelings and views among the teacher candidates. In the first step, teacher candidates were matched and one was asked to tell about an incident that happened to him/ her and the other not to listen to what was told. With this activity, it was discussed how one felt when s/he could not express his/ her feelings and views. Then, role cards were used to enable them to play a role regarding the right to participation in the decision-making process related to them. During the evaluation process, the groups created three cases in which children were able to use their right to participation and a group discussion was held on the importance of the right to participation.

Week 10

The activity entitled Children's Voice aims to develop an attitude towards the understanding and importance of the CR to participation, to freedom of association and peaceful assembly. In the first step, two cases were investigated, and the understanding and awareness towards the children's right to freedom of association and peaceful assembly and its importance through question-answer technique. In the second step, the participants played a ball game by saying "It is the CR to freedom of association and peaceful assembly because …" At the end of the activity, a general evaluation on the above-mentioned right was made through whole class discussion.

Week 11

In the activity titled A Newspaper Headline: The Mechanic's Apprentice, efforts were made to ensure that the pre-service teachers gained an understanding and developed an attitude towards the CR to be protected from child labour. In the first step, case studies based on true life stories related to child labour were examined by question-answer technique. Thus, it was attempted to raise awareness regarding the CR to be protected from child labour and its importance. In the second step, the reasons of the failure to realize the CR to be protected from child labour were examined by using fishbone technique. In the third step, solutions were developed to realize this right by brain-storming. At the end of the activity, a general evaluation was made by carrying out a whole class discussion.

Week 12

The activity entitled Stop Abuse! aims to help the teacher candidates acquire an understanding and attitude towards the CR to be protected from neglect and abuse. In the first step, pre-service teachers presented posters on CR to be protected from neglect and abuse before the class and made evaluations within the context of this right. In the second step, a "find and sort game" was played regarding what to do when encountered any forms of neglect or abuse. Then, a whole class discussion related to legal obligations was conducted. During the evaluation process, the teacher candidates were asked to give examples of the right to be protected from neglect and abuse, and shared opinions on the importance of this right.

Week 13

The activity titled Rights Stop at Nothing aims to make the pre-service teachers acquire an understanding and attitude towards the rights of the children with disabilities. In the first step, teacher candidates were divided into groups and given cards with different disabilities such as sight and hearing. The teachers were requested to make animations regarding these disabilities on the cards and then evaluations were made. In the second step, a group work concerning the rights of the children with disabilities was carried out and a list of disabled children's rights was generated through question-answer technique. At the end of the activity, an overall evaluation was made about the rights of the children with disabilities and their importance.

Implementation Process of the Control Group

A 13-week plan was prepared concerning the predetermined acquisitions within the current research. In this regard, the CR and its importance, the CR violation, the measurements against the violation of the CR, the importance of UNCRC, the general structure and principles of the UNCRC and the things to do when faced with the violation of the CR were explained to the pre-service teachers in the control group through traditional teaching method. In this process, active learning methods and techniques were not employed as in the implementation process of the experimental group.

Data Collection Instruments

Scale for the Attitude towards Children's Rights

Scale for the Attitude towards Children's Rights (SACR) formerly developed by Karaman-Kepenekci (2006) to determine the attitudes of participants toward children's rights was used. The split-half reliability coefficient of the single-dimension questionnaire consisting of 22 items was determined as 0.77 and the Cronbach's alpha coefficient as 0.85. However, it was calculated for the reliability of the questionnaire for the present research and found as 0.80.

The Evaluation Form for the EF

Within the scope of the present study, the evaluation form for the development of understanding CR was utilized. In the process of developing the above-mentioned form, the relevant body of literature was initially reviewed (Harwood & Mcshane, 1996; Öztürk, 2019; Platten, 1995) and it was attempted to gain an insight into how to evaluate the development of understanding and in which contexts (including contents) questions should be asked to assess the development of understanding of the CR. Based on this information and in accordance with the objectives of the program, a sample interview form consisting of open-ended questions was developed. The sample form was submitted to the opinion of four field experts and then a pilot study was conducted. In line with the feedbacks received in this process, the necessary corrections were made and the form was finalized. Eight open-ended questions to determine the understanding of the CR were included in the form.

The Interview Form on the IF

The interview form was initially developed and used by researchers to evaluate the effectiveness of the curriculum and individual development. In the preparation process of the IF, open-ended questions were generated with reference to the opinions of field experts. The items were presented to expert opinions and revised based on the feedbacks received. The interview form, which has been piloted and finalized, four open-ended questions related to the evaluation of the effectiveness of the program and individual development are included.

Data Collection

SACR and EF were concurrently administered to all subjects in the experimental and control groups prior to and after the implementation. IF was employed for 12 subjects through semi-structured interviews following the implementations within the framework of ACREC. In an attempt to prevent data loss, the interviews were recorded using a voice recorder by obtaining the permission of the participants.

Data Analysis

Analysis of the Data on the SACR

The independent samples t-test was run on pre-test and post-test data related to the SACR. Before the test, Shapiro-Wilk test was performed in order to assess whether the sample is likely to originate from a normal distribution. Listed below in Table1 are results of the Shapiro-Wilk test of normality.

Table 1

Shapiro-Wilk Test of Normality Results

Measurement	Groups	N	Shapiro-Wilk *p*-value
Pre-test Score	Experimental	36	0.110
	Control	36	0.312
Post-test Score	Experimental	36	0.056
	Control	36	0.631

Analysis of the Data on the EF

Content analysis was performed on the data regarding the evaluation for the development of understanding CR. In the analysis of the data, an analysis framework developed by Ekiz and Akbaş (2005) for exploring understanding levels by reviewing the relevant literature was used (Table 2).

Table 2

Analysis Framework for Understanding Levels

Levels	Contexts
Good Understanding (GU)	Including responses encompassing all aspects of the scientific answers.
Narrow Understanding (NU)	Including responses covering one or more aspects of the valid scientific answer, yet not all aspects of it.
Fail to Understand (FU)	Repeating the question and including irrelevant and unclear responses.
Misunderstanding (MU)	Including students' responses that are alternatives to valid scientific answers and involving participants' responses that do not correspond to scientific facts.
Fail to Respond (FR)	Including such answers as "I don't know" or "I forgot" or leaving blank.

The findings obtained yielded by the data regarding understanding levels were presented by using "C" for the pre-service teachers in the control group and "E" for the ones in the experimental group. In this respect, C13, for example, refers to the thirteenth person in the control group and E20 to the twentieth person in the experimental group.

Analysis of the Data on the IF

The findings obtained from the IF were subjected to content analysis. In this process, the data set produced from the interviews was investigated line by line in accordance with the research objective and related codes were generated. The codes were re-examined and those concerning similar purposes were compiled and four categories were created. The pseudonyms used in the EF were used while presenting the findings regarding the IF.

Reliability and Validity of the Qualitative Data

Certain studies were carried out in an attempt to ensure reliability and validity in the current research. In order to ensure data loss prevention, the interview data was recorded through a voice recorder. Thus, data collection methods and techniques and evidences regarding the conclusions made in the study were explained in a clear and detailed way to enable people to understand the process. Coder reliability was used to ensure the reliability of the results of the analysis. Accordingly, the data set were submitted to the opinion of a faculty member who is an expert in the children's rights education and has qualitative research knowledge. The coding done by the researcher for ensuring the reliability was presented to external expert and agreement and dissidence were determined between the codes (Miles & Huberman, 1994). Inter-coder reliability for the EF was found as 86% and, for IF, it was found as 85%. It was sought to achieve consensus on the disagreements by discussing differences in coding.

Findings

The findings of the study are presented under three headings in this study:

Findings on the Development of Attitudes regarding the CR

In the current study, the independent samples t-test was performed on questionnaire scores in order to examine the preservice teachers' development of attitudes related to the CR and the results are given in Table 3.

Table 3

Independent Samples t-Test Results of SACR Pre-Test and Post-Test Scores

Measurements	**Groups**	***N***	***x̄***	***S***	***sd***	***t***	***p***
Pre-test Scores	Experimental	36	70.47	6.15	70	0.233	0.816
	Control	36	70.16	4.88			
Post-test Scores	Experimental	36	102.36	5.66	70	19.22	0.000
	Control	36	79.05	4.56			

As noted in Table 3, it has been observed that there is no significant difference between the questionnaire scores of the pre-service teachers in the experimental and control group prior to the ACREC implementation [$t(70) = 0.233$, $p > 0.05$], justifying that the pre-service teachers' attitudes towards the children's rights in

experimental and control groups were similar before the implementation. However, independent samples t-test results of post-test scores of the questionnaire demonstrates a significant difference between the post-test scores of the teachers in experimental and control group [$t(70) = 19.22$, $p \leq 0.05$]. When the SACR averages were examined in an attempt to determine of which group significant difference was in favour, it was found that the mean scores of the questionnaire administered to the pre-service teachers ($\bar{x} = 102.36$) were higher than those in the control group ($\bar{x} = 79.05$). This finding evidence that the development of attitudes of the teacher candidates in the experimental group towards the CR were higher.

Findings on the Development of Understanding regarding the CR

In the present study, following the experimental procedures related to the CRE, examinations were carried out to find out whether there was a difference in the understanding of the teacher candidates in both groups regarding the CR and UNCRC and the violation of the CR Accordingly, related findings are shown below (Table 4).

Table 4

Findings on the Development of Understanding Regarding CR, UNCRC and the Violation of the CR

Situations in which the development of understanding is achieved			Good Understanding		Narrow Understanding		Failed to Understand		Misunderstanding		Fail to Respond	
			F	%	*F*	%	*F*	%	*F*	%	*F*	%
The development of understanding on the CR	Pre	CG	0	0	30	83.33	0	0	4	11.11	2	5.55
		EG	0	0	30	83.33	5	13.88	0	0	1	2.77
	Post	CG	14	38.88	22	61.11	0	0	0	0	0	0
		EG	34	94.44	2	5.55	0	0	0	0	0	0
The development of understanding on the UNCRC principles	Pre	CG	0	0	0	0	0	0	23	63.88	13	36.11
		EG	0	0	0	0	0	0	25	69.44	11	30.55
	Post	CG	18	50	10	27.77	0	0	0	0	8	22.22
		EG	36	100	0	0	0	0	0	0	0	0
The development of understanding on the violation of the CR	Pre	CG	0	0	12	33.33	0	0	20	55.55	4	11.11
		EG	0	0	14	38.88	0	0	18	50.00	4	11.11
	Post	CG	5	13.88	16	44.44	0	0	15	41.66	0	0
		EG	33	91.66	3	8.33	0	0	0	0	0	0
The development of understanding on the classification of the rights in the UNCRC	Pre	CG	0	0	0	0	0	0	18	50.00	18	50
		EG	0	0	0	0	0	0	17	47.22	19	52.77
	Post	CG	8	22.22	14	38.88	0	0	10	27.77	4	11.11
		EG	35	97.22	0	0	0	0	0	0	1	2.77
The development of understanding on the children's right to participation	Pre	CG	0	0	17	47.22	0	0	0	0	19	52.77
		EG	0	0	19	52.77	0	0	0	0	17	47.22
	Post	CG	12	33.33	17	47.22	0	0	4	11.11	3	8.33
		EG	33	91.66	3	8.33	0	0	0	0	0	0
The development of understanding on the children's right to be protected	Pre	CG	0	0	18	50.00	7	19.44	0	0	11	30.55
		EG	0	0	25	69.44	0	0	6	16.66	5	13.88
	Post	CG	12	33.33	19	52.77	0	0	0	0	5	13.88
		EG	33	91.66	3	8.33	0	0	0	0	0	0
The development of understanding on the children's right to grow and develop	Pre	CG	0	0	12	33.33	0	0	13	36.11	11	30.55
		EG	0	0	10	27.77	0	0	19	52.77	7	19.44
	Post	CG	11	30.55	6	16.66	0	0	12	33.33	7	19.44
		EG	34	94.44	2	5.55	0	0	0	0	0	0
The development of understanding on the children's right to live	Pre	CG	0	0	16	44.44	6	16.66	0	0	14	38.88
		EG	0	0	9	25.00	20	55.55	0	0	7	19.44
	Post	CG	14	38.88	13	36.11	7	19.44	0	0	2	5.55
		EG	36	100	0	0	0	0	0	0	0	0

Note. Pre = Pre-measurement; Post = Post-measurement; EG = Experimental Group; CG = Control Group

Table 4 shows that the findings related to the development of understanding have been classified into eight contexts. Of these, the findings regarding the development of understanding on the CR reveal that the teachers in both groups have given responses at NU level to a great extent (83.33%) prior to the implementations. Following the implementations, it is revealed that 34 teacher candidates in the experimental group and 14 pre-service teachers in the control group have given responses at the level of understanding. An example regarding the level of understanding by a preservice teacher is as follows: *"Fundamental rights and all additional rights refer to the CR. Each child has the same standard of rights. The CR means each child's entitlement of equal protection in terms of education, life, shelter, nutrition etc."* (E1)

The findings related to the UNCRC principles indicated that, before the experimental procedure, in the control group, 23 pre-service teachers made explanations at the level of MU level, 13 at FR level and, in the experimental group, 25 teacher candidates made explanations at MU level and 11 at FR level. In this context, a teacher candidate at MU level stated that "*... is to protect children*" (E36). Nevertheless, following the implementations, it was observed that, in the control group, 18 pre-service teachers made explanations at GU level and 8 at the CV level; however, in the experimental group, all teacher candidates were seen to make explanations at GU level. Within the responses given at the GU level, it was determined that the participants made a detailed explanation on the four basic principles of the UNCRC that are the right to live and have the possibility to grow and develop, the child's best interests, non-discrimination and the right to participation.

The findings regarding the understanding on the violation of the CR showed that teacher candidates in both groups were not able to give responses at GU level prior to the implementations and that they made explanations at NU, MU and FR levels. Accordingly, the statement of "*It is the failure to fulfil the rights granted to children or their inability to benefit from those rights*" (C3) may be given as an example of an explanation at NU level. However, the following statements of the teacher candidates may be shown as an example of the explanations at MU level: "*Restricting, repressing and acting dominantly is the violation of the CR*" (E15) and "It prevents children from freedom of living and limits them" (E20). By the end of the experimental procedures, it was determined that, in the control group, 5 of the pre-service teachers gave responses at GU level, 16 at NU level and 15 at MU level. On the contrary, in the experimental group, 33 of the teacher candidates were found to give responses at GU level and 3 at NU level. Examining the GU-level responses, it has been detected that the participants expressed the violation of the CR as a loss of rights, directly or indirectly, resulting from the drawbacks, attitudes or unfair intervention of the states together with such statements as "*It is the child's suffering from harmful actions in case the state lags behind providing the necessary support and opportunity*" (E4)

The findings of the development of the understanding of the classification of rights in the UNCRC demonstrated that, in the control group, 18 pre-service teachers made explanations at MU level and 18 at FR level before the implementation. It was revealed that, in the experimental group, 17 teacher candidates made explanations at MU level and 19 at FR level. In this regard, the statement of "*It can be fundamental rights and social rights*" (E19) may be given as an example of explanations at MU level. Following the implementations, 14 teacher candidates in the control group were found to give responses at NU level and 35 participants in the experimental group were seen to make explanations at GU level. It was observed in the responses given at GU level that pre-service teachers made detailed explanations by making classifications such as the right to live, to be protected and to participation.

In the present study, the findings of the development of understanding on the children's right to participation indicated that, in the control group, 17 pre-service teachers gave responses at NU level and 19 at FR level; however, in the experimental group, 19 teacher candidates were found to make explanations at NU level and 17 at FR level prior to the implementation. Examining the responses given at NU level, participants were observed to state that "*It refers to being able to express their opinions freely*" (C18). After the implementation, 12 pre-service teachers in the control group and 33 teacher candidates in the experimental group were found to give responses at GU level. In light of these responses, it can be said that teacher candidates made explanations on children's rights from different aspects as to participation in decision-making processes that concern them, to freedom of association and peaceful assembly and to games and recreational activities.

When it comes to the findings of the development of understanding on the children's right to be protected, it was resulted that, in the control group, 18 pre-service teachers gave responses at NU, 7 at FU level and 11 at FR level; however, in the experimental group, 25 teachers candidates made explanations at NU level, 6 at MU level and 5 at FR level before the implementation. The following statement can be given as an example of a NU-level response: "*Taking measures against violence and abuse" (C10).* The findings regarding the development of understanding after the implementation showed that, in the control group, 12 teacher candidates gave responses

at GU level, 19 at NU level and 5 at the FR level; however, in the experimental group, 33 teacher candidates made explanations at GU level and 3 at NU level. These findings imply that 91.66% of the pre-service teachers in the experimental group and 33.3% of the participants in the control group have given responses at GU level following the implementation. As seen in the statement of "*It is the protection of the child from any physical, mental and spiritual harm. The right to protection from abuse, protection by the judicial system, the right to protection in armed conflict and the right to be protected from work life can be given as examples*" *(E25),* the pre-service teachers gave comprehensive responses at GU level.

Another context under investigation within the scope of the current research was the development of understanding on children's right to have the possibility to grow and develop. Accordingly, the findings showed that, in the control group, 12 pre-service teachers gave responses at NU level, 13 at MU level and 11 at FR level. It was determined that 10 teacher candidates in the experimental group made explanations at NU level, 19 at MU level and 7 at FR level. An example of MU-level explanations is as follows: "*It should progress in terms of mental and physical development required by the developmental ages*" (C33). At the end of the implementation, it was found that, in the control group, 11 pre-service teachers gave responses at GU level, 6 at NU level, 12 at MU level and 7 at FR level. However, it was revealed that, in the experimental group, 34 made explanations at GU level and 2 at NU level. An example of responses given at GU level is as follows: "*Children need to be guided to get a good education in accordance with their abilities. It is their right. They have freedom of thought. Such rights regarding games and entertainment are also their developmental rights*" (E10).

The findings on the development of understanding of children's right to live demonstrated that 16 teacher candidates gave NU-level responses, 6 gave FU-level responses and 14 gave FR-level responses in the control group prior to the implementations. However, in the experimental group, 20 pre-service teachers provided explanations at FU level, 9 at NU level and 7 at FR level. An example of NU-level explanations has been cited as follows: "*Children have the right to live from the moment they are born*" (C1). On the other hand, an example of FU-level statements is as follows: "*I think that playing games and participating in different activities are among the child's right to live*" (C29). After the implementations, it was found that 14 pre-service teachers made GU-level explanations, 13 made NU-level explanations, 7 made FU-level explanations and 2 made FR-level explanations in the control group. Nevertheless, all the participants in the experimental group were observed to give responses at GU level. Following statement is an example of GU-level responses: "*It refers to child's having appropriate living standards and to meeting his/her needs completely. Such rights as the right to food, to life and housing are also included in this right*" (E22).

Examining the results in general, it can be said that, after experimental implementations, the pre-service teachers in the experimental group were able to make GU-level explanations regarding the CR, UNCRC and the violation of the CR to a great extent; yet, the teacher candidates in the control group were found to give NU-level responses mostly.

Findings on the Effectiveness of ACREC and Individual Development

In the current study, in addition to the quantitative data used to examine the effectiveness of ACREC, qualitative data were also collected with the purpose of elaborating the quantitative results and provide a detailed explanation of the obtained results. Accordingly, findings on the effectiveness of the ACREC and the acquisitions provided by the program to the teacher candidates within the scope of the CR are presented in Table 5.

Table 5

Findings on the Effectiveness of ACREC Wand Individual Development

Categories	Codes	*f*
The Development of Understanding on the CR and UNCRC	Acquiring understanding on the CR	12
	Acquiring understanding on the UNCRC	12
	Acquiring understanding on the violation of the CR	5
	Acquiring understanding in terms of professional development	4
	Understanding the hierarchy of the rights in order of importance	2
The Development of Attitudes towards the CR and UNCRC	Developing positive attitudes towards the CR	12
	Developing positive attitudes towards the UNCRC	12
	Developing positive attitudes towards the CR for professional development	4

Categories	Codes	*f*
The Development of Behaviours towards the CR	Developing democratic behaviours	6
	Attentive listening to children	5
	Respecting for children	5
	Making observations on the CR	4
	Raising awareness towards the CR	4
	Conducting research on the CR	3
	Being a role model for complying with the CR	3
	Transferring what has been learned about the CR to life	2
Views on the effectiveness of the ACREC	Ensuring permanent learning about the CR and UNCRC	11
	Gaining professional competence regarding the CR	9
	Providing and effective training regarding the CR	6
	Increasing the knowledge on the CR	6
	Raising awareness towards the importance of advocating for the CR	6
	Developing empathy skills within the context of the CR	5

As noted in Table 5, the findings on the effectiveness of ACREP and individual development have been grouped under four categories. Of the categories, within the framework of the findings on The Development of Understanding on the CR and UNCRC, the pre-service teachers stated that they developed understanding on the program, CR, UNCRC and the violation of the CR and professional development and that they grasped the hierarchy of the rights in order of importance. This finding implies that the pre-service teachers have significantly developed such understandings as raising awareness towards the necessity of the CR in terms of professional development and the hierarchy of the rights in order of importance as well as learning about the basic concepts of the CR. In this regard, concerning the development of understanding on the UNCRC, a teacher candidate reported as follows: "… *we talked about the UNCRC and I knew almost nothing about it. After training, this has changed a lot. That's why this training has been very useful for me*" (E10).

Within the context of the development of attitudes towards the CR and UNCRC, the teacher candidates reported that they developed positive disposition to the ACREP, CR, UNCRC and professional development regarding the CR. A pre-service teacher explained this situation as follows: "*I didn't know about these rights before… I developed attitudes towards them later. When I took the course, I learned about these rights, how they could produce an effect, and how I could treat the child considering these rights. I paid attention to acting more fairly after the course…*" (E23). A teacher candidate who developed positive attitudes towards the UNCRC stated as follows: "*In fact, we didn't have a disposition to the convention because we didn't know about it. As I learned, I developed a positive attitude. We became even more conscious about the Convention. Children are valued, and we have learned and known about it*" (E22).

In the study, within the context of the development of behaviours towards the CR, the teacher candidates pointed out that, after the implementation, they developed various behaviours such as acting democratically, conducting research on the CR, transferring what they have learned about the CR, being a role model in behaving in line with the CR and respecting for children. This finding shows that the pre-service teachers developed a variety of behaviours both in terms of their communication with children and their behaviours in daily life and studies related to acquiring information regarding the CR. In this respect, a teacher candidate reported that s/he carried out research on the CR by saying "… *when I took it as a course, I felt the need to do more research… By conducting research on this topic and pondering on it, I became more conscious*" (E15).

Regarding the effectiveness of the ACREP, the teacher candidates emphasized that the implementations ensured permanent learning concerning the CR and UNCRC; provided professional competence for the CR; offered an effective training on the CR; enhanced their knowledge about the CR; raised awareness towards the importance of supporting the CR and developed empathy skills within the context of the CR. These findings demonstrate that the ACREP fulfils such significant functions as creating an effective learning environment that ensures permanent learning, the development of professional competence and the enhancement of knowledge in addition to raising awareness towards advocating for the children's rights and establishing empathy. Accordingly, a teacher candidate stated this situation as follows:

If we learned them theoretically, I think that would not be so permanent. When looking back, I remember the practices we carried out. I recall the animations and the activities we did. It's more permanent for me. Besides,

doing something by feeling and asking what you would you if you were is different and saying that this should be done is different. In my opinion, everything we do by feeling is more permanent. I was able to adopt it by this means (E4)

When the findings were evaluated in general, it can be said that the ACREP has gained various acquisitions to the pre-service teachers in terms of the development of understanding, attitude, behaviour and professional development related to the CRE.

Discussion, Result and Suggestions

This paper aims to investigate the effect of the CRE implementations on the pre-service teachers' understanding and attitudes towards the CR through active learning methods. The results of the research have revealed that the CRE carried out with active learning-based practices is more effective compared to the CRE performed with the traditional teaching method. Accordingly, by the end of the implementations conducted with active learning method, it was determined that the pre-service teachers' understanding on the CR, UNCRC and the violation of the CR increased to a high level of understanding and misunderstanding were eliminated. Added to this, after the implementations carried out with the traditional teaching method, it was found that the teacher candidates gave responses at NU level to a great extent and misunderstandings were observed in a part of the control group. These results have demonstrated that the CRE aligned with active learning-based practices is more effective rather than the children's rights education conducted with the traditional teaching method in terms of the development of understanding. Considering that teachers' lack of knowledge and awareness concerning the children's rights and UNCRC are significant problems (Howe & Covell, 2007; Öztürk et al., 2019) and taking into account the fact that children's rights education encompasses the educational practices realized in the UNCRC (Howe, 2005; Howe & Covell, 2007), it may be said that teacher candidates have acquired significant acquisitions through active learning-based children's rights education. Furthermore, the results of the research have shown that, in the experimental group where active learning-based practices were carried out, the pre-service teachers' attitudes towards the CR are significantly higher than those in the control group where the traditional teaching method was performed. It can be alleged that teachers' negative attitudes towards the CRE pose serious problems (Howe & Covell, 2007; Kılıç & Öztürk, 2018; Öztürk et al., 2019; Rudduck & Flutter, 2000) and that the effective acquisition of positive attitudes through the active learning-based implementations is of great importance for the CRE. These findings underpin the functionality of active learning-based practices for an effective children's rights education in teacher training programs which are regarded as the most crucial area of action in the CRE (Jerome et al., 2015). Indeed, practices such as creative drama, case study, educational game, collaborative learning, small group discussion, which are employed in the active learning-based implementation process, are generally considered as effective implementations for human rights education in a broad sense and for children's rights education under this concept (Amnesty International, 2002; Brander et al., 2002; Flowers, 2007; Gümüş & Şentürk, 2022; Hassi et al., 2015; Öztürk, 2019). In addition to acquiring knowledge and attitudes in human and children's rights education, given the necessity of learning processes in which awareness towards the violation of rights, critical thinking and empathy skills and sense of responsibility are ensured; ideas are mutually evaluated on daily situations encountered and collaborative work is encouraged (Brander et al.,, 2002; Flowers, 2000, 2007; Levin-Goldberg, 2008; Misgeld, 1994), it may be asserted that active learning-based practices have established the appropriate learning environment for the CRE. When the relevant body of literature is examined, it is observed that active learning-based practices performed with various participant groups within the context of the CRE have a positive effect on the development of understanding, knowledge, attitudes and awareness. In this respect, Topçu (2019) found that children's rights education carried out with drama method had a positive effect on the development of attitudes and awareness towards the CR among primary school students. Moreover, Öztürk (2019) undertook a study on pre-school teacher candidates and revealed that active learning-based practices positively affected the development of attitudes and understanding towards the CR. In the same vein, Hassi et al. (2015), in their study on secondary school students, unveiled that drama method was effective for human and children's rights education. Uçuş (2013) reported that the children's rights education program, involving active learning methods, ensured the development of knowledge and awareness regarding children's rights. Çarıkçı (2019), however, revealed that active learning-based practices aided primary school students to raise attitudes and awareness towards the CR. In parallel with the studies in the related literature, in this study as well, active learning-based implementations have effectively realized the development of understanding and attitudes towards the CRE, and accordingly, it may be concluded that these practices generate a functional learning process for the CRE. On the other hand, based on the research findings, active learning-based implementations were found to be useful for the CRE by classroom teacher candidates in various aspects such as ensuring the development of understanding, attitudes and competence regarding the on behalf of professional development, contributing permanent learning,

gaining democratic behaviours, respecting children, conducting research, and raising behaviours that can be transferred to daily life. The afore-mentioned results justify the assertion that active learning-based practices provide an effective learning process for the CRE in teacher training. In line with the results of this study;

-Dissemination of CRE with active learning-based practices for professional development in pre-service primary teacher education,

-Inclusion of active learning-based CRE courses as a course in primary teacher education programs,

-Within the scope of active learning-based CRE, workshops and studies should be carried out to provide pre-service primary teachers with planning and implementation skills for CRE,

-Conducting studies on pre-service teachers in different departments to determine the functionality of active learning-based CRE,

-Active learning-based CRE practices should be employed in in-service training programs for primary teachers can be suggested.

Code of Ethics

The ethical consent was obtained from Social and Human Sciences Ethics Committee at Gaziantep University on 08.11.2021 with the approval decision number 14 (Number of decision: E-39083294-050.99-116106).

References

Akyüz, E. (2021). *Çocuk hukuku: Çocukların hakları ve korunması [Children law: Children's rights and protection]*. Pegem Akademi.

Amnesty International (2002, June 8). *First steps - A manual for starting human rights education*. Amnesty International. https://www.amnesty.org/en/documents/POL32/002/2002/en/

Anglin, J. (1992). Children's rights and the Magic Beanstalk. *Journal of Emotional and Behavioral Problems,1*(3), 36–39.

Brander, P., Keene, E., & Lemineur, M.L. (Eds.). (2002). *Compass. A manual on human rights education with young people.* Council of Europe Publishing.

Cohen, L., & Manion, L. (1994). *Research methods in education*. (4th ed.) Routledge.

Covell, K. & Howe, R. B. (1999). The impact of children's rights education: A Canadian study. *International Journal of Children's Rights*, *7*, 171–183.

Covell, K., Howe, R. B., & McNeil, J. K. (2010). Implementing children's human right education in schools. *Improving Schools*, *13*(2), 117–132. https://doi.org/10.1177/1365480210378942

Creswell, J. W. (2014). *A concise introduction to mixed methods research*. SAGE publications.

Çarıkçı, S. (2019). *The effects of children's rights education programme on the 4th graders' attitudes towards and awareness of children's rights.* [Unpublished doctoral dissertation]. Marmara University, Turkey.

Dağlı, S. K. (2015). *Evaluation of teachers' behaviors regarding children's rights by students*. [Unpublished master's thesis]. Yeditepe University, Turkey.

Ekiz, D., & Akbaş, Y. (2005). İlköğretim 6. sınıf öğrencilerinin astronomi ile ilgili kavramaları anlama düzeyi ve kavram yanılgıları [Primary school 6th grade students' level of understanding and misconceptions about astronomy concepts]. *Milli Eğitim Dergisi*, 165, 61–78.

Flowers, N. (2000). *The human rights education handbook: effective practices for learning, action, and change. human rights education series, topic book*. Human Rights Resource Center, University of Minnesota.

Flowers, N. (Ed.). (2007). *Compasito: Manual on human rights education for children* (2nd ed.). Council of Europe. http://www.eycb.coe.int/compasito/pdf/Compasito%20EN.pdf

Gümüş, N., & Er Şentürk, D. (2022). *Yaratıcı drama ile çocuk hakları [Children's rights with creative drama].* Eğiten Kitap.

Harwood, D., & Mcshane, J. (1996) Young children's understanding of nested hierarchies of place relationships. *International Research in Geographical and Environmental Education, 5*(1), 3–29. https://doi.org/10.1080/10382046.1996.9964985

Hassi, ML, Niemelä, H., Paloniemi, A., Piekkari, J., & Wolde, K. (2015). Drama in child rights education - developing a pedagogical model. *The European Journal of Social & Behavioural Sciences, 14*(3), 291–307. https://doi.org/10.15405/ejsbs.172.

Howe, R. B. (2005) Citizenship education for child citizens. *Canadian and International Education Journal, 34*(1), 42–49. https://doi.org/10.5206/cie-eci.v34i1.9053

Howe, R. B., & Covell, K. (2007). *Empowering children: Children's rights education as a pathway to citizenship.* University of Toronto Press.

Jerome, L., Emerson, L., Lundy, L., & Orr, K. (2015). *Teaching and learning about child rights: A study of implementation in 26 countries*. UNICEF.

Karaman-Kepenekci, Y. (2006). A study of university students' attitudes towards children's rights in Turkey. *The International Journal of Children's Rights, 14*(3), 307–318. https://doi.org/10.1163/157181806778458095

Kent Kükürtçü, S. (2019). *The effect of children's rights and democracy education on children's democratic behavior.* [Unpublished doctoral dissertation]. Hacettepe University, Turkey.

Kılıç, A., & Öztürk, A. (2018). An analysis of children's right to participation at primary schools in Turkey: a case study. *Qualitative Research in Education, 7*(3), 265–303. https://doi.org/10.17583/qre.2018.3528

Lansdown, G., Jimerson, S. R., & Shahroozi, R. (2014). Children's rights and school psychology: children's right to participation. *Journal of School Psychology, 52*(1), 3–12. https://doi.org/10.1016/j.jsp.2013.12.006

Levin-Goldberg, J. (2008). *The impact of a human rights education on student attitudes and behaviors.* [Unpublished doctoral dissertation], Northcentral University, United States.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Sage Publication.

Misgeld, D. (1994). Human rights and education: Conclusions from some Latin American experiences. *Journal of Moral Education, 23*(3), 239–259. https://doi.org/10.1080/0305724940230302

Mtukwa, T. (2010). *Catch them young: Using process drama for children's rights education.* [Unpublished doctoral dissertation]. University of the Witwatersrand, South Africa.

Nelken, D. (1998). *Children's rights and traditional values*. Ashgate.

Öztürk, A. (2019). Development of children's rights education curriculum for prospective preschool teachers. *Journal of Theoretical Educational Science, 12*(4), 1257–1283. https://doi.org/10.30831/akukeg.471086

Öztürk, A., Eren, M. & Topçu, B. (2019). Effective children's rights education in turkey from the perspective of classroom teachers: problems and suggestions. *Kastamonu Education Journal, 27*(5), 2221-2232. https://doi.org/10.24106/kefdergi.3415

Öztürk, A., & Kalender, B. (2021, September). *A research on examination of children's rights-based structure at primary schools.* VII. The International TURKCESS Education and Social Sciences Congress, Turkish Republic of Northern Cyprus.

Platten, L. (1995). Talking geography: an investigation into young children's understanding of geographical terms part-1. *International Journal of Early Years Education, 3*(1), 74–92. https://doi.org/10.1080/0966976950030108

Prince, M. (2004). Does active learning work? a review of the research. *Journal of Engineering Education, 93*(3), 223–231.

Robson, J. (2016). Early years teachers and young children's rights: the need for critical dialogue. *Research in Teacher Education, 6*(1), 6–11. https://doi.org/10.15123/PUB.5091

Rudduck, J., & Flutter, J. (2000). Pupil participation and pupil perspective: Carving a new order of experience. *Cambridge Journal of Education, 30*(1), 75–90. https://doi.org/10.1080/03057640050005780

Save the Children (2006). *Annual Report 2006.* https://www.savethechildren.org/content/dam/usa/reports/annual-report/annual-report/sc-2006-annualreport.pdf

Sever Serezli, E., Erbaş, A. A., & Günter, T. (2023). Teaching children's rights by problem-based learning (PBL) approach: An action research. *Journal of Theoretical Educational Science, 16*(1), 153–198. https://doi.org/10.30831/akukeg.1125358

Silberman, M. (1996). *Active learning:101 strategies to teach any subject*. Allyn and Bacon.

Starkey, H. (1991). The Council of Europe recommendation on teaching and learning of human Rights. In H. Starkey (Ed.), *The challenge of human rights education* (pp. 22–38). Cassell Educational Limited.

Todres, J., & Kilkelly, U. (2022). Advancing children's rights through the arts. *Human Rights Quarterly, 44*(1), 38–55.

Topçu, B. (2019). *Development and implementation of children's rights education program based on creative drama.* [Unpublished master's thesis]. Gaziantep University, Turkey.

Torun, F., & Duran, H. (2014). Effect of game method on success, permanence and attitude in children's rights education. *Adıyaman University Journal of Social Sciences, 7*(16), 418–448.

Uçuş, Ş. (2013). *Preparation and evaluation of children's rights education program.* [Unpublished doctoral dissertation]. Hacettepe University, Turkey.

Wilke, R. R. (2003). The effect of active learning on student characteristics in a human physiology course for nonmajors. *Advances in Physiology Education, 27*(4), 207–223. https://doi.org/10.1152/advan.00003.2002

Sınıf Öğretmeni Adayları için Aktif Öğrenme Temelli Çocuk Hakları Eğitimi

Öz

Bu araştırmada, aktif öğrenme temelli çocuk hakları eğitiminin sınıf öğretmeni adaylarının çocuk haklarına ilişkin tutum ve anlayışları üzerine etkisi incelenmiştir. Araştırmada, açıklayıcı sıralı desen kullanılmış olup eşdeğer olmayan ön test-son test kontrol gruplu yarı deneysel desen ve durum çalışması işe koşulmuştur. Deneysel uygulamalar 72 üçüncü sınıf öğretmen adayı ile gerçekleştirilmiştir. Deney grubuna çalışmada geliştirilen Aktif Öğrenme Temelli Çocuk Hakları Eğitimi Programı (AÇHEP) kullanılarak 13 hafta boyunca eğitim verilmiş, kontrol grubunda ise geleneksel öğretim yöntemi kullanılmıştır. Nitel aşamada ise 12 öğretmen adayı ile yarı yapılandırılmış görüşmeler gerçekleştirilmiştir. Bulgular, son test puanlarının deney grubu lehine anlamlı farklılık gösterdiğini ve bu grupta anlayış gelişiminin daha yüksek olduğunu ortaya koymuştur. AÇHEP'in öğretmen adaylarına CR ile ilgili anlayış, tutum, davranış ve mesleki gelişim bağlamında katkı sağladığı görülmüştür.

Anahtar kelimeler: çocuk hakları eğitimi, aktif öğrenme, program geliştirme, sınıf eğitimi, öğretmen eğitimi

BOĞAZİÇİ UNIVERSITY JOURNAL OF EDUCATION
2023, Vol. 40-2, No. 3
https://doi.org/10.52597/buje.1186437

Teaching Teamwork: Online Technical Writing Courses with Engineering Students

Bernadette Longo[a] and Neslihan Önder Özdemir [b]

Abstract

Using a pragmatic approach, this case study aims to incorporate communication skills in team teaching in light of the literature, describes how communication and teamwork principles play out in online third-year technical writing courses with ethnically diverse international students and faculty from engineering and other STEM majors at an institute of technology in the USA (n = 48). The data were collected using weekly assignments for the semester-long course, and student evaluations of course outcomes. The findings showed that because students wrote weekly short analyses and received weekly feedback, they most often improved their writing skills, such as editing their writings according to American English rules, and transferred learning of rhetorical principles from one setting (analyzing other people's writing) into another setting as they learnt to work as a team of productive writers.

Keywords: computer-based learning, team dynamics, professional communication, engineering students, writing.

Article info

Received: 09.10.2022
Revised: 03.04.2023
Accepted: 21.05.2023
Published online: 30.12.2023

Introduction

After graduation from the university, looking for a job is on the agenda of many students. Thus, higher education should prepare the students for work environments across disciplines, including engineering, through honing the required skills (e.g., working and writing in a team, given that potential employers look for teamwork skills). As Lingard and Barkataki (2011) state, teamwork is recognized as a crucial skill for engineering, given that engineering is by nature a collaborative process, and most production systems are often designed by teams; communication and teamwork abilities are required. For example, most engineering students will work with crucial cross-disciplinary technical issues, such as global warming, intelligent networks, sustainable energy development, affordable housing, and resilient infrastructure. Rajabzadeh et al. (2022) conducted research into undergraduate experiences of group work. There were takeaways from group work experiences, such as good communication skills, the positive effects of working with diverse personalities and utilizing individuals' skill sets. Most engineering and science, technology, engineering, and mathematics (STEM) instructors know that when students enter workplaces, they will need to work with interdisciplinary teams to address these complex technical issues. Deveci and Bedirhanoğlu (2022) investigated 229 civil engineering university students' metaphoric perceptions of lifelong learning. "Enhancement of occupational skills" was less frequent in the data set. Their findings suggest that students' awareness should be increased of professional and personal aspects of lifelong learning. They highlight that given the multidisciplinary nature of engineering disciplines; these skills should be on the agenda through collaboration and cooperation with various departments.

We can assign group work in our classes to help prepare students for these 21st-century workplaces that are expected to require a broad set of knowledge, skills (e.g., critical thinking, problem-solving, creativity, collaboration, and communication), work habits, and character traits (Aizenkot & Ben David, 2022). However, then university students may complain to us about group assignments that turn out to be more trouble than doing assignments individually, given that the knowledge that students should know while writing covers several dimensions, including content knowledge, language system knowledge and writing process knowledge (Tribble, 1996). Students often tend to view these assignments as just busier work, and instructors wonder why students resist group assignments that we know will help prepare them for their careers. Among language skills, writing is

[a]*New Jersey Institute of Technology, Department of Humanities, drblongo@gmail.com, ORCID: 0000-0003-0879-2666*
[b]*Corresponding author, Bursa Uludağ University, School of Foreign Languages, neslihaneap@gmail.com, ORCID: 0000-0001-7010-9050*

To cite: Longo, B & Onder Ozdemir, N. (2023). Teaching teamwork: Online technical writing courses with engineering students. *Boğaziçi University Journal of Education*, *40-2*(3), 49-64. https://doi.org/10.52597/buje.1186437

more challenging to acquire for native speakers and second or foreign-language learners across disciplines. Engineering students, who are the target group in this study, typically avoid writing classes as far as we observed in the classes, and as Alley (2022) discussed, engineering and science students entering the university have high verbal American College Testing and the standardized test scores. Still, many engineering and science students cope with their writing, and also where they may feel that course objectives and evaluations do not directly relate to their academic and career goals. However, online technical writing courses can be considered sites for integrating humanistic teamwork and communication principles that will better prepare engineering students for 21st-century workplaces that include diverse, distributed teams by identifying their needs (see for needs analysis, Onder-Ozdemir, 2014, 2018).

In the literature, group work is defined as "students working together in a group small enough so that everyone can participate in a clearly assigned learning task" (Cohen & Lotan, 2014, p. 2). Students in a group communicate about their tasks with one another (e.g., asking questions, explaining, making suggestions, or listening). The interaction may also be nonverbal, such as nodding or smiling. When instructors assign group projects, we often make an assumption that students inherently know how to work with others to accomplish a task. This assumption trivializes students' cooperative skills need to build the foundations of trust and communication that successful teamwork requires. Rather than being a trivial activity, working in groups can actually be "one of the most demanding activities we engage in during our life" (Fujishin, 2013, p. xi). As Lindgard (2010) argues,

> most engineering students are ill-prepared to function effectively on teams before they are asked to do so in a course. To solve this problem, engineering programs must directly address the teaching of teamwork skills. This is the only way to ensure the delivery of graduates with the necessary level of teamwork abilities and attitudes.

Thanks to the opportunities group work provides in higher education, such as negotiating ideas and reflecting upon their learning, group work has long been accepted as an effective learning strategy to develop group work competence and skills required for effective teamwork and employability. Thus, teachers often encourage assigning group work (see Fraser & Deane, 1977; Smith, 1996). As Sweeney and Weaven (2005) discuss, group work also facilitates deeper learning and develops transferrable social skills that can be used in related contexts, such as those skills required for effective teamwork. Instead of assigning group work because it is expected in classes these days, instructors can set up group assignments to help students learn humanistic skills that emphasize the ability to find value in their fellow team members and their collective efforts. This type of learning also relies on learning robust communication skills. Team projects can provide opportunities for students to enhance their communication skills within engineering curricula that might otherwise not adequately address communication instruction (see López-Pellisaet al., 2021; Raza & Chua, 2023; Riemer, 2007; Sheth, 2015).

Communication as a Basis for Teamwork

Because all communication reflects human relations, most technical professionals understand that communication is more than simply a neutral conduit to convey information from one person to another. Kmiec and Longo (2017, p. 8), for example, argue that communication is the foundation of human communities:

> Humans are social creatures, and communication is the means by which humans identify themselves and each other, express their needs and desires, share knowledge, and interact to achieve goals. Communication is a ubiquitous feature of human communities. It is a behavior that creates society and enables groups of people to organize and accomplish complex tasks.

Fujishin (2013) also underscores the importance of communication for building relationships and accomplishing cooperative actions: "The purpose of life is founded in our relationships with others during this lifetime. The primary way we initiate, develop, and maintain these relationships is through the communication process" (p. 38). In team settings, communication is the medium for people to build interpersonal relationships that enable them to address the task, topic, and social dimension of teamwork.

These humanistic communication skills are not only valuable for students to be successful in their academic teamwork, but our students are also learning skills that employers will look for when hiring recent graduates. To help ensure that students learn these skills, the Accreditation Board for Engineering and Technology (ABET) specifies that graduates of engineering programs should have demonstrated abilities to "function on multidisciplinary teams" and "communicate effectively" as two of their eight general program criteria (n.d.).

ABET sees these "soft" skills as being important for young professionals to be "capable of leading the way in innovation, emerging technologies, and in anticipating the welfare and safety needs of the public" (n.d.). In the estimation of ABET's group of engineering professionals, therefore, teamwork and communication skills are vital to not only a person's individual success but also to our collective ability to address complex, global issues.

Professionals working in specific disciplines also acknowledge that they look for strong communication and team skills when hiring recent graduates (Ballinger, 2017; Dominguez et al., 2023; Llopis, 2012; Smith, 2000; Veis, 2017). For example, Ben Amaba from IBM Complex Systems states, "Software engineers need good communication skills, both spoken and written. They need analytical capability, and they need to be able to manage a project from end to end while working well with their colleagues" (Platt, 2011, para 9.) This statement was underscored at the December 2016 Federal Data in Action Summit in Washington, D.C., where panelists discussing the Future of Data Science Education and Recruiting reported that communication skills were the most important qualification they looked for when hiring for technical positions. "For data science to be effective, the panelists argued, they need people who can articulate the data in a way that makes it understandable for the rest of us" (Mitsch, 2017, para 4.). The skills of acquiring how to communicate technical information to people in different disciplines are also the basis for strong teamwork abilities. With strong interpersonal communication skills, teams can become groups in which people learn from each other and teach each other based on each member's area of expertise.

Working with Distributed Teams

Communication and teamwork have proven to be both rewarding and challenging work skills in face-to-face settings, where people have had millennia to come up with workable solutions to interpersonal communication challenges. These face-to-face team settings are still important for building interpersonal relationships. However, more and more engineering professionals find themselves working on complex global issues with people in different locations. These distributed teams are necessarily supported by information and communication technologies (ICTs) that enable both synchronous and asynchronous global communications. Kimble (2014) finds that these ICTs pose new challenges for team functioning:

> The desire to communicate and work with others in groups is part of human nature, but the rapid development of communications technology […] has added a new dimension to this basic desire. Within a single generation, we have moved from a fixed location, one-to-one communication by telex and telephone to a whole range of different possible modes of communication, all of which have been opened up by the sudden and rapid expansion of digital networks. […] The challenge to us as human beings is in how we adapt and respond to these new opportunities (p. 14).

Communication and teamwork skills are as fundamental to distributed team functioning as in face-to-face teams (McHenry & Krishnan, 2022; Staggers et al., 2008). In fact, distributed teams rely more on sophisticated, technology-mediated communication than face-to-face teams, both as a way to overcome cultural (Messer, 2016; Shachaf, 2008) and disciplinary challenges (Gajendran, 2012; Hassell, 2015; Sarker et al., 2011). Adding ICTs to the mix of communication media on distributed teams also adds complications on top of any language, culture, or personality differences that are inherent in global teams.

When distributed teams include members worldwide, communication is especially complicated. To be effective, team members must first "establish a basis for the effective exchange of their varying capabilities" (Siebdrat et al., 2009, para 13). If the team members are primarily native English speakers, establishing this basis is less complicated than in groups that include non-native English speakers whose team participation may be compromised because of this language dynamic. Despite these complications, multi-lingual distributed groups are becoming more and more frequent as organizations seek to address complex global issues. In her study of globally distributed team communication practices, Goettsch (2016) finds that non-native English speakers had more challenges in the areas of language, culture, technology, and collaboration. Her six recommendations for building relationships in these teams included increased informal communication, personal sharing, tolerance for pauses and slower communication, active listening, and awareness of the possibility of miscommunication. Watkins (2013) suggests formalizing the team's communication patterns by establishing a "communication charter" that sets out "norms of behavior when participating in virtual meetings" (para 5) to help ameliorate language and cultural challenges.

Working on distributed, cross-disciplinary, and global teams presents interpersonal challenges that can only be addressed by first establishing strong teamwork and communication skills among members. Engineering

instructors have sometimes sought to include these skills in content-area courses. However, these "soft" skills are unlikely to be addressed without explicit instruction due to the requirements of covering content material in a specific major. After all, these instructors are experts in their discipline but in areas that directly study teamwork and communication, e.g., organizational communication, small group dynamics, or human communication theory. Thus, it is not surprising that "soft" skills like teamwork and communication are not explicitly taught in most engineering classes. This gap in necessary skills training provides an opportunity for humanities and communication instructors to address teamwork skills explicitly in courses, such as third-year technical writing and first-year composition.

Teaching Teamwork and Communication Online

Learning to be effective team members in global, online environments is a skill that instructors can address explicitly in their content area courses. Especially since COVID-19, online education has been used significantly to deliver education at universities worldwide. Thus, self-sustaining online courses should help. Recently, Kuo and Fitzpatrick (2022) have highlighted the assessment of the impact of contextual influences on online higher education. They proposed three instructional design guidelines: (i) building a knowledge-based course structure, (ii) preparing flexibility in design, and (iii) promoting adjustability in modular design. Online courses are especially appropriate for teaching distributed teamwork skills because these learning environments more closely replicate virtual workplaces than traditional, face-to-face classrooms (Solheim et al., 2010). By including this type of distributed teamwork instruction in online courses, instructors provide opportunities for students to experiment and even fail as they strengthen their interpersonal skills (Solheim et al., 2010). Participating in online communities is second-nature to our university students, who come to their courses already prepared to learn more about online interpersonal communication skills. In 2009, a MacArthur Foundation report on digital media and learning found that people aged 18-32 were "actively involved in […] participatory cultures" characterized by "low barriers to […] civic engagement, strong support for creating and sharing creations […] [They] also believe their contributions matter and feel some degree of social connection with one another" (Jenkins, 2009, p. xi). In the intervening years since this study, the students in this research context have only become more adept with and comfortable in networked environments. They come to the classes ready to refine and deepen their interpersonal communication skills (see Moran, 2016, for a discussion of millennials as digital natives). These students also benefit from technology-enhanced learning that engages them as active participants. They will be in workplace teams after graduation (Jones & Fox, 2009; Sarkar et al., 2017).

Technology-mediated learning environments are largely read-write media, which lend themselves fundamentally to writing instruction. In fact, Warnock (2009) argues that because online writing courses require "students to learn to use writing to interact with others" (p. xi), they are perfect environments for students to strengthen their written communication skills while they learn other course content: "The [Online Writing] OW course forces an environment that is not just writing intensive but also often writing [exclusively]. As writing teachers, we could not ask for a better lab or workshop to help […] students develop their ability to communicate using the written word" (p. xi). In these online environments, engineering and writing instructors can design course structures that foreground reading and writing instruction, which form a basis for teaching teamwork and communication. Online course tools as simple as asynchronous discussion boards can provide robust environments for students to strengthen their communication and collaboration skills. In her study, Young (2008) finds that incorporating asynchronous boards into courses enhances student learning and results in higher grades when students actively participate in these online discussions. Tai et al. (2018) describe how this discussion tool can emulate peer-to-peer collaboration in engineering programs to underpin course instruction and perform future professional communication practices. Chadha (2018) also found that online collaboration in courses could "enhanc[e] student deliberative performance" in politics courses and could further "be used to complement a variety of disciplines" (p. 1), in which, unlike face-to-face class environments, all students are required to participate in online environments, which means that students need to develop skills to collaborate productively with their peers despite their personal differences. Although online collaboration can have some advantages, such as flexibility, many dimensions of interpersonal communication may be missing in online classes, such as the loss of empathy between students due to the absence of face-to-face communication, which causes interpersonal communication not to work effectively (Putri Anzari & Pratiwi, 2021). For example, it may lead to some obstacles regarding interpersonal skills and relationships, given that instructors in online classes may feel that their connection with students is limited, without much energy transfer that happens more naturally in the face-to-face classroom, such as feeling less support because of the physical disconnection with the classmates and teachers; lack of a sense of community, body language or someone's energy (see Bazylak & Weiss, 2017; Davis et al., 2019; Pacansky-Brock, 2016). When instructors acknowledge that this online collaboration requires stronger interpersonal and professional communication skills, they can build instruction on these topics into their courses.

As Griffin and Minter (2013) suggest, instructors can integrate assignments using social media and other online tools that students regularly use outside of class and using more formal tools in their course management system (see also Harris & Greer, 2016, for details about designing writing instruction into online courses).

In addition to written assignments, engineering instructors can use instructor- and student-created video content to model and reinforce professional collaborative communication. In a study by Greene and Crespi (2012), for example, students found video content in business courses reinforced their understanding of course content, in addition to finding information presented in this format to be entertaining and relevant. These researchers further report that their students had some challenges managing video technologies. However, the students in the context of this study are currently more adept at creating videos with mobile devices, which should largely overcome this barrier to content production. Speaking on the use of video in her K-12 classroom, Clark (2018) found that this medium helped to "make student thinking visible, give every student a voice, and easily share work" (as cited in Passut, 2018, para 1) – all skills that can translate to workplace collaboration.

Newer technologies can supplement teamwork instruction, both through web-based meeting tools and audio content. Web-based meeting platforms, which are routinely used in workplaces, can be helpful for students to create a sense of proximity with their distributed team members. Examples of these platforms are Cisco WebEx, Adobe Connect, or even Skype (see McLaughlin, 2018 for more information on meeting platforms). Audio tools can also facilitate verbal collaboration skills, both through instructors modeling professional verbal communication to students and through students practicing these skills in peer-to-peer communication. Audio tools can also help visually challenged students participate more fully with multi-media content (for information on inclusive design, see Burgstahler, 2017; D'Onfro, 2018; Rabidoux & Rottmann, 2017).

As highlighted in the literature by Vesikivi et al. (2019, p. 520), "although team teaching has been applied and studied already in the 1970s, there is no single universal definition for it." However, there are discussions in the literature. For example, to Katzenbach and Smith (2001), a team refers to "[…] individuals brought together for a certain task, goal or objective, engaged in frequent face-to-face interaction to execute a task, while the individuals are mutually interdependent on each other about the outcome of the task and its execution." Buch and Andersen (2015, p. 28) highlight that "team and project work is often considered to produce cohesion and identity." Thus, teamwork often stimulates personal and professional growth, autonomy, collectivity, solidarity, and well-being. To hone communication skills, education methods and curriculum need to be revisited to provide students with opportunities, such as team teaching, and a chance to study, work with real-world problems and have the freedom to make their own mistakes and discuss. In engineering, projects are often performed around tasks and project managers coordinate. Project members are assigned due to their expertise in specific technical fields that match specific tasks within the project. Hence, teams are formed. In this study, a team has three elements which are common goals, complementary skills, and responsibilities. Team members, who are engineering students in this study, pursue a common goal and develop a collaborative environment during online education. Team teaching provides engineering students with the opportunity to obtain feedback and support from peers, which creates a collaborative atmosphere and encourages their active participation in knowledge generation and sharing. In this study, team teaching, which has been used interchangeably with teamwork, refers to the ability to work in teams that involves a considerable amount of collaborative practices in online writing courses in engineering at the university, which is possibly the most important skill to possess in working life (Vesikivi et al., 2019).

Pragmatism is a philosophical school of thought highlighting that an idea or proposition is real when it meets the needs for practical applicability, functionality, and workability (Idiong, 2023). Using realistic, practical, and participatory aspects, drawing on John Dewey (1859-1952), the present study utilized a pragmatic approach in higher education where education and learning are social and interactive processes and the teacher's responsibility is more of a facilitator than an educator. In the pragmatic approach, context (e.g., online technical writing courses) and receiver (e.g., engineering students) are significant during interaction (see Aijmer, 2013; Zeleňák, 2006). As De Felice et al. (2023) state, we acquire new information, mainly in social contexts, through the transformation of information. Adult learning typically occurs in social contexts and relation to peers, colleagues at work and/or mentors. In this study, as a communication process, in social interaction, engineering students spend time together during online technical writing courses, which involve verbal and non-verbal communication. Thus, students have been provided with an embracing learning milieu where they can learn how to write in English and realize their potential using teamwork in online technical writing courses.

Using a pragmatic approach, in which engineering students work in a team to explore their experience, knowing and acting are shaped through social interaction and being active in online writing classes; the present

study aims to incorporate communication skills in team teaching in online classes in light of the literature, describes how communication and teamwork principles play out in an online third-year technical writing course at an institute of technology in the USA with an ethnically diverse international student body and faculty. The focus is junior-level technical writing at an institute of technology, where we have students from engineering and other STEM majors, along with business majors. Our motivation for conducting this study is to share how teamwork can empower engineering students and experience reciprocal support for collaboration rather than competition among students, which is believed to enhance course satisfaction and foster student competence and autonomy in education (see Barkley et al., 2014).

Methods

Participants and Teaching Communication Principles in a Third-year Technical Writing Class

The student body and faculty in this study both rank among the most ethnically diverse in the USA, with representative groups, including African American, Latino/a, Asian, and White. Over 20% of the student body are international students from at least 41 countries. As a whole, the student body and faculty are predominantly male (College Factual, n.d.). The classes in this study were online and are generally filled with 24-25 students each semester. The first author in this study was the coordinator of online writing courses and responsible for teaching and the second author was the observer and facilitator to practice teamwork. Both were teaching engineering students, so they were familiar with engineering students' needs. In this study, convenience sampling was chosen to involve participants because of the close proximity to the first researcher in this study because they were in her classes ($n = 48$). This study was a case study to capture the context and lived reality of engineering students (Duff, 2008; Stake, 1995).

We should note that Altınmakas and Bayyurt's (2009) findings revealed interrelating educational and contextual factors that may affect undergraduate writing, including students' perceptions about academic writing and disciplinary-specific text genres and prolonged engagement with the academic context and discourse. Considering these factors and our teaching context, the following six learning objectives in the course syllabus were present in this study:

1. Understand and explain the four rhetorical principles: audience, purpose, organization/arrangement, and discourse community.
2. Analyze and explain how these four rhetorical principles influence authors' writing decisions in technical documents.
3. Analyze writing situations and apply these four rhetorical principles in your own technical documents.
4. Analyze and explain how these four rhetorical principles influence your technical writing decisions.
5. Understand and apply team-building techniques in an online team environment.
6. Write effective technical prose that is mechanically correct and professionally appropriate.

The data were collected using weekly assignments for the semester-long course, and student evaluations of course outcomes. In the present study, during the first half of the semester, students learned to master and apply four rhetorical communication principles: audience, purpose, organization/arrangement, and discourse community- (see Kmiec and Longo (2017) for a rationale and more information on using these principles to teach technical writing). These students' first assignment was to write an introduction of themselves that included descriptions of "five great things to do in your hometown." Because this assignment was based on the expertise that students bring with them to class, which is engineering, they could all accomplish this introductory task. Because they posted these assignments to a discussion board shared by everyone in the class, students also recognized the purpose of this first assignment as introducing themselves to other members of the online class. As teachers, we can also become familiar with students' writing skills from this initial assignment.

In their second assignment, students revised their previous descriptions of things to do in their hometown to address architecture majors at our school, an audience of people with whom the students should be personally familiar. In addition to completing this revision, students were also asked to describe what changes they made in their description to accommodate their new audience and persuade them to visit their hometowns. We are more interested in their analysis in this second assignment than we are in the changes to their descriptions because the

analysis began our instruction in the first two rhetorical principles: audience and purpose. Students were supplemented the writing assignment with reference articles on these two topics, especially when preparing technical documents.

As Johns (2002) highlights, genre-based pedagogy can offer students explicit and systematic explanations of the ways language functions in social contexts. Students can understand the ways they use language to orient to and interpret particular communicative situations and employ this knowledge for their education. Textual conventions are often subject to community constraints, and the students need to consider working within these boundaries. Form, as well as other text features, is considerably affected by the conventions of a genre. Thus, for the next two weeks, students studied the four rhetorical principles in relation to a series of articles that all addressed elements of the course topic, which was nuclear fusion energy production. In these weeks, the concept of organizational strategies to the first two rhetorical concepts of audience and purpose was also added when this study was conducted. Students learned simple strategies for organizing writing and recognizing these strategies in sample popular science articles (see Jones, 2017 for sample strategies). The first article the students in the context of this study read and analyzed was from the *MIT Technology Review*, which covered innovations in nuclear fusion for an audience similar to my students. The second article was from *The New York Times* and focused on the business aspects of our topic. Assignments ask students to write about the audiences, purposes, and organization strategies in each article. In week 4, students also compared the article writers' decisions in weeks 3 and 4 for presenting information to accommodate their particular rhetorical considerations. They explained why each author made different decisions about how to present facts relating to nuclear fusion based on the authors' audiences and purposes.

In weeks 5 and 6, students read about the concept of discourse communities that form over a common goal and that establish regular roles and patterned ways of interacting […] Because these communities have members with regular and repetitive behaviors and responsibilities, they tend to adopt specific lexis […] and to develop habitual patterns for those individual communications that represent regular action (Kmiec & Longo 2017).

Students added this rhetorical concept to analyze research articles posted on the website of a company leader in developing equipment to generate clean energy through nuclear fusion. These articles represented the type of knowledge base and genres that were discussed in the readings about discourse community. Students also compared the writers' decisions in these formal research articles to the decisions writers in weeks three and four made when writing to more popular audiences. Although the topic content in the research articles was highly technical (nuclear physics) and was unfamiliar to most of my students, they were able to recognize and discuss the writing decisions authors made using the rhetorical concepts we covered.

In week 7, students read a lengthy popular article on nuclear fusion from *Time Magazine* and compare the writer's decisions to those made by research article writers. Students practiced their analytic skills for all four rhetorical concepts to compare these articles with very different audiences, purposes, and discourse communities. Students wrote about decisions that authors made about what content to include or exclude and how to organize the content to accommodate their intended audiences and achieve their purposes. By this point in the semester, students should have a solid mastery of these concepts and be able to apply them to analyze other people's writing. They were also writing analysis papers each week and sharing them with the entire class on weekly discussion boards. Their work was graded on a regular schedule each week and feedback was provided based on weekly grading criteria that had been available to students at the beginning of the semester. They knew how they would be graded before they started their assignments.

This brought us to the midterm of the semester in week 8, and students individually wrote an investigative report on the four rhetorical communication principles: audience, purpose, organization/arrangement, and discourse community. Their assignment was to help students in our class next semester (their audience) learn about these four rhetorical principles (their purpose), given that "writing skill requires a long period to develop" (Atasoy, 2021, p. 214). Students were asked, "to demonstrate what you have learned about these topics and how they relate to communication in a professional or academic setting." In addition to the grading criteria, additional readings about writing an investigative report to provide a structure for the type of report we expected them to produce were also provided.

Teaching Teamwork in a Third-year Technical Writing Class

In the second half of class, students were assigned three-person teams based on their class standing at midterm. The three students with the highest course grade at midterm were in a team, the next three students by grade were in the next team, and so on. All assignments in this half of class focus on learning to work in teams to complete their final assignment, which was a team report addressing next semester's students to tell them what they would need to know about audience, purpose, organization, and discourse community to become better writers and get a good grade in the class. These weeks-long, coordinated assignments helped integrate teamwork instruction into the course content versus addressing these social skills as an add-on to other technical writing material. Teamwork and communication skills would help prepare students for success in workplaces upon graduation. Being able to articulate their knowledge about teamwork helps graduates communicate their job readiness in a market where nearly 79% of employers look for teamwork skills when they interview applicants, according to a 2016 survey cited by Aoun (2017). This survey also showed that 70% of employers looked for written communication and problem-solving skills, both of which students also strengthened in this online technical writing course.

When engineering and STEM instructors prepare students for 21st-century workplaces, Aoun (2017) argues that students will not succeed "unless they are both highly collaborative and socially accountable to each other" (p. 39). Students can learn these humanistic skills through teamwork, but only if instructors structure the learning environment to teach these skills explicitly. In addressing this need to teach teamwork explicitly in online courses, Staggers et al. (2008) suggest that to fully capitalize on the potential of this environment for "the development of layered literacies […] students must learn effective teamwork skills. […] To achieve this goal, we offer a variety of team-building exercises designed to help each group through what some theorists believe are the necessary phases of team development" (p. 473).

Aoun (2017) calls this type of knowledge "human literacy" and finds that it is one of three literacies – technological, data, and human – that 21st-century universities need to teach under a rubric he calls "humanics" (p. 55) and argues that these are the literacies that differentiate human from artificial intelligence. Further, it is these literacies that prepare students to optimize human capabilities that will be necessary for future workplaces where humans cooperate with intelligent machines.

In addition to including more intelligent machines, future workplaces employing distributed teams will include people with more diverse backgrounds than 20th-century workplaces. Students will be working with people who have a "diversity of perspectives, including ones that challenge their presuppositions. Only through the full and respectful inclusion of people of different backgrounds, identities, and creeds can we learn, cooperate, and create to our full potential. Divided communities are weaker than unified ones" (Aoun, 2017, pp. 59-60). Fujishin (2013) also finds that teams with a range of experiences and perspectives can come up with innovative approaches to problems:

> Heterogeneous groups provide far greater perspectives, experiences, information, and skills than homogeneous groups. […] the different ideas, backgrounds, and ways of doing things increase the probability of making better decisions, solving problems, and being more productive in the long run. (p. 13)

Online courses can provide a robust environment for students to learn the human literacy skills that they will need in 21st-century workplaces where they will work with diverse, distributed team members, as well as intelligent machines.

When considering how to teach teamwork and communication skills in online classes, instructors need to keep in mind that if they have a diverse group of students, these individuals' cultural backgrounds will impact their reaction to the course: "Accordingly, cultural dimensions of learning need to be adequately addressed in designing and delivering instruction. […] Cultural attributes can affect online presence and learner perception" (Zhu, 2011, p. 13). In addition, instructors need to plan explicit team-building assignments to help students learn how to maximize team diversity and encourage the type of innovative problem-solving that employers value in their workplaces (see Staggers et al. (2008) and Morrison (2012) for examples of these course team-building structures). In the online technical writing class, we used chapters and exercises from Fujishin (2013) to teach teamwork and interpersonal communication skills during the last half of the semester.

During five weeks in this half of class, students read chapters in the Fujishin (2013) book and addressed questions each week asking them to share ideas about topics, such as listening to each other, solving problems as

a group, managing discussions, creating a cohesive group, and managing conflict. These topics emphasized the significance of communication and interpersonal understanding to build a foundation of trust for achieving team goals. In week 9, for example, each team member completed a self-inventory of their personality characteristics relating to teamwork. All three team members then shared their personal inventories and discussed how their characteristics might affect team functioning. They completed this assignment without judging themselves or other team members; they simply shared information about themselves as a way to get to know each other and build trust.

In week 10, teams read about group problem-solving in a chapter that includes information about decision-making techniques, steps for reaching consensus, sample discussion questions, and an agenda for students to follow in a problem-solving exercise. We assigned teams this problem, which was the final team assignment: "What should we tell next semester's Technical Writing 352 students about audience, purpose, organization, discourse communities, and creating successful teams?" Because each team member addressed this same question in their midterm investigative report, each one of them had expertise on this topic and a different perspective to bring to their problem-solving session. The team learned to listen to each other, reconciled their different ideas, and came up with a preliminary plan for how to approach their final assignment.

In week 11, the team topic was building cohesive teams. Students learned about the social dimension of team building and how this could be personally and collectively rewarding. Fujishin (2013) explains this as ways you can create caring and build a social dimension within your problem-solving group that encourages cooperation and productivity. "If group members discover some level of personal success, connection, value, support, and trust during the process […], they will more likely experience a social dimension that produces a cohesive group" (p. 154).

Students read about building personal success, connection, value, support, and trust among group members this week. They also considered the dangers of groupthink when teams are too cohesive and lose sight of different perspectives. The assignment for this week asked each team member to articulate a personal goal they would like to accomplish with the team this semester. Often, these goals were based on the self-inventories they completed in week 9. Team members then shared their goals with each other, and the team wrote a status report on how they would help each other achieve their goals.

For the next two weeks, teams drafted and posted their final reports for the next semester's students. We send them comments for revision during this phase of the class. In week 14, students continued to revise their reports and also read about managing group conflicts. This study included information on different approaches to managing conflicts, as well as setting out three types of conflict: substantive, procedural, and interpersonal. Specific steps were described for dealing with each of these types of conflicts. Finally, seven guidelines for encouraging group collaboration were explained to achieve "a common goal with a collective sense of purpose, sharing, and trust" (Fujishin, 2013, p. 181). Teams then wrote about a procedural and substantive conflict they dealt with during the semester and how they addressed it to strengthen the social dimension of the team. In this week, students learned that team conflicts could be opportunities for learning from different perspectives and encouraging innovation when these conflicts were approached with a spirit of cooperation and trust.

Results and Discussion

We should note that results were as reported by the students in their reflections about what they learned; there was no outside evaluation of the "results." As for the outcomes after fifteen weeks, teams handed in their final team reports for next semester's students at the end of the class. Most students made good progress as professional colleagues and technical writers, which is in line with previous studies (Barkley et al., 2014; Lingard & Barkataki, 2011; Marin-Garcia & Lloret, 2008). From our perspective of teaching technical writing for over 20 years, we could see that the semester-long focused on four rhetorical principles allowed students to analyze over and over again the writing choices in professional settings and the outcomes of authors' writing decisions. Because students wrote weekly short analyses and received weekly feedback, they most often improved their writing skills, as well, such as sharing a common vocabulary of terminology, being familiar with the writing style, and deploying the skills learned in teamwork effectively to plan plant design and processes. These are huge projects performed by a group and not by an engineering student. Additionally, by the end of the semester, they transferred their learning of the rhetorical principles from one setting (analyzing other people's writing) into another setting as they learnt to work as a team of productive writers.

In their last assignment, students responded individually to these questions asking them to reflect on what they learned about rhetorical principles and teamwork:

- Who is your audience and how did you accommodate their needs? Are their ways in which you did not accommodate their needs?
- What is your purpose for writing and how did you achieve it? Are their ways in which you did not achieve your purpose?
- How did you organize your material for your audience and purpose? Why is this organization strategy effective or ineffective?
- How would you describe the discourse community within which you are writing? How is your text appropriate or inappropriate for your discourse community?
- What is the main thing you learned this semester about working in a group? Why is this important and how might you use this experience in the future?

All in all, our evaluation of students' improvement came from (i) our observation of their weekly team assignments, given that we have been teaching writing for over 20 years and have evaluated many students' writing and also (ii) engineering students' self-evaluation from the last question of the final reflection assignment in this study, which was "What is the main thing you learned this semester about working in a group? Why is this important and how might you use this experience in the future?"

Below is a sampling of students' analyses of what they learned about accommodating their audience and purpose and the writing strategies they used in their final report:

> *The needs of the audience included information about what the course is and what is the real-life application of the course. For this, we compiled all the analyses each group member had done before the midterm. This gave us an idea of what each member had learned in the course and how their thinking process worked. By doing so, we were able to write about what the course taught us and hence what the future students will be learning. We also wrote that the teachings of the course were used in writing the research proposals and presentations we had to write for our STEM classes. (Student UR in Spring 2018)*

> *The purpose of any written work relates back to the question: what was the author trying to inform or explain to his or her audience? In our case, the purpose of the report correlated with our group's primary goal, which was not only to educate upcoming students and summarize what we learned this semester to current students but also to show how much we grew as a team. We definitely achieved this purpose by providing adequate and relevant information to all of our audiences in a simple manner; rather than giving too many specific details, my group and I firmly believe that it is best for any upcoming students to take these concepts at the most basic level and apply them when they actually take the class during the upcoming Fall semester. (Student DF in Spring 2018)*

Here is a sampling of students' analyses of what they learned about accommodating their discourse community and their writing decisions in their final report:

> *The discourse community that my team is writing within is a community of students taking* Technical Writing *352 currently. We all share our current goal of informing next semesters* Technical Writing *352 students what they need to know to be successful in this course. We all share Moodle as a form of common communication because everyone can see everyone else's work, and we can also message each other to enhance our ability to communicate further. Everyone within the community (the class) also shares a common vocabulary of terminology we have learned throughout the semester. To demonstrate this class as a discourse community even further, the students taking the class next semester can be seen as the novice who are new to the field of technical writing, followed by the students taking the class currently who are in the middle ground between novice and expert. Finally, Dr. X is on the expert side of the community. (Student DZ Spring 2018)*

> *...Being that this is the discourse community in which we are writing, it was important to us to use a writing style that is effective and professional to be taken seriously by people who take writing seriously. (Student RB Spring 2018)*

Here is a sampling of students' analyses of what they learned about teamwork in completing their final report:

> *As we came from diverse backgrounds, we all learned new things about each other, which was another benefit of the group activity. I feel that M… might have had a hard time since I come from India and S… from South Africa, so we both use British English. Though the language wasn't much different, our sentence construct and grammar were different than what M… would use. M… had to teach us how to write in American English. By the end of the semester, both me and S… were able to edit our writings according to American English rules and I see that as an added personal achievement. Working in a group is important since when we graduate and go out into the corporate world to work, we will always have to work in groups. For example, as a Chemical Engineer, I will have to plan plant design and processes, and these are huge projects done by a group and not by an individual. Hence, to work efficiently, I will have to deploy the skills I learned in this course. (Student UR Spring 2018)*

The data sample above suggests how a student may benefit from a diverse background in international teamwork in the class. The student's awareness of differences in sentence construct and grammar is apparent and how they collaborated in editing their writing using American English rules. All in all, the data showed us how online teamwork might benefit both work writing and increased awareness of collaboration in engineering.

The gains of online teamwork are clear in each line of the students and the benefits to engineering students' careers when they graduate:

> *By making students work in teams for the second half of the semester, students learned to work better alongside others through experience. In particular, I learned how to accommodate the individual personalities of others and, through communication, work together to create something more complete than what could be done by myself. To us, this is important because I have learnt that a team consists of people with their own individual ideas and situations. While multiple people may not always be on the same wavelength, through effective cooperation, these differing perspectives can come together to make something great (Student TM Spring 2018).*

> *The main thing that I learned this semester about working in a group is that it is not simple. Working in a group can be more challenging than working alone. Also, I got to meet two awesome individuals whom I didn't know about before, D… and Y... I'm so glad that Dr. X set the class up this way so that we could learn about each other and get nice teamwork done in real-time. The key to successful group work is sharing ideas or thoughts about the project with all the group members and resolving conflicts by following certain guidelines that depend on the type of conflict. This is important because in the future, as an engineer, I may be working with people that I don't really see too often or at all, and all I'll receive from them is a file of some sort (Student KL Spring 2018).*

At the end of the semester, students were able to analyze their writing decisions and communicate their ideas in a manner that reflects their maturing professionalism. When we looked back to their first assignments about their hometowns only 15 weeks earlier, these assignments mostly sounded like they came from engineering and STEM students who considered their technical writing class as just another required – and mostly irrelevant – class to get through on their way to graduation. After teaching nine sections of this course, which refer to nine 15-week classes, we were satisfied that by the end of the semester, the students in the context of this study were more engaged with their writing and sounded more like young professionals than mostly uninterested students. These students mastered rhetorical concepts they could use to analyze their future communication situations. They practiced effective skills to accommodate those situations. They expanded their abilities to explain and justify their decisions. These students were becoming members of their professional discourse communities. They would become technical professionals with human literacy skills to contribute to their 21st-century workplaces.

Conclusion and Pedagogical Implications

Though elucidating a 15-week online third-year technical writing course at an institute of technology in the USA, this case study utilized the process and techniques elucidated here in conducting international student teamwork in engineering. In the first half of class, students learned and applied four rhetorical communication principles, namely audience, purpose, organization/arrangement, and discourse community. In the second half of class, students were assigned three-person teams. Weekly writing assignments accompanied by feedback were

performed to measure students' technical writing trajectories and gains. The findings showed that despite diverse backgrounds and challenges (Shokirova et al., 2022), international students had many gains, such as learning new things about each other, resolving conflicts when they occurred, sharing a common vocabulary of terminology, becoming familiar with the writing style, and utilizing the skills learned in teamwork effectively to plan plant design and processes in engineering. They also transferred their learning of the rhetorical principles from analyzing other people's writing into another setting in a team. The findings obtained in this study suggest that to cultivate students' communicative ability, communication skills in team teaching in online classes can improve teaching and learning how to write by empowering learners to write in a team more strategically and effectively, which can help students apply their knowledge to practical situations. The activities in this case study boosted students' motivation to be involved actively in activities and reflect. The steps described above have encouraged engineering students to practice teamwork skills and improve the quality of collaboration among team members, which can be replicated across disciplines in mainstream classrooms worldwide. We can plan, implement and analyze pedagogical practices for online writing classes that support and enhance student learning. Also, we should provide students with opportunities for a sufficient amount of writing practice after observing their needs. More attention should be attached in the engineering curriculum to providing such lessons around teamwork. We should note that this study was conducted in the US, and the findings were limited to engineering students. Further studies can be conducted across countries and disciplines to provide new insights into online writing classes and teamwork.

Code of Ethics

Ethical approval was obtained from Bursa Uludağ University Research and Ethics Committees (Social Sciences and Humanities Research and Ethics Committee) with session number 2022-08 on 30.08.2022. All the participants took part in this study on a voluntary basis, and their identity was kept confidential.

References

Accreditation Board for Engineering and Technology, Inc. [ABET]. (n.d.). *Criteria for Accrediting Engineering Programs*, 2018-2019. http://www.abet.org/accreditation

Aijmer, K. (2013). *Understanding pragmatic markers: A variational pragmatic approach*. Edinburgh University Press.

Aizenkot, D., & Ben David, Y. (2022). An exploratory study of 21st century skills of undergraduate education students: A comparison between freshman, second, and graduation years. *Innovations in Education and Teaching International*, *60*(4), 1–10.

Altınmakas, D., & Bayyurt, Y. (2019). An exploratory study on factors influencing undergraduate students' academic writing practices in Turkey. *Journal of English for Academic Purposes*, *37*, 88–103.

Alley, M. (November 22, 2022). *Why our engineering and science students struggle with writing*. Writing as an Engineer or Scientist https://www.craftofscientificwriting.org/struggle.html

Aoun, J. E. (2017). *Robot-proof: Higher education in the age of artificial intelligence*. MIT Press.

Atasoy, A. (2021). The relationship between writing self-efficacy and writing skill: A meta-analysis study. *Education and Science*, *46*(208), 213–236.

Ballinger, G. (2017). *The importance of communication skills for the modern engineer*. The Ohio State Engineer Magazine. https://u.osu.edu/engineermag/current-issue/the-importance-of-communication-skills-for-the-modern-engineer/

Barkley, E. F., Cross, K. P., & Major, C. H. (2014). *Collaborative learning techniques: A handbook for college faculty*. John Wiley & Sons.

Bazylak, J., & Weiss, P. E. (2017). *Online Evolution: Advantages and challenges of online course components*. Proceedings of the Canadian Engineering Education Association (CEEA). https://doi.org/10.24908/pceea.v0i0.10182

Buch, A., & Andersen, V. (2015). Team and project work in engineering practices. *Nordic Journal of Working Life Studies*, *5*(3a), 27–46

Burgstahler, S. (January 30, 2017). *ADA compliance for online course design.* EDUCAUSE Review. https://er.educause.edu/articles/2017/1/ada-compliance-for-online-course-design

Chadha, A. (2018). Peer interactions: Extending pedagogical deliberations into the virtual hallway. *International Journal of Online Pedagogy and Course Design, 8*(3), 1–17.

Cohen, E. G., & Lotan, R. A. (2014). *Designing groupwork: Strategies for the heterogeneous classroom* (3rd ed.). Teachers College Press.

College Factual. (n. d.). New Jersey Institute of Technology diversity: How good is it? https://www.collegefactual.com/colleges/new-jersey-institute-of-technology/student-life/diversity/

D'Onfro, J. (August 18, 2018). *How Google has stepped up its efforts to make its own tech more accessible to the disabled.* National Organization on Disability. https://www.nod.org/how-google-has-stepped-up-its-efforts-to-makes-its-own-tech-more-accessible-to-the-disabled/

Davis, N. L., Gough, M., & Taylor, L. L. (2019). Online teaching: Advantages, obstacles and tools for getting it right. *Journal of Teaching in Travel & Tourism*, *19*(3), 256–263.

De Felice, S., Hamilton, A. F. D. C., Ponari, M., & Vigliocco, G. (2023). Learning from others is good, with others is better: the role of social interaction in human acquisition of new knowledge. *Philosophical Transactions of the Royal Society B*, *378*(1870), 20210357.

Deveci, T., & Bedirhanoğlu, İ. (2022). University students' positive and negative perceptions of lifelong learning: A metaphoric analysis. *Boğaziçi Üniversitesi Eğitim Dergisi*, *39*(1), 31–48.

Dominguez, C., Cruz, G., & Cerveira, A. (2023). *Using socially relevant projects to develop engineering students' project management, critical thinking, teamwork, and empathy skills: The UTAD-REFOOD experience*. In *Technology and Innovation in Learning, Teaching and Education*. 3rd International Conference, *TECH-EDU 2022* Selected Papers (pp. 294–315). Springer Nature.

Duff, P. (2008). *Case study research in applied linguistics*. Taylor & Francis.

Fraser, S. & Deane, E. (1977). Why open learning? *Australian Universities Review*, *40*(1), 25–31.

Fujishin, R. (2013). *Creating effective groups: The art of small group communication* (3rd ed.). Rowan & Littlefield Publishers.

Gajendran, R. S., & Joshi, A. (2012). Innovation in globally distributed teams: The role of LMX, communication frequency, and member influence on team decisions. *Journal of Applied Psychology*, *97*(6), 1252.

Goettsch, K. L. (2016). Working with global virtual teams: A case study reality check on intercultural communication best practices. *Global Advances in Business and Communications Conference & Journal, 5*(1). http://commons.emich.edu/gabc/vol5/iss1/3/

Greene, H. & Crespi, C. (2012). The value of student created videos in the college classroom – an exploratory study in marketing and accounting. *International Journal of Arts & Sciences, 5*(1), 273–283.

Griffin, J. & Minter, D. (2013). The rise of the online writing classroom: Reflecting on the material conditions of college composition teaching. *College Composition and Communication, 65*(1), 140–161.

Harris, H. S. & Greer, M. (2016). Over, under, or through: Design strategies to supplement the LMS and enhance interaction in online writing courses. *Communication Design Quarterly, 4*(4), 46–54.

Idiong, S. P. (2023). John Dewey's pragmatic education: A veritable tool for nation building in Nigeria. *International Journal of Education and Evaluation (IJEE)*, *9*(1), 21–30.

Jenkins, J. (2009). *Confronting the challenges of participatory culture: Media education in the 21st century*. MIT Press.

Johns, A. (2002). *Genre in the classroom: Multiple perspectives*. Lawrence Erlbaum.

Jones, A. (2017). *Simple organization strategies*. Carson-Newman University Library. https://cn.libguides.com/ld.php?content_id=20306784

Jones, S. & Fox, S. (January 28, 2009). *Generations online in 2009*. Pew Research Center. http://www.pewinternet.org/2009/01/28/generations-online-in-2009/

Katzenbach, J. R., & Smith, D. K. (2001). *The discipline of teams: A mindbook-workbook for delivering small group performance*. John Wiley & Sons.

Kimble, C. (2011). Building effective virtual teams: How to overcome the problems of trust and identity in virtual teams. *Global Business and Organizational Excellence, 30*(2), 6–15.

Kmiec, D., & Longo, B. (2017). *The IEEE guide to writing in the engineering and technical fields*. John Wiley & Sons.

Kuo, Y. Y., & Fitzpatrick, B. J. (2022). Instructional design guidelines for advancing self-sustaining online higher education in the USA. *Performance Improvement Quarterly*, *34*(4), 427–454.

Lingard, R., & Barkataki, S. (2011). *Teaching teamwork in engineering and computer science*. In 2011 Frontiers in Education Conference (FIE) (pp. F1C-1–F1C-5). https://doi.org/10.1109/FIE.2011.6143000

Llopis, G. (July 10, 2012). *Effective managers earn trust quickly by doing 5 things well*. Forbes Magazine. https://www.forbes.com/sites/glennllopis/2012/07/10/effective-managers-earn-trust-quickly-by-doing-5-things-well/#115eb85e5631

López-Pellisa, T., Rotger, N., & Rodríguez-Gallego, F. (2021). Collaborative writing at work: Peer feedback in a blended learning environment. *Education and Information Technologies*, *26*(1), 1293–1310.

Marin-Garcia, J. A., & Lloret, J. (2008). Improving teamwork with university engineering students. The effect of an assessment method to prevent shirking. *WSEAS Transactions on Advances in Engineering Education*, *5*(1), 1–11.

McHenry, R., & Krishnan, S. (2022). A conceptual professional practice framework for embedding employability skills development in engineering education programmes. *European Journal of Engineering Education*, 47(6), 1296–1314. https://doi.org/ 10.1080/03043797.2022.2164255

McLaughlin, M.K. (November 21, 2018). *The best video conferencing software of 2018.* PC Magazine. https://www.pcmag.com/article2/0,2817,2388678,00.asp

Messer, J. (September 17, 2016). *The top 5 problems with distributed teams and how to solve them*. InfoQ. https://www.infoq.com/articles/top5-problems-distributed

Mitsch, J. A. (February 6, 2017). *The value of soft skills in a high-tech world*. CIO. https://www.cio.com/article/3166032/it-careers/the-value-of-soft-skills-in-a-high-tech-world.html

Moran, K. (January 3, 2016). *Millennials as digital natives: Myths and realities*. Nielsen Norman Group. https://www.nngroup.com/articles/millennials-digital-natives/

Morrison, D. (March 27, 2012). *Strategies for effective group work in the online class*. Online Learning Insights. https://onlinelearninginsights.wordpress.com/2012/03/27/strategies-for-effective-group-work-in-the-online-class/

Ozdemir-Onder, N. (2014). Diagnosing the EAP needs of Turkish medical students: A longitudinal critical needs analysis. *Ibérica*, (28), 35–57.

Ozdemir-Onder, N. (2018). Needs analysis. In J. I. Liontas (Ed.), *The TESOL encyclopedia of English language teaching* (pp. 1–6). John Wiley & Sons

Pacansky-Brock, M., Smedshammer, M., & Vincent-Layton, K. (2019). Humanizing online teaching to equitize higher education. *Current Issues in Education, 21*(2 (special issue). https://cie.asu.edu/ojs/index.php/cieatasu/article/view/1905

Passut, J. (February 13, 2018). *Technology can give all students a voice: Expert says tech has made it easier to assess learning and empower students*. EdTech Magazine. https://edtechmagazine.com/k12/article/2018/02/technology-can-give-all-students-voice

Platt, J. R. (November 3, 2011). *Career focus: Software engineering*. IEEE-USA Today's Engineer. http://www.cis.umassd.edu/~hxu/courses/cis582/CareerFocus.html

Putri Anzari, P., & Pratiwi, S. S. (2021). What's Missing? How Interpersonal Communication Changes during Online Learning. *Asian Journal of University Education*, *17*(4), 148–157.

Rabidoux, S. & Rottmann, A. (May 2, 2017). *5 tips for ADA-compliant inclusive design*. Inside Higher Education. https://www.insidehighered.com/digital-learning/views/2017/05/03/tips-designing-ada-compliant-online-courses

Rajabzadeh, A. R., Long, J., Saini, G., & Zeadin, M. (2022). Engineering student experiences of group work. *Education Sciences*, *12*(5), 288.

Raza, K., Li, S., & Chua, C. (2023). A conceptual framework on imaginative education-based engineering curriculum. *Science & Education*, 1–14. https://doi.org/10.1007/s11191-022-00415-2

Reimer, M. J. (2007). Communication skills for the 21st century engineer. *Global Journal of Engineering Education, 11*(1), 89–100.

Sarkar, N., Ford, W., & Manzo, C. (2017). Engaging digital natives through social media. *Systemics, Cybernetics, and Informatics, 15*(2), 1–4.

Sarker, S., Ahuja, M., Sarker, S., & Kirkeby, S. (2011). The role of communication and trust in global virtual teams: A social network perspective. *Journal of Management Information Systems, 28*(1), 273–310. https://doi.org/10.2753/MIS0742-1222280109

Shachaf, P. (2008). Cultural diversity and information and communication technology impacts on global virtual teams: An exploratory study. *Information and Management, 45*(2), 131–142.

Sheth, T. D. (2015). Communication skill: A prerequisite for engineers. *International Journal on Studies in English Language and Literature, 3*(7), 51–54.

Shokirova, T., Brunner, L. R., Karki, K. K., Coustere, C., & Valizadeh, N. (2022). Confronting and reimagining the orientation of international graduate students: A collaborative autoethnography approach. *Journal of Teaching and Learning*, *16*(2), 5–27

Siebdrat, F., Hoegl, M., & Ernst H. (2009). How to manage virtual teams. *MIT Sloan Management Review, 50*(4), 63–68. https://sloanreview.mit.edu/article/how-to-manage-virtual-teams/

Smith, K. A. (1996). Cooperative learning: Making "groupwork" work. *New directions for Teaching and Learning*, *1996*(67), 71–82.

Smith, K. A. (2000). *Strategies for developing engineering student's teamwork and project management skills*. Proceedings of the 2000 ASEE Annual Conference, Session 1630. https://peer.asee.org/strategies-for-developing-engineering-students-teamwork-and-project-management-skills

Solheim, C., Cohen, B., Dikkers, A., & Longo, B. (September 22, 2010). *Interdependent catalysts for transforming learning environments … and the faculty who teach in them*. EDUCAUSE Review. https://er.educause.edu/articles/2010/9/interdependent-catalysts-for-transforming-learning-environments--and-the-faculty-who-teach-in-them

Staggers, J., Garcia, S., & Nagelhout, E. (2008). Teamwork through team building: Face-to-face to online. *Business Communication Quarterly, 71*(4), 472–487.

Stake, R. (1995). *The art of case study research*. Sage.

Sweeney, A. & Weaven, S. (2005). *Group learning in marketing: An exploratory qualitative study of its usefulness*. Proceedings of the Australian and New Zealand Marketing Academy Conference, Perth, Australia.

Tai, Y., Ting, Y., & Tseng, T. (2018). A proposed cohesive use of online discussion board from the aspects of instructional and social interactions in engineering education. *International Journal of Online Pedagogy and Course Design, 8*(3), 33–44.

Tribble, C. (1996). *Writing.* Oxford University Press.

Veis, S. (August 1, 2017). *Good communication skills – An engineer's career escalator*. Engineering Management Institute. https://engineeringmanagementinstitute.org/good-communication-skills-engineers/

Vesikivi, P., Lakkala, M., Holvikivi, J., & Muukkonen, H. (2019). Team teaching implementation in engineering education: teacher perceptions and experiences. *European Journal of Engineering Education*, *44*(4), 519–534.

Warnock, S. (2009). *Teaching writing online: How and why*. National Council of Teachers of English.

Watkins, M. D. (June 27, 2013). *Making virtual teams work: Ten basic principles*. Harvard Business Review. https://hbr.org/2013/06/making-virtual-teams-work-ten

Young, A. (2008). Structuring asynchronous discussions to incorporate learning principles in an online class: One professor's course analysis. *Journal of Online Teaching and Learning, 4*(2), 217–225.

Zeleňák, E. (2006). On pragmatic and non-pragmatic concept of explanation. *Organon F*, *13*(3), 334–348.

Zhu, C. (2011). Online collaborative learning: Cultural differences in student satisfaction and performance. *Journal for Educational Research, 3*(1), 12–28.

Takım Çalışmasını Öğretmek: Mühendislik Öğrencileri ile Online Teknik Yazma Dersleri

Öz

Pragmatik bir yaklaşım kullanan bu çalışma, literatür ışığında çevrimiçi sınıflarda takım öğretiminde iletişim becerilerini birleştirmeyi amaçlamış olup iletişim ve takım çalışması ilkelerinin, ABD'deki bir teknoloji enstitüsünde mühendislik ve diğer STEM alanlarında eğitim alan, etnik çeşitliliğe sahip uluslararası öğrencilerin yer aldığı çevrimiçi üçüncü yıl teknik yazma dersinde nasıl rol oynadığını açıklamaktadır. Bu çalışmada veriler, yarıyıl boyu süren teknik yazma dersi için haftalık ödevler ve dersin öğrenim çıktılarına ilişkin öğrenci değerlendirmeleri kullanılarak toplanmıştır. Bulgular, öğrencilerin haftalık yazdıkları yazılar üzerinde kısa analizler yazmaları ve haftalık geri bildirim almaları nedeniyle yazma becerilerini büyük oranda geliştirdiklerini ve retorik ilkelerini öğrendiklerini, bir ortamdan (diğer insanların yazdıklarını analiz ederek) başka bir ortama aktardıklarını ve öğrencilerden oluşan bir üretken yazarlar ekibi olarak çalışmayı öğrendiklerini gösterdi.

Anahtar kelimeler: bilgisayar destekli öğretim, takım dinamiği, mühendislik öğrencileri, teknik yazı

Boğaziçi University
Journal of Education

Boğaziçi University Journal of Education (BUJE) publishes scientific articles that contribute to the field of education in Turkey and in the world. The Journal publishes refereed articles on theoretical or applied research in the following fields: Psychological services in education, guidance and psychological counseling; early childhood or pre-school education; special education; adult education; educational administration, supervision, philosophy, history and policies; science and math education; foreign language education and applied linguistics; measurement, testing and research techniques in education; educational technology; program development and evaluation in education.

Basic Rules to be Followed in Preparing and Submitting Manuscripts to Boğaziçi University Journal of Education

Manuscripts submitted to the Journal should not have been published or submitted for publication review elsewhere. They could be a research report, a systematic literature review or an original opinion article discussing a new idea or model.

The standards prepared by the American Psychological Association (APA) have been adopted in journal publications. Please refer to the APA 7 publication manual for the rules to be followed in the articles submitted to the journal. Articles should be uploaded to the Dergi Park system at https://dergipark.org.tr/tr/pub/buje.

The rules to be followed in submitting the article are listed below.

The languages of the Journal are Turkish and English. The title of the article should not exceed 20 words, the entire text, excluding figures, tables, and references, should be between 4500-7500 words, and all pages, including the first page, should be numbered in the upper right corner. In addition to the abstract given in the language of the main text, another abstract should be given in the other language. These abstracts should be written on separate pages, with 100-150 words for applied research and 75-120 words for theoretical articles and literature reviews. Below the article abstract, 3 to 5 keywords, which can indicate the main subject of the article and are widely accepted in the scientific language of the field, should be provided.

Throughout the text, a font like Times or Arial (10 points) that allows both Turkish and English characters to be easily typed should be selected, and the same font should be used throughout the text.

To maintain the integrity and fairness of the peer review process, it is essential that submitted manuscripts undergo a thorough anonymization process. Authors are kindly requested to adhere to the following guidelines when preparing their manuscripts for submission:

1. Remove Author Identifying Information: Ensure that all author-specific information is removed from the manuscript file, including names, affiliations, contact details, and any other identifying information in the main body of the text and in headers or footers.

2. Anonymize References: When citing your own work within the manuscript, replace author names and details with "Author" and the publication year to maintain anonymity. For example, replace "Smith et al. (2020)" with "Author (2020)."

3. Blinded Title Page: Create a separate title page that includes the manuscript title but excludes author names and affiliations. This title page should be uploaded as a separate document during the submission process.

4. Anonymous File Names: Ensure that the file names of all submitted documents (including the manuscript file and any supplementary materials) do not contain any author names or identifying information.

5. Remove Acknowledgments: Any acknowledgments that could potentially reveal author identities should be omitted from the manuscript during the anonymization process.

6. Check Citations in Tables and Figures: Review tables and figures to make sure that any author-related information is removed or replaced with anonymized labels.

7. Review Supplementary Materials: Ensure that any supplementary files or materials provided with the submission also adhere to these anonymization guidelines.

8. File Properties Anonymization: To further enhance manuscript anonymity, authors should review and remove any metadata or file properties that may inadvertently reveal author information. This includes details such as document author names, comments, or other identifying information embedded within the document properties. Authors should use software tools or settings to inspect and eliminate such metadata before submitting the manuscript.

By meticulously following these guidelines, authors contribute to a fair and impartial peer review process, where manuscripts are evaluated solely based on their scientific content and merit. This anonymization process helps ensure that reviewers and editors can objectively assess the quality and validity of the research presented in the manuscript.

A cover letter providing information about the article should be prepared, including the article title, the name(s) of the author(s), title(s), affiliation(s), address, phone number, and email address, ORCID numbers, information about whether the article is based on a thesis (specialization, doctoral, etc.), and if applicable, where and when it was presented at a conference. Additionally, it should be specified who the corresponding author for correspondence is. Necessary information about the ethics committee approval of the research should also be provided.

Tables and figures should be presented in their original positions within the text. Figures will be published as they appear in the original. Therefore, original (first) copies of figures should be submitted. Figures in electronic versions of the accepted manuscripts may be in color; however, please note that the printed issues of the journal will be in black and white. Therefore, authors should keep this in mind when preparing and submitting their figures. It's important to ensure that figures are clear and convey information effectively in grayscale, as the color information may not be visible in the printed version. Authors are encouraged to use distinct patterns, shading, or labeling to differentiate elements within their figures to maintain their clarity and comprehensibility in both electronic and printed formats. This practice ensures that readers can fully grasp the content of the figures, regardless of whether they are viewing them electronically or in a physical print copy.

Examples of the citation format can be found at https://apastyle.apa.org/style-grammar-guidelines/references/examples.

For correspondence
Serkan Özel
Boğaziçi University, Faculty of Education, 34342 Bebek, Istanbul, Turkey
Tel: (+90 212) 359 45 88 Fax: (+90 212) 257 50 36
e-Mail: bujed@boun.edu.tr