Article History
Received: 09.01.2024
Accepted: 25.09.2024
Available online: 27.12.2024
Article Type: Research Article

ADIYAMAN UNIVERSITY
Journal of Educational Sciences
(AUJES)

https://dergipark.org.tr/tr/pub/adyuebd

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Ahmet Önal[1]
[1]Süleyman Demirel University, Faculty of Education

To cite this article:
Önal, A. (2024). Pre-service teachers' perceptions toward the use of ICT: The SQD Scale. *Adiyaman University Journal of Educational Sciences*, *14*(2), 62-72.

Adiyaman University Journal of Educational Sciences

Volume 14, Number 2, December 2024, Page 62-72 ISSN: 2149-2727
DOI: http://dx.doi.org/10.17984/adyuebd.1416937

Pre-Service Teachers' Perceptions toward the Use of ICT: The SQD Scale

Ahmet Önal [1]
[1] Süleyman Demirel University, Faculty of Education

Abstract

The role of technology in the field of education continues to grow and the widespread adoption of online education in recent years has secured the importance attached to Information and Communication Technologies (ICT). In line with this, the current study aims to unveil pre-service teachers' perceptions of how well their teacher training programs prepare them for effective ICT utilization and the level of support they receive from their teacher training programs as to effective ICT use by employing the synthesis of qualitative evidence (SQD) scale. With this aim in mind, the study adopts a convergent-parallel mixed methods design and the data have been garnered from a total of 191 pre-service English language teachers studying at 9 different teacher training programs across Türkiye. The analyses of the quantitative and qualitative data indicate that a majority of pre-service teachers think that the level of support they receive from their teacher training programs in terms of effective ICT use is not satisfactory. The perceptions of the participants that consider their teacher training programs (in)effective in terms of ICT use have also been presented within the study. Finally, several suggestions have been provided for teacher training programs with the aim of training pre-service with better and higher ICT utilization skills.

Key words: Pre-service teacher training, ICT, Teacher training programs

Introduction

We have been experiencing a technological transformation in the last two decades and global (such as the outbreak of the Covid-19 pandemic) as well as local (such as the devastating earthquake series that destroyed 11 cities in Türkiye) adversities have accentuated the role of technology in the field of education because online education emerges as the best option during such crisis moments. As we experience technological innovations and more frequent shifts to online education, expectations from teacher training programs (Mouza et al., 2014; Tondeur et al., 2016; Tondeur et al., 2020) as well as expected roles and competencies of pre-service teachers are changing and increasing accordingly (Ay et al., 2015). To be more precise, 21st century teachers are required to combine various pedagogical skills with Information and Communication Technologies (ICT) if they are to cater for the needs of their future students by emphasizing communication, collaboration, critical thinking, creativity, problem-solving and socio-cultural competencies (Angeli & Valanides, 2009; Santos & Castro, 2021; So & Kim, 2009; Valtonen et al., 2015; Valtonen et al., 2017; Voogt & Roblin, 2012). It should be noted that the current generation of pre-service teachers have been labeled as *digital natives* (Prensky, 2001) and they have generally been assumed to have excelled in ICT skills as to personal and social uses; however, as has been suggested by several researchers (Agyei & Voogt, 2011; Harvey & Caro, 2017; Kartal et al., 2016; Le2009; Mouza & Karchmer-Klein, 2013; Niess, 2008; Valtonen et al., 2011; Valtonen et al., 2015; Valtonen et al., 2020), they still need systematic guidance in combining technology with their didactic skills. In other words, the fact that they can use certain social networking sites or mobile applications deftly does not necessarily mean that they can use technology in the best way in their instructional practices; thus, they need to be trained both *about* technology and teaching *with* technology. In support of this, many online foreign language teaching web-sites and applications (such as Preply, Lingoda, Duolingo, Rype, etc.) have recently emerged and gained quick popularity, implying that foreign language teachers need to be equipped with the competences to utilize technology in their instructional practices. It should be noted at this point that although they are not synonyms, the terms *ICT* and *technology* have been used interchangeably throughout this research paper.

The central role played by teacher training programs in preparing pre-service teachers to effectively utilize technology has been underscored by previous research (Boling & Beatty, 2012; Hofer & Grandgenett, 2012; Jaipal & Figg, 2010; Kwangsawad, 2016; Mouza et al., 2014; Schmidt et al., 2009; Tondeur et al., 2016; Tondeur et al., 2020; Valtonen et al., 2017; Voogt et al., 2016; Yurdakul et al., 2012). For instance, Yurdakul et al. (2012) assert that rather than *techno-centric* approach emphasizing knowledge and skills in using technology, *techno-pedagogical* approach blending technology and pedagogy in practice would yield more favorable

Corresponding Author: *Ahmet Önal*, *ahmetonal@sdu.edu.tr*

outcomes in teacher training. Similarly, Kwangsawad (2016) claims that pre-service teachers need to be aware of ICT tools, how to properly use them, and how to make the best use of them pedagogically appropriate to the content they are to teach. However, it may not be possible for all teacher training programs to attain such perfectionistic goals. Furthermore, it has even been argued that teacher training programs have often failed to prepare pre-service teachers sufficiently to utilize ICT tools, and mere exposure, without adequate practice opportunities, contributes to such failure (Angeli & Valanides, 2009; Mouza & Karchmer-Klein, 2013; So & Kim, 2009; Wang et al., 2018).

In direct contrast with this, several researchers have concluded that teacher training programs proved to be quite effective in training pre-service teachers in terms of ICT utilization. For instance, pre-service teachers' development of ICT utilization skills throughout their teacher training program in the USA context was handled by Hofer and Grandgenett (2012), who found that the participants improved their skills at the end of a three-semester MA program. Similarly, Harvey and Caro (2017) construed that explicit teaching of ICT use throughout the teacher training program yielded favorable results. In a similar vein, Öz (2015) aimed to identify the extent to which English language teacher training programs in Turkish context prepare pre-service teachers in using ICT tools and concluded that, according to the perceptions of the pre-service teachers, teacher training programs have mostly been effective. Additionally, Sarıçoban et al. (2019) targeted at measuring the technological pedagogical and content knowledge (TPACK) level of pre-service English language teachers in Türkiye and observed that they regarded themselves sufficient in all sub-components of TPACK, implying that their teacher training program prepared them satisfactorily for ICT utilization.

Tondeur et al. (2016) suggest that assisting pre-service teachers in designing ICT-rich lessons and offering sufficient constructive feedback emerge as the main challenges for teacher training programs. In this respect, the strategies employed by teacher training programs in training technologically competent pre-service teachers have shown great variety and lack a coherent and consistent systematicity. Correspondingly, Tondeur et al. (2012) have introduced and advocated a model, according to which teacher training programs should: *a)* employ teacher trainers as role models, *b)* encourage reflection on instructional uses of technology, *c)* teach how to use and integrate technology, *d)* foster collaboration among peers, *e)* offer scaffolding, and *f)* provide continuous feedback. More specifically, the model specifies that teacher trainers employed by teacher training programs should function as role models for pre-service teachers and encourage them to reflect on instructional uses of ICT, teach how to use ICT for instructional purposes and provide continuous feedback, offer scaffolding when necessary, and stimulate collaboration among peers with the aim of fostering peer-learning and peer-assessment.

In this respect, the present study has employed the synthesis of qualitative evidence (SQD) scale, developed and validated by Tondeur et al. (2016). The SQD scale is based on the suggested model and aims to reveal pre-service teachers' perceptions of how well their teacher training programs prepare them for effective ICT use and the level of support they receive from their teacher training programs as to effective ICT utilization. The SQD scale in tandem with the TPACK-practical scale has recently been employed in Turkish context by Baran et al. (2019), who aimed to explore pre-service teachers' perceptions of the support their teacher education programs provide for developing their TPACK. The findings of their study demonstrated a positive correlation between teacher education strategies and preservice teachers' TPACK; however, their study was quantitative by its nature. On the other hand, the distinctive feature of the present study lies in the fact that the quantitative data has been triangulated by the qualitative data collected via an open-ended survey form. Therefore, it would be safe to argue that the present study promises to delve into the perceptions of pre-service teachers as to ICT use more profoundly. In addition, the perceptions of pre-service teachers as to the support they have been provided by their teacher training programs (including the specific courses offered by the program) have been taken into consideration, leading to more reliable and relevant conclusions. As a result, the conclusions drawn by the study may have implications for policy makers, curriculum designers, and teacher trainers. Furthermore, the suggestions may be employed as a guide for reviewing and updating their teacher training practices. The findings of the present study promise to enable all the stakeholders to better understand the type(s) of support needed by pre-service teachers as to effective utilization of ICT in Turkish context. With all these aims in mind, the present study is intended to provide answers to the following research questions:

1. What are the pre-service teachers' perceptions toward the use of ICT strategies in their teacher training program?

1.1. Do the pre-service teachers agree that their teacher training program has prepared them sufficiently to teach English using ICT effectively?

1.2. What course(s) offered by the teacher training program are considered as helpful for integrating ICT into teaching English by the pre-service teachers?

Methodology

The current study has been designed to identify pre-service teachers' perceptions of how well their teacher training programs prepare them for effective ICT use and the level of support they receive from their teacher training programs in terms of effective ICT utilization. To achieve this aim, a convergent-parallel mixed method design has been adopted and the data have been collected from pre-service English language teachers from a variety of teacher training programs across Türkiye. The SQD scale developed by Tondeur et al. (2016) has been employed for the collection of quantitative data and an open-ended survey form designed by the researcher has been utilized for the collection of qualitative data. Further information as to the design of the research, participants, data collection tools and processes has been presented in the following sections of the article.

Research Design

This mixed methods study has been conducted to address pre-service teachers' perceptions of how well their teacher training programs prepare them for effective ICT use in their instructional practices and the level of support they receive from their teacher training programs in terms of effective ICT utilization. In line with this aim, a convergent-parallel mixed methods design has been employed. Both qualitative and quantitative data have been collected, merged and interpreted in a convergent-parallel mixed methods design to gather complementary data on a specific phenomenon at the same time (Creswell, 2012). To be more precise, qualitative and quantitative data are collected and analyzed separately, but at the same time, to provide multiple perspectives on the focus of the study (Creswell, 2012; Edmonds & Kennedy, 2017). As has been suggested by Creswell (2012), the researcher aimed to improve the impact of the study by collecting and combining different types of data bearing on the same phenomenon and consolidate the reliability and validity of the research via the triangulation of data.

Participants

The present study has adopted the technique of *convenience sampling* (Dörnyei, 2007; Nunan, 1992) as the participants have been included within the study due to their convenient proximity and accessibility to the researcher. Demographic information as to the participants of the study has been presented in Table 1.

Table 1. Demographic information of the participants

	Number of Participants			
University	Female	Male	Total	University %
Süleyman Demirel Univ.	20	13	33	17,3
Necmettin Erbakan Univ.	10	7	17	8,9
Yozgat Bozok Univ.	13	5	18	9,5
Ondokuz Mayıs Univ.	15	9	24	12,5
Pamukkale Univ.	18	8	26	13,6
Alanya Alaaddin Keykubat Univ.	10	7	17	8,9
Bayburt Univ.	11	6	17	8,9
Amasya Univ.	12	6	18	9,5
Trabzon Univ.	13	8	21	10,9
Total	122	69	191	100

As can be seen in Table 1., a total of 191 pre-service English language teachers studying at 9 different teacher training programs across Türkiye participated in the study. 122 female and 69 male pre-service English language teachers were accessed in the study, and it can be argued that a representative sample of participants has been included in terms of gender distribution.

Data Collection Tools

Though there are a multitude of instruments that can be used to rate pre-/in-service teachers' ICT utilization skills and practices (Baser et al., 2016; Chien et al., 2012; Kartal et al., 2016; Schmid et al., 2020; 2021; Schmidt et al., 2009; Valtonen et al., 2017; Valtonen et al., 2020; Yeh et al., 2014; Yurdakul et al., 2012), the Synthesis of Qualitative Evidence (SQD) scale, developed and validated by Tondeur et al. (2016), has been adopted within the study for the collection of quantitative data since it specifically focuses on the contribution of teacher training programs to the development of pre-service teachers' ICT utilization skills and practices. More specifically, Tondeur et al. (2016) developed the SQD scale with the aim of revealing the extent of support and training offered by teacher training programs from the viewpoint of pre-service teachers in terms of utilization of ICT tools in their instructional practices. The items of the SQD scale are based upon the inner circle of the SQD model that lists effective strategies for ICT use in instructional practices (Tondeur et al., 2012) as well as a synthesis of 19 qualitative studies and the SQD scale is argued to demonstrate highly satisfactory psychometric

properties in that the reliability and validity of the SQD scale were confirmed via the analysis of the data gathered from 688 pre-service teachers in Belgium context (Tondeur et al., 2016). To be more precise, the SQD scale involves 24 items that are rated on a 6-point Likert-type scale (ranging from *1: totally disagree* to *6: totally agree*) and clustered around 6 key factors at micro and institutional levels (1: role model [ROL], 2: reflection [REF], 3: instructional design [DES], 4: collaboration [COL], 5: authentic experiences [AUT], 6: feedback [FEE]). The items under the *role model* factor focus on pre-service teachers' exposure to good samples of ICT use by their teacher trainers/professors. Likewise, the items under the *reflection* factor emphasize the pre-service teachers' opportunity to reflect on and discuss the role of ICT in education. The items under the *instructional design* factor deal with pre-service teachers' employment of ICT in their instructional design. In a similar fashion, the items under the *collaboration* factor highlight the need for cooperation between and among the pre-service teachers in their endeavors to make the best use of ICT in their instructional practices. The items under the *authentic experiences* factor cluster around the pre-service teachers' use of ICT in their classroom experiences such as microteaching and practicum. Finally, the items under the *feedback* factor delve into the quality, quantity, and continuity of feedback pre-service teachers receive from their trainers/professors. Considering the scope of the factors and items, it would be justified to argue that the SQD scale is sufficiently comprehensive to pinpoint pre-service teachers' perceptions of how well their teacher training programs prepare them for effective ICT use and the level of support they receive from their teacher training programs as to effective ICT utilization.

In support of this, the reliability of the overall scale (Cronbach's $\alpha = .98$) as well as the individual factors of the scale (ROL: $\alpha = .91$, REF: $\alpha = .89$, DES: $\alpha = .90$, COL: $\alpha = .87$, AUT: $\alpha = .83$, FEE: $\alpha = .93$) have been computed by Tondeur et al. (2016). The items of the original SQD scale were in English and as the participants of the present study are pre-service English language teachers, the SQD scale has been implemented without any changes. According to the results of the reliability analysis conducted for the present study, the overall SQD scale ($\alpha = .91$) as well as the factors (ROL: $\alpha = .87$, REF: $\alpha = .84$, DES: $\alpha = .89$, COL: $\alpha = .85$, AUT: $\alpha = .82$, FEE: $\alpha = .91$) proved to be highly reliable.

As for the collection of the qualitative data, an open-ended survey form (consisting of two open-ended questions [1: *Do you think that your teacher training program has prepared you sufficiently to teach English using ICT effectively? Why?*, 2: *What courses you have taken throughout your teacher training program do you consider as useful for teaching English using ICT effectively?]*) has been produced by the researcher and attached at the end of the SQD scale. The views of two colleagues as to the suitability and comprehensibility of the open-ended questions for the SQD scale have been granted prior to the implementation of the study. As a next step, the participants have been requested to answer these questions in a wholehearted manner. The underlying reason for the collection of qualitative data is to confirm or deny the findings offered by the quantitative data analyses and delve more into the perceptions of the participants as to the main aim of the research.

Data Collection Process

The data collection process for this study started in April, 2023, subsequent to the approval of Süleyman Demirel University Ethics Council (March 22, 2023/134-7), and ended at the end of May, 2023. The data collection tools have been uploaded on an online platform (forms.google.com) and the link has been shared with the pre-service English language teachers through their advisors because online education has been adopted by higher education institutions across Türkiye at that period. The participants have been informed about the content as well as the aim of the study in detail and their consents have been gathered before they have been requested to participate in the study.

Data Analysis

Both quantitative and qualitative data have been collected in this mixed methods study. For the analysis of quantitative data, descriptive analyses such as mean score, percentage, standard deviation and score category breakdown have been computed and the results have been presented in tables. Likewise, qualitative data collected through the open-ended survey form has been analyzed employing the thematic analysis technique, which enables the identification of significant codes and categories emerging from the raw data (Boyatzis, 1998). More specifically, the researcher engaged himself with the relevant literature, the nature of the research questions and his professional experience along with the collected data. To make sure that representative codes and categories have been identified reliably and consistently, the data have been read, reread, overviewed, and annotated systematically through manual coding (O'leary, 2004). Consequently, the findings of the thematic analysis have been presented via the interpretations of the researcher along with the verbatim quotations of the participants' responses. As the study has been conducted by a single researcher, inter-rater/-coder reliability computations have been ignored, which can be regarded as a limitation of the study.

Ethics Approval

The current study has been conducted after the approval of Süleyman Demirel University Ethics Council (March 22, 2023/134-7) was granted.

Findings

1. What are the pre-service teachers' perceptions toward the use of ICT strategies in their teacher training program?

The first – and the main – research question of the study aims to reveal the perceptions of pre-service teachers as to the use of ICT strategies in their teacher training program. In this respect, quantitative data have been collected and analyzed employing descriptive analyses such as mean score, percentage, standard deviation, and score category breakdown. The results of the analyses can be seen in Table 2.

Table 2. Descriptive statistics for SQD and its factors

Factors*/SQD	N	$\bar{X}$	Score Category Breakdown**	Percentage of scores (%)	sd
ROL	191	2.787	Slightly disagree	46.45	.82
REF	191	2.670	Slightly disagree	44.5	.78
DES	191	2.745	Slightly disagree	45.75	.95
COL	191	2.785	Slightly disagree	46.41	.94
AUT	191	2.798	Slightly disagree	46.63	.84
FEE	191	2.593	Disagree	43.21	.75
SQD	191	2.720	Slightly disagree	45.33	.85

*Factors of the SQD: ROL: Role Model; REF: Reflection; DES: Instructional Design; COL: Collaboration; AUT: Authentic Experiences; FEE: Feedback.
**Score category breakdown has been computed as: 1.00-1.83: totally disagree; 1.84-2.66: disagree; 2.67-3.50: slightly disagree; 3.60-4.33: slightly agree; 4.34-5.16: agree; 5.17-6.00: totally agree.

As can be inferred from Table 2., the participants *slightly disagree* ($\bar{X}$=2,72) that their teacher training program sufficiently prepares them for effective ICT use and the level of support they receive from their teacher training programs in terms of effective ICT integration is satisfactory. More specifically, the participants of the study *slightly disagree* with the ROL ($\bar{X}$=2,78), REF ($\bar{X}$=2,67), DES ($\bar{X}$=2,74), COL ($\bar{X}$=2,78), AUT ($\bar{X}$=2,79) and *disagree* with the FEE ($\bar{X}$=2,59) factors. In other words, according to the perceptions of the participants, teacher training programs fail to employ teacher trainers as role models, encourage reflection on instructional uses of technology, teach how to use and integrate technology, foster collaboration among peers, offer scaffolding, and provide continuous feedback.

Do the pre-service teachers think that their teacher training program has prepared them sufficiently to teach English using ICT effectively?

The first sub-research question of the study aims to reveal whether pre-service teachers think that their teacher training program has prepared them sufficiently to teach English using ICT effectively. In an effort to answer this research question, qualitative data has been collected through an open-ended survey form and analyzed via the thematic analysis technique. The findings of the thematic analysis, including categories, codes, frequencies, and percentages, have been presented in Table 3.

Table 3. Categories and codes for teacher training programs

	category	f/%	code	f/%
Do you think that your teacher training program has prepared you sufficiently to teach English using ICT effectively?	insufficient	109/57	Lack of role models	47/24
			Gap between theory and practice	53/28
			Insufficient training & coursework	63/33
			Lack of feedback	51/26
			Lack of technological equipment	46/24
			Lack of practice opportunities	65/34
	sufficient	82/43	Support offered by the professors	34/18
			Relevant coursework	38/20
			Microteachings & Practicum	48/25
			Getting feedback	37/19
			Observing good examples	40/20

As can be inferred from Table 3., 57% (n=109) of the participants have reported that their teacher training program has failed to prepare them sufficiently to teach English using ICT effectively whereas 43% (n=82) of the participants assume that their teacher training program has prepared them sufficiently to teach English using ICT effectively. The participants have stated that *lack of role models* (n=47), *gap between theory and practice* (n=53), *insufficient training & coursework* (n=63), *lack of feedback* (n=51), *lack of technological equipment* (n=46), and *lack of practice opportunities* (n=65) contribute to their teacher training programs' failure to prepare them sufficiently to teach English using ICT effectively. For instance, the participants reported that their professors have failed to be good role models for them in terms of ICT utilization (*PST3: Our professors ask for help when integrating technology [for example when they are using the smart boards], and they expect us to use them effectively. This is nonsense.*). In a similar vein, some of the participants referred to the gap between theory and practice (*PST9: We learn about how to teach with technology, but we are not exposed to any practice in terms of integrating technology.*) and called for more opportunities to allow them to transform what they have learned into observable practices. In addition, insufficient training and coursework emerged as another weakness of their teacher training program (*PST12: We did not take any courses that focused on teaching English using technology.*).

On the other hand, the participants who suppose that their teacher training program has prepared them sufficiently to teach English using ICT effectively based their answers on reasons such as *support offered by the professors* (n=34), *relevant coursework* (n=38), *microteachings & practicum* (n=48), *getting feedback* (n=37), and *observing good examples* (n=40). More precisely, some of the participants expressed their satisfaction in terms of the support offered by their professors (*PST19: Our professors encouraged us to make the best use of technology while we were designing/conducting our classes.*). On the surface, this finding may seem contradictory because some of the participants complain that their professors failed to act as role models in terms of ICT use. In contrast, some other participants appreciate the support offered by their professors as to ICT utilization. However, as the participants of the present study involved 9 different teacher training programs across Türkiye, this seemingly contradictory finding may be attributed to local variations among teacher training programs across the country. Similarly, some of the participants have stated that relevant coursework provided by their teacher training program contributed to their ICT utilization skills (*PST22: I think that some of the courses I took contributed greatly to my ICT integration skills.*), paying special attention to the courses that include practice components (*PST33: In some of our courses, we are required to conduct microteachings and, in our final year, we complete our practicum. I think that we get the chance to apply what we learned thanks to these courses.*). In direct contrast to the findings of the quantitative data presented above, some of the participants report that such practice-based courses assisted them in developing their ICT utilization skills through the feedback they or their peers received (*PST41: When I observe my classmates' microteachings and practicum teaching sessions, I take note of good activities designed by them. I sometimes design similar activities in my own teachings.* / *PST24: Our professors or mentor teacher give feedback to my classmates after they do their microteachings or practicum lessons. I also pay attention to the feedback and try to avoid making similar mistakes in my future teachings.*). As can be inferred from these findings, there are seemingly conflicting perceptions, which can be attributed to local and/or institutional variations; nonetheless, it is clear that the participants opine that the gap between theory and practice, and lack of role models, training & coursework, feedback, technological equipment, and practice opportunities contribute to their negative perceptions. In addition, the participants appreciate the support offered by the professors, and the benefits of relevant coursework, microteachings & practicum, getting feedback and observing good examples.

What course(s) offered by the teacher training program are considered as helpful for integrating ICT into teaching English by the pre-service teachers?

The second sub-research question of the research intends to identify the courses offered by the teacher training program that are considered as helpful and useful for utilizing ICT in teaching English by the pre-service English language teachers. In this respect, qualitative data has been collected and analyzed. The findings of the thematic analysis, including categories, codes, frequencies and percentages, have been presented in Table 4.

Table 4. Findings of the thematic analysis for the courses

	category	f/%	code	f/%
What courses offered by your teacher training program do you consider	None of the courses	102/53	None of the courses	102/53
	Some of the courses	89/47	Practicum	69/36
			Teaching of English Language Skills	60/31
			Teaching English to Young	58/30

as helpful for integrating ICT into teaching English?	Learners Teaching of Integrated Language Skills	56/29
	Materials Development	45/24
	Instructional Technologies	44/23
	Microteaching	43/23

As can be inferred from Table 4., 53% (n=102) of the participants think that none of the courses offered by their teacher training program has been helpful for the utilization of ICT tools in teaching English. In contrast, 47% (n=89) of the participants have reported that some of the courses they have taken throughout their teacher training program have contributed to their ICT utilization skills in teaching English. More precisely, the participants opine that several courses they have taken throughout their teacher training program such as *practicum* (n=69), *teaching of English language skills* (n=60), *teaching English to young learners* (n=58), *teaching of integrated language skills* (n=56), *materials development* (n=45), *instructional technologies* (n=44), and *microteaching* (n=43) have helped them to embed ICT into teaching English effectively. Additionally, some of the participants asserted that the individual professor, rather than the name of the specific course, may be more influential in terms of ICT use (*PST17: In terms of integration of ICT, I think that what matters is the professor. For example, one of our professors casted the screen of his smart phone on the smart board, which was novel for me. Then, I learned that it was possible to cast the screen of your smart phone on the smart board. This happened in our academic reading class.*).

Discussion

The findings of the study clearly indicate that, as has been confirmed by the statements of the pre-service teachers, the level of support they have received from their teacher training programs in terms of effective ICT use is not satisfactory and they *slightly disagree* that their teacher training program sufficiently prepares them for effective ICT utilization. Put differently, they suppose that teacher training programs fail to employ teacher trainers as role models, encourage reflection on instructional uses of ICT, teach how to use and integrate ICT tools, foster collaboration among peers, offer scaffolding, and provide continuous feedback in terms of ICT use. Baran et al. (2019) used the same data collection tool in Turkish context with pre-service teachers from three different state universities and observed that the most commonly utilized strategies were *reflection* and *modeling* whereas *feedback* and *instructional design* strategies received the lowest scores. However, the current study reveals that all the strategies covered by the SQD scale received low scores and the participants either *disagreed* or *slightly disagreed* with the strategies offered by their teacher training institutions. In a similar fashion, it was found in the study of Tondeur et al. (2016) that teacher training programs experienced several challenges in helping pre-service teachers to construct ICT-rich lessons and offering adequate feedback. On the other hand, Sarıçoban et al. (2019)'s study concluded that Turkish pre-service teachers' perceptions of their teacher training programs and their ICT competencies were quite satisfactory. Likewise, Öz (2015) also reported that the teacher training program of the participants proved to be successful in that it provided the pre-service teachers with the necessary skills and knowledge of technology to be implemented in their practical teaching. These conflicting conclusions drawn by different studies may be explained with reference to inter-institutional variations among teacher training programs across the country.

In a similar sense, the findings of the qualitative data indicate that less than half of the participants regarded their teacher training programs as *satisfactory* in terms of teaching English using ICT effectively. To start with, the participants have stated that a lack of role models contributes to this failure. Regardless of the level they are teaching, teacher trainers/professors should keep up with the latest technology and benefit from it in their classrooms. In this respect, Kwangsawad (2016) claims that teacher trainers should display the responsibility of acting as models of technology integration. Likewise, Kaufman (2015) maintains that in order for pre-service teachers to combine technology with their instructional practices, teacher trainers themselves should act as role models to encourage them. Furthermore, the participants have referred to the gap between theory and practice, implying that pre-service teachers need to be allowed and encouraged to make use of ICT in their practice-based courses such as microteaching and practicum. This imbalance between theory and practice has been underscored by previous research (Coskun & Daloglu, 2010; Kilic, 2010) and the need to increase the amount of practice-based courses have been frequently recommended. Additionally, many of the pre-service teachers assume that they have not had enough training and/or coursework to effectively utilize ICT tools, which comes to mean that the curricula of teacher training programs need a comprehensive revision. This revision should include supplementing more practice-based courses that encourage effective ICT use in their content.

The participants that state their pre-service teacher training program has prepared them sufficiently for the utilization of ICT in their instruction maintain that they have received the necessary support and encouragement from their professors. This finding may appear contradictory since some of the participants

regard their teacher training programs as satisfactory whereas others consider them unsatisfactory. As an explanation, it can be argued that there are variations in terms of curricula among different teacher training programs across the country, and this inter-institutional diversity may contribute to this inconsistency. Moreover, even within the same teacher training program, the same course can be given by different professors and a variation in terms of ICT use can also be observed between different professors, which may also lead to this discrepancy. In this respect, some of the participants have reported that they have taken relevant courses to enable them to effectively use ICT in their instruction. To be more precise, the pre-service teachers have referred to the positive impact of practice-based components (such as microteachings and practicum) of their teacher training programs. In such practice-based courses, pre-service teachers get the chance to observe their peers and benefit from the feedback offered to not only themselves but their peers as well. In this regard, it would be justified to argue that pre-service teachers should be provided with more opportunities to apply what they have learned through more frequent and extensive microteachings/practicum courses.

As for the courses offered by the teacher training programs, a slight majority of the pre-service teachers maintain that none of the courses offered by their teacher training program has been helpful for utilizing ICT tools in teaching English. This can also be interpreted as a clear indication of the need to revise and update the curricula of teacher training programs and install more courses that focus on practice components. On the other hand, some of the pre-service teachers have stated that courses they have taken throughout their teacher training program such as *practicum*, *teaching of English language skills*, *teaching English to young learners*, *teaching of integrated language skills*, *materials development*, *instructional technologies*, and *microteaching* have helped them to use ICT in teaching English effectively. As can be understood from the responses of the participants, courses that involve practice components have been considered to be more helpful for the utilization of ICT in teaching English. It should not go without saying that, for some of the participants, the professor rather than the course itself is a determinant for the effective utilization of ICT. This statement corroborates the fact that a professor/teacher can guide his/her learners in using technology (by him-herself employing technology) even when s/he is teaching something not so related to technology.

Conclusion

It would be safe to argue that pre-/in-service teachers with a high level of ICT skills can make the best use of appropriate technologies when training their students. In this respect, the current study has aimed to address pre-service English language teachers' perceptions of how well their teacher training programs prepare them for effective ICT use in their instructional practices and the level of support they receive from their teacher training programs in terms of effective ICT utilization. Teacher training programs have been regarded as educational *mosaics* involving a variety of courses, students with diverse backgrounds, and instructional support mechanisms, implying that the analysis of these programs should be conducted at multiple points via a variety of methods (Hofer & Grandgenett, 2012). As has been suggested by Martin (2015), teacher training programs should feed pre-service teachers with sufficient preparation by enriching their didactic competences with innovative instructional technologies. In support of this, it has been claimed that the latest technology needs to be embedded into content-specific, practice-based methods courses in a holistic fashion to foster pre-service teachers' self-confidence and to successfully integrate technology (Baran et al., 2019; Golas, 2010; Hersh, 2013; Mouza et al., 2014; Tondeur et al., 2016; 2020; Voogt et al., 2016; Wang et al., 2018). To achieve this, pre-service teacher training programs need to offer intensive, coordinated, systematic, and dedicated efforts if they are to develop pre-service teachers' ICT utilization skills (Angeli & Valanides, 2009; Tondeur et al., 2016). This implies that teacher training institutions need to be restructured holistically to allow for the successful integration of content, pedagogy, and technology (So & Kim, 2009).

Consistent with the findings of the present study, it has been assumed that the knowledge and skill of effective ICT use develops over time through long-term exposure and repeated practice, implying that teacher training programs play the major role in offering both exposure and practice opportunities (Baran & Uygun, 2016; Mouza & Karchmer-Klein, 2013; Yeh et al., 2014). In this respect, Valanides and Angeli (2008) observed that teachers' self-confidence and competence in benefitting from technology increased as they gained experience. On the other hand, Bilici et al. (2016) observed that teacher training programs in Türkiye generally train pre-service teachers in using word processing software and basic internet usage, which is hardly sufficient for preparing them to make the best use of ICT tools. It should also be noted at this point that what pre-service teachers learn today may soon become obsolete as the pace of technological innovations is surprisingly rapid. Consequently, Mouza and Karchmer-Klein (2013) underscore the necessity of continuous professional development in ICT use by referring to the unstable and constantly changing nature of technology, which requires teachers to keep up with innovations in software and hardware. Therefore, effective ICT utilization should not be a concern just for pre-service teachers and in-service teachers should also keep up with the latest technology through in-service trainings designed with this aim in mind.

Suggestions

As a final note, the data was collected through the SQD scale and an open-ended survey within the study; thus, the source of the data was the participants' self-perceptions rather than actual observations of their field performances. Accordingly, a limitation of collecting data via self-report surveys is that even though they provide significant insights in a quick and cost-effective manner (Akyuz, 2018; Baser et al., 2016), participants' self-perceptions only reflect their beliefs or attitudes (Agyei & Voogt, 2011) and may not match with their actual implementations (Koh, 2013; Schmid et al., 2021); therefore, as a suggestion, further studies may also involve observations of the participants' practices to reveal the congruence between their stated beliefs and practices. Furthermore, the study was conducted by a single researcher and the analysis of the qualitative data was implemented by a single rater, which may weaken the reliability of the study. Further studies that involve qualitative data may employ more than one rater to enhance the reliability of the study.

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