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Iranian Teachers' Perceptions of Technology Integration in Teaching English as a Foreign Language

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Abstract

The integration of technology in higher education, particularly in the teaching of English as a foreign language (TEFL), has been significantly impacted by globalisation. The COVID-19 pandemic has accelerated this trend, with a shift towards online and mobile-assisted language learning. This study, which employed a small-scale qualitative research approach using volunteer sampling and face-to-face interviews, explores Iranian TEFL teachers' perceptions of technology integration during the pandemic. The research uncovers the impact of online and mobile-assisted language learning on both students' learning and teachers' professional knowledge and effectiveness. Six themes emerged from the analysis of the 14 semi-structured interviews conducted with in-service TEFL teachers: online teaching quality, challenges of online teaching, influence of teacher characteristics, quality of applied technological knowledge, affordance of technology integration, and online teaching components. The findings suggest that individual variability exists in teachers' integration of technology in practice, the quality of online language teaching, and language teachers' technological knowledge. This indicates a need for targeted mentoring and coaching to improve technology-mediated practice. Additionally, the study reveals that variability in individual teacher capacity is not related to the length of teaching experience, highlighting the need for ongoing professional development for teachers throughout their careers.

Key Words: TEFL, in-service teachers, online learning, mobile-assisted language teaching, teachers' technological knowledge.



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1 Introduction

Globalisation has led to rapid development and integration of technology in society. The higher education sector is no exception, having experienced a pandemic-forced wave of educational reform and rapid technological integration in 2020. This abrupt technological shift required accelerated evolution in language teaching (Issac et al., 2019; Wekerle & Kollar, 2021; Su, 2023) and significant changes in the dynamics of the language learning classroom. Globally, teachers face multiple challenges in assisting students, delivering learning materials, and supporting the learning process using technology (Gheung & Slavin 2013). Rather than focusing on emotions and social relationships (Gkonou & Mercer, 2017), teachers' attention has been diverted to rapid technology integration in online teaching. Online teaching requires them to modify their teaching strategies to provide students with active and interactive language learning experiences (Ho et al., 2023), which provides parity with the classroom experience. With this, teachers' technological knowledge and digital literacy came to the fore, as it was necessary for effective online instruction (Jin, 2022; Zhao et al., 2018) and to integrate technology into teaching and support the development of new and adapted learning designs (Sue, 2023). Thus, teachers had to rapidly develop knowledge and understanding of new technology and technological pedagogical approaches to teach their subjects effectively.

Iran is no exception to these disruptions. Preexisting bandwidth and Internet connectivity issues (Dashtestani, 2014) created notable challenges to technology integration in teaching, which was amplified during the pandemic (Khatoony & Nezhadmehr, 2020). Slow Internet speeds have severely affected the delivery of online classrooms, becoming a central challenge for education in Iran during the pandemic. This was evident when the Ministry of Education made the proprietary software SHAD, a social networking application, available to teachers across Iran as a platform for online delivery of education (Akbari, 2021). There were considerable problems with video interaction (between teachers and students) arising from the recordings only being available for up to 24 hours after the presentation. This issue was compounded as students could not download video files because of Internet connectivity issues (Askari & Chen, 2021).

Further, teachers face a lack of appropriate materials, online resources, and funding and support for language institutions, along with their limited understanding of online instruction and insufficient pedagogical and technological knowledge (Khatoony & Nezhadmehr, 2020; Dashtestani, 2014; Tagizadeh & Yourdshahi, 2020). Challenges which Iranian teachers were less able to cope with because of the lack of training in using technology in teaching (Khatoony & Nezhadmehr, 2020) may have led to negative attitudes towards using mobile-assisted technology in teaching (Soleimani & Pourrasa, 2021). Nonetheless, teachers hold positive attitudes towards technology integration in teaching, which is associated with positive feedback in their school climate (Raygan & Moradkhani, 2022; Nushi & Ghasemi, 2021), demonstrating resilience and perseverance when encountering issues with technology (Khatoony & Nezhadmehr, 2020). Teachers' attitudes were central to the success of technology integration during the pandemic (Momeni, 2022; Raygan & Moradkhani, 2022), with some developing coping strategies to adjust to teaching online, and in some cases involving the adaptation of content for online teaching (Ghanbari & Nowrooze, 2022).

Since the end of the pandemic, many language teaching settings have abandoned the traditional chalk-and-talk approach to instruction, replacing it with remote and online learning, which is sometimes mixed with blended learning. Teachers now rely on digital devices (Brooks & Grajek, 2020). Furthermore, this evolution in language teaching has accelerated the technological innovations and integrations that began before the COVID-19 pandemic (Su, 2023). Prior to the pandemic, there was a general assumption that teachers were digitally literate and had the requisite knowledge and skills to guarantee successful teaching in the technology age (Deng & Zhang, 2023). Moreover, teachers' technology-related teaching skills have been demonstrated to play a significant role in enabling them to realise the potential of

digital technologies in the learning environment (Koehler & Mishra, 2008). Nonetheless, technology has transformed the language-teaching process with significant changes in practice.

This research aims to capture the transformation in the practice of English as a Foreign Language through the experiences of teachers working in language teaching centres in Tehran, the capital of Iran. The core purpose was to understand how English language teachers perceive online teaching, mobile-assisted learning, and the integration of technology in practice. Furthermore, there is a focus on the changes that may have occurred in teachers' technological knowledge by engaging with technology in planning and delivering classes. Despite the wealth of literature on online teaching during the COVID-19 pandemic, there is no detailed understanding of how EFL teachers in Iran experience technological integration from the perspective of their professional and technological knowledge growth.

For this reason, in this article, we explore the experiences of 14 in-service teachers of English as a Foreign Language (EFL) through their experiences and perceptions of online teaching, supported by mobile-assisted technology, and the relationship between teachers' knowledge and technology-integrated teaching (Appendix). The specific objectives of the project are as follows:

1. Gather the authentic experiences of EFL teachers in Iran to stimulate debate amongst leaders of language education about the role of technology integration in language teaching.
2. Consider the ongoing contribution of mobile technology to enhancing online teaching quality and student learning.
3. Conduct empirical research that provides evidence for the efficacy of teaching with technology as a way of enhancing EFL teachers' knowledge and classroom performance.

In fulfilling these objectives, we identified the aspects of online teaching and technology teachers considered influential on quality teaching. This leads us to consider implications for the continuation of online language teaching in Iran and language teachers' professional development. The main research questions for this study are as follows:

1. What do EFL teachers perceive about technology integration in online teaching?
2. How do EFL teachers perceive the role of mobile technology in supporting online teaching processes?
3. How does integrating technology into online teaching affect EFL teachers' professional and technological knowledge?

2 The context of English language teaching in Iran

Understanding the context of English language teaching in Iran and in the EFL community is important. English is a lingua franca language that offers a medium for global communication. It gives authority to the teaching of English as a Foreign Language worldwide. In Iran, English is formally taught to children between the ages of 11 and 13 in junior school (Ansary & Babaii, 2003). Language education in Iran is a matter of government policy motivated by political, social, economic and educational factors (Farhady et al., 2010). In terms of language learning, government policy has the potential to steer decisions which determine the promotion of the learning and teaching of specific foreign languages. English language teaching in Iran has a history that reflects this and the context and changing attitudes toward English language learning (Moghaddam & Murray, 2019).

The development of English language literacy among the younger generations in Iran has become a key driver in the education system. In the past, the primary objective of English teaching was to develop

students with acceptable language competence. The focus on competence has been steered by the economic imperatives vital to Iran's development as a semi-peripheral country. Thus, English language teaching focuses on improving students' reading abilities and skills. It has been shown that globally, across a range of tertiary and quaternary sectors and industries, the latest technological information resides in printed materials. Hence, a good level of reading ability is considered crucial for students to develop as independent users and consumers of English (Atai & Mazlum, 2012). Fortuitously, Iranian EFL learners are enthusiastic about and positive toward learning English to enhance their writing ability (Javadi et al., 2012).

Although teacher training programmes have existed for a long time, training in second language teaching has only recently received close attention in many developing countries (Alhossaini & Ketabi, 2013). In Iran, the Ministry of Education has taken an authoritative and centralised approach to developing the teaching context, which excludes teachers from the decision-making process (Baniasad et al., 2016). The initial teacher education programmes delivered at teacher-training universities were administered under the supervision of the Iranian Ministry of Science, Research, and Technology (Aliakbari & Tabarabaei, 2019). Teacher training is attractive to many, as it offers a fully funded certification route, students receive a salary, and employment by the Iranian Ministry of Education is guaranteed.

Initial and in-service teacher training is also delivered through teacher training centres and is a remit of the Ministry of Education (Baniasad et al., 2016); trainers are selected from among the instructors of the Ministry of Education (Alhossaini & Ketabi, 2013). Although courses are generic in nature, they include complementary practical English courses to develop teachers whose main subject duties include EFL teaching. In-service teacher training in Iran is available online in generic courses. Other courses available to teachers are held in person. They are attractive as they lead to certification at the end of the course, which can provide evidence for promotion, leading to an increase in salary and yearly evaluation (Baniasad et al., 2016).

Despite the availability of teacher training, there have been criticisms of the standard of language teacher education in Iran and EFL teaching in schools. This corresponds to teachers' self-assessment. Kazemi and Ashraf (2014) reported that teachers have identified the need to attend training courses that develop their teaching skills to improve their English proficiency. Alhossaini and Ketabi (2013) report that pre-service teacher training courses for EFL teachers in Iran have revealed many shortcomings, including the lowering of standards to improve pass rates, an overfocus on the theoretical compared to the practical, and the intensive nature of courses, which impacts learners' engagement.

3 Literature Review

3.1 Technology-integration in teaching

The ensuing integration of technology into 21st-century language learning classrooms has unlocked a myriad of possibilities for the transformation of practice. Integrating technology into various aspects of pedagogy can bring a variety of affordances to the education system (Wang et al., 2023). Smith et al. (2023) have argued that technology integration has a positive effect on the quality of teaching. Having various online resources and tools can enhance the effectiveness of online teaching. In this regard, the literature establishes that teachers can benefit from technological advancements in online delivery such as interactive whiteboards, virtual reality, resources, educational applications, and chatrooms. These advancements can provide an opportunity for EFL teachers to form a virtual community for English language education (Farkhani et al., 2022). However, teachers' demographic factors, including age and gender, can affect their attitudes towards online education (Muñoz Carril et al., 2013; Martin et al., 2019). Indeed, Collar and Sahin (2011) asserted that age may affect technology integration, leading older teachers to question their self-efficacy and encounter self-imposed barriers to enhancing practice.

This is important, as teachers' knowledge, understanding, skills, and attitudes towards integrating technology into teaching are critical to success. Integrating technology into the teaching process offers the possibility of developing new representations of subject matter, including audio and video, and the ability to augment teaching using mobile technology. This necessitates that the teacher reevaluates their comprehension of teaching with technology, as well as their grasp of the subject matter and its corresponding representations.

Students appear to be more positively influenced by technology integration in learning, as studies indicate that language education is positively affected by online resources and instruction in the context of learner 2 education (Tao & Gao, 2022). Furthermore, online contexts and resources potentially enhance students' writing proficiency and speaking skills (Shin et al., 2021; Lem, 2018). Pilgrim et al. (2012) explained that the integration of technology into instruction could assist students in obtaining a higher level of thinking and problem-solving skills. Integrating technology during teaching can provide students with various opportunities, such as attending online workshops, group discussions, and online quizzes (Hashim, Ahmad & Ahmad, 2011). Recent studies have shown that technology can support education by encouraging informal discussions and openly sharing knowledge (Leh et al., 2021). It offers a variety of feedback modalities, and students prefer to receive audio or audio-visual feedback instead of written feedback because of its clarity, detail, and authenticity, which offer depth and personality (Merry & Orsmond, 2008; Killingback et al., 2019).

Perhaps one of the most progressive aspects of technology integration in teaching is the use of mobile technology and communication applications, which are prevalent worldwide and offer accessible socialisation.

The possibilities for enhancing language teaching are significant. Mobile applications can enhance students' learning, including their listening and speaking skills. For instance, Demouy and Kukulska-Hulme (2010) demonstrated that using iPods and MP3 players while learning can improve students' language skills. Similarly, Jarvis and Achilleos (2013) revealed that nonnative English speakers can use mobile applications to gather information for various academic purposes.

Clearly, integrating technology in teaching and the availability of mobile applications means that the teaching and learning processes can be reoriented to become learner-centred. Indeed, students with self-motivation are reported to perform better in online learning environments (Afzal & Crawford, 2023). Students can actively select technology, applications, and resources to fulfil their learning objectives (Morales & Calvo, 2017). For example, YouTube can improve proficiency in understanding English learning, including speaking, grammar, and writing skills (Caliskan et al., 2019). Similarly, Fearnley (2020) mentioned that Facebook can enhance enthusiasm and increase the space for learning English.

3.2 Mobile-messaging applications

The existing research on mobile-assisted teaching indicates that mobile applications could potentially enhance the quality of teaching and learning (Abdullah et al., 2013; Demouy & Kukulska-Hulme, 2010; Jarvis & Achilleos, 2013). Awada (2016) argued that mobile applications utilised as educational tools can aid teachers in improving the quality of instruction, which in turn affects students' learning outcomes. There are numerous applications available for online classes that allow for free video contact sharing via software such as Skype, Zoom, and WhatsApp (Afzal et al., 2022).

Motteram et al. (2020) emphasise the significance of mobile-phone-based applications, including WhatsApp, in supporting language teacher development in challenging contexts. Susanti and Tarmuji (2016) highlighted the versatility of mobile messaging applications, which can be utilised on a variety of technological devices and gadgets that offer additional activities such as text messaging, sending videos and sound clips, creating chat groups, sharing locations, and sharing photographs. Recently, there has been a focus on the potential of WhatsApp, an original mobile phone-based instant

messaging application, to enhance online language teaching (Ferreira-Meyers & Martins, 2020). Several studies have demonstrated that WhatsApp, in particular, can be a valuable educational tool (Haron et al., 2021) for fostering the development of cognitive skills, such as creativity, critical thinking, and inquiry (Baguma et al., 2019).

A range of studies underscores the advantages of employing WhatsApp in fostering students' linguistic competence. Bouhnik and Deshen (2014) posited that the application of WhatsApp in group chats can facilitate the development of language skills, such as reading comprehension, grammatical acumen, and orthographic proficiency, owing to the presence of the instructor. Ankeny (2019) emphasised the potential of WhatsApp to enhance students' writing proficiency during instruction. Barhoumi (2015) suggested that using WhatsApp to teach English as a Foreign Language (EFL) can yield general benefits, including increased collaboration between high- and low-achieving learners. This approach may also boost students' confidence, leading to improved language skills and proficiency, particularly in genuine oral interactions. Costa and Han (2017) indicated that learners can derive numerous benefits from incorporating WhatsApp into their learning experience, such as acquiring new vocabulary, reducing anxiety, and rehearsing pronunciation. In summary, research indicates that WhatsApp is a versatile and practical tool that effectively promotes social and academic interactions among students and between students and their instructors (Alubthane & Al Youssef, 2021).

4 Methodology

4.1 Research design

This research draws on qualitative data collected using a semi-structured interview approach, which was part of a larger survey that used an inventory and survey approach to collect quantitative data. The quantitative study examined the mediating role of teachers' technological knowledge in the relationship between teachers' technology usage and pedagogic content knowledge. The qualitative focus here was on TEFL teachers' perceptions of online teaching and using WhatsApp in mobile-assisted teaching and how technology integration changes teachers' knowledge. The findings presented are based on results from this parallel research design involving online inventories and interviews.

4.2 Sample and data collection

The study was undertaken in Tehran, the capital of Iran and involved two sampling phases. Tehran was purposively selected due to its density of language centres. Next, a cluster sampling approach was used to group language centres in different regions of Tehran and teachers (potential participants) were defined in clusters based on those centres. Of the 22 language centres, 15 were randomly chosen. The selected stratum of teachers in Tehran was then sampled using a probability approach (Wilson, 2010), and an online questionnaire was sent to all eligible teachers.

The second step involved online interviews with participants who had declared their willingness to be contacted further in the study by including their email addresses when completing an online inventory administered to collect quantitative data. This is not reported in this article.

The study used a single research measure: a semi-structured online interview protocol. The interview protocol contained 11 open-ended questions that invited participants to share their perceptions and views on teaching English online, augmented by mobile-assisted technology and the WhatsApp application. Further, probes and prompts were used to develop respondents' replies and unpack lines of inquiry and exemplification (Bryman, 2016; Silverman, 2017). Fourteen teachers of English as a foreign language agreed to participate in the interviews. Table 1 below presents an overview of sample composition. Of the 222 original participants, 14 were included in the present study because they had completed an online

inventory and volunteered to participate in an interview. Despite the small number of participants, their personal characteristics, teaching experience and qualifications represented a balanced sample.

Table 1 *Sample composition*

Characteristic	Description	Value
Gender distribution	Male	7
	Female	7
Age	Age range	26 to 50 years
	Modal age group	28 years
Teaching experience	Length of teaching experience	4 years to 20 years
Qualifications	Highest qualification level	Bachelors = 2
		Masters = 7
		Doctorate = 5

Table 2 below presents an overview of participant characteristics. The sample averaged 34.21 years old ($SD = 7.27$, range 26 to 50 years) and included an equal number of men (50%) and women (50%). In this sample, 14% of the participant's highest qualification attained was a bachelor's degree, 50% had attained at least a master's degree and 36% had attained a doctorate (PhD). The sample averaged 11.35 years of teaching experience ($SD = 5.89$, range 4 to 20 years). At least five participants (36%) had either a master's degree or PhD in the field of TEFL. As volunteer sampling was used, the characteristics of the sample are unique and show a variation in age, teaching experience and qualification. Rather than a limitation and threat to external validity (Casteel & Bridier, 2021), the range of experiences was suited to the exploratory research questions and had the potential to add richness and detail to the data.

Table 2 *Participant characteristics*

Participant	Gender	Age	Teaching experience (years)	Qualification
1	Male	36	18	PhD English Language Teaching TEFL
2	Female	50	20	BA Software engineer
3	Male	41	20	PhD English Language Teaching TEFL
4	Female	43	12	MA English Language Teaching TEFL
5	Female	26	8	MA E-business entrepreneurship
6	Female	37	8	MA E-business entrepreneurship
7	Male	27	6	MA Urban Management
8	Female	31	4	MA Biotechnology
9	Female	32	12	MA English Language Teaching. TEFL TTC kids and teens TESOL Canada
10	Male	28	4	BSc Chemical engineer
11	Female	28	7	MA English Language Literature
12	Male	30	10	PhD English Language Literature
13	Male	29	10	PhD English Language Literature
14	Male	41	20	PhD English Language Teaching TEFL

Individual interviews were arranged between the participant and researcher at a mutually convenient time. The interview research method allowed the interviewees to feel more relaxed when discussing the phenomenon of study, as they were interested in sharing their experiences and perceptions with the interviewer. All the interviews were conducted and recorded using Skype or similar video-conferencing applications since the participants were geographically dispersed and could not attend in-person interviews. The interviews were audio-recorded with the consent of the interviewees. During the interview, the questions clustered around three themes: online teaching, teachers' perceptions of teaching using mobile-assisted technology and WhatsApp, and the relationship between teachers' knowledge and technology-integrated teaching (Appendix). The main purpose of the interview was to obtain insight into teachers' perceptions of the act of teaching with and during technology integration in the teaching process.

4.3 Data Analysis

This study used thematic analysis to identify, analyse, and report themes within qualitative data. The qualitative data were analysed manually, and an inductive approach to thematic content analysis was taken since no theory guided the creation of codes or categories. All themes arose from the data following the procedures Bengtsson (2016) and Braun and Clarke (2006) reported.

For the first stage of the analysis, the researcher transcribed the interviews verbatim in preparation for the thematic analysis. During this transcription, the researcher became familiar with the data and was able to perceive different perspectives from different participants. The second stage of the data analysis involved what Braun and Clarke (2006) refer to as initial coding, with the transcribed texts being broken down into small meaning units, and each identified meaning unit was labelled with a code. According to Bengtsson (2016), codes can facilitate the identification of concepts around the data during the analysis process. The third stage involved categorising codes in terms of pertinent sub-themes. Fourth, the researcher created potential themes from different codes and codes defined for each specific theme. In the fifth step, the themes were reviewed, and a detailed report was produced to finalise the data analysis and interpretations. In the last step, the researcher reported the generated codes, categories, sub-themes, and themes in a codebook created according to Bengtsson (2016).

Member-checking (respondent validation) was used in this study to check the credibility and internal validity of qualitative data (Bryman, 2016). Member checking returns an interview transcription or debriefs the analytical results with participants for agreement. To check the credibility of the data analysis, 25% of the generated codes were randomly chosen to be sent to interviewees for agreement. In this study, 22 codes were created and five were sent to interviewees for agreement. The researcher benefited from using this technique to check the certainty of data and recognised no modification was needed in the qualitative data process.

4.4 Ethical Considerations

The study was approved by the Research Ethics Committee of the College of Arts and Humanities at Bangor University (Approval number ZA1 2020-21). The researcher made the application on 04/09/2020. In addition, initial permission was obtained from the authorities of the language centres to approach and recruit potential participants. Participation in the research had minimal risks as the researcher had no prior relationship with participants. Further, as data were being collected remotely, participants were somewhat distanced from the researcher due to the virtual nature of interviews, limiting potential issues such as transference and the halo effect.

5 Results

5.1 Teachers' perceptions of online and mobile-assisted teaching

In the interviews, participants shared their perspectives on the process and the act of online and mobile-assisted teaching on student and teacher learning. The interviewees also shared their views on the challenges of technology integration in teaching. In analysing the interviews, the results of this study are grouped under six broad themes: online teaching quality, challenges, affordance, technological knowledge, online teaching components, and teachers' characteristics. These six themes highlight what English teachers perceived to be important to the quality of the teaching as a support for online learning (Table 3).

Table 3 Themes, sub-themes and codes at the end of Stage 3

Theme 1 Online teaching quality	Theme 2 Challenges of online teaching	Theme 3 Influence of teacher characteristics
Sub-theme: Drivers of Quality Teaching Code: Widening of teaching experience Code: Flexibility of online and mobile app-supported teaching Code: Updated teaching materials	Theme: Challenges of online teaching Code: Poor Internet connection Code: Lack of features in software apps	Sub-theme: Influence of age on teaching capabilities Code: Age value
Sub-theme: Effectiveness of online teaching Code: Teachers' behaviour Code: Features of quality		Sub-theme: Influence of English teachers' gender during online teaching. Code: Importance of Gender Code: Developed commitment
Theme 4 Quality of applied technological knowledge	Theme 5 Affordance of technology integration	Theme 6 Online teaching components
Sub-theme: Experience in teaching with technology Code: Experienced teachers	Sub-theme: Engendering students' motivation to engage in online teaching Code: Interactive teaching styles	Sub-theme: Timely and accessible feedback Code: Online assessment
Sub-theme: Being more knowledgeable about technology usage Code: Improved teachers' knowledge Code: Knowledge transferability Code: Value of technological knowledge	Sub-theme: Accessibility of resources using technology Code: Value of communication applications as an educational tool Code: Availability of teachers	Sub-theme: Features of online teaching Code: Online events Code: Online Attendance Flexibility, convenience Code: Recoding features

5.1.1 Online teaching quality

The respondents' narratives prominently featured perceptions of the drivers of quality in online teaching. They emphasised several advantages of online teaching, which enhanced the quality and effectiveness of teaching.

The first point to note is that English language teachers described their approaches to teaching as being confronted by the shift to online delivery. Designing learning activities that engaged students in different ways was challenging yet encouraged teachers to develop new ways of teaching. Still, it encouraged teachers to take advantage of easy access to a range of current online resources, which ultimately improved the teaching process and, by extension, the quality of teaching. Interviewee 3 explained:

“Wide access to technology, which is possible these days, makes teaching easier. So, you have access to loads of resources for teaching English. For instance, how do you teach grammar? How to teach vocabulary? How to practice listening skill? These things make it easier for teachers, and teachers feel more confident. In my country, this kind of technology, such as Skype or whatever, means I can participate in many courses to improve my teaching career. So certainly, it has a huge effect on teachers’ performance” Interviewee 3 (Male).

This critical professional learning experience supported the growth and enhancement of teachers’ pedagogical and technological knowledge. They recognised that teaching online positively impacted their awareness and understanding of various technologies. This led to improvements in the quality of teaching, centring around an increased range of teaching experiences, teaching spaces, and access to resources. Notably, engaging in online teaching offered a natural progression for teachers to access professional development opportunities through attending online training events such as webinars, an act which could be engaged with from the convenience of their homes. Interviewee 9 illustrates:

“I think that if you want to teach online, if you want to go with the technology, you should update yourself with the new method of teaching. You should participate in different webinars, and seminars, you can read more articles and participate in different workshops about online teaching. So, by participating in these events, you will increase your level of teaching knowledge” Interviewee 9 (Female).

In common with many teachers during the pandemic, online and mobile-assisted teaching proved flexible for students and teachers, with neither being restricted to a particular geographical location. It gave students access to different teachers with increased availability and was convenient, which may have increased their interest and motivation to attend online. Once lockdowns had ceased, there was no need to travel to class, offering teachers time to focus on planning for teaching and students time to concentrate on their studies. This reciprocal benefit improved the quality of teaching and, by extension, student outcomes.

A strong sub-theme, apparent in the respondents’ narratives, was teaching effectiveness, characterised by the teacher’s ability to create productive relationships with learners in the virtual classroom. The exchange of information between the teacher and students, which, in some cases, was facilitated by online discussion, was vital during COVID-19. Teachers described projecting confidence, competence and kindness towards students who had faced significant disruption to their education, compounded by having to master new technologies to access education.

5.1.2 Challenges of online teaching

A recurring theme across the interviews was teachers’ experiences of poor Internet connectivity, whether theirs or their students, as a barrier to meaningful and effective e-learning. This represented one of the biggest challenges faced by online teaching in Iran. Notably, respondents believed that for meaningful

and effective e-learning, a stable internet connection is essential for teachers and students. As Interviewee 1 explains:

"The only problem that we encounter, at least in Iran, is low-speed internet connection. They might not be reliable enough. Maybe some interruption or disruption happens in the classroom. Disconnecting can happen, which discourages students from online classes" Interviewee 1 (Male).

Internet connectivity had different facets, including the speed of connection, significantly impacting the teacher's effectiveness in using resources to convey meaning. Interviewee 10 illustrates:

"I think that the only issue during online teaching refers to a good internet connection. For instance, when I am trying to send a heavy video clip or high-quality PDF file with many photos in it, a crash might happen. I think that the crash can be challenging during online teaching. Sometimes, getting disconnected is a bit frustrating to the students. They cannot really focus on the lesson" Interviewee 10 (Male).

The quote illustrates another facet of the challenge: interruptions or distractions to students' learning caused by poor internet connectivity during online lessons. Learning a language is a communicative process that requires students to carefully attend to, listen to, and make connections between words and their positions in sentences. Interruptions impede this process.

Equally as challenging, some respondents reported frustration with the limitations of the software they were using to teach. During the pandemic and beyond, online teaching relied predominantly on generic applications such as MS PowerPoint and WhatsApp, which are not designed for educational purposes. Further, some respondents admitted struggling with the lack of teaching features in certain software, including specific drawbacks to using WhatsApp, which did not contain session recording or whiteboard facilities. There was a widespread perception amongst the participants that using software with appropriate teaching features can significantly impact the learning process.

5.1.3 Influence of teachers' characteristics

There was a common perception amongst English language teachers that older teachers were less familiar with technology, which was a barrier to the teachers' ability to integrate technology into online teaching. In contrast, younger teachers were perceived as more flexible in using technology and competent at online teaching. As Interviewee 9 explains:

"I think the age of teachers has an important role in online teaching. It has a very important role in both using the technology and their teaching quality. They should be familiar with technology to deliver online teaching. Younger teachers can use applications better than middle-aged teachers. Younger ones use online teaching effectively" Interviewee 9 (Female).

The binary of competence created by this statement was immediately dissolved in others, as English language teachers expected all teachers to be able to integrate technology into teaching. This description was echoed in similar responses by interviewees, and the message was that older teachers are less familiar with technology, which acts as a barrier to the teachers' ability to integrate technology into online teaching.

"I believe that the older teachers are less familiar with technology, for example, using software or computer literacy. In the case of technology, let's say Computer-Assisted-Language-learning, which is called CALL, studies have shown that the older teachers, the less familiarity with technology, and the less comfortable they are" Interviewee 1.

Perceptions of the impact of teachers' gender on online teaching reinforced a similar binary, as interviewees considered female teachers more committed to upholding the tacit contract between the student and teacher, even when teaching online. This commitment was expressed through various strategies teachers used in their interactions with students, which sometimes extended beyond the classroom when follow-up was needed.

5.1.4 Quality of applied technological knowledge

Teachers perceived a positive relationship between the cumulative experience of teaching, not necessarily length of experience, with technology and more sophisticated technological knowledge. They positioned technological knowledge as separate from the knowledge of teaching, although more experience with technology was perceived as a foundation for effective online teaching. Similarly, teachers distinguished between knowledge of technology and applied technological knowledge. The latter was considered integral to the act of teaching online rather than a preparatory activity such as identifying image resources. Teachers understood applied technological knowledge as formulated during knowledge transfer, a foundational process underlying flexible performance and adaptability. These were associated with an awareness of new teaching methods and ways of delivering content. Teachers with a high level of experience with technology were considered better able to organise online sessions than teachers with limited technological experience. Interviewee 13 explained that:

"When you are working with technology on a daily basis, you will get more experience and get involved with it. If you know how to work with technology, you can be successful in teaching online classes. Knowing more about its features, and components will equip you to deliver your course effectively. It helps you to get familiar with new teaching methods, apps, and lots of different teaching materials. Yes, I would say having more experience with technology plays a crucial role in online teaching" Interviewee 13 (Male).

Within this narrative, the experience of teaching with technology was perceived as a gateway to effective and quality teaching. There was a common perception that teachers' adaptability and flexibility in the online teaching mode were underlain by applied knowledge of technology, including the use of a variety of different resources and teaching methods. Interviewee 11 asserts the importance of experience in online teaching.

"The more you practice and the more you work with technology, the more powerful and successful you will be in your online teaching. For example, if you are learning English, if you do not practice, you cannot learn properly. Therefore, the more technology is used during teaching, the stronger it is. Therefore, you will be a more experienced teacher in online teaching. I completely agree that more experienced teachers can adapt themselves to technology which increases their teaching effectiveness. They should be techno friend to be successful and effective teachers in their online teaching" Interviewee 11 (Female).

The use of the terms 'powerful' and 'strong' amplifies the perceived impact of technology on the effectiveness and quality of teaching online. Participants' perceptions of what it means to be experienced and master technology were independent of any age-related description. There was a recognition that adaptability could be achieved through repeated practice, and experience was measured in terms of focus on a specific activity rather than years of teaching service.

With this came an awareness and understanding among more experienced teachers that integrating technology into teaching can enhance the quality of teaching. Further, this recognises the value of technological knowledge and technology literacy.

5.1.5 Affordances of technology integration

As the interview process turned to discussing mobile-assisted teaching, teachers spoke of the value of mobile technology in facilitating learning and social interaction between and amongst students and teachers. The exchange of knowledge and ideas among teachers was expressed as pivotal to expanding teachers' professional knowledge and repertoire, illustrated by Interviewee 9:

"One of my colleagues likes to use Instagram to see different teachers' teaching methods to become more familiar with their methods and techniques. For instance, the way they are teaching grammar and vocabulary. They learn from each other. I can say that learning from each other helps me to broaden my horizons in teaching English. I am grateful that I live in this technical era"
Interviewee 9 (Female).

Many respondents described using the same interactive strategy to achieve their goals during online teaching, which hinged on encouraging students to participate in the learning process. Technology enabled both synchronous and asynchronous interaction, which could be used to engage students and independent of their physical location. Interviewee 3 discusses one example of asynchronous interaction:

"Contacting with students outside of class can be the best way to encourage them to participate in the learning process. Students feel free to send their homework to their teachers because of their availability, and they can ask questions whenever they want. In less than 24 hours, a teacher put feedback on their work. In this regard, it can improve students' participation in the learning process. This way can encourage students' motivation during online teaching" Interviewee 3.

In terms of synchronous interaction, teachers reported engaging the students in raising questions and discussing them at the group level. For instance, setting up discussion groups helps the students become more active and enthusiastic about the learning process. For both teachers and students, social interactions included accessing and engaging with what would later become teaching resources. From another perspective, teachers recognised that online teaching offered students unrestricted geographical access to teachers located internationally beyond Iran.

Teachers recognised the value of mobile applications for asynchronous learning. Many teachers discussed using applications with audio and video recording facilities. Further, participants were keenly aware that listening to recording documents at home could improve students' attainment of learning objectives.

5.1.6 Online teaching components

At times, the narrative from participants focused on several core components that together make up the online teaching and learning process. Many teachers identified individual and targeted feedback as one

of the most important processes, the other being the availability of online events for both students and teachers. Interviewee 1 demonstrates awareness of formative feedback as a form of teacher presence:

"We can give and receive feedback all the time throughout the week. It is not just, you know, the presence of the classroom. Students can send their homework to their teachers to receive feedback from them. So, in this case, students can take benefit from them. Because they feel that have their teachers' presence through the week all the time. It can be a good strategy for teachers because they can evaluate their students' performance and their progress through the week. It is possible to send and receive feedback through applications like WhatsApp application. That is why they are good educational tools" Interviewee 1 (Male).

Teachers perceived that receiving feedback could potentially improve students' attainment of learning objectives. There was an understanding that teacher presence was exerted through formative feedback which helped build quality student-teacher relationships, and when students received timely summative feedback, this can be the best technique to increase students' motivation and engagement when learning online. Interviewee 8 illustrates:

"I can send them some different links or websites to search for more learning materials. I encourage them, "Hey guys, send me your documents, writing on WhatsApp". Then, I can send them audio feedback. I think that sending audio feedback is better than written feedback because I have noticed the students are happier with that. This kind of feedback is more detailed and understandable for them. Emotionally, I make them get involved in English class" Interviewee 8 (Female).

The very nature of the online teaching environment provided respondents and their students flexible access to a variety of educational events, many of which were beyond their range during the pandemic and beyond due to being held in other regions of countries.

Similarly, respondents encouraged students to attend online events, which could be engaged flexibly and asynchronously through recorded sessions. They took a similar approach in their teaching, offering learning material in recordings or learning objects. Another way of encouraging students to participate in online events was by discussing the advantages of attending online events with students. This acted as a trigger for students' intrinsic motivation to take part, making them excited to participate.

6 Discussion

This research contributes to understanding how the pandemic and sudden change in the education system due to COVID-19 have resulted in many challenges and limitations for language teaching. Fourteen teachers of English as a foreign language in language centres in Tehran, with differing degrees of experience, shared their perceptions and experiences of teaching online, and the impact of technology-integrated teaching on teachers' knowledge. During the pandemic, English language teaching has gained much attention from the shift to online teaching and mobile technology integration. There were reciprocal benefits for the students and language teachers. Both have benefited from the increased accessibility of higher education and flexibility afforded to learning. Teachers developed new approaches to teaching that were perceived as improving the educational quality of students. Khatoony and Nazhadmehr (2020) reveal that some EFL teachers may lack motivation to engage in online teaching. These findings represent a sampling limitation of this study, as the participants who volunteered may have been more intrinsically motivated towards online teaching and therefore compelled to share their experiences.

Teaching online has enhanced teachers' educational knowledge in different ways, increased their access to resources, including the latest teaching methods and up-to-date subject matter, and widened their range of teaching experience. Similar to other studies (Ghasem & Ghannam, 2021), teachers recognised students' satisfaction with the convenience and sustainability of attending teaching and online events at home. Like EFL teachers in the study by Khatoony and Nezhadmehr (2020), language teachers were aware that student motivation is essential for successful online teaching and learning (Brophy, 2004). This hinges on the teacher's ability to create productive relationships in the virtual classroom, which supports students' engagement, a finding congruent with that of Nazhadmehr (2020). The language teachers in this study recognised that an interactive teaching style fostered students' engagement with online learning (Zhang et al., 2023; Jones et al., 2022). Despite the rapid shift to online teaching at the start of the pandemic, teachers have used a variety of applications and online resources to develop interactions and trigger students' intrinsic motivation (Wang et al., 2023). Like others, English language teachers have used online learning objects such as videos for language practice to improve students' learning (Garcia-Ros & Alham, 2023).

Almekhlafy (2020) report that online teaching of a foreign language can be effective in improving language skills, specifically in reading, speaking, and vocabulary. English language teachers were aware that audio feedback in language learning could be used to improve students' pronunciation by listening to audio feedback several times (Merry & Orsmond, 2008). For example, the use of YouTube can improve proficiency in understanding English learning, leading to enhancements in speaking skills, grammar, and writing proficiency (Caliskan et al., 2019; Shin et al., 2021; Lem, 2018). However, advances in technology have offered the possibility of simulating more authentic language interactions. Rodriguez et al. (2023) found that online augmented-reality experiences positively influence nursing students' academic performance and learning compared to face-to-face teaching. However, until Internet connectivity issues in Iran are resolved, the use of such resources is not a reasonable prospect.

These findings support previous studies, demonstrating that frequent communication between teachers and students in the course keeps students actively engaged and contributes to their meeting course learning objectives (Smith et al., 2021). For TEFL to be effective, student-teacher interaction and the exchange of information during online learning are necessary parts of the teacher's ability to develop productive social relationships in distance education (Avalos et al., 2022). This is further demonstrated by language teachers' perception that providing timely feedback can be a powerful tool for students' engagement during online learning (Dawson et al., 2019). It fulfils the student-teacher contract, thereby enriching the quality of the student-teacher relationship. Furthermore, they were aware that personalised and timely feedback could support students' attainment of learning objectives. These results agree with Morrison and Jacobsen (2023), who report that strength-based and personal feedback contribute to students' motivation and self-regulation (Ahea et al., 2016), an important point for sustained engagement in online learning. Thus, assessing students' online learning should be considered a crucial component of effective teaching and learning processes in online teaching (Gupta et al., 2023).

In terms of a language learning community, the online teaching infrastructure offers the possibility of developing student-teacher interactions, creating virtual rooms, increasing teamwork, and developing students' language skills (Klimova, 2021). Online classes must be complemented by asynchronous resources, meaning that students and teachers have more freedom and equipment to learn and discuss subject content. Recent studies have shown that technology can encourage informal discussions and open knowledge sharing (Leh et al., 2021) among both students and teachers. Moreover, mobile applications, such as WhatsApp, have the potential to be pedagogical tools because of their widespread use, enabling learning from peers and communication and providing an efficient way to augment online teaching by encouraging peer-to-peer networks. Online learning allows EFL teachers to form a virtual community of English language education (Farkhani et al., 2022), drawing on their knowledge and experience across a range of geographical contexts. At the institutional level, Raygan and Moradkhani (2022) demonstrate

that a sense of professional community and institutional support, as experienced in the school climate, is critical to developing EFL teachers' positive attitudes towards technology acceptance and integration in teaching. However, Raygan and Moradkhan (2022) failed to demonstrate a significant relationship between school climate and technological integration, suggesting that other factors may have a main effect. In contrast to the professional learning community approach, Mohamad et al. (2015) suggested that a motivating learning environment for students generates a context for active competition with other students.

However, there were perceived constraints on online teaching and learning, some of which became affordances. The teaching process and student-teacher relationships were perceived to be impacted by teachers' personal characteristics. Similar to other studies (Inan & Lowther, 2010; Cheng & Xie, 2018), language teachers in Tehran consider age an influential personal characteristic that determines how a teacher integrates and uses technology in online teaching. Furthermore, Marchiori et al. (2019) revealed that gender is an important variable in determining the integration of technology in teaching. Women experience higher complexity and uncertainty when using information technology, manifesting as technostress, than men. It is important to note that teachers discussed their perceptions and predictions rather than drawing on specific examples, which may be a methodological limitation and a limitation of the data. Perceptions may be susceptible to age bias within the profession and the stereotypical views of older teachers as technophobes. Further, it may be that older teachers use technology in different ways, which are not necessarily less effective, but rather address other aspects of the teaching process which they consider more important. For example, a preference for using communication features to develop quality student-teacher interactions over presentation features to stimulate student motivation. This may explain the new finding from this study, which reports that Iranian language teachers perceive female teachers' nurturing and caring qualities to be pivotal to teaching quality.

In Iran, similar to other educational settings where online learning is at a stage of development and implementation (Baran et al., 2010), language teachers' and students' unstable Internet connectivity in the online language teaching setting has negatively impacted access, creating obstacles to the quality of teaching offered by teachers and student learning (Saha et al., 2022; Noer & Febriyanti, 2020). By contrast, using mobile technology to support online teaching presents different challenges. Language teachers struggled with the teaching features available on WhatsApp, including the recording and whiteboard facilities. Similarly, Noer and Febriyanti (2020) reported that pre-service teachers' barriers to learning using WhatsApp arise from their lack of concentration and difficulties in conducting discussion groups. Effective teaching and quality online learning require stable Internet connectivity for teachers and students and flexibility in mobile technology and social networking applications (Akbari, 2021), which can evolve as software and hardware transform. Thus, comprehensive planning for an effective communication infrastructure in Iran is needed to support equitable access to distance education and the quality of teaching if it is inclusive of the diversity of its students.

There is a general perception that the more teachers use technology in teaching, the more powerful their applied technological knowledge will be. Teachers' descriptions focus on their digital literacy and their role in guiding their integration of technology in the educational context (Sue, 2023; Mishra, 2019). These findings intersect those of Raygan and Moradkhan (2022), who suggest that EFL teachers' technology literacy can inspire their confidence in using technology in teaching. Indeed, Soleimani and Pourrasa (2022) concluded that Iranian EFL teachers' lack of knowledge of mobile-assisted learning might result in less positive attitudes towards technology integration.

Further, in this study, teachers perceived that effective teaching hinges on their experience as a prerequisite for adaptability and flexibility, which is underlain by applied technological knowledge technology. Thus, applied technological knowledge is perceived as constituted through the transfer of knowledge and the development of new teaching methods and teaching materials (Taherdoost & Madanchian, 2022). This intersects with the findings of Raygan and Moradkhan (2020) that EFL teachers'

technical pedagogical and content knowledge and attitudes are significantly positively correlated with more extensive technology integration.

In this study, the breadth of experience was perceived as distinct from the years of teaching experience and any age-related assumptions. Indeed, Tao and Gao (2022) report that having relevant teaching experience can be a fundamental key to teachers' effectiveness in teaching a language online. This resonates with Sidi et al. (2023), who report that teachers with technological experience can improve their ability to cope with the challenges of online distance teaching. This finding lends support to that of Iqbal and Bhati (2020), who found that teachers' attitudes towards mobile-assisted teaching were similar irrespective of gender and years of experience. This suggests a positive outlook for the profession, as recent studies have documented that experienced teachers can benefit from experience-appropriate, pedagogical, and content-related support programmes for online teaching (Scherer et al., 2021). Thus, positive attitudes towards technology integration would support a continuum of professional development focused on teaching with technology, which may be needed starting at the pre-service teacher stage and matched by a set of performance-related competencies linked to increasing mastery of technology.

Conclusions

Although this study's results have overwhelmingly revealed English language teachers' perceptions of the positive features of online teaching and mobile-assisted technology, they have also revealed the need for teachers' professional development throughout their careers. The literature reveals that teachers and the quality of teaching are the prime influences on student learning.

These findings suggest considerable variability in language teachers' technological knowledge at the individual level. While there is a perception that younger teachers are more capable of integrating and using technology in teaching, evidence does not support this. Experience is a key factor, but it is not tied to the length of teaching experience; rather, teachers' professional and technological knowledge appears to be related to their self-efficacy and commitment to learners. Professional development opportunities must focus on building individual teacher capacity by establishing a structured career entry and development programme pathway to ensure that teachers experience variation in ways of using technology to teach and in different modes of learning, such as ground-based, blended, and online learning, to improve individual capacity. However, this qualitative study was limited in its ability to detect broad trends in teachers' attitudes and behaviours based on their personal characteristics. It is advisable that further research be conducted using a considerably larger sample and statistical analysis to confirm these findings, as the qualitative level of the sample focuses on individual-level experience, which may vary from broader trends.

Similarly, at the organisational level, improvements in pre-service teacher education and in-service teacher professional development need to be targeted. Due to the limitations in generalising the findings from this qualitative study, educational evaluation is required to determine regions and centres lacking technology infrastructure and integration. From this, appropriately weighted regional and institutional funding can be identified to support centre-specific technology transformation plans to work towards equitable digital provision for language teaching across Iran. A career pathway and technology passport could be used at the individual level to map a teacher's career profile and record the specialist technology skills that teachers develop to enable capacity mapping across regions with a few developing centres of teaching integration excellence. These hubs of excellence could provide regional teachers with professional development to level up language teachers' capacity to teach using technology.

While English language teachers have demonstrated that they can identify relevant developmental opportunities, the variability in the quality of online teaching and technology integration, which is invariant with the length of teaching experience and age, means that targeted mentoring and coaching

would be a better use of resources to improve English language teaching. At the training level, there is a need to move to an online infrastructure to provide flexible access to teaching and professional development resources worldwide. Furthermore, language teachers have expressed positive attitudes and motivation towards online teaching; therefore, offering drop-in support sessions would be advisable. Developing teachers with sufficient technological literacy can lead to a direct increase in their effectiveness in teaching performance during online teaching. If improvements were made to Internet connectivity in Iran, webinars and online workshops would be a flexible and accessible option for online English teachers to access professional development (Malekolkalami, 2020). It is reasonable to assume that engaging in this form of training could have an extraordinary impact on EFL teachers' pedagogical content knowledge during online instruction.

In addition to the above findings, this study identified areas for further research. One area that requires further exploration is how teachers transform content into different presentation forms expressed through pedagogic content knowledge when using technology-integrated approaches to teaching. There may be differences between teachers in their ability to select or form appropriate instructional approaches based on their technological knowledge and experience. If significant differences between teachers could be found in subject transformation, it would further support a targeted approach to professional development, such as subject-based mentoring. It may be necessary to attract, recruit, and increase the number of experienced EFL teachers for online teaching in the EFL context to impact students' growth in the online learning environment (Alqahtani, 2021).

The findings of this study provide invaluable insights for educational institutions, policy-makers, and English teachers to integrate technology into the EFL context at the individual level. They offer empirical evidence which, combined with statistical outcomes, could guide education policymakers to develop a language-teaching workforce with skills and knowledge to generate excellent and efficient learning outcomes (Hogg et al., 2023). In the context of this study, the Ministry of Education in Iran is responsible for developing teaching materials and resources used by educational centres for both student teaching and teacher training. Thus, policymakers can benefit from the findings of this study, which can inform the design of appropriate courses to improve the effectiveness of online English language teaching. Finally, the potential contribution of these qualitative findings in teaching English as a second language could extend to countries with similar economic growth rates worldwide. In this respect, areas of proposed future research have the potential to significantly improve the quality of second language teaching globally.

Declaration of competing interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Appendix

Interview questions

Online teaching

1. Pandemic circumstances pushed many teachers to use online teaching to deliver their courses. Please tell me about your experiences in teaching online.
2. In what ways can a teacher encourage students to take part in online events? Please give me more explanation.
3. Do you think a teacher's age plays an important role in the use of online teaching technologies? Please elaborate.

Mobile assisted-technology and WhatsApp

4. Are you interested in using technology during the teaching process or relying on traditional methods? Please elaborate.
5. How do you perceive the importance of mobile-assisted teaching in the future of Teaching English as a Foreign Language (TEFL)?
6. Please tell me about your experience using WhatsApp to teach your course.
7. How does using mobile applications such as WhatsApp enhance the quality of your teaching?
8. How does using mobile applications such as WhatsApp enhance your students' engagement in the learning process?
9. Do you think gender plays a role in mobile-assisted teaching options? Why is this the case?
10. Please let me know if you think of any other issues relevant to mobile-assisted teaching.

Teachers' knowledge

11. Do you think that more experienced teachers in online course delivery are more knowledgeable about using technology? Why this is the case?
12. To what extent do you agree with the statement that technology usage can promote teachers' educational knowledge? Please explain.
13. How did your knowledge about the subject you teach and your method of teaching help you deliver your course online successfully?