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Teachers' technology-related self-images and roles: Exploring CALL teachers' professional identity

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Abstract

Despite the surge of interest in language teachers' professional identity (TPI) as an integral component of their professional growth (Barkhuizen, 2017; Clarke, 2018) and the increasing interest in the field of computer assisted language learning (CALL) (Nami et al., 2015), there is still a paucity of research on the professional identity of language teachers who integrate technology with language instruction (CALL teachers). To bridge this gap, the present study explored the components that construct CALL teachers' professional identity (CALLTPI). The data were collected from a set of in-depth, semi-structured interviews investigating perceptions of 24 CALL informants (educators, experts, professors, and teachers) from different contexts and countries about CALL teachers' roles in technology integration in English language teaching (ELT). Fifteen sub-components were inferred from the thematic analysis of the interview transcripts as compared against the available literature on CALL teacher education and language teachers' professional identity. These sub-components corresponded to three major components, namely, CALL teachers' individual identity, classroom-based identity, and agentive identity. The results can provide CALL teacher educators with implications for designing professional development programs with the aim of developing teachers' professional identity and enhancing the effectiveness of technology integration in ELT.

Introduction

Widely addressed from sociocultural, psychological, historical, and poststructuralist perspectives, the concept of teachers' professional identity (TPI) is known as the integral factor contributing to language teachers' professional growth (Barkhuizen, 2017; Beijaard et al., 2000; Beijaard et al., 2004; Clarke, 2018; Farrell, 2016; Pennington, 2015; Pennington & Richards, 2016). Pennington and Richards (2016) define language teachers' professional identity as the perceptions of language teachers' membership in the community of other language teaching practitioners, in which they integrate and enact their self-image, knowledge, social and contextual perceptions, and institutional and methodological roles and characteristics. TPI goes beyond knowledge and requires a language teacher "not only to know things and know how to do things, but also to be her/himself—that is, to adapt and personalize disciplinary or professional knowledge to her/his own individual identity and contexts of teaching" (Pennington & Richards, 2016, p. 6). In addition, Kubanyiova and Crookes (2016) underscore the overarching role of teachers as advocates and moral agents, and maintain that rethinking the concept of TPI amplifies this agentive role.

Likewise, the literature on e-learning and particularly on CALL highlights the importance of teachers' professional growth through enhancing the interplay of teachers' technological, content (subject matter), and pedagogical knowledge and skills as an essential factor for the effectiveness of instruction (Hubbard & Levy, 2006; Mishra & Koehler, 2006; Nami et al., 2015; Tai, 2015). In addition, CALL teachers' attitudes and beliefs also significantly contribute to the successful integration of technology with English language teaching (ELT) and the interplay of CALL teachers' knowledge, skills, and attitudes promises to enhance the effectiveness of CALL (Hedayati, 2013; Hedayati & Marandi, 2014; Kessler, 2007; Kimmons & Hall, 2016; Taghizadeh & Hasani-Yourdshahi, 2020; Vannata & Bannister, 2009). However, in spite of the multifaceted nature of CALL (either face-to-face, blended, or virtual) and the importance of TPI, our extensive search of literature indicated a dearth of research on the CALL teachers' professional identity (CALLTPI) —their self-image and perceived roles in integrating technology in the language classroom. This study thus contributes to CALL teachers' professional growth by exploring the complexities and nuances of the construct of CALLTPI.

Review of Literature

CALL Teacher Education

The heightened academic attention to the implementation of information and communications technology (ICT) in education and the professional and public interest in language instruction highlight the importance of CALL teachers' professional growth (Hubbard & Levy, 2006; Kessler, 2007; Kimmons & Hall, 2016; Nami et al., 2015; Tai, 2015; Torsani, 2016). To elaborate on the growth of CALL teacher education trends, Torsani (2016) outlines three major models recorded in the literature as knowledge and skills learning models (e.g., the TPACK Model), pedagogical models (e.g., Role-based Model), and sociocultural models (e.g., online CoPs). The first trend was an attempt to fill the divide between teachers' different areas of knowledge. Built upon Shulman's (1987) model of pedagogical content knowledge (PCK), Mishra and Koehler (2006) postulated the TPACK Model to identify the components of knowledge required for technology integration in teaching. Accordingly, technological, pedagogical, and content knowledge are pivotal for the effectiveness of teaching with technology, and the interplay between these three major components forms four more components: (a) technological pedagogical knowledge, (b) technological content knowledge, (c) pedagogical content knowledge, and (d) technological, pedagogical, and content knowledge. The development of these seven components, in addition to an overall contextual knowledge, results in effective technology integration and therefore, teachers' professional growth (Mishra, 2019; Mishra & Koehler, 2006).

The second trend addressed the pedagogically oriented endeavors for linking knowledge and skill with a focus on teachers' roles. Hubbard and Levy (2006) proposed their descriptive role-based model for a successful and effective technology-enhanced language teaching. They attributed the effectiveness of CALL teachers' technology integration to the interplay of the two major categories of roles they assigned to CALL teachers. These roles included functional roles (practitioner, developer, researcher, and trainer) and institutional roles (classroom teacher, CALL specialist, expert versus adjunct, and CALL professional) (Hubbard & Levy, 2006). The third trend of CALL teacher education incorporates sociocultural models facilitating the inter-personal communication encouraged in online learning communities (Torsani, 2016); that is, learning to teach is believed to best occur within communities that encourage collaboration, reflection, critical thinking, dialog, and negotiation (Palloff & Pratt, 2007). Such an atmosphere elevates instruction to its optimal level of transformative learning and knowledge formation.

Emphasizing the relative effectiveness of the third model, Torsani (2016) considers the first two models as abstract, requiring more empirical underpinning to practically contribute to CALL teacher development. However, since these models elaborate on various aspects of CALL teacher education, the present study, while acknowledging the usefulness of all three models, focuses mainly on the knowledge and skills learning models (e.g., the TPACK Model), as recent studies on this model include attempts to develop practical CALL teacher education models (e.g., Nami et al., 2015; Tai, 2015; Torsani, 2016; Tseng, 2018).

For instance, Tai (2015) adopted an experiential approach to TPACK and proposed the TPACK-in-Action Model for the development of English language teachers' CALL competencies and their awareness of technological affordances and constraints. In this model, CALL activities are first controlled by the educator, then involve cooperation of both educator and teachers, and finally, are controlled by teachers. Also grounded in the TPACK model, Nami et al. (2015) studied Iranian CALL teachers' knowledge and found that reflections, CALL practice, and cooperation in developing lesson studies helped teachers fill in the gaps between their technological, pedagogical, and content knowledge. Additionally, Tseng (2018) explored English as a Foreign Language (EFL) teachers' roles in integrating TPACK with instructed second language acquisition (SLA) through computer-enhanced input and negotiation of meaning to improve students' interaction with the computer and their communication skills with the class.

Relevant to the three approaches mentioned above, CALL teachers' attitudes, perceived challenges, and resulting decisions regarding CALL have been investigated, and their contribution to the development of CALL teachers' knowledge, skills, attitudes, and choices of technology integration have been discussed (e.g., Hedayati, 2013; Hedayati & Marandi, 2014; Kessler, 2007; Kimmons & Hall, 2016; Taghizadeh & Hasani-Yourdshahi, 2020; Vannata & Bannister, 2009). For instance, Kessler (2007) surveyed the attitudes of English as a Second Language (ESL) teachers on CALL preparation and concluded that "informal CALL preparation is closely linked to teachers' attitude toward technology while formal CALL teaching preparation is not" (Kessler, 2007, p. 173). Moreover, to broaden the discussions on the factors influencing teachers' technology integration, Kimmons and Hall (2016) surveyed teachers' attitudes about the role of "institutional considerations for their own adoption of technologies" (p. 309) and found that the influence of teachers' actual classroom experiences on their beliefs and attitudes about CALL outweigh the influence of institutional considerations.

Concerning the importance of teachers' knowledge and attitudes in the Iranian CALL context, whilst conducting research on CALL teacher education, Hedayati (2013) found that in addition to dealing with technical constraints, EFL teachers need to improve the elements of their TPACK, discourse knowledge, and community skills via building CALL communities and involving stakeholders in professional development. Closely related, Hedayati and Marandi (2014) explored the obstacles of implementing CALL as perceived by Iranian EFL teachers and found a general reluctance on the part of Iranian EFL teachers to use technology in ELT due to three major obstacles, namely, "teacher, facility, and learner constraints" (Hedayati & Marandi, 2014, p. 298). Relatively recently, Taghizadeh and Hasani-Yourdshahi (2020) surveyed CALL teachers' knowledge, attitudes, and their perceived challenges regarding technology use in young learners' classrooms. Lack of technological knowledge, training courses, insufficient institutional support, and limited technological infrastructures were found to be the main challenges despite teachers' positive attitudes toward using technology and willingness for professional development.

The concepts and studies mentioned above mainly address improving CALL teachers' technology related knowledge, skills, attitudes, as well as the perceived constraints and challenges as contributors to their professional development. While acknowledging these factors, according to the literature, the major contributing element to teachers' professional development is the integration of these factors to teachers' own self-image and perceived job-related individual, social, and professional roles (Barkhuizen, 2017; Beijaard et al., 2004; Clarke, 2018; Pennington, 2015; Pennington & Richards, 2016); that is, CALL teachers need to go beyond their knowledge, skills, and attitudes and develop their TPI so that, in the light of their own professional self-image and perceived roles, they can "adapt and personalize disciplinary or professional knowledge" (Pennington & Richards, 2016, p. 6) in different CALL contexts. To further clarify this point, the following section briefly explains the concept of TPI.
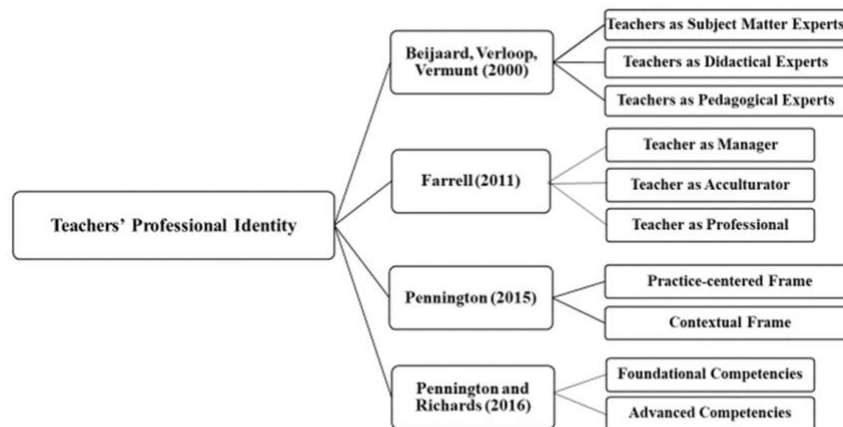
Language Teachers' Professional Identity

Professional identity encompasses individuals' perceptions of their roles in their professions, and the way individuals define themselves (and are defined by others) as members of a professional community (Clarke, 2018; Pennington & Richards, 2016). Beijaard et al. (2004) define teachers' identity as teachers' self-images and perceptions that "determine the way teachers teach, the way they develop as teachers, and their

attitudes towards educational changes" (p. 108). Although the multifaceted and fluid nature of identity prevents arriving at a solid definition and classification of language teachers' professional identity (Barkhuizen, 2017), efforts have been made to identify different facets of this construct (e.g., Beijaard et al., 2000; Farrell, 2011; Pennington, 2015; Pennington & Richards, 2016). Beijaard et al. (2000) highlighted teachers' perception of their TPI as a multidimensional construct of expertise including a combination of subject matter, didactical, and pedagogical expertise. In addition, Farrell (2011) proposed a taxonomy of ESL teachers' role identities in which he identified 15 major role identities categorized in three groups, namely, (a) teacher as manager, (b) teacher as acculturator, and (c) teacher as professional. Later, Pennington (2015) addressed language teachers' professional identity as a frame, that is, lenses or vantage points through which individuals can perceive different phenomena. Accordingly, language teachers' professional identity encompasses two frames, namely a practice-centered frame (instructional, disciplinary, professional, vocational, economic) and a contextual frame (global, local, sociocultural).

Pennington and Richards (2016) also addressed language teachers' professional identity by specifying two major areas of competency of language teacher identity: foundational competences (i.e., language-related identity, context-related identity, self-related identity, and student-related identity) and advanced competences (i.e., practiced and responsive teaching skills, theorizing from practice, and membership in communities of practice and profession). They use the term *competency* to refer to different aspects of identity linked to the (self-image of) roles, abilities, skills, and knowledge that teachers develop throughout their professional experiences (Pennington & Richards, 2016). According to Pennington and Richards (2016), as language teachers develop their pedagogical knowledge, reasoning, and skills, they gain confidence and more importantly, develop their identity, leading to informed classroom decisions and the integration of teachers' personal views with their knowledge, reasoning, and skills. Regarding the formation of TPI, Kumaravadivelu (2012) holds that transformation of the teaching self is due to teachers' "ability and willingness to exercise their agency and to formulate strategies of power and resistance" (p. 58) as they actively deal with institutional constraints, rigid frameworks, and social inequalities. Figure 1 illustrates the main components of the models of TPI outlined in this section.

Figure 1

Major Models of Teacher Professional Identity

While we acknowledge and refer to all these definitions and models where relevant, in this study, we mainly focus on the model proposed by Pennington and Richards (2016) as it encompasses almost all the elements mentioned in the others.

Among myriad recent research on TPI, in the Iranian EFL context, Sahragard and Sadeghi (2017) studied

the Iranian EFL teachers' TPI as informed by Farrell (2011) and concluded that teachers' multidimensional perspectives about their own roles in teaching confirmed the three major role identities, namely, teacher as manager, teacher as acculturator, and teacher as professional. Furthermore, Mirzaee and Aliakbari (2018) investigated the professional identity of an Iranian EFL teacher through an approach to the teacher's life history, and they found a need to focus on the development of EFL teachers' sense of agency for better constructing their TPI.

Although the importance of CALL teachers' professional growth through developing their technology integration knowledge, skills, and attitudes has initiated many studies, the scarcity of endeavors on the CALL teachers' self-image, sense of agency, perceived roles, and the enactment of these elements calls for the exploration of the complexities of CALLTPI and its components. To this end, we embarked on exploring this construct as guided by the following research question:

- What are the components that construct CALL teachers' professional identity?

Methods

Participants

The CALL informants who volunteered to participate in this study were selected based on convenience sampling as a type of nonprobability sampling (Ary et al., 2010; Cohen et al., 2007). They comprised 24 CALL teacher educators, university professors who taught academic CALL courses and/or used digital technology to teach language-related subjects, and classroom teachers who used digital technology in language teaching in either virtual, blended, or face-to-face technology-enhanced classes. The criteria for technology use ranged from face-to-face classes that used online spaces (e.g., blogs) for sharing assignments and electronic materials to teaching in virtual classes. Although the number of volunteers was limited due to difficulty recruiting participants, we continued the data collection until reaching the level of data saturation as recommended by Cohen et al. (2007); that is, we collected and analyzed the data until new information did not emerge and there was a repetition in the occurrence of the explored themes. To observe the anonymity of the interviewees, they are hereafter referred to as I-1, I-2, …. I-24 (Interviewee 1, … Interviewee 24). The participants' biographies, including their gender, nationality, teaching context, academic degree, experience in language teaching, and experience in technology integration, are summarized in Appendix A.

Instrumentation

As suggested by Ary et al. (2010), a semi-structured interview was selected as the instrument to collect more naturalistic and holistic data. Therefore, as the baseline for creating a set of interview topics to create an interview protocol for exploring CALLTPI and identifying its components, we started with the available models in the literature on language teachers' professional identity and CALL teacher education. Thus, the interview questions were designed to elicit data about CALL teachers' perceived teaching roles, self-image, confidence, sense of self-efficacy, skills, and knowledge that contribute to enacting their teaching roles, solving pedagogical and technical problems, dealing with ethical challenges, and making decisions in technology-enhanced teaching environments. A panel of five professors revised and confirmed the interview questions. These questions are available in Appendix B.

As indicated in Appendix B, while the questions address all of the components of CALL teachers' knowledge and skills, the questions' focus varied to investigate different aspects of CALL as well as different components of TPI. Questions 1, 2, 5, and 6 encompass teachers' functional and institutional roles, their pedagogical, technological, and content knowledge, as well as their theoretical perspectives on ELT and CALL (e.g., Hubbard & Levy, 2006; Mishra & Koehler, 2006; Pennington & Richards, 2016). Questions 3 and 4 mainly probe teachers' sense of self-efficacy, confidence, and comfort regarding CALL, since these are considered among the factors contributing to TPI (e.g., Tschannen-Moran & Woolfolk Hoy, 2001; Vannata & Bannister, 2009). Questions 7 and 8 investigate teachers' attitudes about CALL (e.g.,

Hedayati, 2013; Hedayati & Marandi, 2014; Kessler, 2007; Kimmons & Hall, 2016; Taghizadeh & Hasani-Yourdshahi, 2020) as well as their self-image and perceived roles as teachers (e.g., Farrell, 2011; Pennington & Richards, 2016). In Questions 9, 10, and 11, while the teachers' attitudes are more fully investigated, the ethics and morality of teaching are also directly addressed (e.g., Kubanyiova & Crookes, 2016). Finally, Question 12 investigates teachers' attempts toward professional development, which is addressed both in CALL and TPI literature (e.g., Farrell, 2011; Hubbard & Levy, 2006; Mishra & Koehler, 2006; Pennington and Richards, 2016).

Design

This was a qualitative, data-driven, exploratory interview study in which the components of CALL teachers' professional identity were probed through semi-structured interviews. As indicated in the Instrumentation, these components were operationalized based on the definitions provided in the TPI and CALL literature. We used constant comparison and thematic analysis as stated by Ary et al. (2010) and Cohen et al. (2007), with any emerging theme considered in the analysis.

Data Collection Procedure

To collect the data, announcements were shared among English language faculties and departments in both Iranian and international universities, international TESOL and CALL communities (e.g., JALTCALL, and Electronic Village Online), schools, and language institutes during February to June 2018. Subsequently, the Iranian interviewees were mostly interviewed face to face, and the foreign interviewees and one of the Iranians who lived in another city were interviewed via video conferencing tools (i.e., Skype and Zoom). The face-to-face interviews were audio-recorded and the online interviews were screen-recorded. The interview durations ranged from 35 to 63 minutes and added up to 935 minutes. The recordings were transcribed for the purpose of data analysis.

Data Analysis

A qualitative analytical approach was adopted for analysis of the data through a coding scheme (i.e., open coding, axial coding, and selective coding) and categorized based on the constant comparison approach following the systematic approach suggested by Ary et al. (2010); therefore, in order to arrive at a sound categorization and thematization of the data, the transcripts were coded based on the statements representing interviewees' concerns. These statements constituted one or more sentences. While we constantly compared these inferred codes with the theoretical and conceptual frameworks informing the existing literature mentioned above, we allowed for the emergence of new themes as well. To ensure the dependability of the inferences, tests for estimating inter-coder reliability (Cohen et al., 2007) were conducted. To this end, ten percent of the randomly selected data was also coded by a second coder familiar with a coding scheme used in thick description research methods and particularly instructed for the purpose this study; the inter-rater reliability was found to be 89%. The disagreed upon data then was discussed, and the inter-rater reliability of 91% was obtained. The final results of the data analysis led to the emergence of fifteen categories that were further categorized into three major themes. These themes and categories are explained and discussed in the following section.

Results and Discussion

The analysis of the data resulted in the emergence of three major themes: individual identity, classroom-based identity, and agentive identity. These themes were inferred from the categorization of fifteen teachers' roles (sub-themes) that represented technology-oriented facets of CALLTPI. Table 1 illustrates the themes and summarizes their frequency of occurrences and percentages in the data. It should be mentioned that the order of the themes follows the TPI literature (e.g., Kumaravadivelu, 2012; Pennington, 2015) that first consider a teacher as an individual, then, a teacher working within classroom frameworks, and finally, as a person who proactively and agentively acts beyond job descriptions.

Table 1

Summary of the Major Themes of CALL Teachers' Professional Identity

Major Themes	Categories (Sub-themes)	Frequencies	Percentages
Individual Identity	Teacher as a Committed Disseminator of Technology	81	6.15%
	Teacher as a Technology Enthusiast	73	5.54%
	Teacher as a Confident and Efficacious Technology User	63	4.78%
	Teacher as an Individual Influenced by Technology	31	2.35%
Sub-Total		247	18.75%
Classroom-based Identity	Teacher as a Knower	211	16.02%
	Teacher as a Developer and Implementer	169	12.83%
	Teacher as a Manager	92	7%
	Teacher as a Problem Solver	76	5.77%
	Teacher as an Evaluator	52	4%
	Teacher as a Realistic CALL Practitioner	30	2.27%
Sub-Total		630	47.84%
Agentive Identity	Teacher as an Advocate for Students	168	12.76%
	Teacher as a Moral Agent	141	10.71%
	Teacher as a Learner	51	3.87%
	Teacher as a Member of CoP	48	3.64%
	Teacher as a Role Model	21	1.6%
Sub-Total		429	32.57%
Total		1317	100%

The next sub-sections elaborate on the definitions of the themes and sub-themes. Examples of the themes are provided within the text.

Call Teachers' Individual Identity

The first theme, individual identity, represents teachers' personal attitudes, self-image, perceived roles, and commitments toward their use of technology in general with an influence on their classroom practices. As reported in Table 1, the interviewees addressed their individual identities in 247 cases, approximately 18.75% of the reported codes. This theme corresponded with the four sub-themes that are explained below.

Teacher as a Committed Disseminator of Technology

This sub-theme represents teachers' commitment, dedication, and responsibility toward using technology in English language teaching. In 81 cases, roughly 6.15% of the data, the interviewees indicated various degrees of commitment and dedication to remain up to date about technology use and to respond to job demands. The interviewees believed that as individuals it is their responsibility to use technology correctly and properly, and particularly as language teachers, they have the commitment to learn how to teach with technology, deal with its heavy workload, and transfer their skills and knowledge to their colleagues. With

respect to the proper use of the technology, one interviewee stated, "I believe it is not correct to leave technology out of our classes merely because it can spread the Western culture. I am responsible to use it properly considering all its effects" (I-3).

Teacher as a Technology Enthusiast

This sub-theme shows teachers' motives for using technology in all aspects of life including language teaching (either in face-to-face, blended, or fully virtual classrooms). This sub-theme was reported in 73 cases, nearly 5.54% of the data. These motives, which were influenced by the interviewees' perceptions of the facilitating role of technology, reported to drive them to develop professionally (e.g., job promotion), and increase their intrinsic motivation to idealistically try to improve the whole enterprise at the national level or even higher. Although the interviewees stated their motives regarding technology use in ELT, they mentioned mostly personal reasons as the impetus for their starting point. For example, an interviewee said, "I use technology in English language teaching because I love computer technology by nature" (I-18). Another interviewee stated, "for me, trying out a lot of technology is something that I like. I usually work with mobile apps and download lots of them" (I-14). He added, "I am the only one at my school who does love that and spends his money downloading the software" (I-14).

Teacher as a Confident and Efficacious Technology User

This sub-theme, which indicated teachers' confidence, comfort, and efficacy in using technology, was addressed in 63 cases, nearly 4.78% of the data. The interviewees referred to different degrees of their comfort, confidence, and efficacy in selecting and using technology, solving their technological problems, and leading their students and colleagues to use technology in ELT. Whereas some interviewees expressed less confident attitudes and mentioned they might panic while facing a technical breakdown, others reported to be comfortable, confident, and effective in solving technical problems and students' technology-related phobia, as well as in settling the potential disrupting behaviors that happen in technology-enhanced English language classes. Interestingly, experience was reported as the major source of their confidence. The interviewees mentioned ideas such as, "I was not confident at the beginning when I started using technology in teaching" (I-19), and "because of the trial and error I have gone through, I have become so confident that I solve my problems, find my resources, and do not need to ask the man in charge of the computers and systems" (I-11).

Teacher as an Individual Influenced by Technology

This sub-theme that was observed in 31 cases, roughly 2.35% of the data, highlights the participants' self-knowledge and awareness of the influence of technology use on their personality traits, the effectiveness of their teaching, their authority in the class, as well as job satisfaction and security. Although some believed that since they have started using technology, they have become more confident teachers, and their classroom organization skills have improved, some expressed their worries about maintaining their jobs, believing that teachers will soon be replaced with technology. One participant emphasized the importance of digital literacy for ensuring job security by saying, "everyday lots of jobs are converted to digital formats. So I think if a teacher is not familiar with technology and 21st century skills, in the next few years he would lose his job" (I-7).

Discussing CALL Teachers' Individual Identity

CALL teachers' self-image regarding their roles in technology use and the enactment of this image in their personal and professional lives constituted a major theme in this study. The sub-themes were found to correspond to some of the findings on the language teachers' vocation-related identity, self-awareness and self-knowledge (self-related identity), personal attitudes and motives to use technology in ELT, and sense of self-efficacy in teaching and technology integration (e.g., Hedayati, 2013; Hedayati & Marandi, 2014; Pennington, 2015; Pennington & Richards, 2016; Taghizadeh & Hasani-Yourdshahi, 2020; Tschannen-Moran & Woolfolk Hoy, 2001; Vannata & Bannister, 2009). These areas that are manifested and enacted in teachers' personal and professional conduct constitute their individual self-image and identity. However,

due to the intricacies and complexities of technology and the characteristics of cyberspace and online interactions, they take on a relatively new nature.

For instance, the appropriate integration and implementation of technology appeared to be related to the teachers' sense of self-efficacy and positive attitudes toward using technology in ELT. Although these results were mainly aligned with the literature (e.g., Hedayati, 2013; Hedayati & Marandi, 2014; Taghizadeh & Hasani-Yourdshahi, 2020; Vannata & Bannister, 2009), the sense of self-efficacy appeared to contribute to facets beyond merely CALL teachers' quality of their technology use. Sense of self-efficacy (i.e., one's own belief in their ability to successfully doing a job; Tschannen-Moran & Woolfolk Hoy, 2001) is held by Pennington and Richards (2016) as one aspect of TPI. Our findings underscored the complexities of technology use, not specified in TPI literature, and reflected the representation of CALL teachers' self-efficacy as a leading factor to the effective integration of technology with teaching, solving technological glitches, and motivating students to learn language through technology.

As another example, teachers' dedication and commitment regarding the dissemination and appropriate use of technology and their awareness of its influences correlated with what Pennington (2015) refers to as vocational identity. According to her, "vocational identity encompasses the strength of commitment and attachment to teaching work and/or to teaching in a specific field or context" (p. 23). Our findings indicated that CALL teachers' commitments and their context-specific awareness of virtual spaces go beyond the vocational identity as maintained by Pennington (2015), and by extension, this aspect of identity prevails over CALL teachers' personal beliefs as individual technology users. In fact, the complexities of technology integration require CALL teachers to develop commitment and levels of awareness toward their strengths and weaknesses in dealing with the influence of technology and the multifaceted nature of cyberspaces and virtual worlds—an awareness not necessarily essential for the regular face-to-face classrooms.

Teachers' Classroom-based Identity

In addition to individual aspects of CALLTPI, the interviewees attributed several roles to themselves particularly as classroom teachers. We categorized these roles under the theme classroom-based identity. As represented in Table 1, this theme constituted the most frequently reported theme, mentioned in 630 cases of the codes, approximately encompassing 47.8% of the data. This theme incorporates the six sub-themes highlighting the roles that participants attributed to themselves and other language teachers as they attempt to effectively integrate technology with ELT or avoid it. These roles (sub-themes) are elaborated as follows.

Teacher as a Knower

The interviewees addressed instances of the knowledge related to technology use in ELT in 211 cases, roughly 16.02% of the data. We categorized the codes addressing teachers' knowledge according to the TPACK Model (Mishra & Koehler, 2006) and the literature indicating the representation of teachers' knowledge in their informed instructional decision-making as a facet of TPI (e.g., Farrell, 2011; Kumaravadivelu, 2012; Pennington, 2015; Pennington & Richards, 2016). More specifically, this sub-theme represented the interviewees' technological and pedagogical knowledge, theoretical perspectives and sociocultural and cognitive approaches enacted in their informed pedagogical decisions and CALL practices, as well as their views about learner autonomy and cultural considerations in CALL. Highlighting the importance of effective instruction over the mere use of technology, one interviewee stated, "depending on the nature of the course that I run, I adopt appropriate instructional strategies and teaching techniques to teach my English language knowledge to my students via using some applications and software" (I-23). The data also revealed that most interviewees considered the social and interactive aspects of language instruction while selecting and using computer technology in English language teaching.

Teacher as a Developer and Implementer

This sub-theme encompassed the understanding and realization that teachers gain from their practice of developing and implementing their own lessons as they integrate computer technology with language

instruction. It appeared in 169 cases, nearly 12.85% of the data. This sub-theme incorporated teachers' realization of being facilitators in learning language skills, providing self-developed activities and language practice, developing materials, and providing content (English language). The interviewees emphasized that their experiences have helped them realize and understand how to select and use computer tools and blogs for extra activities when there is no time in the class for them. One interviewee described her realization of her own logic behind developing and implementing lessons as she stated, "I rely on problem-based learning as my favorite approach to teaching, and I have practiced it more or less during my more recent years of instruction" (I-4).

Teacher as a Manager

This sub-theme indicates CALL teachers' concerns for classroom management, especially in virtual environments. It surfaced in 92 cases, roughly 7% of the data, and included the teachers' concerns about CALL for administering a language teaching method, guiding online communication and collaboration, managing curriculum, and maintaining teachers' authority and classroom discipline in virtual classes. The interviewees particularly highlighted the differences of management issues between regular classes and technology-enhanced classes, and one interviewee held that, "as compared to regular classrooms, in technology-enhanced and virtual classes, special sophisticated pre-planning is required" (I-20). It was also maintained that the physical absence of the teacher in online classes requires a special control to make sure the students are logged in or are at their computers. The interviewees put emphasis on maintaining teachers' authority in technology-enhanced classes, and one said, "when teachers use technology, students see them as more competent, so teachers' authority is more accepted when they are more competent in technology use" (I-11).

Teacher as a Problem Solver

This sub-theme that appeared in 76 cases, nearly 5.77% of the data, highlights teachers' attempts and actions for troubleshooting and crisis management in technology-enhanced language classrooms. These included teachers' attempts to solve technology-related problems independently, rely on technology support, and adopt alternative plans. The interviewees expressed varied views, ranging from "when a technical problem happens in the class, I immediately shift to the traditional way of teaching" (I-13); to "I ask an IT specialist available at my school for help" (I-19); to "I know it is my job to solve it" (I-24). One interviewee who was also a supervisor said, "younger teachers come to me and ask me to help them with their technology-enhanced classes. Sometimes they ask me to stay in the room next to the language lab so that I would know if they have a problem" (I-20).

Teacher as an Evaluator

The interviewees also attributed to themselves the role of evaluators or assessors. These evaluative concerns, which were found in 52 cases, nearly 4% of the data, included their concerns about technology integration for the evaluation of students' language progress, evaluation of the technologies, self-evaluation of the quality of their own teaching with technology, and evaluation of the syllabus and the program curriculum. Regarding classroom assessment, one interviewee stated, "if I want to give an online test, I will read articles about how online assessment and test are administered, then act accordingly" (I-11). Moreover, the interviewees tried to make sure that any communication and collaboration that students do would be used as formative assessment, and they emphasized designing and grading the online quizzes as summative assessment to encourage students' participation. Additionally, one of the interviewees highlighted her attempts to "evaluate and modify the applicability of the language teaching curriculum and the syllabus of technology-enhanced language classroom" (I-17).

Teacher as a Realistic CALL Practitioner

In addition to describing interviewees' roles in encouraging CALL practice, in 30 cases, nearly 2.27% of the data, they also addressed the cases where they would avoid technology use due to their context-based decisions. These situations and negative attitudes that caused the interviewees' unwillingness to use

technology, among other things, pertained to the lack of institutional support and technological infrastructure, unequal access to technology due to the financial and filtering issues, and the insufficient digital literacy on the part of both students and teachers. In this regard, one interviewee said, "as an ordinary teacher with little familiarity with computer and digital technology, being asked to use CALL was full of fear and anxiety for me. Nothing helped and I felt deeply insecure, so I preferred conventional teaching" (I-15). According to the interviews, there are cases in which "the troubles outnumber the benefits of CALL, and it is the teacher who should decide if the technology should be integrated or avoided to arrive at a more effective education" (I-3).

Discussing CALL Teachers' Classroom-based Identity

As seen above, the roles that the interviewees attributed to themselves in the classroom were (a) teacher as knower, (b) developer and implementer, (c) manager, (d) problem solver, (e) evaluator, and (f) realistic CALL practitioners. In taking on these roles, they referred to the knowledge, understanding, and realization gained from their practice and experience. These roles were categorized based on the literature, including CALL teachers' knowledge model, taxonomies of teachers' professional identities, and language teachers' local and sociocultural roles (Farrell, 2011; Hubbard & Levy, 2006; Mishra & Koehler, 2006; Pennington, 2015; Pennington & Richard, 2016; Sahragard & Sadeghi, 2017). Implied in our results, CALL teachers' self-image and perceived roles as developers and implementers were reported to be enacted in their practice and the implementation of CALL. Hubbard and Levy (2006) refer to this role as practitioner, one of the functional roles of teachers. However, Hubbard and Levy (2006) mainly highlight the importance of knowledge and skills in effective technology integration rather than emphasizing CALL teachers' self-image, and perceived roles, that is, their professional identity.

Also recorded in the literature, language teachers' professional identity is formed as teachers set instructional goals, make pedagogical decisions, and put these decisions into practice based on integrating their theoretical and pedagogical knowledge, values, and contextual features of their classroom (Farrell, 2011; Kumaravadivelu, 2012; Pennington, 2015; Pennington & Richards, 2016). The results of this study were also aligned with the context-related identity that broadly considers teachers' attitudes, decisions, and actions according to various contextual features of actual classroom practices as factors indicating their professional identity (Pennington & Richards, 2016). Although these factors incorporate areas of teachers' realizations, the specific characteristics of online instruction that require particular understanding of the educational virtual environments and technological nuances are not pinpointed by Pennington and Richards (2016). For instance, the context-related identity in the TPI literature mainly addresses native-speakerism and context of teaching (EFL, ESL, EIL, etc.) as the context-related challenges.

The contextual complexities of technology integration, especially in virtual environments, also include the required knowledge to deal with technological glitches and challenges, and the attitudes contributing to CALL teachers' decisions whether to use or avoid technology (e.g., Hedayati, 2013; Hedayati & Marandi, 2014; Kessler, 2007; Taghizadeh & Hasani-Yourdshahi, 2020). Given the result of our extensive search of literature that indicated a paucity of research on the mutual influence of CALL and TPI, our findings shed light on CALL teachers' self-image, attitudes, decision-making abilities, in tandem with knowledge and skills regarding making decisions for selecting appropriate instructional approaches, digital tools, troubleshooting strategies, and evaluation tools and techniques. More importantly, virtual learning environments necessitate that teachers have the whole range of online interaction strategies and communication skills at their disposal. CALL teachers must also develop adequate technological literacy and troubleshooting skills to deal with technological glitches and constraints that are frequently reported by experienced CALL practitioners. Gaining knowledge, confidence, and experience in the areas mentioned above, in effect, results in the construction of CALLTPI through development of the realization of their strengths and weaknesses, as well as teachers' values and perceived roles regarding management and decision making in technology integration.

Teachers' Agentive Identity

Agentive identity constituted the third theme and encompassed teachers' advocacy and their agentive roles in social, cultural, and moral aspects of CALL. This theme, as shown in Table 1, was addressed in 429 cases of codes that constituted approximately 32.57% of the data. The corresponding roles (sub-themes) are explained below.

Teacher as an Advocate for Students

Supporting students in technology-enhanced language classrooms beyond the frameworks of curriculum and job descriptions was reported in 168 cases, nearly 12.75% of the data. This sub-theme addressed CALL teachers' awareness of and concerns for students' technophobia, self-confidence, individual differences, and motivation in CALL. The participants expressed their attempts to support students through solving their common technical problems with technology, improving their self-confidence by engaging them in technology use, and considering their individual differences by designing various tasks and activities as supplementary. One of the participants said, "I am aware of my students' common anxiety and fear of using technology, and I effectively remove this anxiety in English language class by spending the first session of every semester on handling students' technophobic aspects and removing psychological barriers" (I-12).

The interviewees also attributed to themselves the role of supportive supervisors; they attempted to be constantly available, and to make sure that students had the required resources and materials, and that they participate in activities and do the tasks. In addition, they tried to answer students' questions and encourage them to communicate and engage with each other, and to provide them with immediate feedback and comments. In addition, the emphasis on the teachers' presence in online environments to compensate for the lack of physical presence highlighted the teachers' attention to the complexities of online and virtual identity. For instance, one interviewee stated that, "when a problem happens in online classes, I try to be in touch with the students and accessible to them to prevent confusion and to make them feel comfortable" (I-11).

Teacher as a Moral Agent

The participants also expressed their convictions about the necessity of being aware and raising students' awareness of the ethical and moral aspects of CALL. These concerns were addressed in 141 cases, roughly 10.7% of the data. The roles that the interviewees attributed to themselves encompassed raising students' awareness of appropriate online behavior (including netiquette and avoiding plagiarism, for example), protecting their online safety and privacy, ensuring the reliability and authenticity of online resources, and striving for students' equal access to technology. Moreover, the interviewees believed that in closed and protected virtual classes, the moral issues are more related to teachers than students, especially when they collect students' information or select and use some materials. They further mentioned that students should have computer courses in which they learn about malware, social media, online ethics, privacy, and plagiarism. The majority of the interviewees were also concerned about creating awareness of the ideological and cultural influence of the Internet and social media on the worldview and behavior of users, especially language learners. One interviewee mentioned "I usually specify one whole session to talk to my students about the threats of cyberspaces on human relationships" (I-23). Finally, one interviewee had this concern regarding equality of access: "Students have laptop computers and smartphones in different models, some of them have very modern smartphones, but some of them do not. Some even cannot connect to Wi-Fi. This causes different levels of access to education" (I-8).

Teacher as a Learner

The interviewees also expressed their dedication to continued professional development as one of their professional roles and responsibilities. This sub-theme, addressed in 51 cases (or nearly 3.87% of the data), incorporated the role of CALL teachers as perpetual learners and interviewees' learning attempts as a result of this role. The interviewees referred to their experiences in learning how to integrate technology in language teaching, whether formally or experientially, through participating in formal and academic

courses, in-service courses, attending workshops, taking part in conferences, learning through self-study, asking colleagues and experts, experientially using digital tools, and so forth. One of the participants stated, "I don't have any specific degree in computers. I just learnt it hands-on. Technology is user-friendly. I search on my own and lurk in different websites" (I-9). She later added, "when I see something new, I follow up on it and study it. If I am interested in it, I use it in my classes. Following up is the best way for me to get new information" (I-9).

Teacher as a Member of CoP

This sub-theme that was reported in 48 cases, nearly 3.64% of the data, indicated the interviewees' concerns about membership in and contribution to communities of like-minded people. Although by joining these communities, teachers also contributed to their own knowledge (which was the focus of the previous sub-theme), this sub-theme pertains specifically to CALL teachers' roles in collaboration, sharing their knowledge, and solving problems in the field of CALL. They reported their desire to do this through improving other members' knowledge and enhancing research and practice for other teachers and researchers in the community. Some of the participants mentioned they shared their knowledge with others by publishing books and articles, running workshops, and administering in-service teacher development courses. A few reported on their attempts to form CALL teacher communities, such as associations and websites. One of the participants stressed the importance of creating such communities, adding "in our country we are separate CALL teachers. We do not have a community or a society. We need a society of CALL teachers in which we can share, learn, and enhance our knowledge and practice" (I-4).

Teacher as a Role Model

Teachers' perceptions of being a positive role model for their students and colleagues was a sub-theme that was addressed in 21 cases, around 1.6% of the data. It encompassed the participants' perceptions of their role in fostering students' and teachers' independent use of technology for language learning as well as their cultural awareness. Some interviewees shared "I am my students' model in taking the responsibility for learning independently and sharing the resources and tools" (I-17); "my students and colleagues have learned from me how to be risk-takers and self-disciplined in technology use" (I-14); and "my students follow me in being respectful of our own and others' cultures in cyberspaces" (I-22).

Discussing CALL Teachers' Agentive Identity

Our findings represented CALL teachers' agentive self-image and perceived roles specific to CALL. For instance, teachers' moral agency and advocacy, that is their moral-related commitments both within and beyond the classroom and syllabus, constitutes one of the facets of TPI (Kubanyiova & Crookes, 2016). This role is proposed by Farrell (2011) in his taxonomy of language teachers' role identities as acculturator, social worker, and care provider, in that teachers extend their support to students outside of the classroom to provide them with care and social support. This aspect of TPI, which is also referred to as student-related identity, develops as teachers extend their self-knowledge by learning about the students (Pennington & Richards, 2016). One of the moral and social roles that emerged in this study was CALL teachers' responsibility to be present for fulfilling the students' educational needs. Accordingly, in virtual classrooms, teachers and learners are likely to experience a sense of alienation due to the insufficient face-to-face interaction and physical human presence (Palloff & Pratt, 2007). Thus, the effective collaboration in online learning communities requires a sense of presence in virtual space that is established and maintained by adopting an online persona or identity (Palloff & Pratt, 2007). As indicated in the results of this study, CALL teachers adopted this role as one of their moral roles in technology-enhanced language classrooms to proactively strengthen moral aspects of instruction such as equal attention to the students.

Agentive identity, as demonstrated by Kubanyiova and Crookes (2016) "leads us to the even greater need for language teachers themselves to organize, build support from communities, and advocate for their own programs" (p. 127). The efforts that the interviewees reportedly made for their professional growth via self-study, contributing to the communities of like-minded CALL teachers, and being positive role models for other stakeholders were also aligned with the literature on language teachers' agentive identity. In addition,

Moreau and Brownhill (2017) emphasized a teacher "being a role model as a central and positive component of their professional identity" (p. 372). In our study, teachers perceiving themselves as their students' and colleagues' positive role models encouraged them to stay up-to-date, aware, and skillful in integrating technology with ELT, and it boosted their sense of efficacy, confidence, and commitment regarding technology use.

As seen above, the findings revealed CALL teachers' concerns about creating awareness regarding online norms of conduct, the cultural and ideological orientation of digital materials and sources, and the communication patterns that are imposed upon the users due to the design of learning management systems and social networks. Thus, in technology-enhanced learning environments (either face-to-face, blended, or virtual), CALLTPI should be constructed in such a way that teachers can empower themselves and other stakeholders to proactively play an agentive role in the social, cultural, ethical, and moral issues of CALL.

Conclusion

Our study provided some insights into the professional identities of the CALL teachers interviewed, and identified three major themes, namely, individual identity, classroom-based identity, and agentive identity. It can be concluded that these CALL teachers perceived a professional image of themselves and their roles as individuals who use technology, as teachers who integrate technology in their classroom and in this case, play leading parts in decision making, managing, evaluating and so forth. They also recognized their proactive and agentive roles as influencing the classroom and the whole enterprise morally, and becoming positive role models for stakeholders, including their students and colleagues. Although the literature has investigated most of these concepts, the complexities of technology integration, the related moral challenges, and CALL teachers' professional identity require further investigation. Thus, the integration of TPI and CALL teacher education, which is the focus of the present study, was an initial attempt to provide a focal point for exploring and constructing individual, pedagogical, social, moral, and educational aspects of CALL teachers.

Due to the limited number of volunteer participants, the role of contributing factors such as academic degree, length of ELT and CALL experience, educational context, and nationality remain unclear. The potential roles of these variables in the development of CALLTPI can play prominent roles in future research. In addition, the overarching role of TPI in teachers' classroom conduct indicates that our findings probably have implications for CALL educators who design pre- and in-service teacher development programs. Caution is needed, as the multifaceted, complex, and fluid nature of identity demands that educators and researchers take into account various aspects of TPI alongside teachers' criticality, reflectivity, beliefs and so forth to develop the technological facet of teachers' professional self-image and roles. Moreover, our findings might inspire pre- and in-service teachers to establish and develop the technological aspects of their professional identity more effectively. Given the increasing need to integrate educational technology into pedagogical instructions, specifically for language instruction, our findings can be adopted as a baseline for encouraging further research and practice. This research-based practice can also inform upstream curriculum designers and materials developers who are responsible for the development of technology-enhanced academic programs and national curriculum for language instruction.

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Appendix A. Biographies of the Participants

Name	Gender	Years of Teaching Experience	Years of Using Technology in Teaching	Context(s) of Language Teaching	The Highest Degree Completed	Nationality
Interviewee 1	F	18	14	Private Tutoring, (High)School, University	PhD in TEFL	Iranian
Interviewee 2	F	20	3	Language Institute, University	MA in TEFL PhD Student of TEFL	Iranian
Interviewee 3	F	13	5	Language Institute, University	PhD in TEFL	Iranian
Interviewee 4	F	15	7	Language Institute, University	PhD in TEFL	Iranian
Interviewee 5	F	8	3	Language Institute, Private Tutoring, University	MA in TEFL PhD Student of TEFL	Iranian
Interviewee 6	F	11	4	Language Institute, University	PhD in TEFL	Iranian
Interviewee 7	M	20	15	University, Online Courses	PhD in TEFL	Iranian
Interviewee 8	M	14	4	Language Center, (High)School, University, Industry, Business	MA in TEFL	Irish
Interviewee 9	F	20	10	University	PhD in TEFL	American
Interviewee 10	F	26	12	University, Language Centers for Immigrants	MA in TESL	Canadian
Interviewee 11	F	20	12	University, Language Institute, Online Courses	PhD in TEFL	Iranian
Interviewee 12	F	27	14	University, Online Courses	PhD in TEFL	Iranian
Interviewee 13	F	12	5	Language Institute, University	MA in TEFL	Iranian
Interviewee 14	M	15	6	University, Private School	BA in Linguistics and French Literature, MA in TESL	American

Interviewee 15	F	14	4	Language Institute, Private Tutoring, University	PhD in TEFL	Iranian
Interviewee 16	F	12	9	(High)School, University	MA in English Language, PhD in Economics	Indian
Interviewee 17	F	42	21	(High)School, University, Online Courses	MBA MA in Education	American
Interviewee 18	F	17	10	University	PhD in TEFL	Iranian
Interviewee 19	M	25	5	Secondary School	MA in Education	Singaporean
Interviewee 20	F	50	25	University, (High)School, Online Courses	MA in Spanish PhD in TESL	American
Interviewee 21	M	45	20	(High)School, University, Online Courses	MA in TESL	American
Interviewee 22	M	48	30	University, (High)School, Online Courses	PhD in TESL	Japanese
Interviewee 23	F	51	28	University, Workshops, Online Courses	PhD in TESL	American
Interviewee 24	F	14	6	Language Institutes, Online Courses	MA in TESL	Russian

Appendix B. Interview Questions for Exploring CALLTPI

I. Background Information

1. Name (optional): _____
2. Experience in English Language Teaching: _____ Years
3. Experience in Using Technology in English Language Teaching: _____ Years
4. Context(s) of English Language Teaching: _____
5. Highest Degree Completed: _____
6. Studying a Degree at the Moment: _____
7. Degree(s) and/or Course(s) in Technology Use for English Language Teaching/Learning Purposes:
   _____

II. Interview Questions

1. What types of technology do you use in your teaching? For which purposes do you use these technologies? How often do you use them? Please provide examples.
2. What is your perspective on teaching language skills (specify each skill)? How are the technologies mentioned in the previous question in line with your perspective? What are the advantages and limitations of this tool? Please provide examples.
3. How comfortable and confident do you consider yourself in using technology for language teaching? Please provide an example of a digital tool you have recently used in your teaching. What was your experience of becoming familiar with the tool and learning to use it in classroom?
4. How comfortable and confident do you consider yourself in troubleshooting when problems arise during teaching with technology? Please provide an example of a recent situation where you had to troubleshoot a situation.
5. Can you effectively teach students how to use technologies for improving their language learning? Please provide examples.
6. If you are a teacher educator, can you effectively teach teachers how to use technologies for improving their language teaching? Please provide examples.
7. How different do you think classes which use technology are from classes which do not use it? What would you consider as the major differences?
8. In which ways do you think the recent technological advancements have changed or added to the roles and responsibilities of an English teacher? What are the roles of teachers who use technology in teaching? How do you define an effective and successful CALL teacher?
9. Which constraints do you do you deal with (e.g., personal, contextual, administrative, etc.) in using technology in language teaching? Please explain how you deal with them.
10. Which challenges do you face when you use technology in teaching (e.g., cultural, ideological, etc.)? Please explain how you deal with them.
11. Are there any moral concerns that you think should be cultivated regarding the use of technology for proper language teaching/learning? If so, please provide examples and explain what you do for establishing them.
12. How do you attempt to improve your knowledge and skills of using technology in language instruction or teacher education? How do you keep these skills and knowledge updated and solve your problems?

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