

Exploring Changes in TEFL Candidates' Recurring Cognitive Patterns: A Scenario-Based Study

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Abstract

Over the last three decades, exploring Second Language Teacher Cognition (SLTC) and the factors affecting teachers' cognitive patterns has turned into one of the concerns within the realm of Second Language Teacher Education (SLTE). The inconsistency of the findings concerning the role of teacher education courses in bridging the gap between theory and practice has highlighted the need for exploring new techniques to encourage teacher reflection and cognitive development. In line with this perceived need, in the present qualitative study, seven researcher-designed Problem-Based Teaching Scenarios (PBTs) were assigned to seven TEFL students to explore the cognitive patterns recurring in their responses. Besides, their transformations, while generating practical pedagogical solutions to the posed problems, were traced over the course of study. The analysis of the data collected through the PBTs and a structured written interview revealed a number of cognitive patterns including thinking within the boundaries of prior language learning experience, educational culture, teaching experience, and pedagogical content knowledge. Furthermore, three main cognitive changes namely, moving from not fully grasping the problem to providing well-ordered solutions, from imitating to partially reflecting, and from prescribing to describing were observed. It is hoped that the findings have pedagogical and practical implications for SLTE instructors, curriculum designers, materials developers, and researchers.

Keywords: Cognitive change, Cognitive pattern, Second language teacher cognition, Problem-based teaching scenario, Second language teacher education

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INTRODUCTION

Over the last three decades, language teacher cognition, as a concept encompassing teachers' mental life, knowledge, and belief (Borg, 2009; Borg & Sanchez, 2020; Li, 2017, 2020), has attracted a surge of attention. A quick glance at the related literature (e.g., Borg, 2019; Li, 2020; Parsons et al., 2017) indicates that learning about teachers' mental lives has remarkably contributed to our understanding of teachers' learning, actions, and the mental resources that they draw upon in their practices, i.e., it provides insights into the "process of teachers' becoming, being, and developing professionally" (Borg, 2009, p. 163). The studies conducted on language teacher cognition have addressed a variety of issues including the connection between teachers' beliefs and actual classroom performances (Phipps & Borg, 2009), and teachers' beliefs about language learning, as well as language skills and components (Baker, 2014; Burri & Baker, 2021; El-Okda, 2005; Macalister, 2012). The studies also focus on changes in teacher cognition over time as a result of teaching experience, or attending certain educational programs (Li, 2020).

Teacher education programs, as the main focus of this study, are expected to give novice teacher-learners their initial experience helping them take steps toward professional development (Borg, 2019; Freeman & Johnson, 1998), gain self-belief and self-efficacy in their teaching (Borg, 2005; Cabaroglu & Roberts, 2000; Malderez et al., 2007; Malinauskas, 2017), and expand their repertoire of teaching techniques (Akbari & Dadvand, 2011). Nonetheless, a group of scholars in the field has pointed out that the deep-rooted and fixed nature of teacher cognitions may overshadow the impact of teacher education on what teachers do in their classrooms (Borg, 2009; Parsons et al., 2017). On the other hand, a number of studies (Borg 2005; Cabaroglu & Roberts, 2000; Malderez et al., 2007; Richards et al., 1996) have indicated that teacher learners' thoughts, beliefs, and knowledge could be transformed under the influence of their professional education.

The inconsistent findings of the studies, mostly undertaken in English as a Second Language (ESL) Western contexts, concerning the influence of teacher education programs, along with the dearth of studies investigating non-native English teachers' cognition (Ben-Peretz, 2011; Li, 2017) justify further exploration of the issue. Furthermore, the fairly intangible nature of the theoretical knowledge, presented in these programs, may lead to a gap between teacher learners' theoretical and practical pedagogical knowledge. This gap might be bridged by providing the teacher-learners with opportunities for reflection upon conceivable teaching problems. Problem-Based Teaching Scenario (PBTS) (Errington, 2010; Filipenko, 2016) could create spaces for teacher-learners to *reflect for action* (Farrell, 2013). They can resort to their tacit beliefs in solving probable pedagogical problems, plan their future actions, and improve or change their practice. Reflection for action might stimulate the experienced teachers to think about their past experiences, and the inexperienced teachers to imagine practical solutions for probable pedagogical problems. Continued research, focusing on scenario-based studies investigating "...developmental processes involved in language teacher trainees' cognitive change" (Borg, 2003, p. 91) could contribute to unveiling teachers' mental life transformation. Accordingly, considering the scarcity of the studies implementing PBTS in the Iranian second language teacher education context, the present study attempted to explore Iranian EFL teachers' cognitive patterns and to trace the changes in their cognition as a result of reflecting on pedagogical problems. The significance of this study lies in its novelty in terms of PBTS implementation in the Iranian context, and specifically its implications for SLTE programs.

LITERATURE REVIEW

Cognition is defined technically as "various mental processes used in thinking, remembering, perceiving, recognizing, classifying, etc." (Richards et al., 1992, p. 59). When it comes to teacher cognition, however, the task of

defining this concept gets quite challenging, partly due to the existing terminological variations. In the literature, teacher cognition has been termed variously as “beliefs”, “pedagogical knowledge”, “pedagogical reasoning”, “personal practical knowledge”, “culture of teaching”, “conceptions of teaching”, “professional crafts knowledge”, and “situated knowledge” (Borg, 2003, 2006). The problem is that “identical terms have been defined in different ways and different terms have been used to define similar concepts” (Borg, 2006, p. 35). Notwithstanding all confusions, Second Language Teacher Cognition (SLTC) has been defined as “an often tacit, personally-held practical system of mental constructs held by teachers ... defined and refined on the basis of educational and professional experiences throughout teachers’ lives” (Borg, 2006, p. 35).

The growing attention to teachers’ mental constructs was the consequence of transformation in conceptualizing teachers’ role in language teaching from unthinking implementers of prescribed curricula and procedures to empowered, autonomous, and reflective researchers who “theorize from their practice and practice what they theorize” (Kumaravadivelu, 2006, p. 184). The latter view stemmed from advances in cognitive psychology in the 1970s and the realization of the importance of teacher cognition in instructional decision-making (Li, 2020; Phipps & Borg, 2009). Despite the proliferation of studies on SLTC in the 1990s (Borg, 2003, 2006; Li, 2020), the “cognitivist” orientation was criticized as decontextualized lacking “an awareness of the immediate ... and more remote ... influences on the instructional choices teachers make” (Borg 2019, p. 1153).

Later on, with the socio-cultural turn in SLTE, a more comprehensive picture of teacher cognition was suggested highlighting the “personal, professional, socio-cultural and historical dimensions of teachers’ lives how becoming, being, and developing as a teacher is shaped by (and in turn shapes) what teachers (individually and collectively) think and feel about all aspects of their work” (Borg, 2019, p. 4). In the interim, a number of factors shaping teacher cognition including language learning experience,

teacher education, classroom practices, and contextual, social, emotional, and cultural factors were identified (Borg, 2003, 2019; Li, 2020; Timperley et al., 2007).

Concerning the role of teachers' language learning experience or what Lortie (1975) terms as *apprenticeship of observation*, it has been argued that these experiences partially influence novice teachers' beliefs, which are deeply entrenched and resistant to change (Li, 2020; Warford & Reeves, 2003). Additionally, Gutiérrez Almarza (1996) maintains that the knowledge that teachers gain through personal experience as learners is "rich, diverse, complex, and probably different from the prescriptive mode of knowledge with which they are presented during teacher education" (Gutiérrez Almarza, 1996, p. 51). Besides, Moodie (2016), using the term *anti-apprenticeship of observation*, argues that teachers may even tend to act against their prior learning experience.

The effect of teacher education courses and Teaching English to the Speakers of Other Languages (TESOL) programs on teacher cognition has also been subject to serious debates. On the one hand, it has been argued that deep-rooted teacher mental constructs and pedagogical beliefs can overshadow the effectiveness of teacher education (Borg, 2009). On the other hand, a number of scholars (e.g., Borg, 2005; Borg et al., 2014; Cabaroglu & Roberts, 2000; Li, 2020; Richards et al., 1996) argue that teacher education could influence teachers' cognition. In this regard, Li (2020) reports that a part of her participants' beliefs, particularly the ones related to language and language learning, were more resistant to change than the beliefs concerning teaching and teacher-learner relationship. Li (2020) concludes that "teacher education (including course structure, tutors and teaching practicum) can have a powerful influence on pre-service teacher development" (p. 233).

Regarding the effect of social factors, it has been argued that "cognition is shaped not just by new information but by social, emotional, and cultural processes" (Timperley et al., 2007, p. 12). Social context at macro level comprises different micro contexts such as educational norms,

the organizational or institutional cultures (Holliday, 1994), teacher education programs (Richards & Pennington, 1998), and classrooms (Li, 2017). Classrooms, as micro-social contexts, are created by teachers and learners (Hall, 2013; Li, 2017). Besides cognition, which is an indispensable factor in forming teachers' decisions, the classroom itself is shaped by the social context. Accordingly, teacher cognitive development, from a socio-cultural viewpoint, is a collaborative process of negotiation with contexts "mediated or influenced by others in social interaction" (Li, 2017, p. 20). Overall, consulting "knowledgeable others", attending professional conferences, gaining deeper insights about students and teaching-learning challenges, becoming more autonomous and reflective, are considered important social factors affecting teachers' cognition (Broemmel et al., 2020).

Similarly, teachers' cognition has a two-way interaction with teaching *experience*; on the one hand, teachers' beliefs affect their practices and on the other hand, teaching experience can lead to both cognitive and behavioral changes (Akbari & Tajik, 2009; Borg, 2003; Burri & Baker, 2021; Kang & Cheng, 2014; Moradkhani & Goodarzi, 2020; Mullock, 2006). In this regard, Kang and Cheng (2014) argue that "teacher cognition development is the result of a continuous process in which the knowledge and belief system cyclically interacts with the teacher's classroom practices under the mediation of teacher reflection" (p. 182).

Empirically, research into SLTC has focused on several issues like identifying sources of teachers' cognition (Öztürk & Gürbüz, 2017), examining teachers' cognitions in relation to each language skill (Baker, 2014; El-Okda, 2005; Macalister, 2012), comparing novice and experienced teachers' cognition (Akbari & Tajik, 2009; Karimi & Norouzi, 2017; Mullock, 2006), showing discrepancies between teachers' stated beliefs and their actual practices (Graham et al., 2014; Harmer, 2007; Hativa et al., 2001), and tracing teachers' belief transformation (Cota Grijalva & Ruiz-Esparza Barajas, 2013). A brief review of some empirical studies is presented in what follows:

Concerning teacher cognition, as manifested in teaching language skills, El-Okda (2005) conducted a study to uncover EFL student teachers' tacit beliefs about teaching reading skill prior to their entry to a methodology course. The participants examined the appropriateness of the decisions made by the teacher in hypothetical vignettes and then articulated their reasoning or practical arguments. The analysis of the data revealed that the majority of the participants held "confined" and "culture-specific" pre-existing beliefs about teaching reading skill.

In another study, Macalister (2012) examined the beliefs related to vocabulary teaching held by a group of pre-service teachers and their teacher educators. The researcher also investigated the extent to which the teachers' beliefs were demonstrated in describing an imagined lesson. The survey data, as expected, indicated that pre-service teachers and teacher educators held different beliefs about the role of vocabulary in language teaching. "Unsurprisingly", little direct mention was made of vocabulary role by the pre-service teachers in their descriptions of teaching the imagined lesson.

In yet another study, Baker (2014) explored the connections between cognition and instructional behaviors of five English language teachers while teaching L2 pronunciation. The data were collected through electronic written interviews, stimulated recall talks, and classroom observations. The findings revealed that controlled techniques deployed by the teachers outnumbered guided and free techniques, suggesting that the teachers had limited pedagogical knowledge. Similar studies on language teacher cognition with a particular focus on L2 pronunciation have also been conducted by Burri and Baker (2021).

Atai and Shafiee (2017) explored the consistent sets of pedagogical thought units of three Iranian EFL teachers while providing oral corrective feedbacks on their students' grammatical errors, and the variations across these patterns resulted from the teachers' academic backgrounds. The data analysis led to the identification of three themes namely *Professional*, *Procedural*, and *Personal knowledge* and it was found that there were

significant thought pattern differences among the participants based on their academic backgrounds.

Concerning cognition and teaching experience, Mullock (2006) investigated the pedagogical knowledge base of four TESOL teachers with various levels of experience in teaching general, business, or advanced English courses. The analysis of the data collected through stimulated verbal recall protocols showed that the less experienced teachers were as much concerned with certain categories as the experienced ones. Partially replicating Mullock's study, Akbari and Tajik (2009) investigated the impact of teaching experience on the pedagogical thought patterns of four experienced and four less experienced teachers who taught the same general English course. Contrary to Mullock's study, their analysis of the teachers' recollections showed that the two groups differed in the number of their thought patterns and the order of thought categories. Within this research strand, the effect of collaboration between novice and experienced teachers on teachers' cognition has also been subject to study. In this regard, Karimi and Norouzi (2017) found out the positive impact of a group of experienced teachers' mentoring on the quantity of the novice teachers' pedagogical thought units underlying their pedagogical practices.

The sources of teacher cognition have also been the target of studies in SLTE literature. To mention one, Öztürk and Gürbüz (2017) in an exploratory study identified factors like "prior language learning experiences", "pre-service education", "previous institutional contexts", "novice years as a teacher", and "their teaching experiences" (p. 12) as the main sources shaping teacher cognition. Besides, factors like learner characteristics, institutional requirements, and the teacher's improvisational decisions were found to be effective in classroom practices.

Our review of the literature on SLTC indicated that despite the diverse quantitative and qualitative research methods deployed by researchers, relatively fewer studies (El-Okda, 2005; Macalister, 2012) have adopted PBTS to explore teachers' cognitive patterns, on the one hand, and to trace the changes in their cognition as a result of reflecting on the posed

pedagogical problems, on the other hand. The present study aimed to add to the existing body of the literature on PBTS and SLTC.

PURPOSE OF THE STUDY

Assuming that language teachers' mental frameworks might overtly or covertly exert control over the decisions made by them, and at times impede generating creative ideas, in this study, we endeavored to explore seven Iranian EFL teacher learners' cognitive pedagogical patterns observed in their responses to a series of PBTSs throughout a semester-long teacher education course. Moreover, we aimed at tracing the process of their transformation in generating pedagogic practical solutions to the posed problems. The following research questions guided the study:

1. What are the recurring cognitive pedagogical patterns in the teacher learners' responses to the PBTSs?
2. What are the observable changes in the cognitive pedagogical patterns of the teacher-learners in responding to the PBTSs?

METHOD

Participants

The conveniently selected participants of this study were seven (five female and two male) Iranian MA TEFL students at Islamic Azad University, Qazvin, Iran. Their ages ranged from 25 to 45 and their teaching experiences varied from no formal English teaching experience to 12 years of teaching at either Iranian national schools or private language institutes. All of the participants had already gained theoretical knowledge concerning the history of language teaching methods, post method, the concepts of reflective teaching, and critical pedagogy. Moreover, during the present study, they were taking part in a *Teaching Language Skills* course, taught by one of the researchers, covering concepts related to the integration of skills, and teaching language skills and components.

Instrumentation

Problem-based teaching scenario (PBTS)

Scenario-based learning, as put by Errington (2010), refers to a pedagogic approach that deploys scenarios to achieve desired learning outcomes. Problem-based teaching scenarios depict challenging incidents in professional contexts. In this study, each researcher-made PBTS addressed a hypothetical problematic situation in teaching a different language skill or component. The responses to the seven PBTSs comprised the primary data for this study. The rationale behind employing PBTS was to indirectly access the teacher learners' cognitive pattern and their potential transformation since the provision of opportunities for practical experience and authentic observation was not feasible.

Open-ended written interview

The structured electronic interview (see Appendix) was designed to elicit the challenges the participants faced in the process of responding to PBTSs as well as their perceived transformations throughout the experience.

Data Collection Procedure

Every week the participants studied the assigned articles, discussed them in the class, and expressed their own ideas related to the applicability of the theoretical issues in their own teaching context. Every other session, they were required to respond to a PBTS and e-mail their responses within a week. In the next session, their responses were briefly discussed in the class, and feedback from the instructor (one of the researchers) and peers was provided. The teacher-learners were constantly encouraged to take time and respond reflectively and creatively using the knowledge at their disposal; however, the length and language (L1/ L2) of their responses were left to their discretion.

To plan each scenario, the researchers collaboratively reviewed the existing literature on teaching skills and detected the commonly cited challenges in teaching them. The first scenario touched upon listening skill. The available literature indicates that most language teachers either do not grasp what teaching listening entails or find it truly challenging (Richards, 2015). One of the macro-skills in teaching listening is global listening (Brown, 2003) which demands listeners to make use of contextual information to understand the overall idea of the text without being distracted by every single word they hear. With this in mind, the researchers designed the following scenario:

You are teaching a group of young students at the intermediate level of English language proficiency. You are trying to teach them global listening, i.e. understanding the general meaning of what is being listened to. However, most of the students keep concentrating on every single word. This disturbs them in a way that they lose track of the whole meaning of the text. How do you solve this problem?

The second scenario addressed speaking skill. The development of compensation strategies and their importance as a component of strategic competence has been well acknowledged in the language teaching literature (Richards, 2015). Bearing that in mind, the researchers designed the following scenario:

You are the instructor of a speaking class. You see that the students either keep code-switching or stop speaking whenever they are short of words. You want to get them to use gap fillers (umm, uh, you know, I mean, like, etc.) as a compensation strategy to cope with their communication problems. How would you encourage the students to use this strategy?

The third scenario, the reading scenario, addressed motivation, as a psychological rather than cognitive dimension of teaching reading. Given the dynamic nature of motivation, it has been realized that elements like

“task enjoyment”, “relevance” and “task content” can boost the learners’ motivation while reading (Pawlak, 2012). Having an eye to the above-mentioned points and also being aware of the common problem of language teachers with teaching prescribed boring reading materials, the researchers developed the following teaching scenario:

You are the teacher of a group of female teenagers at pre-intermediate level of English proficiency. Your textbook contains a text about animals’ hibernation. You know the students are likely to find the text boring. The text is being followed by some multiple-choice reading comprehension, true/false exercises, and word formation tables. How would you use your creativity to teach the text?

The next scenario concerned teaching writing skill and more specifically teaching how to write effective topic sentences. Our focus on this dimension of writing was due to the fact that the conventions for text organization are different from one language to the other which can lead to unwanted transfer from L1 to L2 (Richards, 2015). For example, Katchen (2009) reported that Persian paragraphs written by his participants “usually lacked topic sentences, and the method of development differed somewhat from the American pattern” (p. 165). Hence, the researchers developed the following scenario with regard to this teaching problem:

You are teaching a paragraph writing course to a group of young students at the intermediate level of English language proficiency. You have explicitly taught the concept of topic sentence and its features, provided and elicited lots of examples, and the students have done the exercises provided in their coursebook. However, in the paragraphs written by the majority of your students, either topic sentences are totally absent, or they lack controlling ideas, i.e., they are either too broad or narrow. How do you solve this problem?

Grammar was the topic of the next PBTS. Having an eye to the current insights into different dimensions of grammatical knowledge, i.e., form, meaning, and use (Larsen-Freeman, 2014) and learners' need to know how different language forms are used at the level of extended discourse (Richards, 2015), the researchers composed the following scenario:

*You are teaching a group of young EFL students at the intermediate level of language proficiency. The students have already been taught conditional sentences. You realize that your students can easily keep in mind the **form** of the conditionals and do the textbook exercises successfully, but when it comes to deciding when to **use** each one at the discourse level, they encounter serious problems. How would you use your creativity to clarify the real **meaning** of each conditional type and solve the problem?*

The next scenario concerned an issue in teaching vocabulary, acknowledged in ELT literature, i.e., converting receptive vocabulary knowledge to productive one (Richards, 2015; Zimmerman, 2014). Accordingly, the following scenario was designed.

You are teaching vocabulary to a group of young EFL students at the intermediate level of language proficiency. Your students chiefly tend to accumulate new words without being able to use them actively. How do you use your creativity to help learners turn their passive lexical knowledge into active one?

By the end of the semester, to better trace the possible cognitive changes in the participants' problem solving, we posed the following scenario focusing on teaching reduced forms.

You are teaching a group of pre-intermediate EFL students. They seem to have difficulty recognizing the reduced forms like gonna for "going to," hafta for "have to," and reduced auxiliary verbs. How would you help them?

At the end of the semester, a structured written interview was conducted to explore the processes the teacher-learners went through in responding to the PBTSs and their perception of their own transformations throughout the experience.

Data Analysis

The collected data underwent the following qualitative data analysis procedure. In the first round of the data analysis, each set of responses to every single PBTS was scrutinized by the researchers, and the offered solutions were listed. This was accompanied by open-coding of the reported solutions which gradually led to the emergence of preliminary patterns indicating teacher learners' cognition. Later, the initial codes and memos were re-checked to identify the cognitive pedagogical pattern recurring in the teacher learners' responses and to trace the changes in their cognition over the course of the study. Likewise, the data collected through the interviews were coded and the themes related to the challenges and transformations experienced by the participants in responding to the scenarios were identified.

Following Lincoln and Guba (1985), in this qualitative study, the researchers adopted a number of strategies to enhance the trustworthiness of the findings. The researchers' prolonged engagement with the participants, the collection of the data over a fairly extended period of time, and using more than one data collection instrument aimed at enhancing the credibility of the findings. Besides, to avoid "a single investigator's blinders" (Patton, 2015, p. 674) and to produce more dependable findings, the collected data were analyzed by both of the researchers, and the categories were derived collaboratively. Furthermore, to increase the transferability of the findings (Merriam & Tisdell, 2016), attempts were made to provide evidence supporting each extracted category and to delineate the process of data collection and analysis. In addition to being concerned with the

trustworthiness of the findings, the researchers took heed of ethical issues by informing the participants about the fact that their documents would be used merely for research purposes and their identities would remain confidential.

RESULTS

Through multiple readings of the participants' responses to the PBTs, a number of themes concerning recurrent cognitive patterns emerged. The detected themes were indicative of different types of *thinking within* frameworks including thinking within the framework of the prior language learning experience, educational culture, teaching experience, and academic knowledge gained throughout the TEFL program. Each of these themes is delineated below.

Recurring Cognitive Patterns

Thinking within the prior language learning experience

Meticulous reading of the responses revealed repeated instances of the teachers' resorting to their experience as language learners to solve the posed teaching problems. For example, Ghazal, an MA candidate of TEFL with almost no teaching experience, was one of the participants whose reference to her former language teachers and their teaching behaviors was somehow dominant in her responses. What follows is an excerpt of her response to the listening scenario:

I had a listening teacher who had a remarkable influence on the development of my language skill. She used to hand in transcripts of short stories with missing parts. Initially the 10 percent of the transcripts ... was missing and we were to listen and fill in the blanks. As the course developed, the number of missing segments increased up to 80 percent. I think it really worked.

Thinking within the educational culture

Another identified cognitive pattern concerned the educational culture the participants had been brought up with, which seemed to be at work in shaping their pedagogical decisions. A strategy frequently offered was stimulating the students by “games”, “competitions”, “marks”, “scores” and “bonus points”. For instance, in her solution to the reading scenario, Samira, an MA candidate with TEFL educational background and limited teaching experience at one private language institute, maintained that she would ask the students “to read the questions and the text ... whoever answers first will get a good mark”. Likewise, Mahnaz, a young reticent candidate with almost no language teaching experience, who often responded briefly to the scenarios, in response to the listening scenario proposed that she would “make a game” in which the students have to fill in gaps while listening. She added, “Whoever completes more gaps, will get a higher score”. Similarly, she stated that she would employ the same competition and game-based solution when dealing with the speaking scenario. In this regard, she mentioned, *“I form two groups and the ones who do not use the gap-fillers, when needed, will lose some points and the rival team will get extra points”*.

Other commonly reported strategies, culturally transmitted, were the deployment of “repetition” and “memorization” as pedagogical solutions. For instance, Nahid, a candidate with almost no teaching experience and low language proficiency, kept relying on these strategies. In response to the speaking scenario, she proposed that “the teacher can write some gap fillers on the board and students repeat them several times. ...If they practice them enough, they can memorize them”. In yet another example, Reza, a teacher with a decade of teaching experience, in his response to the final scenario, offered drilling which indicated his tendency towards repetition. He explains:

... I think it could be helpful to first repeat the chunks several times... if the problem persists it's better to write the model on the board, explain the rule and then ask some of the students to repeat and repeat correctly.

Thinking within teaching experiences

Another recurring cognitive pedagogical pattern identified was the teacher learners' reliance on their teaching experience in solving the problems. This was particularly evident in the responses of those with more extended teaching experience. An example of this case was Azade, an MA candidate with over seven years of experience in teaching English to a wide variety of learners. In responding to almost all of the scenarios, she commenced her responses with reference to her personal teaching experiences. For example, in her response to the speaking scenario, she stated, "Based upon my teaching experience, I have realized that to seem a native-like speaker, there are some ways one of which is using gap fillers to compensate for speakers' hesitations and also to reduce bothering pauses". Similarly, in the case of the reading scenario, she offered a personally practiced solution and added that "In my classes, in order to prevent my students from getting bored when the text is boring, I use this strategy, and it often works".

Thinking within pedagogical content knowledge

A few of the responses by the participants, who reported having almost no or little teaching experience, were quite in line with the pedagogical content knowledge they had gained from the presented materials and the assigned sources. For instance, Arezoo, a participant with no TEFL-based educational background or teaching experience, showed a fairly strict adherence to the acquired pedagogical content knowledge which might have aided her in organizing her thoughts. For instance, in her response to the listening scenario, she explained: "Based on the articles we covered during the semesters, there are some phases that should be considered in teaching

listening.... Primarily, I will choose a topic, related to the listening task to get listeners prepared for it. Then, Next,...”.

Cognitive Changes

In the second round of the data analysis, the focus was on the observable cognitive changes in the participants throughout responding to the posed scenarios. Accordingly, the cognitive changes themed as moving from not fully grasping the problem to providing well-ordered solutions, from imitating to partially reflecting, and from prescribing to describing were traced. Each is described below.

From not fully grasping the problem to providing well-ordered solutions

While scrutinizing the solutions, we found a number of them irrelevant to the raised problems, implying that either the participants had not grasped the problem as a real problem or lacked the ability to employ the pedagogical information at their disposal to come up with relevant and practical solutions. For example, in his response to the reading scenario (teaching a text supposedly boring to the students), Reza presented some general steps he would take in teaching *any* reading text instead of addressing the main problem related to the nature of the instructional material and learner motivation. Moreover, he seemed to have been treating the reading task more like a listening one. A part of his response is provided below:

I like to describe my own method of teaching reading. First, as pre-reading, I give them the definition of the word hibernation on the board with exact phonetic transcription. ... as a while-reading activity they listen to the audio file of the text...they should guess the meaning through the context first Finally, as post-reading, I ask them questions....

However, tracing his responses, we could see that in the case of the writing scenario, given halfway throughout the course, Reza had grasped the

problem, though he seemed to have failed to offer *practical* solutions and simply restated the raised problem. Below is an excerpt:

As we know writing is quite the most difficult skill among others It is like constructing a building; if the foundation goes wrong there will be a big problem with the rest. I make them practice topic sentences and give more examples.

Reaching almost the end of the course, in response to the grammar scenario, Reza offered a few fairly organized solutions which could evidence a gradual change in his cognition.

I teach this grammar [conditionals] through a dialogue, or via a simple story. After reading the dialogue. I ask them to underline the conditionals, then answer different related questions which direct their attention to the meaning of each conditional

From imitating to partially reflecting

The other trend of cognitive change observed in the participants' responses was gradual moving from the mindless repetition of borrowed ideas to partial reflectivity. This was more evident in the responses provided by Sarah, a teacher with over six years of teaching experience. In her initial writings, she displayed careless copying and pasting from the internet, nevertheless, as the course proceeded, she showed some evidence of partially reflecting on the problems and generating fairly original ideas. For instance, in her response to the writing scenario, she came up with the following solution for teaching topic sentences:

It will be helpful for the students to write a five-paragraph essay in their mother tongue. I think these students are weak in writing in their first language. In this way, they can understand the concept of every paragraph and its different components. Also, they can understand the concept of the main idea, supporting details, topic sentence, introductory, concluding

paragraphs, etc. ... we can also work on some paragraphs published in newspapers in the students' L1 and make them find different components of a paragraph. Selecting a good and correct paragraph in L1 is essential here....

From prescribing to describing

Another observed trend of cognitive change in the participants' responses was indicative of distancing from an outsider perspective and approaching an insider view. This could be seen more vividly in the discourse of one of the experienced teacher-learners, Ali. He displayed a gradual movement from considering himself an outsider, prescribing dos and don'ts, to imagining himself as an insider who sensed the problems more profoundly. Initially, in response to the first scenarios, he kept using "must" and "should" and simply offered a series of tips. Below is an example:

The learners should be told they are going to listen for the gist of the listening at pre- listening stage. The questions the teacher asks must be general ones targeting comprehension. They should not be allowed to take notes otherwise the focus will be on words rather than meaning.

However, Ali gradually employed a more descriptive language, talking about what he would do to solve the posed problem. For example, in response to the reading scenario, presented halfway through the course, he delineated the steps he himself would take as an insider. The following is an excerpt:

I will start explaining that knowing the vocabulary is not always necessary.... I will also tell them that sometimes we know all the words in the text but we cannot answer comprehension questions. If time allows, I would provide them with a video to watch

Subsequently, the data collected through the interview were analyzed. The analysis revealed that while confirming the tangible and “real-life” nature of the scenarios, nearly all of the participants had found the experience “thought-provoking”, “challenging”, “fulfilling”, and “practical” since these scenarios pushed them “to think critically about the specified issues and problems”. As an example, Nahid, explained her experience mentioning “scenarios used in this course were really challenging and practical, so they forced me to think about their situations and taught me how to think and have some solutions for my future problems in teaching”. Similarly, Samira expressed her experience as follows:

I think it was very useful. I have never taught English, but by responding to the scenarios, I could put myself in the teachers' shoes. ... I understand teaching is a kind of art and a difficult job because teachers should predict problems and difficulties through teaching. I also realized that I cannot automatically prepare some materials and go to my class. Everybody has their own way of learning and I should be able to teach in different ways.

Our findings concerning the recurring cognitive patterns were also verified by the participants' responses to the interview questions. In explaining the process, they had gone through in responding to the scenarios, they mentioned that they often used their own “imagination” to create some ideas, surfed the net, and consulted peers and TEFL references. This implies their reference to *pedagogical content knowledge*. One of the participants directly reported her reliance on her own *prior language learning experience*. Concerning their perceived transformation throughout the program, they expressed that they felt changes in their repertoire of “teaching ideas and techniques”, planning lessons and implementing them, “sensitivity towards teaching complexities and learners' problems”, as well as their sense of “responsibility and commitment” to the teaching profession. Below are some excerpts taken from their responses:

What I was doing in the past, was not scientific at all. I taught students without any thinking and reflection. But now I have understood that I should have a critical reflection in my teaching method, and definitely, after each session, I will try to identify my weaknesses and improve my methods, strategies, and teaching behavior.

I learned to be more creative and I try to have new and effective techniques to attract learners' attention and solve the problems they encounter. ... My responsibility as a teacher is not just presenting the lesson. When a problem comes, I should solve it.

DISCUSSION

The present study was an attempt to explore the cognitive pedagogical patterns recurring in a group of Iranian teacher learners' responses to a number of PBTs. Moreover, considering teacher cognition as a process, rather than a state (Borg, 2015), the researchers aimed at tracing the changes occurring in the participants' cognitive pedagogical knowledge as a result of reflection upon the problems. To this aim, the potential consistencies in the patterns of their pedagogical thoughts were investigated, focusing on teaching all language skills and sub-skills. Contrary to a number of studies (Atai & Shafiee, 2017; Baker, 2014; Macalister, 2012; Phipps & Borg, 2009) which exclusively investigated teacher cognition in relation to specific language skills or components, the present study approached the concept of teacher cognition more holistically hoping to provide the teacher learners with a broader and more integrative view of teaching and learning language skills and components.

An identified pattern in the participants' cognition was decision-making under the influence of their prior language learning experience, i.e., the apprenticeship of observation (Lortie, 1975). The findings indicated that the participants, especially the novice or inexperienced ones, granted their prior teachers the status of role models and were inspired by them, which is in line with the findings of the previous studies (e.g., Bagheri & East, 2021; schooling; Kardoust & Saeedian, 2021; Mohammadabadi et al., 2019). The

participants' responses indicated their assumed satisfaction with their prior language learning experience. Their reliance on the limited knowledge at their disposal, gained through their own language learning, could be justified by their shortage of knowledge base or dearth of teaching experience. Interestingly, however, in this study, instances of anti-apprenticeship of observation (Moodie, 2016) could not be detected which might be due to their shortage of critical thinking practice preventing them from questioning the status quo.

Another overriding pattern in the participants' cognition was thinking within the boundaries of the dominant educational culture. Having been brought up in a competitive educational culture, characterized by marks, scores, and bonus points seems to have shaped their pedagogical beliefs and decisions. Moreover, having been taught through the process of repetition and memorization, they tended to frame their decisions accordingly (Sri Lengkanawati, 2004; Tavakoli & Tavakol, 2018). In other words, their behavioristic language teaching-learning belief, which was partly the outcome of transfer of training (Fisiak, 1981), apparently has limited their perspectives. The dominance of such thought patterns can raise some concerns. Despite the fact that all the participants had already passed courses on language teaching methodology and were familiar with a variety of language teaching-learning theories and techniques, initially, they did not show signs of using their newly gained theoretical knowledge in solving the posed problems. This finding can support the fairly resistant nature of the teachers' cognitive content, previously proposed by a number of scholars (Borg, 2003, 2006, 2015; Li, 2017, 2020). In this regard, Li (2020, p. 89) maintains that "cultural norms and formal education have a stronger impact" than other factors on teacher cognition. Similarly, Borg (2015) points out that "Teachers employ routinized mental scripts in the classroom and they are generally reluctant to abandon these routines once started" (p. 12). Though, as is explained, this gradually changed during the process of reflecting on the PBTSSs.

The third prevailing cognitive pattern observed in the data was thinking within the framework of teaching experience or personal practical knowledge (Clandinin & Connelly, 1987). This was evident in the case of the participants who enjoyed prior teaching experience, though limited. To justify their suggested solutions to the posed problems, they repeatedly resorted to their “very personal and contextualized” (Li, 2017, p. 109) practical experience. In line with Li (2020), these teachers’ “personal theories or principles ... developed from their practice [became] their guidance for future practice” (p. 24). This, resonating the findings of previous studies conducted in other contexts, yields support to the important role of teachers’ practical experience in shaping their moment by moment instructional decisions (Akbari & Tajik, 2009; Borg, 2003, 2006, 2015; Broemmel et al., 2020; Burri & Baker, 2021; Kang & Cheng, 2014; Mullock, 2006; Sun, 2012; Tsang, 2004).

Thinking within the framework of pedagogical content knowledge was the last identified theme reoccurring mainly in the novice or inexperienced participants’ discourse. Along with their prior learning experiences, to respond to the PBTs, they drew upon the information and technical terms they had learned through consulting scholarly coursebooks, journals, and reports during their related courses they had taken or were currently taking. This underscores the oft-cited role of TEFL education and teacher preparation courses in constructing and expanding teachers’ cognitive repertoire (Borg, 2005; Borg et al., 2014; Cabaroglu & Roberts, 2000; Li, 2020; Richards et al., 1996).

The second research question concerned the participants’ cognitive changes observed in their responses. The traced changes comprised moving from not fully grasping the problem and providing irrelevant responses to offering well-ordered solutions, moving from imitating and mindless copying of other sources to partially reflecting, and finally moving from taking an outsider view and prescribing solutions to taking an insider view and describing their solutions. Apparently, lack of experience with problem-based education might have, initially, led to the participants’ blurred

conceptualization regarding the complex nature of the posed problems on the one hand, and the realization of teachers' role in exploiting their potential for solving the problems, on the other hand. This, once more, underscores the importance of educational culture and teaching-learning habits shaped all through the individual teacher learners' educational life (Amerstorfer, 2020).

As verified by the participants in their interviews, these changes could be ascribed to a few factors including encouragement for creativity throughout the course by the educator, involvement in classroom reflective discussions for each scenario, and the problem-solving nature of the scenarios which pushed them to go beyond their theoretical knowledge, think outside the box and come up with relevant and practical solutions. Moreover, the role of the academic professional knowledge gained through consulting cutting-edge and informative sources during the course cannot be overlooked (Berry et al., 2016; Sanchez & Borg, 2014). All these indicate that although the participants' prior teaching-learning experience may have initially prevented change in their deeply entrenched beliefs (Li, 2020; Warford & Reeves, 2003), their regular tackling with the pedagogical problems provided a fertile ground for reflection and change. This finding is partially in line with Mishan (2011) and De Simone (2008) reporting changes in teacher learners' critical thinking abilities and pedagogical problem-solving skills as a result of engagement in problem-based learning in teacher education programs. Though, it should be mentioned that "the nature of the problem, its complexity, ... the learners' prior experience with [problem-based learning]" (Amerstorfer, 2020, p. 78), acquaintance with the posed problem, accurate interpretation of the problem, and individual versus collaborative problem-solving might have affected the results of the present study.

CONCLUSION AND IMPLICATIONS

The findings of this study suggest that pedagogic scenarios not only provided a space for the teacher-learners to verbalize their tacit pedagogical



beliefs and instructional decisions but also guided them to reflect for action (Farrell, 2013). This technique can effectively be employed by SLT educators particularly when opportunities for authentic teaching in a classroom context are not feasible. This may have more benefits in programs designed for inexperienced teachers helping them visualize probable teaching problems and gain a more realistic insight into their profession. The findings may also have implications for SLTE curriculum designers and materials developers, directing their attention to the benefits of PBTs in engaging teacher-learners in constructing knowledge by pondering over semi-real teaching-learning problems and bridging the gap between theory and practice. Finally, adding to the body of literature concerning SLTC, the findings may have empirical implications for SLTE researchers. Considering the limitations of this small-scale study, longitudinal studies, deploying different data sources and data collection techniques, and in different contexts are recommended, i.e., studies deploying PBTs in conjunction with other means of data collection might unveil the hidden layers of teachers' mental lives and provide more fertile grounds for teachers' cognitive growth.

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Appendix

Interview Questions

Dear teachers,

You are respectfully required to share your ideas and experiences in response to the following questions.

1. Throughout this semester, you experienced responding to various teaching scenarios. How did you like the whole experience?
2. Do you feel the scenarios addressed real-life teaching problems? If yes how?
3. Explain the process you went through in responding to the scenarios please.
4. Where did your ideas for solving to the raised problems come from?
5. Which scenario(s) did you find more challenging? Why?
6. Do you personally feel any changes in your:
 - a. repertoire of classroom techniques
 - b. teaching practices
 - c. critical reflection
7. Do you now see any gaps in your teaching that you would like to bridge? Explain please.