Critical thinking from the ground up: teachers' conceptions and practice in EFL classrooms

Li Li, University of Exeter li.li@exeter.ac.uk

Abstract

It is widely believed that critical thinking is vital for academic success or effectiveness and innovation in the workplace. However, there is insufficient knowledge about how language teachers conceptualise critical thinking and implement it in teaching. This is especially true in EFL contexts and at the secondary level. Against this background, this paper addresses the research gap to understand EFL teachers' conceptualisation and practice of critical thinking. This study adopts a funnelling approach. A broad overview of 182 EFL teachers' conception of critical thinking skills was investigated through a questionnaire, a smaller group of 12 teachers were interviewed in three focus groups to offer in-depth understanding, and three teachers were observed in teaching. The findings identify the key characteristics and elements of critical thinking from teachers' perspectives and shed light on how teachers use cultural and subject-specific genres to embody critical thinking in their conceptualisation. The findings suggest that teachers actively implement critical thinking in teaching. The classroom extracts reveal teachers' interactional strategies to enhance critical thinking. The findings have substantial implications for teacher learning.

Keywords: critical thinking, sociocultural perspective, teacher cognition; classroom discourse, Chinese EFL classrooms

1. Introduction

Research suggests that critical thinking (CT) is vital for success in academic work (D'Alessio, Avolio & Charles, 2019; Fong, et al., 2017; Veliz & Veliz-Campos, 2019; Wallace & Wray, 2006), and effectiveness and innovation at the workplace (Jafarigohar et al., 2016; Pithers & Soden, 2000). It is considered a critical 21st-century skill, forming a widely recognised 4C framework with communication, creativity, and collaboration (Kokkidou, 2013). Arguably, students with higher critical thinking skills are projected to have a better future (Butler et al,, 2017). Thus, CT has been a core element of education globally (e.g. UK, USA, Europe, Thailand, and Singapore) (Li, 2015). In China, as elsewhere in the world, developing students' thinking skills is vital to education reform (Li, 2016). In 2001, the Chinese Ministry of Education (MOE hereafter) launched a new curriculum and syllabus to encourage students' critical and imaginative thinking skills, challenging the educational beliefs that focus on receptive learning, rote-learning, and mechanical drilling. On the contrary, it advocates learner participation, exploration, information collection and comprehension, problem-solving, negotiation, and collaboration (Li, 2016). In 2022, the MOE issued a revised National English Language Curriculum Standards, which stipulates enhancing thinking skills as one of the critical objectives of language learning. It highlights the interdependency of language learning and thinking development. The revised curriculum stipulates that EFL (English as a Foreign Language) teaching in China should involve applying English in real-life situations, improving intercultural communication skills and developing multiple perspectives, and the ability to reason with evidence, fostering logical thinking, critical thinking, and creative thinking.

In language education, research suggests that developing thinking skills may promote higher levels of language proficiency (Liu & Stapleton, 2018; Tarone, 2005). However, integrating thinking in language teaching has been peripheral, particularly in foreign language instruction (Li, 2011; 2016; 2020; Soko et al.,2008; Wilson, 2016). It is well-argued in the literature that teachers might find it challenging to implement thinking skills in foreign language instruction, and one of the reasons highlighted in the literature is teachers' insufficient knowledge about the concept (Li, 2016). The evidence then leads to an important argument: if we want to educate students to be equipped with 21st-century skills, teachers need to be able to integrate such skills into teaching. However, we do not sufficiently understand teacher cognition about critical thinking (Li, 2016). Therefore, what teachers know, understand, and how to promote CT becomes a primary issue of investigation. Against this background, the present study aims to investigate how English language teachers conceptualise critical thinking, what pedagogical considerations they have to promote the skills in their teaching, and how the skills are manifested in their practice, taking Chinese EFL teachers as an example. Insight into these issues from a Chinese context can serve as essential knowledge for (re)-creating pedagogy and designing teacher education in similar contexts where English is taught as a foreign language.

The significance of this inquiry lies in three areas: First, it is a widely shared belief that CT should be integrated into the English subject (Abrami et al., 2008; Alnofaie, 2013; Li, 2016; Wilson, 2016). Nevertheless, teachers are not equipped with the skills and pedagogical knowledge (Li, 2016; Zhang et al., 2020). Thus, an in-depth understanding of teacher cognition about critical thinking will provide a strong foundation for teacher training to prepare them to implement a thinking-based curriculum. Second, researching foreign language teachers' conceptions of thinking skills and professional practice helps researchers, policymakers, and teachers identify classroom challenges and opportunities. Third, despite the large volume of empirical studies on critical thinking in education, there is still insufficient research in second language education, particularly regarding language teacher cognition about critical thinking in a context where English is taught as a foreign language (EFL). This research addresses this deficit by focusing on teachers' conceptualisation of critical thinking, pedagogical knowledge, and classroom practice. Findings from this study will resonate in similar contexts, mainly where similar social, cultural and educational values exist.

2. Critical thinking in second language education

Despite the significance of critical thinking skills and the plethora of research studies, the concept remains 'elusive' (Davies & Barnett, 2015, p. 3) due to conflicting views about critical thinking and clashes in different theoretical perspectives. Paul (1988) defines CT as "the ability to reach sound conclusions based on observations and information", indicating the significance of analysis, synthesis, and evaluation in this process (p. 50). Halpern (2014) provides a broad definition of critical thinking, referring it as "the use of cognitive skills or strategies that increase the probability of a desirable outcome" (p.8). Critical thinking, therefore,"is purposeful, reasoned, and goal-directed... in solving problems, formulating inferences, calculating likelihoods, and making decisions" (ibid). He highlights the dispositional aspect of critical thinking, arguing that critical thinkers will "use these skills appropriately, without prompting, and usually with conscious intent, in a variety of settings" (ibid). Another often-cited definition by Ennis (2015) defines critical thinking as "reasonable, reflective thinking that is focused on deciding what to believe or do" (p.2). In the field of language learning, further attempts were made to understand the concept. Marin and de la

Pava (2017), defined critical thinking in EFL as, "a set of conceptual, methodological, criteriological and contextual considerations that integrates thinking skills, dispositions, attitudes, intellectual resources and pedagogical assistance. It affects communicative competence, creativity, argumentation, problem-solving, decision-making, autonomous learning, metacognition and emotions. It is oriented through a communicative approach, including task-based and project-based instruction, in order to take ownership of information, construct knowledge, take individual and collective action with the purpose of shaping up ethical citizens who are committed to the common good and the dignity of others" (p. 86). This definition has signalled the connection of communicative competence and emotion to critical thinking. Elsewhere, Li (2016) conceptualised it from teachers' perspective to claim CT involves different higher-order thinking skills and highlighted the awareness of one's learning process, ability to make appropriate argument and solve problems, openness and flexibility (p. 278). Despite the differences in these definitions, it is a shared understanding that critical thinking involves analysis, evaluation, inference, observation, reflection, and reasoning. It is a process one needs to engage in to make a reasonable decision, and it is bilaterally interlinked with learning or achieving goals. These characteristics are exhibited in 'good' thinking (Wegerif et al., 2015).

Critical thinking has been highlighted in language learning as a critical element (Dornyei, 2005; Larsson, 2017; Li, 2011; 2020; Norton, 2001; Wilson, 2016). However, research on critical thinking in second language education is scant. Among the limited studies, sufficient evidence suggests that integrating critical thinking in the curriculum is beneficial. For example, teaching critical thinking in an L2 writing class facilitates the production of more critical ideas in writing (Liu & Stapleton, 2018; Pei et al., 2017). Evidence suggests that students with higher critical thinking skills significantly outperformed their counterparts with lower critical thinking skills (e.g., Din, 2020; Haji Meibodi, 2014; Heidari, 2020; Zare & Biria, 2018). Therefore, research suggests direct instruction of critical thinking to improve reading comprehension (Haji Meibodi, 2014; Karimi &Veisi, 2016; Kamali & Fahim, 2011). In an affective aspect, teaching critical thinking in L2 classes could motivate students to take risks (Casanave, 2010; Shahini & Riazi, 2011). However, positive research evidence does not guarantee the implementation of CT in practice. As research points out, teachers play a significant role in implementing any innovation. For example, Li (2016) claimed that implementing a thinking-based approach to develop 21st-century learners depends on how teachers conceptualise, believe, and practice thinking skills in their classrooms, signalling the significance of researching teacher cognition.

3. Teacher cognition about thinking skills

Teacher cognition is a complex concept concerning all aspects of teachers' lives. In a recent review of the development of language teacher cognition, Borg (2019) offers a sophisticated definition of teacher cognition, defining it as "understanding, with reference to 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" (p. 4). Equally, Li (2016), takes a sociocultural perspective of teacher cognition, claiming it "as a process in which a variety of components (e.g., students, materials, teaching activities and teachers) interact in a particular context… In this perspective, teacher cognition is not static and does not exist in teachers' heads, but a fluid and interactive understanding that is situated in a given context" (p. 275-276). Under this perspective, social interaction and context are

perceived as the most significant aspects of teacher cognition. Therefore, Li (2017) proposes to study teacher cognition by analysing moment-by-moment interaction. In that respect, researching teacher cognition promotes understanding of classroom instruction at a micro-level and contributes significantly to our understanding of teacher education teacher learning. This paper takes this perspective to examine not only what teachers think and believe but what they do in their instructions.

As mentioned earlier, there are very few studies that focus on teacher cognition about thinking skills within an English as a foreign language context. In particular, there is a lack of research on how teachers conceptualise critical thinking and promote it in their classrooms (Li, 2016; 2020). A similar claim was made in a recent review by Yuan et al. (2022). A thorough examination of the field yielded 25 empirical studies on EFL teachers' perceptions of and engagement with CT in wide range of educational contexts from 2010 to 2020. In addition, there are very few studies concerning secondary school classrooms in the literature (Fung, 2017; Liang & Fung, 2021).

Among the limited studies, some consensus has been made regarding language teachers' knowledge and understanding of critical thinking. Teachers generally hold a positive attitude towards promoting critical thinking (Asgharheidari & Tahriri, 2015; Ketabi et al., 2012; Li, 2016; Zhang et al., 2020). Nevertheless, research also shows teachers demonstrate 'fragmented' or deficient understanding of the concept (Li, 2016; Marin & Pava, 2017; Zhang et al., 2020). In terms of promoting critical thinking, research suggests several obstacles and dilemmas. The first and foremost factor concerns the lack of subject and pedagogical knowledge about thinking skills (Li, 2016; Zhang & Sternberg, 2002). For example, Mok's (2009) study pointed out that teachers lacked knowledge of teaching methods and skills that could develop students' thinking skills in class. Given that the focus of the English classes is on linguistic knowledge acquisition, teachers found it difficult to create opportunities or the space for critical thinking. Li (2011), however, revealed a more complex picture when some teachers created opportunities and space in their classrooms to engage students with critical thinking, and others restricted such possibilities by not giving students time and space to develop their thinking. Zhang et al.'s (2020) study suggested a potential conflict between developing students' language abilities and fostering CT skills simultaneously. Indeed, making room in the tightly packed curriculum for developing thinking skills is a struggle (Zawojewski & McCarthy, 2007). A second influential factor concerns training and professional development. Li (2016) highlighted professional learning opportunities as a critical factor in implementing critical thinking. In a similar vein, Yuan et al. (2022) pointed out an inadequacy in teacher education programmes, particularly in offering student teachers opportunities to engage in systemically conceptualising and actualizing critical thinking in practice. In that regard, challenges in practical work and multi-cultural experience might have a positive influence on fostering (student) teachers' critical thinking skills and awareness. For example, Yuan et al. (2022) revealed that pre-service language teachers' overseas field trips had a powerful influence on enhancing their CT skills and dispositions. These teachers might gradually develop CT-oriented pedagogies for future classroom practice.

4. The Chinese context

According to Li (2011), developing learners' thinking skills gained an important role in Chinese education reform. One of the reform objectives is to educate 21st-century learners equipped with critical and creative thinking skills. New curriculum standards were launched to focus on moving away from receptive learning, rote-learning, and mechanical drilling and advocate learner participation, exploration, information collection and comprehension, problem-solving, negotiation, and collaboration (Li, 2016). In English language education, the latest national English curriculum stipulates that CT is one of the critical competencies for secondary school students to attain (MOE, 2022). Specifically, the new curriculum emphasises multiple perspectives, reasoning with evidence, and logical thinking as key outcomes of English language education (MOE, 2022, p.5).

At the outset, it is vital to acknowledge the role of the high-stake examinations in the Chinese education system, as Li (2016) identified the exams as a crucial factor that hinders teachers from teaching thinking skills. These exams are pivotal for learners because they are selective exams for further education, especially the NCEE (National College Entrance Examination) at the end of senior high school. NCEE determines whether students can obtain a university place, which might further influence their career (Li, 2016). The examinations are usually summative-oriented, and the NCEE has become teachers' and learners' real aim and motivation (Ding & Lehrer, 2007). The NCEE is also an indicator of teaching effectiveness and is closely linked to the school's academic reputation and possibly resources. Thus, Chinese education is exam-oriented (Kirkpatrick & Zang, 2011), and teaching and learning is a process of 'accumulating knowledge' rather than 'constructing and using knowledge for immediate purpose', in which the process of rote learning and memorisation is essential (Hu, 2002). Learning occurs through imitating others rather than through independent thinking, which is why it is considered a reproductive process of education rather than analytical or speculative (e.g., Carson, 1992; Conner, 1996). Rote learning and repetition is blamed for a lack of criticality and creativity among Chinese students (e.g. Tian & Low, 2011). However, Li & Wegerif (2014) argue that Chinese teaching is dialogic, which asserts that insights emerge out of the inner illumination that occurs when multiple different perspectives are held together in a dialogue. Thus, Chinese thinking is reflective of independent interpretation and the development of understanding. According to Li & Wegerif (2014), reflective thinking involves reflecting on one's own learning attitudes, weaknesses, and strengths, as well as challenging other people's views and learning from peers. On that note, Li & Wegerif (2014, p. 26) argued, "[T]here are two levels of learning referred to in Confucius' educational philosophy. One is the accumulation of knowledge (through transmission), and the other is discovering knowledge (through reflection)" Given the high stakes of the exam, it is possible that the accumulation of knowledge takes priority in teaching so that students achieve good grades. However, this doesn't mean that discovering knowledge through reflection is not evident in practice.

Given the insufficient knowledge about teacher cognition about critical thinking and its importance, this paper reports a study conducted with secondary school EFL teachers in China. The present study aims to understand how teachers conceptualise critical thinking and examine the approaches they use to foster it in subject learning. As such, this study aims to bridge the research gaps between the theories of teaching thinking and actual pedagogical practices in EFL contexts. The research questions addressed in this study are:

- How do English language teachers conceptualise critical thinking?

- How do English language teachers promote critical thinking in their practices?

5. Research methodology

An exploratory case study approach was adopted for this study as it enabled an in-depth understanding of a phenomenon in its context to answer 'how' questions. I used a funnelling approach (Spradley, 1980), in which a broad overview of 182 teachers' conceptualisation of critical thinking and their pedagogical beliefs was captured by means of a survey, a smaller group of 12 teachers were interviewed in three focus groups to gain insights into the research questions, and three teachers were further observed in their classrooms.

The study was undertaken in Beijing, China. The data were collected as part of a more substantive project which examines EFL teachers' cognition of critical thinking in Chinese secondary schools, following Li's 2016 study. The rationale for focusing on secondary school teachers and foreign language instruction is due to the scant research and the importance of higher-level thinking development at this learning stage. Participation in the study was entirely voluntary, and participants were approached through a convenience snowball sampling strategy. An invitation was sent to some secondary school teachers through a Chinese social networking platform (WeChat), and they were subsequently asked to recommend their colleagues and friends to complete the survey. Informed consent was collected from all the participants at the beginning of the survey online. At the end of the questionnaire, participants were invited to be part of the follow-up interview and 27 teachers left their contact details. Subsequently, 17 participants agreed to be interviewed but only 12 participants offered the time and successfully completed the interview. Among those, three teachers were identified to be video recorded with consent from all concerned (including the schools).

The majority of participants (88.5%, N = 161) were female: this is consistent and representative of primary and secondary education in China and worldwide (e.g., Beghetto, 2008; Kampylis et al., 2009; Li, 2016). Nearly 50% of the participants (n= 90) were aged between 35 and 45, and there is a balanced number of teachers with teaching experience of 1–5 years, 6–10 years, and 11–15 years. A large number of teachers (n= 117) have an equivalent Master's degree. The summarised demographic information is reported below in Table 1. Participants have been assigned pseudonyms. The research instruments included a self-report, anonymous, online questionnaire (critical thinking for second language teachers) containing a demographic section and 28 items divided into three sections (teachers' conceptualisation; teachers' attitudes; and teachers' practice). Apart from the demographic section, the rest of the items were based on five-point Likert scales (from 'strongly disagree' to 'strongly agree'). Due to the focus of this paper, the two sections concerning teachers' conceptualisation of critical thinking skills and their understanding of teaching CT are reported.

Table 1

Demographic Information of Participants

Demographic characteristics		N	%
Gender	Male	21	11.5
	Female	161	88.5
Age	20 to 25	23	12.6
	26 to 35	45	24.7
	36 to 45	90	49.5
	46 to 55	24	13.2
Teaching experience	1 to 5 years	42	23.1
	6 to 10 years	56	30.8
	11 to 20 years	37	20.3
	21 to 30 years	36	19.8
	More than 30 years	11	6
Student level	Junior	82	45.1
	Senior	100	54.9
Qualification	Doctorate	15	8.2
	Masters	117	64.3
	Bachelor	48	26.4
	Diploma	2	1.1

The questionnaire was designed based on the literature (e.g., Facione, 1990; Ennis, 1993; Moore, 2013; Li, 2016). It is clear that interpretation, analysis, evaluation, inference and self-regulation were all identifiable in the across studies. By examining the sub-skills involved in each of these skills, then a definition is established. For example, analysis is defined as *a detailed examination of the elements or structure of something*. Here, elements include ideas, arguments and views. *Structure* was added to taken into consideration of language learning. Open-mindedness and flexibility again are identified as something that one characteristically needs to do to engage in critical thinking across the literature, so they were then combined to form the category of 'being flexible'. When considering what critical thinking means, a particular attention was given to the social-cultural influence. For example, recognising the role of reflective thinking in Chinese culture and its connection to the concept of critical thinking, items such as self-reflection/correction and self-evaluation were added. Definitions were offered to make the terms as straightforward as possible to the respondents. The questionnaire was piloted with similar groups of teachers with a view to pre-testing the instrument content and asking respondents for their interpretation of the items' meaning (Warwick & Osherson, 1973). A Cronbach's alpha internal consistency reliability was calculated with a good Cronbach's α for each section (α= 0.945, 0.899, and 0.924, respectively) (George & Mallery, 2003). After completing the survey, 12 teachers were invited to participate in focus-group interviews. Interviews were conducted in their first language and digitally recorded, then transcribed. Focus group interviews lasted 69, 75, and 83 minutes, respectively. The purpose of the focus group was to explore the participants' in-depth views of their understanding of critical thinking, mainly how they understood the concept and how they promoted it in their teaching. Following the focus-group interviews, three teachers' classrooms were observed and followed with video-based interviews (Liz,

Sam, and Karen). Both their teaching and video-based interviews were video recorded subject to further analysis using 'applied' conversation analysis. Only the extracts selected were translated, and a bilingual Chinese-English researcher double-checked the translation. In addition, several measures were in place to ensure the accuracy of the chosen methodology to address the research requestions, including 1) the instruments were developed based on established findings and literature, and amended based on the pilot results (questionnaire and interview); 2) the use of multiple types of data to achieve triangulation; 3) the identification of sample characteristics and sampling procedure.

The questionnaire data offer an overall picture of Chinese EFL teachers' cognition of critical thinking through descriptive statistics. Means, standard deviations, and percentages are reported. Due to the imbalance of participants in gender, age, and qualifications, correlations were not determined. The three focus group interviews generated 227 mins of recording, and the total amount of classroom video analysed was 135 mins. For focus group interviews, I undertook a grounded approach to classifying teachers' verbal accounts into themes which were then compared with quantitative data. First, the interview transcripts were read and reread to identify the key message of each utterance. Themes were identified through an iterative process to examine commonalities and differences in the focus group interviews. Codes were then grouped to form themes that illuminated the teachers' conceptions and perspectives of teaching critical thinking. For example, when analysing teachers' conceptualisation of critical thinking, keywords such as 'analysis', evaluation, reasoning, analytical skills, examining grammatical structures and so on' were identified as codes, and then they were grouped and classified as themes. Sometimes, one utterance might be coded with different codes. Table 2 is an illustration of such.

Table 2

An example of codes and theme

Utterances	Codes	Themes
In my view, analysis is critical thinking, so for English subject, it involves analysis of the material, for example, students read a passage and analyse the main point of each paragraph.	Analysis of material	Analysis
It (critical thinking) is about doing some deep analysis of language and drawing a conclusion with evidence.	Analysis of language Drawing a conclusion with evidence	Analysis Inference
Analytical thinking is essential, such as comparing and contrasting. I ask students to compare sentences so that they could understand the grammar structure.	Analytical skills (compare/contrast)	Analysis
Critical thinking involves identifying the components of a sentence or language points and conducting proper analysis.	Analysis of sentence structure or text (compare/contrast)	Analysis
When reading a passage, students can tell how the personality of main characters shape the plot	Analysis of characters	Analysis

All the identified codes were re-examined, modified, and confirmed by comparing with the questionnaire results, to provide in-depth interpretations. Then video-based reflection data and classroom recordings from three individual teachers were transcribed and coded to

provide a fine-grained analytical perspective of what is going on in talk-in-interaction using 'applied' conversation analysis (ten Have, 2007). According to Li (2020), conversation analysis makes the intertwinedness of cognition and interaction visible, focusing on the nature of the cognition being socially shared, socially mediated, and publically displayed. By focusing on the interactional strategies and resources that teachers employ, we can see how teachers promote critical thinking in practice (Li, 2011). Conversation analysis places a heavy emphasis on the use of the transcript of data. Hutchby and Wooffitt (2008) claim that transcription is a necessary initial step in enabling CA, and the production of transcripts represents a distinctive stage of data analysis. In this sense, transcription is a core procedure of analysis and accuracy of dynamics of turn taking (e.g., overlaps, gaps, pauses) and characteristics of speech delivery (stress, intonation, and pitch) (Hutchby and Wooffitt, 2008). The analysis, therefore, focuses on turn taking organisation, overall structural organisation of the interaction, sequence organisation, turn design and lexical choice (Drew & Heritage, 1992; Heritage, 1997). For example, classroom interaction is 'formal' and follows a particular system in turn structure (cf. McHoul, 1978; Mehan, 1979), where teacher often asks the question, and defines what contributions are relevant and appropriate whereas students respond to the questions. The core aim of CA is to investigate talk-in-interaction, not as 'a screen on which are projected other processes', but as a phenomenon in its own right'(Schegloff, 1992, p.xviii), thus, the commitment to naturalist description of interaction gives addresses the issues of validation by offering the transparency of analytic claims, detailed analysis of turn structure and sequence, institutional character of interaction, and uncover the emic logic underlying the organization (Peräkylä, 2011; Seedhouse, 2004).

Findings

This section addresses the research questions by combining data gathered from questionnaires, interviews, and classroom recordings.

5.1 Teachers' conceptualisation of critical thinking

As shown in Figure 1, teachers demonstrated a good understanding of critical thinking. The core elements of critical thinking, such as 'analysis', 'evaluation' and 'inference' were recognised by the participants. Analysis, defined as *a detailed examination of the elements or structure of something* here was considered unanimously as critical thinking (95.6%; M= 4.57; SD=0.58). Inference, defined as *concluding on the basis of evidence and reasoning*, also received a high score (88.5%; M=4.36; SD=0.81). Evaluation referred as *the process of making a judgement about something* was the third highest-rated item (88.4%; M=4.38; SD=0.79). Interview data further confirmed the results, as teachers constantly referred to 'analysis', 'reasoning', 'using evidence', and 'making a good judgement'.

> FG 1: Critical thinking is about analysing the material and drawing a reasonable conclusion based on evidence. I think analysis is the most crucial element of critical thinking, as one cannot make a judgment without rationales.

> FG2: Critical thinking involves many sub-skills, including reasoning, being logical, and using appropriate evidence to build an argument and convince others. But analytical thinking is essential, such as comparing and contrasting.

In addition, 'synthesis' and 'self-reflection or self-correction' were also highly rated by participants (80.8%; M=4.03; SD=1.17; and 72%; M=4.01; SD=1.07 respectively). Here, synthesis was interpreted as *a process of combining different components to form a connected one*, and self-reflection/self-correction was defined as *an awareness of considerations of*

one's work and make appropriate amendments when necessary. The focus group also revealed further insights:

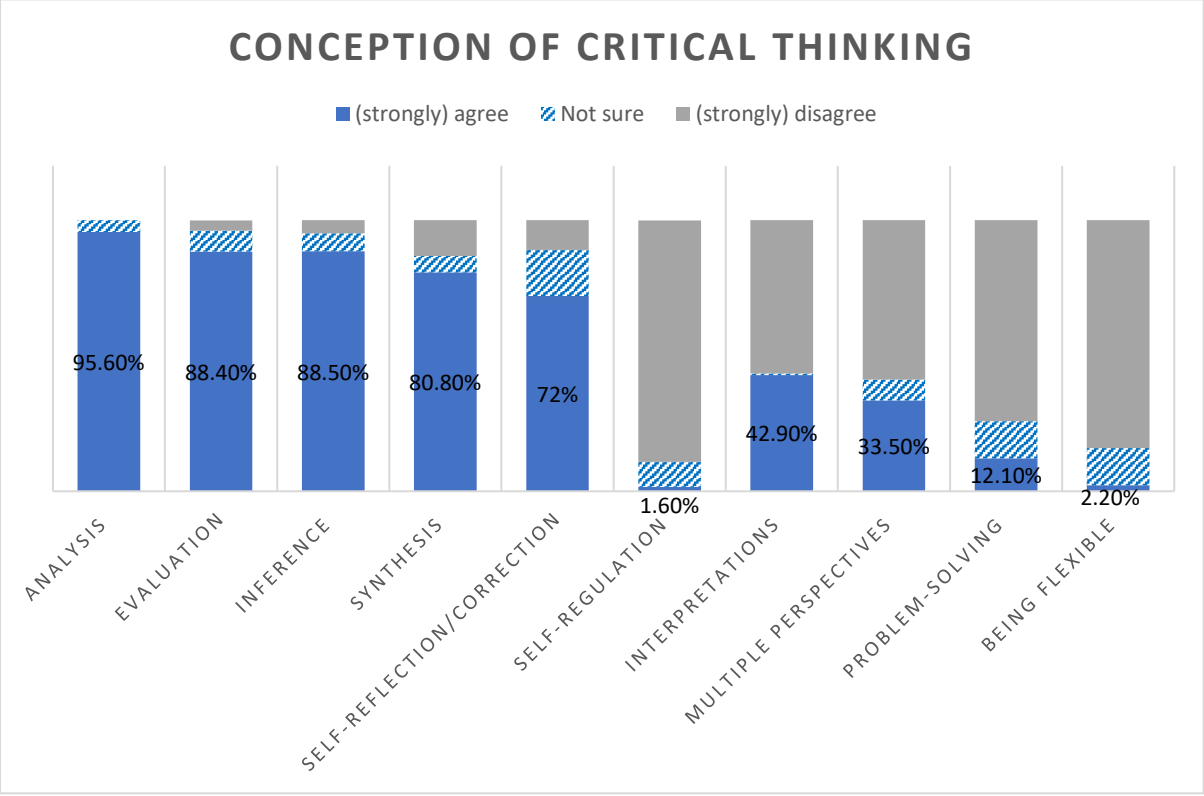
> FG1: Students must learn to analyse the language. They can come up with principles of using the language to make connections between different aspects of the language.
>
> FG2: One needs to be equipped with skills to reflect and make changes. Being able to self-correct shows critical analysis.

It is worth noting that self-regulation(1.6%; M=1.90; SD=0.61), being flexible and open (2.2%; M=1.97; SD=0.66) and problem-solving (12.1%; M=2.16; SD=1.04) were the least rated components as critical thinking. The focus group interviews offered more insights into teachers' thinking when they were asked to comment on this issue.

> FG1: We certainly feel that self-regulation concerns learning style but not to do with thinking. It is about managing oneself. Openness and flexibility are attitudes and have no link to thinking skills.
>
> FG2: I think problem-solving is the outcome or purpose, while critical thinking is the method to reach that. The other reason is that there is less about problem-solving in English language learning. Of course, it does not mean it is not essential.

Figure 1

Teachers' Conception of Critical Thinking



5.2 Implementation of critical thinking in teaching

Teachers were asked to reflect on their teaching regarding critical thinking skills. It can be seen from Figure 2 that the majority of teachers believed they were teaching critical thinking skills, particularly 'analysis' (99.5%; M=4.75; SD=0.45), 'evaluation' (96.2%; M=4.66; SD=0.65) and 'drawing conclusions based on evidence (95.6%; M=4.67; SD=0.61). This matches how they defined critical thinking, too (see above). In addition, synthesis (combining ideas) and self-reflection/self-correction were also taught by majority of teachers (89%; M=4.28; SD=0.84 and 81.3%; M=4.25; SD=0.91). Again, this is in line with their understanding of critical thinking.

It seems interesting that although most teachers did not recognise self-regulation as part of critical thinking, they taught it in their teaching (75.3%; M=3.96; SD=1.28). However, insights from the focus group confirmed that teachers considered it essential for learning. They believed that teaching their students to regulate and monitor their learning is critical.

Again, in line with teachers' conceptualisation of critical thinking, most teachers did not teach students to consider issues from multiple perspectives (70.3%; M=2.53; SD=1.46) or be open to new ideas (70.3%; M=2.42; SD=1.17). The Focus group revealed that the focus or nature of English learning and time constraints were possible reasons.

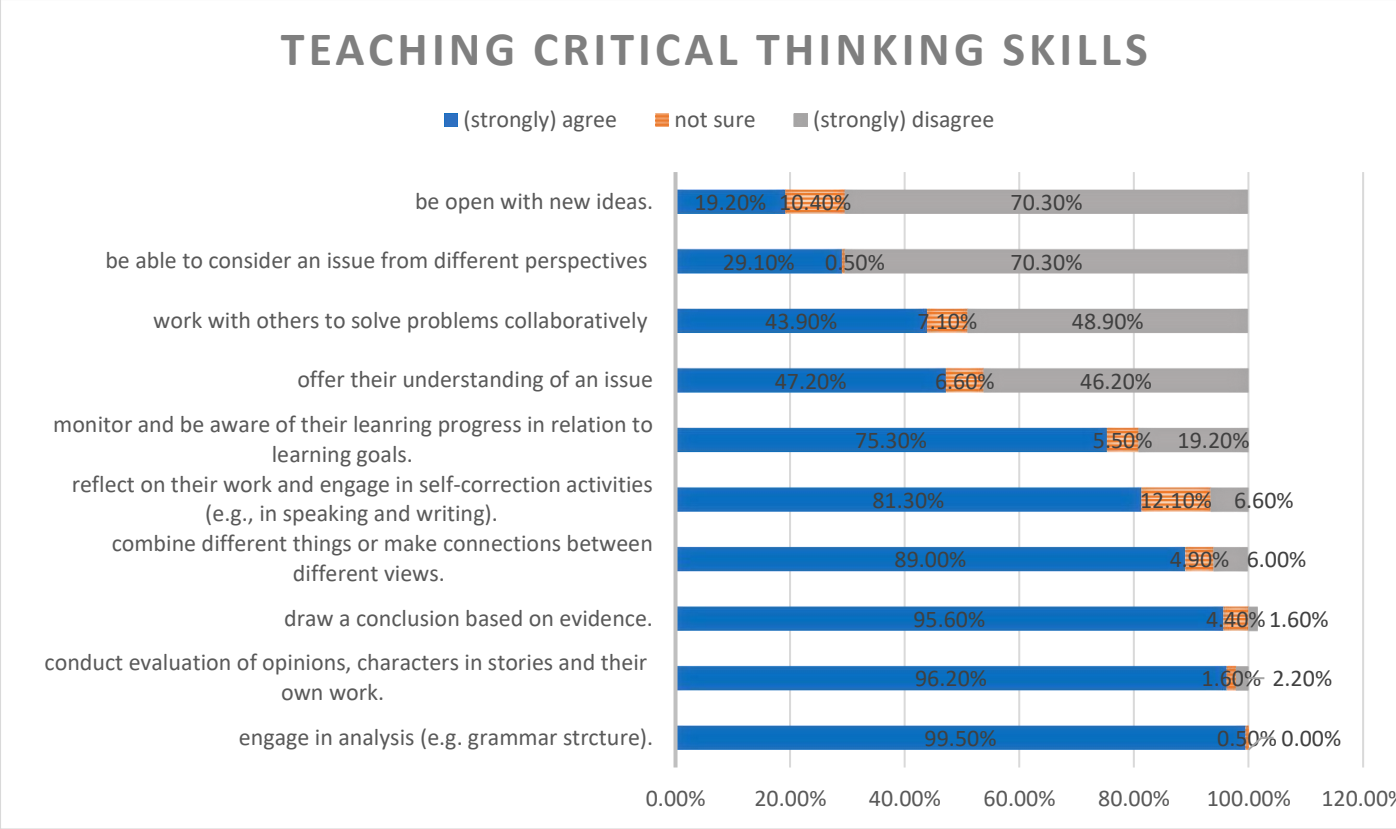
> FG: We do not have many topics/issues for students to consider new ideas or different views because most of the time, we are teaching language-specific content, such as grammar vocabulary. Even for reading comprehension, there are right or wrong answers.

> FG: When we have an open discussion topic, I will encourage students to consider multiple perspectives. But we do not have much time in class as there is a lot to cover, so we have to restrict the amount of time we spend on this activity.

Although teachers did not explicitly mention the packed curriculum, given the amount of the material they need to cover and the issue of insufficient class time, it's indicative that thinking-oriented tasks and activities will not take priority.

Figure 2

Teachers' Perspective of Approaches to Promote Critical Thinking



The following ideas were frequently mentioned in the focus group discussion regarding strategies to promote critical thinking.

- analysing language features in sentences/paragraphs
- creating situations where language is used (e.g., scenarios)
- asking students to offer opinions and views (e.g., on the story)
- making connections between language points (comparing words)
- collaborative group work
- asking more open questions to allow students' input
- reducing the number of questions focusing on information seeking
- task-based teaching (e.g., asking students to complete a task together)

Classroom data were analysed to gain insights into teachers' approaches and strategies to promote critical thinking. In what follows, I present three extracts to illustrate how teachers teach critical thinking.

Extract 1

```
1     T      ((showing a PowerPoint slides))
2            ok (.) now look at these sentences (.)
3            they are:::
4     SS     attributive clause=
5     T      =yes (.) now I want you to read them (.)
6            read them carefully and see what patterns
7            you can observe (.) OK?
8            ((11.0)
9     T      ok (.)tell me when you use which (.) who (.)
10           where and that (.) an- could we change them?
```

Extract 1 is taken from Liz's class, where she is teaching grammar. Instead of lecturing, she offers an opportunity for students to do some analysis of the sentences. First, Liz offers a space for students to demonstrate their understanding, as indicated by the stretched sound in line 3, to which students responded with the correct answer (line 4). Understanding is the basis on which she gives further instruction to require students to identify patterns (lines 5-7). It is a referential question that usually facilitate higher-level thinking skills (Li, 2011), as analysis and reasoning is required to complete this task. After a rather long pause, she provides further requests, this time asking students to summarise the rules and make a correct judgment (lines 9-10). The interactional approaches employed by the teacher open a space for students to engage in understanding, summary, analysis, and evaluation – components of critical thinking (Li, 2011).

Despite the low level of recognition of problem-solving as part of critical thinking, teachers promote problem-solving skills. In this lesson, In Extract 2, Sam creates a scenario for students to use language for real-life purposes, specifically, convincing Mum that they can go to Tom's party.

Extract 2

```
1     T      now we have a problem (.) you want to go
2            to Tom's party (.)BUT your mum won't
3            let you go (.) what are you going to do?
4            how are you going to convince her?
5            ((eye gaze with a student))
6     S1     I am going to tell her Tom is my best friend=
7     T       [ok
8     S1     =[so I want to celebrate his birthday=
9     T      =uh ↑huh (.) anything else?=
10    S2     =what's the reason that my mum won't let me
11           go?
12           ((students laughing))
13    T      That's a good question (.) ok (.) now I'd
14           like you to work in groups (.) to list the
15           reasons Mum won't let you go an- the reasons
16           you want to go
```

Sam poses the issue by asking an open question, followed by seeking further clarification on how to persuade Mum (lines 1-4). The referential questions here create a space for students to engage in the process of reasoning (Li, 2011). It is also evident that the teacher only offers acknowledgment rather than feedback to encourage more ideas to come forward (lines 7 and

9). It is interesting that when Sam asks for more input in line 9, student 2 makes self-selection and asks a counter-question to the initial problem that Sam poses (lines 10-11). It is potentially a challenge to Sam, which students recognise, as indicated by their laugh (line 12). The interactional structure now changes with an inserted student initiation. Sam, at this point, acknowledges the question with positive evaluation and after a brief pause, makes a swift move to request students to work in groups to work on arguments and counterarguments. Clearly, the interactional structure does not follow the typical initiation-response-feedback pattern, which is widely believed to restrict critical and creative thinking (Mercer & Littleton, 2007). Rather, we see the feedback move now is replaced by another initiation (line 9), and the supposed response is an inserted student initiation, which is followed by a dialogic space created by the teacher (lines 13-16) (Wegerif, 2006).

In Extract 3, Karen teaches a reading lesson to high school students. Before the session, students were asked to read a folk story about a boy (Tim) protecting the villagers when his village was attacked.

Extract 3

1	T	what do you think of Tim? (0.4) What's your
2		opinion?=
3	S1	=I think he is brave (.)
4	T	yes (.) he is brave BECAUSE↑::=
5	S1	=because he was not afraid to fight for his
6		country=
7	T	=excellent (.) what did he do then?=
8	S1	=he planned with his £friends£ to trap=
9	T	=ok↓ that's good (.) anybody else? Xiaomi?=
10	S2	=I think he is clever (1.2)
11	T	because?=
12	S2	=um because he used his knowledge (.) he knew
13		the valley=
14	T	=£very good£ (.) ok (.) I would like you to
15		talk about this in your group now (.) five
16		minutes (.) go

In Extract 3, Karen initiates a first pair part, requesting students' opinions about the character in the story. After a short pause, she further clarifies the question (lines 1-2). One student makes self-selection, commenting (line 3), which receives positive feedback from Karen (line 4). Again, we see how a referential question is used to promote multiple views. Because it is the individual opinion that is sought, it is natural for students to make a justification based on their views and experience. It is also worth noting that the interactional structure does not follow the typical Initiation-Response-Feedback (IRF) pattern. Instead, it is a 'spiral IRF', with the F move replaced by a follow-up initiation until the final feedback is required (Li, 2011; Panselinas & Komis, 2009). In this extract, we see a series of ***I*** (lines 1-2, 4, 7, 9,11) and ***R*** (lines 3, 5-6, 8, 10, 12-13) before the teacher offers the final feedback, followed by the dialogic space (line 14-16), albeit positive feedback is also observed (line7 & 9). Examining the interactional strategies, we see the teacher, Karen, requesting the student to justify the answer with evidence indicated by a stretched word with a high volume (line 4), requesting

further details and information, extending the student's input, and requesting a justification (line 11).

6. Discussion and implications

The findings show that EFL teachers' conceptualisation of critical thinking aligns with the literature that the concept entails analysis, evaluation, and inference as the core elements (Dwyer, 2017; Dwyer, Hogan & Stewart, 2011; 2014). In addition, it also includes the other two significant elements, namely, synthesis and self-reflection/self-correction. This study suggests that the concept includes these five key components, which also confirms the CTAinEFL framework (Li & Liu, 2021).

There are some interesting observations in terms of the conceptualisation of critical thinking. First, it is interesting to note that synthesis and self-reflection/self-correction are not often cited in the literature as the core of critical thinking (see Black, 2012; Halpern, 2014; Liu et al., 2014). There are several potential reasons why the teachers identified them as core elements of critical thinking. First, synthesis is highly valued as a skill in literacy education in China, and students are trained to develop such a skill from primary school through journal writing and composition. Second, synthesis is considered a core element in 'understanding' and 'applying', which is highly recognised in Chinese education (Li, 2016). Third, Chinese educational philosophy advocates reflective thinking, which is also crucial in teaching and learning across subjects (Li & Wegerif, 2014; Li, 2015).

Second, the literature suggests that critical thinking is a skillful ability that involves drawing on inferences, evaluating, reasoning, analysing, and problem-solving (Black, 2012; Moore, 2013). However, teachers in this study did not report problem-solving as a core element of critical thinking. This result is similar to Li's 2016 study, where teachers offered a contextualised view of the concept, involving identifying and analysing language to discover rules and patterns, making a reasonable argument with evidence, and applying language in real-life contexts. However, teachers do employ problem-based teaching (see Extract 2). Several interpretations could be valid here. It could be that problem-solving is not core to language learning as suggested by focus group interviews, or teachers hold a 'fragmented' understanding of critical thinking (Li, 2016). They might not consciously articulate problem-solving as part of critical thinking, they do value the skill and implement it in their teaching. It would be interesting to uncover teachers' understanding of problem-solving and whether it is perceived to be linked to particular subjects.

Third, the findings from the survey and interviews suggest that self-regulation/self-correction and being flexible and open are not highly recognised as critical thinking, but they exhibit in teachers' classroom practice. Again, teachers might consider these crucial skills, despite failing to recognise them as core elements of critical thinking. Some research highlights that these components as essential parts of critical thinking. From that perspective, CT is about making purposeful, goal-directed self-regulatory judgments involving both cognitive and affective skills (Ennis, 2015; Halpern, 2014; Hyytinen et al., 2019; Lau, 2015). Perhaps it is feasible to say that teachers recognise cognitive skills (analysis and evaluation) better than affective skills (e.g., openness and being flexible). However, it is not only cognitive skills that are important in teaching and assessing critical thinking; self-regulation also needs to be considered (Halpern, 2014; Lau, 2015). As such, it makes critical thinking an adaptive process when students plan, adapt, and monitor their thoughts, emotions, and behaviours to the demands of completing the task (Beckman et al., 2021; Schunk & Greene, 2018). There is also a contradictory result compared to Li's 2016 study. Li (2016) suggested that valuing

multiple perspectives was an essential element of higher-order thinking, whereas teachers in this study did not perceive multiple perspectives in critical thinking, despite the evidence in their classrooms. It might be helpful to determine what higher-order thinking skill is associated with multiple perspectives. A longitudinal study might also be helpful to see the trend and changes in teachers' understanding and perceptions of critical thinking in different situations, for example, when training is provided.

In implementing critical thinking, several key issues emerged from the findings. First, it is encouraging to see that teachers actively create opportunities to implement critical thinking in their teaching, with particular attention to analysis, evaluation, inference, reflection, and self-regulation. It looks like further progress has been made in EFL teachers' practice with critical thinking in the last few years compared to Li's 2016 study. Li (2016) suggested the lack of practice of promoting thinking skills in English classrooms in China, despite the significance of higher-order thinking skills in the curriculum. A primary factor that prevents teachers from implementing thinking skills in teaching is the lack of subject and pedagogical knowledge about thinking skills. This study substantiates the positive and significant influence of teacher knowledge about CT on practice. In other words, integrating critical thinking into teaching depends on the teachers' knowledge, and it can be assumed that sufficient content knowledge can lead to practice (Li, 2016). Bringing an innovative classroom approach depends on various factors, and one frequently cited one is class time. As argued earlier, the tightly packed curriculum might limit opportunities to develop critical thinking (Li, 2016; Zawojewski & McCarthy, 2007). Therefore, developing teachers' pedagogical knowledge about integrating thinking skills in the language learning process becomes a critical issue. This is especially true for beginning teachers, as they are more vulnerable to the pressures of the profession than experienced teachers (Gold & Roth, 1993), who do not have years' experience to draw upon (Li, 2017). It is worth noting that although teachers do not consider self-regulation as a critical element of critical thinking, they promote that skill in their practice because it is perceived as an essential learning skill. It raises an important question: what skills are subject-specific, and what skills are general? Perhaps understandings from the ground up will help to disentangle the different perspectives regarding thinking skills. For example, some argue that CT is a mix of skills and dispositions that can be developed, while others believe it is a general and innate skill.

Second, the study suggests that various pedagogical approaches and interactional strategies are adopted to promote critical thinking. Clearly, teachers are open to different ideas, use collaborative group work, and employ problem-based tasks. Different interactional strategies are used to promote critical thinking, including explanations (Extract 1), asking open questions (Extract 1-3), giving specific instructions (Extract 1), acknowledgment (Extract 1-3), and offering positive feedback (Extract 2, 3), seeing clarification or elaboration (Extract 3) and echoing students' contributions to bring the class together (Extract 3). The classroom data further echoes Ellerton's (2021) suggestion that well-designed pedagogical and curriculum approaches can be developed and implemented to foster critical thinking, particularly when teachers have developed a purposeful understanding of the concept. In addition, we see 'dialogic space' is purposively created by the teacher to allow multiple voices (Wegerif, 2006), and spiral IRF is used to encourage participation, reasoning with evidence, analysis, and evaluation (Li, 2011).

The significance of the present study lies in the fact that the findings are compatible with the theoretical contentions and empirical evidence in the literature confirming the five core elements of critical thinking in an EFL context (Li & Liu, 2021; Liu et al., 2014). Moreover, statistical analyses and classroom data further revealed insights into teachers' practice fostering critical thinking. This is one of the few studies combining quantitative and qualitative evidence of critical thinking skills from teachers' perspectives (see Li, 2011). The analysis of the questionnaire data provides a broad collective understanding of critical thinking, and the classroom interaction and interviews offer an emic perspective of how critical thinking is promoted in practice. It is a truism to say that teachers can engage in promoting components of critical thinking in practice even though they fail to perceive or articulate them clearly in their view.

The study findings bear some implications for teacher learning. First, given the importance of critical thinking for language learning, it is crucial for teacher education programmes to integrate critical thinking into the curriculum so that teachers receive systematic training on content and pedagogical knowledge about CT. It can be plausibly argued that the enhancement of teachers' knowledge about CT, in turn, may lead to a systematic implementation of critical thinking in teaching. Various approaches have been proposed to foster teachers' understanding and beliefs about critical thinking. Noting the significance of experience in student teachers' development in critical thinking (Yuan et al., 2021) and the value of Collaborative Dialogic Reflective Practice (CDRP) (Li, 2017), I would argue for peer support as an effective and appropriate method to improve subject and pedagogical knowledge about CT. I would emphasise the significance of collaboration, as that offers teachers a space to support each other and achieve a common goal in a community.

Second, the study also highlights the subject-specific perspective when interpreting critical thinking. Although some skills are considered essential and taught in language classrooms, teachers do not recognise them as core elements of critical thinking (for example, problem-solving, multiple perspectives, and self-regulation). Teacher training programmes might also emphasise the personal and environmental components apart from the cognitive ones (Seo et al., 2005). For example, critical thinking involves self-regulation skills, and understanding the multi-layered concept will further enable teachers to enhance self-regulation in teaching explicitly (Lau, 2015). When teachers support students in setting goals, planning, monitoring, and reflecting on their learning, their critical thinking is facilitated (Beckman et al., 2021; Winne, 2018). Third, this study addresses one critical issue: how teacher cognition of critical thinking manifests in classroom discourse and the connections between thinking skills and language acquisition (Li, 2016). We already know the relationship between interaction and cognition; it is illuminating to identify the relationship between critical thinking and language learning through the lens of interaction. Teachers should be encouraged to evaluate their classroom interactions to see how they increase opportunities to foster critical thinking (Li, 2011).

7. Conclusion

This paper investigates how language teachers conceptualise critical thinking and their practice in promoting it in EFL classrooms in China to address the research gap identified in the literature. As argued in the literature, critical thinking is essential for effective learning

and education for motivated, reflective and self-regulated learners and should be systematically integrated into the English curriculum and instruction. This study suggests that teachers' knowledge about critical thinking focuses on cognitive skills and is subject-specific, highlighting the need to develop personal and environmental perspectives of critical thinking and combine the affective aspects (e.g., being open and flexible, self-regulation). Teachers' knowledge about critical thinking has moved away from low-level skills, such as memorisation, although the literature does acknowledge the complex view of memorisation in the Chinese context (Li, 2016). The findings from this study suggest that there is progress in teacher knowledge about and practice of critical thinking in China. Nevertheless, the study took a convenient sampling strategy, and this line of research merits further investigation, involving perhaps a more substantive sample from broader geographic, social, educational, and subject backgrounds.

As Li (2016) argues, different factors account for teachers' implementation of critical thinking. Addressing one aspect will not be sufficient in changing practice, but the study does confirm that teacher knowledge is the most influential factor. In the light of the results, it is expected that with sufficient teacher training to enhance teachers' content and pedagogical knowledge, positive progress should be made in teachers' implementation of critical thinking in their classrooms. Therefore, an interventional study might be desired to confirm this. In addition, a longitudinal study would help examine the significance of knowledge on practice, albeit other social and cultural factors (such as tests).

In summary, developing critical thinking is essential in language learning. Still, without understanding teacher cognitions, we are less likely to successfully implement it in the curriculum and, therefore, less likely to educate the open-minded, flexible, self-regulated learners with critical skills. Equally, we can identify opportunities and constraints in developing critical thinking only when we analyze teachers' practice. The current study is only the beginning of this line of inquiry, and future research is greatly needed to examine critical thinking in action.

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Appendix A Transcription conventions
Adapted from Hutchby and Wooffitt (2008)

(1.8)	Numbers enclosed in parentheses indicate a pause. The number represents the number of seconds of duration of the pause, to one decimal place.
(.)	A pause of less than 0.2 seconds.
=	An equal sign is used to show that there is no time lapse between the portions connected by the equal signs. This is used where a second speaker begins their utterance just at the moment when the first speaker finishes.
[ ]	Brackets around portions of utterances show that those portions overlap with a portion of another speaker's utterance.
((looking))	a description enclosed in a double bracket indicates a non-verbal activity.
an-	A dash indicates an abrupt cut off, where the speaker stopped speaking suddenly.
sou::nd	A colon after a vowel or a word is used to show that the sound is extended. The number of colons shows the length of the extension.
↑↓	Up or down arrows are used to indicate that there is sharply rising or falling intonation. The arrow is placed just before the syllable in which the change in intonation occurs.