

Cognition-in-interaction: A Discursive Psychological Perspective of Novice Language Teacher Cognition

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Abstract

Teacher cognition has been an important agenda of language teacher education in recent decades, and it has advanced the field's understanding of L2 teachers' work. Thus far, language teacher cognition has been understood from different epistemological perspectives and researched with different methodological approaches. Given that teacher cognition is social and situational, more research is needed from an emic perspective to understand how teachers develop and renew their cognitions in their professional context. This paper adopts a discursive psychological perspective on teacher cognition, investigating novice teacher cognition using applied conversation analysis. As part of a more extensive study, the study offers an in-depth analysis of novice Chinese EFL teachers' thinking, knowing, understanding, conceptualising, and stance-taking regarding language teaching. The teachers were recruited through a combination of convenience and snowball sampling strategies. The dataset includes 330 minutes of classroom teaching, 217 minutes of interviews, and 605 minutes of video-based guided reflection on teaching. The data revealed the key theme in teachers' understanding of 1) focusing on linguistic knowledge, 2) establishing teacher authority, and 3) developing practical pedagogical knowledge. The findings reveal teachers' moment-by-moment cognition-in-interaction and multiple roles in facilitating learning. Substantial implications are put forward for teacher learning and teacher education.

Keywords: teacher cognition; discursive psychology; EFL classroom; conversation analysis; teacher knowledge

Teacher cognition is an important agenda in (second) language teacher education; as Johnson (2006, p. 236) rightly pointed out, “[M]any factors have advanced the field's understanding of L2 teachers' work, but none is more significant than the emergence of a substantial body of research now referred to as teacher cognition”. However, despite the flourishing research in language teacher cognition, insufficient knowledge is there regarding novice teachers' conceptualisation, understanding, beliefs, and knowledge. Among the limited studies, several

studies shed light on the importance of studying novice teachers' knowledge and beliefs (e.g., Kang & Cheng, 2013; Kumazawa, 2013; Xu, 2013; Zhang & Zhang, 2020), and particularly what we could learn about teaching expertise by comparing novice and expert teachers (Gatbonton, 2008; Li, 2017; Sun & Zhang, 2022; Tsui, 2003).

Thus far, language teacher cognition has been understood from different epistemological perspectives and researched with different methodological approaches, such as cognitive perspective, interactionist perspective, discursive psychological perspective, and sociocultural perspective (Li, 2017; 2020a). Despite the differences in the current research, the consensus is that the impact of teacher cognition not only sheds light on the issues in developing effective pedagogy and improving student learning but also promotes understanding of classroom instruction at a micro-level and teacher learning (Li, 2017). This paper adopts a discursive psychological perspective on teacher cognition in investigating novice teacher cognition using applied conversation analysis. From a discursive psychological perspective, teacher cognition is defined as 'cognition-in-interaction' to differentiate it from the cognitive view that cognition is fixed and stable across situations (Li, 2017). Thus, cognition-in-interaction is a special kind of psychological reality—not defined by the mental state or process but by the participants orienting practically in an ongoing interaction following the rules for turn-taking. The focus, therefore, is placed on understanding the teacher's cognition of moments in situ and how their distributed cognition is publicly displayed and negotiated.

It is important to acknowledge at the outset that novice teachers may face more challenges and struggles during the early stage of their career as they are constantly trying out methods and tasks with their students and establishing their professional images (Farrell, 2003; Li, 2012; Ruohotie-Lyhty, 2013; Sabar, 2004). The struggles and negotiation contribute to the development of their personal practical knowledge and professional images and identities. In the meantime, novice teachers bring knowledge to the existing community and engage in re-negotiation between their prior learning experience and the immediate context. This re-negotiation will further contribute to the development of the community and shape the local practice. From two different directions, it is clear that understanding novice teachers' cognition is essential in improving teaching and learning and informing teacher education. Theoretically and methodologically, it is vital to understand decision-making and knowing in situ. Against this background, this paper addresses novice teachers' cognition, particularly how novice language teachers demonstrate their understanding, knowing, believing, stance-taking, and positioning in the moment-by-moment talk in their professional settings.

The purpose of this research is two-fold. First and foremost, this research will take a different theoretical position to define and understand teacher cognition, focusing on the multiple and fluid nature of the concept. Traditionally, teacher cognition is viewed as somewhat static and stable, performing as a filter in the teachers' decision-making process. However, the research evidence also suggests that teachers display multiple fluid understanding and practice according to the micro-context (e.g., Gray & Morton, 2019; Li, 2017; 2020a). Therefore, by taking an emic perspective, this research aims to make a methodological breakthrough and advance our understanding of teacher cognition's social and dialogic nature. Secondly, this research offers further insights into novice teachers' cognition, as research into novice teachers' cognition is scarce. The findings significantly impact teacher development and education. To this end, the paper examines the cognition-in-interaction of novice teachers in

their professional context. It seeks to illuminate how their cognition is displayed through interactional resources and strategies in interactional work.

Literature Review

Language Teacher Cognition

Teacher cognition refers to teachers' principles or theories about teaching and learning that guide their classroom decisions and actions. A review of the literature on second-language teacher cognition suggests that the researchers have used multiple terms. The most widely used are perception, conception, attitudes, pedagogical knowledge, personal practical knowledge, beliefs, etc. These terms have been defined with different foci. For example, 'beliefs,' a frequently used and interchangeable term for 'cognition,' has been viewed with different dimensions, such as cognitive, affective, subjective, and objective (Richards & Lockhart, 1994). As such, various definitions have been proposed. For example, in a recent review of the development of language teacher cognition, Borg (2019) offers a sophisticated and developed perspective of teacher cognition, defining it as "understanding, concerning the personal, professional, sociocultural 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). Emphasising the significance of the social nature of cognition, Li (2017) takes a different stance to suggest cognition is not fixed and a static mental state but fluid and developmental in a social context, claiming it is cognition-in-interaction that we need to understand further.

By conducting systematic research, Li (2020a) concludes four different traditions or theoretical positions researchers take in conducting empirical studies: cognitive perspective, interactionist perspective, discursive psychological perspective, and sociocultural perspective. The table below summarises the key features of the different perspectives and their associated research methodologies.

Despite the different theoretical perspectives and methodological approaches researchers take, the consensus is that the impact of teacher cognition sheds light on the issues in developing effective pedagogy and improving student learning and promotes understanding of classroom instruction at a micro-level and teacher learning (Li, 2017). There are at least four reasons why we need to focus on teacher cognition. First, research suggests that teacher cognition heavily influences how teachers plan their lessons, make pedagogical and interactive decisions in the teaching process, and what kind of learning they promote in the classroom (Pajares, 1992; Borg, 2003; Mangubhai et al., 2004; Li, 2012). Second, researching teacher cognition is crucial to understanding classroom dynamics. That is, teacher cognition can reflect how an evolving identity, 'self-as-teacher,' is interpreted and how teachers and students work together to manage their relationships in the learning activities. Third, researching teacher cognition sheds light on teacher effectiveness (Fenstermacher, 1979; Li, 2017). A better understanding of teaching and learning can be achieved by revealing the decision-making process, thereby improving educational effectiveness or developing appropriate methodology. Finally, studying teacher cognition can contribute to teacher development of practical pedagogical knowledge, which is somewhat context-bound and context-specific. This is especially relevant to the context where innovation in practice is expected. Gaining insights from teachers can facilitate the implementation of innovative practices and reduce associated barriers.

Table 1. Theoretical Perspectives of Language Teacher Cognition Research

Perspective	Key features	Focus	Research Methodology
Cognitive	Beliefs and psychological constructs are fixed assumptions or propositions held consciously or unconsciously by teachers. Cognition is considered as one's static traits that remain constant across situations.	Research tends to focus on reality inside teachers' heads, and the focus is to elicit what teachers think about one or many aspects of their professional lives.	Survey and case studies, often involving questionnaires and interviews.
Interactionist	Teachers' beliefs and actions are not separate but a unified entity. This perspective focuses on the emergence of beliefs in interaction and places high value on the actual practice of the teacher.	The beliefs are fluid, and they emerge as a result of teacher–student interactions.	Interactional analysis
Discursive psychology	It treats language as a central activity in social life and a vehicle through which our sense of the world, and indeed psychological concepts such as memory, attitude, or cognition) are actively constructed. It studies how these psychological concepts are deployed in, oriented to, and managed in the language (talk or text) by people. Social interaction, therefore, is an illustration of these concepts.	It focuses on how issues like knowing are dealt with by the participants in a conversation. Therefore, how beliefs and knowledge 'emerge' from discourses and are 'accomplished' locally.	Conversation analysis
Sociocultural theory	Beliefs, understanding, and knowledge are constructed in a particular social and cultural context, and people's thinking and behaviours are shaped by a given context.	A focus is placed on understanding how social and cultural practice shapes individuals' understanding, knowledge, and beliefs.	Multiple and mixed methods

Novice teachers' cognition

As discussed above, there is insufficient knowledge about novice teachers' cognition. Additionally, the limited number of studies suggests some contradictory research findings. In what follows, I will discuss four relevant studies. Informed by complexity theory, Sun and Zhang (2022) explored and compared university English teachers' cognitions and practices about form-focused instruction in grammar teaching by conducting a multicase study on two novices and two experienced teachers in China. The study revealed that teachers with varied teaching experience had the same attitude toward English teaching in a unified top-down educational system where all teachers must teach according to a central governing body's mandate. Teachers, guided by the same syllabus and teaching materials, tended to formulate similar teacher cognitions in English teaching. However, the authors also highlighted the differences between novice and experienced teachers in actualising their cognitions about focus on form instruction in their practices. The authors made an interesting point regarding the

stablens of novice teachers' cognition by claiming, "the novice teachers' cognitions are not as solid as those of the experienced teachers... novice teachers need to renew or update their cognitions and knowledge by attending teacher education programmes, workshops, or other forms of continuing professional development or any other professional learning activities" (p.13). It seemed that the novice teachers failed to implement focus on form while the experienced teachers were able to do so. They argued that the novice teachers' cognitions about focus on form instruction were generally peripheral, while the beliefs held by the experienced teachers were mainly core or central.

Webster (2019) investigated the practical knowledge development of four early career English language teachers outside structured professional development programmes as they taught speaking skills to adult migrants. He identified a notable lack of early career practical knowledge development in all four participating teachers, indicating a strong relationship between this absence of growth and the theoretical nature of the teachers' practical knowledge. The findings highlighted the need for educational institutions to ensure mechanisms are in place which facilitate active and ongoing teacher engagement with theory.

Kaca & Yigitoglu (2017) investigated the influences of the curriculum followed at an intensive English program on novice teachers' cognitions. Findings revealed that the teachers encountered specific challenges in realising the curriculum objectives. These included confusion regarding the curriculum followed in their teaching context and tensions between their beliefs and practices while realising the curriculum objectives. Such confusion contributes to the discrepancies between their teaching practice and ideas. The study also found that the teachers responded to the curriculum requirements in classrooms in different ways, mainly compromising their beliefs, suggesting the curriculum was a hindrance rather than a help. The authors argued the importance of teachers being central in the decision-making processes of curriculum development and implementation.

Karimi and Norouzi (2017) investigated how novice L2 teachers' pedagogical knowledge base might grow as a result of expert mentoring initiatives, where the novice teachers received a mentoring program consisting of Video-Recorded Performance Analysis, Expert-Teacher Observation and Critical Friendship initiatives from experienced teachers. The study noted that student behaviour ranked most among novice teachers' thought categories. As explained by previous research, newly qualified teachers are usually more concerned with this issue due to a lack of confidence in their job (Gatbonton, 2008). The other insight from the study was the positive impact of mentoring programmes in orienting novice teachers towards a more 'experienced' by raising their awareness about students and their learning.

Cognition-in-interaction

Cognition-in-interaction is "socially and publicly displayed understanding, knowing, positioning, conceptualising and stance taking" (Li, 2017, p.56). It takes a discursive psychological perspective to view teacher cognition as socially constructed, a consequence or outcome of interaction with others. Cognition-in-interaction emphasises that cognition is situational and developmental, which views talk as a medium of action rather than a channel to action. That is, people in a conversation respond to each other appropriately and do interactional work together to establish meanings. Words, thus, are powerful and have consequences. Therefore, cognition-in-interaction is a special kind of psychological reality – not defined by the mental state or process but by the participants orienting practically in an

ongoing interaction following the rules for turn-taking. In essence, cognitions are publicly displayed in natural utterances, which are shaped by the understanding of the prior turns and shape the development of the next turn.

Discursive psychological perspective leads the study of teacher cognition to very different approaches. The focus is shifted from the mental construct of participants to the displayed positions and understandings of the participants. Cognition-in-interaction emphasises action and natural talk and views beliefs as locally constructed and publicly displayed understandings, for example, by analysing student–teacher interactions in classrooms and interviews with teachers about their beliefs (Morton, 2012). The merit of the discursive psychological perspective on teacher cognition is the emphasis on action, micro context, and natural talk, which is distinct from the cognitive view of teacher cognition that stresses the cognitive psychological labels using experimental manipulations or decontextualised examples.

Discursive psychology adopts social interaction as a lens for studying cognition, such as student–teacher interaction in classrooms and teacher–teacher interactions, following the principles of conversation analysis (CA). The rationale for using CA principles is to uncover how intersubjectivity (or joint meaning-making) is organised by the participants rather than to approach the data from an extraneous viewpoint. That is, the focus is placed on how participants display their understanding of the situation for one another. In such talk-in-interaction, speakers display in their sequentially ‘next’ turn an understanding of what the ‘prior’ turn is about and how they are positioned and oriented to it (Hutchby & Wooffitt, 2008). Therefore, data are not approached with a predetermined set of features but treated relatively open; as Seedhouse (2004) argues, CA provides an emic analysis of social action in classrooms from an ethnomethodological perspective, allowing data to speak for themselves. Despite the limited research in teacher cognition from a CA perspective, there is some relevant work regarding teacher identity (Gray & Morton, 2019; Li, 2020b) and teacher learning through conversation analysis (e.g., Huth et al., 2019; Sert, 2015; 2021). The collection work suggests that the emic perspective offers a moment-by-moment understanding of self and others, positioning, and learning in a professional context.

Research Methodology

Conversation Analysis

Conversation Analysis treats “grammar and lexical choices as sets of resources which participants deploy, monitor, interpret and manipulate to perform their social acts” (Schegloff et al., 2002, p.15). In principle, CA considers talking as an action rather than a channel to action. Thus, in conversation, participants do and perform knowing and understanding, and their being is constituted in talk-in-interaction. CA focuses on “how sequences of action are generated and how participants’ turns display their interpretation of each other’s utterances and the social actions they represent” (Hutchby & Wooffitt, 2008, p.14). In this sense, the conversation also “performs a social display of the interactants’ cognitive, emotional, and attitudinal states” (Li, 2017, p.57).

By adopting CA principles in researching teacher cognition, it is possible to understand how moment-by-moment pedagogical decisions are made and how teachers orient to students. As a methodology, CA follows principles and assumptions, as summarised by Hutchby and Wooffitt (2008, p.20):

- Talk-in-interaction is systematically organised and deeply ordered.
- The production of talk-in-interaction is methodic.
- The analysis of talk-in-interaction should be based on naturally occurring data.
- Analysis should not initially be constrained by prior theoretical assumptions.

It is essential to discuss the features of ‘conversation’ in the classroom. First, the type of conversation in a classroom is an institutional talk, which has defined purposes; for example, there are pedagogical goals and agendas that the teacher manages. Second, the contribution between the teacher and students is not equal. That is, the conversation is often directed and managed by the teacher, and students need to bid to speak. In addition, it is the teacher that decides what contributions are allowed and relevant.

Participants

The present study offers an in-depth analysis of novice Chinese EFL teachers’ thinking, knowing, understanding, conceptualizing, and stance-taking regarding language teaching. The data reported in this paper is derived from an extensive study of teacher learning, including both pre-service and in-service teachers from different schools in China. The original project investigated how teachers developed their beliefs, understanding, and knowledge in their professional (learning) context. The data examined in this study include four EFL teachers who all had a learning experience in English-speaking countries (see Table 2 below). The students in their classes were aged 15-16 and averaged ten years of English study. These teachers were recruited through a combination of convenience and snowball sampling strategies; therefore, no specific criteria were applied in participation selection, as the study was not intended to achieve generalisation.

It is worth noting the broad social and educational context. English is compulsory for all learners from the age of 9, although many start to learn English from 3-4. It is also vital to acknowledge the role of the high-stakes examinations in the Chinese education system, as 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 for teaching and learning English (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, it is common to see teaching and learning as knowledge-based, focusing on linguistic output. This said, evidence also suggests that some teachers demonstrate flexibility and creativity in language teaching (e.g., Li, 2011; 2016).

Table 2. Research Participants

Teacher	Age/ gender	Year of Teaching	Qualifications	(Overseas) study experience
Teacher A	25/female	Two years and 11 months	BA in English language teaching; MA in TESOL	She studied in an English-speaking country for the MA degree
Teacher B	26/male	Two years and two months	BA in business English; Masters in English literature	Exchange student in an English-speaking country
Teacher C	25/female	One year	BA in business management. MA in TESOL	She studied for a master's degree in an English-speaking country
Teacher D	24/male	One year	BA in Management; MA in TESOL	He studied in an English-speaking country for the MA degree

Identifying novice teachers can be challenging as there is no unified definition, and previous research has adopted different criteria. Gatbonton (2008) suggested that novice teachers “are those who are still undergoing training, who have just completed their training, or who have just commenced teaching and still have minimal (e.g., less than two years) experience behind them” (p.162). Tsui (2003) used a combination of criteria, which included experience, reputation, recommendation, and classroom observation. Li (2017) used years of work experience (e.g., less than three years) and self-evaluation to identify novice teachers. This study adopts the same criteria used in Li’s 2017 study: anyone with less than three years of work experience and self-assessed as a novice was invited as a possible participant.

Data

Video recordings of social interaction are the sources of data. The dataset includes 330 minutes of classroom teaching, 217 minutes of interviews, and 605 minutes of video-based guided reflection on teaching. The interviews took place before their teaching was recorded, focusing on teachers’ broad understanding of teaching techniques, textbooks, student quality, feedback, and student progress. Then each teacher was asked to identify a unit to record the teaching. The classroom recordings were focused on teachers’ interaction with students, and in each setting, two video cameras were placed, one at the front of the classroom and one at the back. The teachers were then invited to watch the recordings with the researcher and identify moments they would like to discuss. The discussion was guided by 1) anything unexpected, 2) things went well and not so well according to the plan, 3) student participation and the delivery of the pedagogical aims, and 4) anything the teachers would like to share with the researcher. What is worth noting here is how to establish a trusty relationship between the researcher and the participants. First, all teachers were volunteers, and they were fully briefed on the requirement of their participation, and they were guaranteed confidentiality of their identity and participation. Second, teachers understood the purpose of the research and how they might benefit professionally from this work. Third, the researcher once had experience working in a similar environment, which helped build rapport with the teachers and gain their trust.

Detailed transcriptions of verbal and non-verbal behaviours were made and subjected to fine-grained analysis, following the CA conventions developed by Jefferson (see Appendix for

transcription conventions). All recordings were watched several times, and various themes of teachers' understanding were identified. Then the extracts illustrating these themes were selected and transcribed. The pauses, gestures, and intonation revealed in the transcripts were subjected to detailed micro-analysis. In this way, the focus was placed on how the teachers' understanding, knowing, and decision-making become apparent in doing interactional work with interlocutors.

Findings

Understanding what teachers think, know, and believe and how they make interactive decisions in a classroom should focus on the turn-taking and exchange structures in operation and pay attention to the meaning construction between the teacher and interlocutors. When teachers conceptualise and conduct their professional work, they not only enact what they believe but also react to the micro-contexts they are in and the agenda of that talk; for example, in a classroom, the direction of the talk is shaped by the pedagogical goals. In addition, they establish multiple relationships with the ones they interact with, and such relationships constantly shift across both space and time (Miller, 2009).

In the following section, I discuss extracts from the dataset that illustrate the main themes through the lens of social interaction: 1) focusing on linguistic knowledge, 2) establishing teacher authority, and 3) developing practical pedagogical knowledge. Additional themes were also identified, such as promoting authenticity, adopting the translanguaging practice, and developing students' learning skills. However, this paper does not include additional themes due to space constraints.

Focusing on Linguistic Knowledge

For many EFL teachers, linguistic knowledge is critical, especially vocabulary, grammar, and pronunciation accuracy. Many novice teachers consider their career goal to be knowledgeable in the subject matter—for example, knowing the rules and having a rich knowledge of vocabulary and pedagogical techniques, especially explaining the subject knowledge well (Li, 2020a). The following two extracts are illustrations of such beliefs among novice teachers. Extract 1 is taken from the interview with teacher A, who talks about her teaching principles, and Extract 2 is a segment from teacher B's classroom.

Extract 1

1 I so what do you think is important in learning English (.)I mean
2 for your students?
3 T (0.2) uh(.)((clears her throat))(3.0) for my students (.)vocabulary
4 and grammar (.) definitely (.)er (.)in fact I feel
5 communication is also important (0.3) but you know the test is all
6 about vocabulary and grammar (1.2) you know that=
7 I =yeah((laughing))I took many tests when I was a student=
8 T =we all did (.)and now you have to take a test if you want
9 to gain a position in a school (1.2) even in a secondary
10 school or a good primary school (.)
11 I so you were saying vocabulary and grammar are important
12 because they are the things tested?=
13 T =yeah (.) tests are mainly about vocabulary and grammar (.)so
14 they are important for students if they want to get good
15 grades (0.2) that's the reality (3.2) I need to make sure that I
16 teach my student the important and useful content (0.8) but
17 you might disagree with me

In this extract, teacher A is interviewed about her teaching philosophies. Clearly, she assigns high importance to vocabulary and grammar for her learners and believes in the critical role of tests in influencing how English is taught. This extract shows how a novice teacher values the importance of linguistic knowledge in language learning, which unfolds line by line in her interaction with the interviewer. In line 1, the interviewer elicits the question, which orients A toward discussing what is essential for a language learner. It is this orientation that directs the flow of the conversation and construction of the teacher's beliefs about language learning: vocabulary and grammar are important (lines 3-4). This understanding is then shared and co-constructed by the interviewer by seeking confirmation (lines 11 and 12). It is worth noting how the teacher situates her beliefs and understanding in a broad context. In lines 5-6, she emphasises the importance of the tests in influencing her beliefs about language learning. This understanding is further evident in her later articulation. In lines 13-15, she clarifies and justifies the importance of vocabulary and grammar and highlights the significance of tests in language learning in China. What is interesting here is how she establishes the context with the interviewer and co-constructs this understanding. In lines 5-6, the discourse marker 'you know' and 'you know that' helps to establish a shared understanding of what is being discussed in the context. In the following sequence (lines 7-10), the interviewer and the teacher are doing interactive work to establish a mutual understanding of the importance of tests and their influence on one's career. The meaning is constructed, as evidenced by the latched turns (lines 6 and 7), the interviewer's acknowledgment token, and laughter (line 7). The similar experience from the interviewer (line 7) positions both the teacher and the interviewer differently this time, which generates a long turn by the teacher, exemplifying the importance of tests as a gateway to entering the profession (lines 8 and 9).

What is interesting in this extract is that the teacher also displays different beliefs in conversation with the interviewer, which is that communication is also essential (lines 4-5). These two different sets of beliefs are constructed from different perspectives. In lines 3-4, the teacher displays her beliefs as one who sees what is essential for the students in context; in lines 4-5, she positions herself differently, perhaps as a language learner or user (Li, 2017). It

is important to note that these beliefs are not contradictory. Instead, the context decides which one gains priority in classroom practice. It is worth noting that the teacher also recognises different sets of beliefs and that her beliefs about the importance of tests are open to challenge (lines 16–17). It is assumed that these different perspectives about language learning are also clearly related to this teacher’s different identities. For example, she uses ‘for my students’ (line 3) and ‘I feel’ (line 4) to distinguish these two positions/understandings.

Pauses function differently in the unfolding of this teacher’s beliefs. A long pause (3.0 s) in line 3 allows the teacher to understand the first pair part and construct her response. Arguably, the three-second pause here gives her a thinking space (Li, 2011). Clearly, the teacher does not have fixed knowledge or beliefs about which component of English is important for her students. On the contrary, her articulated knowledge and beliefs are constructed in the interaction with the researcher. A longish pause (1.2 seconds in line 6) provides a space for the teacher to initiate a new turn (you know that) to establish a shared understanding with the interviewer. Here, the teacher takes an active role in directing the conversation with the interviewer. In line 9, after the teacher articulates the importance of tests, she pauses again (1.2 seconds). Then she exemplifies and stresses the implications of testing (even in a secondary school or a good primary school). This pause stresses the importance of the implication that she brings up later. A 3.2-second pause in line 15 marks the conclusion of her turn when she offers the floor, which the interviewer does not take. Teacher A carries on but moves in a new direction, this time talking about herself as a teacher. This shift clearly suggests that all aspects of teacher cognition (e.g., teaching, learning, students, tests, and self) are intertwined. Then the brief pause after articulating her responsibility (0.8) indicates an invitation to the interviewer to do the interactive work with her.

The following extract shows how a teacher conceptualises the importance of linguistic knowledge, such as vocabulary, in language learning. It is an English class of Year 10 students in a Chinese secondary school, where the teacher discusses fact versus fantasy with students. A young male teacher, B, was just into his third year of teaching English but had only been teaching this class for a few months before the data were collected.

Extract 2

1 T ok just now um we have talked about something about um facts
2 and fantasy (.) next I will give you something different
3 ((showing a PowerPoint slide of the Loch Ness monster)) (1.0)
4 SS ((1.0 unintelligible))
5 T what’s that? (0.8) Xiao Ning!=
6 S1 =the monster of=
7 T =the monster of::(1.0) what!=
8 S1 =‘lake’ (.)
9 T lake (1.1) YES is lake but we always use THIS word ((writing
10 loch on the blackboard)) lo::ch it’s a Scottish word (.)
11 Loch’s monster (.) Is it um (.) fact or fantasy? (1.0) is it a
12 fact or ‘fantasy’? We don’t know (.) Maybe it’s a fact (.)
13 some um some people believe it’s true(.) some people
14 don’t (1.0) some people think just invented such a thing so
15 we cannot say it’s a fact or fantasy (.) We just say it’s a
16 mystery a legend (.) um this is the first one(.) next one?
17 ((showing the next slide)) does anyone know this?

Teacher B's interactive work emphasises the accuracy of language use. In this extract, B is teaching the concept of fantasy and mystery using the example of the Loch Ness Monster. This is done by eliciting the Loch Ness Monster with a PowerPoint slide (line 3). After a longish pause, several students take the cue, but their contributions are unidentifiable (line 4). In line 5, the teacher then seeks clarification and selects a student who takes the cue and makes a seemingly relevant contribution (line 6). However, at this point, the teacher interrupts the student and echoes the student's contribution with an extended sound (of: :) to elicit more input. After another longish pause, he asks with an emphatic tone, demanding a relevant second pair part. The student then completes his turn with 'lake' in a soft voice, suggesting the uncertainty of his answer (line 8). Then the teacher takes the floor and produces an extended turn to focus on vocabulary explanation. He adopts a few strategies to emphasise vocabulary teaching, such as writing the word on the blackboard, eliciting (line 10), and explaining. Here, the teacher focuses on creating opportunities for students to acquire vocabulary in context – loch, a Scottish word meaning lake, in this case.

In lines 11-16, he is trying to distinguish mystery from fantasy, using the Loch Ness Monster as an example. First, he presents a question (lines 11–12), and when there are no responses from students, he repeats the question and provides his view (line 12). Then he goes on to offer more of his views. This long turn suggests that he adopts a position of knowledge source and focuses on accuracy (of vocabulary and the concept). Combined with his earlier interruption, it looks much more like he wishes to involve students, but they must respond quickly. The balanced view from this teacher's classroom interaction with students suggests that conceptual or linguistic knowledge is important but not entirely at the expense of cutting out opportunities for students to participate or contribute. Indeed, teaching vocabulary in a meaningful way is strongly evident in this extract (e.g., using the Loch Ness Monster to teach fantasy and mystery).

Establishing Teacher Authority

Teaching is a process of becoming, and for novice teachers, it is a time of formation and transformation of becoming and being a teacher when they establish principles and rectification for their professional practice (Li, 2020a). For many novice teachers, establishing authority is a critical part of this process, in which they display the subject knowledge and the skill of explaining the subject knowledge well. Extract 3 is an illustrative extract to show how a teacher demonstrates his authority in teaching by monitoring students' work. Teacher D typically starts his class by checking students' homework, and the previous sessions focused on vocabulary.

Extract 3

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1   T       Next (.) what is the correct answer? (1.2) ok (.)
2       ((eye gazed with a student)) you
3   S1      erm (0.4)B=
4   T       =read the whole sentence please
5   S1      (0.8) the dam was built to prevent the village to be flooded=
6   T       =Ok (.) is it correct? B? prevent (.) we say prevent
7           Something FROM what ((writing on the blackboard))
8           prevent from (.) so it's noun or i-n-g after from (.) ok?
9           This is important (.) please remember (.) it was in
10          various tests previously (0.3) ok (.) can you write it down
11          and make a sentence using prevent from?
12  SS      ((writing on their handbook))

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In this extract, the teacher starts the lesson by checking the work he set for students. In line 1, he makes a request in the first pair part and subsequently nominates a student in line 2. The student then takes a cue to provide an answer, to which the teacher provides no feedback. Instead, he asks the student to read the sentence (line 4). This can be interpreted as a dispreferred response from the student's perspective, indicating that the student's answer is not deemed to be relevant. By asking the student to read the sentence, the teacher identifies the possible 'trouble source' and takes the next turn. From line 6, he poses a question to the class to confirm the correct answer. However, the teacher does not give the turn to anyone but produces a lengthy turn to provide direct corrective feedback (prevent (.) we say prevent something FROM what), with further explanations (line 8). Here, we can see he positions himself as not only the linguistic knowledge source but also someone confident about the significance of the target language in the high-stakes exams (lines 9-10). His authoritative position is further reinforced by giving students detailed instruction, which entails 'telling,' for example, asking students to write it down and practice the structure. Here, teacher D displays his authority by demonstrating subject knowledge, class control, and reinforcement of the gap between the teacher and learners. Indeed, he has the absolute authority of 'knowledge' and the right to speak.

The rule-setting is one key element of classroom management. Establishing authority is also reflected in how the teacher sets up rules in the classroom, such as 'who' has the right to speak and how much time each participant speaks (Li, 2017). Consider the following extract in which teacher D sets the rules for answering or raising questions. In this exchange, the teacher ensures the students understand how to ask questions.

Extract 4

```

1      T      What do you think has happened to the lion?=
2      SS     =[((unintelligible as they are talking the same time))
3      T      =[ok (.) one by one (.)ok? (2.3)
4          OK! ((clapping her hands)) Stop! Now listen to me (.) raise
5          your hand if you want to speak (.) or ask a question (.) the
6          teacher will select who to speak (.) ok?=
7      SS     =((in unison)) OK:::=
8      T      =I will select five students to answer this question (.) and
9          each of you can speak for one minute (.) and please do not
10         interrupt when others speak (0.6) ((gesturing hands up))
11         first (.) Yang Mei (.) please
12     S1     (0.2) I think the lion is turned into a stone lion

```

In this extract, teacher D establishes authority by dealing with an unexpected incident and managing classroom behaviour. How he manages the class unfolds in his interaction with students. In line 1, he poses a question, inviting students' contributions. It is this initiation that generates an unexpected turn. Instead of bidding to talk, students show great interest in the question and produce multiple second pair part (line 2). However, it is worth noting that the teacher is unfinished with his instruction, as evidenced by the overlapping turns (lines 2 and 3). The teacher's instruction is followed by a 2.3-second pause. After the extended pause, he raises his voice and uses body language to regain control of the turn (line 4). This is

accompanied by a loud, direct instruction with an emphatic effect (Stop!). It is clear that he likes to be in control of the class, and the roles of the teacher and students are clearly defined and mutually acknowledged (lines 4-6). As the conversation continues, he asks the students to acknowledge the receipt of his instruction, to which he receives a preferred response (line 7). From a discursive psychological perspective, it is how the teacher does this that is of interest. In this extract, first, he refers to himself as ‘the teacher,’ indicating his status in the classroom (line 6); second, he explains how to ask questions or to bid for a turn to speak, setting the rule for the classroom structure (lines 4-6); and, finally, he outlines the rules for this task explicitly, indicating his role to be the one to make the selection of speaker, how long they speak and the role of other students (lines 8-11). It is through the mutually oriented discourse that the teacher establishes his authority.

Developing Practical Pedagogical Knowledge

Teaching is a process of developing personal practical knowledge in context. As Elbas (1981) put it, practical knowledge is knowledge “broadly based on (teachers’) experiences in classrooms and schools and is directed toward the handling of problems that arise in their work” (p. 67). Specifically, teachers’ first-hand encounter with students’ learning styles, interests, needs, strengths, and difficulties directly contributes to teachers’ practical knowledge development. The data in this study suggests that developing practical pedagogical knowledge is a central theme of novice teachers’ cognition. Practical pedagogical knowledge (PPK) here encompasses instructional techniques and classroom management skills.

Overall, novice teachers display a lack of flexibility and confidence in their pedagogical considerations and tend to follow the rules and their lesson plans rigidly. They also display difficulty in practicing learner-centred pedagogy despite having such awareness. The following extract from the video-based stimulated recall with teacher C is an illustration.

Extract 5

1 I Students are pretty £good£ (.) they learn fast,
 2 (3.8)
 3 T £not really£ (.) most of them have learnt this already (.)
 4 I really?=
 5 T =yes (.) but I don’t want to skip it (.) but you can see they
 6 are not engaged (.) because most of them have already learnt=
 7 I =Have you thought of changing the material?
 8 T (2.1) um (.) yes (.) but you can see (.) there are a few
 9 ((pointing to a student on the screen)) like this one (.)
 10 I am not sure (.) I think I’d better teach them following the
 11 textbook (.) otherwise we might miss something important for
 12 the test (0.3)
 13 I right (.) so what changes were you thinking of?
 14 T (2.2) I was thinking of changing the task (.) here (.) I was
 15 thinking of asking students to discuss and rewrite the end of
 16 the story (.) but then I thought it’s safer to just go over
 17 the exercise in the workbook=
 18 I uh huh?
 19 T Students will find it challenging as it’s not usually what
 20 I would do (.) it is also easier to control the pace of
 21 the lesson

This extract is taken from the video-based reflection dataset where teacher C discusses a critical incident in her teaching. Here the interviewer and the teacher co-establish an understanding that it is a critical moment in teaching. The interviewer starts with a positive comment on students' learning ability (line 1), followed by a rather long pause. Then the teacher takes the cue to offer further insights into the matter – the students have learnt the content already (line 3). The surprise shown by the interviewer indicates further inquiry (line 4). The teacher takes the cue to elaborate on her thoughts and assessment. Here, the teacher demonstrates her knowledge of students and her inflexibility in making changes to accommodate the situation (lines 5-6). Naturally, the interviewer makes an initiation, requiring the teacher to clarify further whether she would consider changing the material (line 7). The long pause and hesitation (um) suggest possible uncertainty from the teacher. However, she provides an affirmative response, but after a brief pause, she justifies her decision (lines 8-12). As she claims, she must be sure that she covers the content as she fears missing something important for the test. At this point, it is clear that the teacher has developed personal knowledge about the context, the students, and the high-stakes tests. All of these are important for her, but teaching to tests seems to be critical in her pedagogical decision-making process.

In order to tease out how she makes the decision, the interviewer invites further clarification on the possible changes after a brief acknowledgment (line 13). After a rather long pause, the teacher elaborates further regarding her decisions (lines 14-17). Her rationale is that going over the exercises in the workbook is safer. Again, she is aware of the benefit of adopting a student-centred approach and adjusting her teaching according to students' abilities. However, the context might restrict her from doing so, as revealed further below in lines 19-21. She claims that students will find it challenging as it is not the usual practice in her teaching— the time constraints pose a further barrier.

From a discursive psychological position, we can see how this teacher displays her knowledge, understanding, and beliefs in the interactive work. She clearly demonstrates sufficient knowledge about the students in terms of their level and learning styles (lines 3, 5–6, 8–9, 19) and the learning context (e.g., the significance of the tests) (lines 11-12, 16–17; 20–21). She also displays her pedagogical considerations by articulating her position (line 5), offering a positive response (line 8), making a claim of insufficient knowledge, providing justifications for her decision (lines 10-12; 16–17; 20–21), and elaborating pedagogical knowledge. Her interactional strategies suggest that she has little flexibility in adopting pedagogical innovation in practice, despite the awareness of a student-centred approach and sufficient knowledge about the students and broader context.

Discussion

The above five extracts have illustrated the critical themes of novice teachers' cognition-in-interaction and how their knowledge, understanding, beliefs, and decision-making are evidenced in interaction. Although this study does not intend to make any generalised claims, it is a truism that novice teachers possess and display three dominant understandings: focusing on linguistic knowledge, establishing authority, and developing practical pedagogical knowledge.

Linguistic knowledge is a critical part of subject knowledge for novice language teachers because it represents the immediate need of a teacher in the profession (Li, 2017). This finding

corroborates what Li (2017) observed for student teachers. Interestingly, both novice and student teachers pay specific attention to linguistic knowledge, and one of the possible reasons is that there is a desire to establish themselves as knowledge source in the early days of their profession. For those novice teachers, grammar, lexis, and phonology are the fundamental components of a language and, thereby, the core elements of language teaching. As researchers in the field argue, how language is defined and how language teachers understand language learning are heavily influenced by teacher education (Borg, 2006; Johnson, 2009; Li, 2017; 2020a). Thus, how language teacher education programmes present linguistic knowledge is critical in shaping teachers' knowledge about disciplinary knowledge. Traditionally, language as the system is somewhat overemphasised in second/foreign language learning contexts, and existing studies have clearly established the need for linguistic training and language awareness in teacher education programmes (Andrews, 2006; Govardhan et al., 1999; Vásquez & Sharpless, 2009; Murphy, 1997). As such, raising teachers' awareness of the nature of language and enhancing teachers' linguistic knowledge is equally important. Johnson (2009) points out the need to turn our attention to the process of a teacher knowing – how teachers come to know what they know, how certain concepts in teachers' consciousness develop over time, and how their learning processes transform them and the activities of L2 teaching. This suggests that teacher education perhaps needs to move from developing language teachers' knowledge to raising their awareness of the process of knowing.

Among teachers' different identities in their profession, establishing authority is a prevailing theme of novice teachers' cognition. It is widely acknowledged that teaching is not merely a matter of decontextualised skills or of mirroring predetermined images; it is “a time when one's past, present, and future are set in dynamic tension” (Britzman, 1991, p. 8). Therefore, teaching as a professional activity is always a process of becoming and transforming for teachers – an ongoing process in which teachers engage in self-interpretation of whom they are and become recognised as a particular type of person (Farrell, 2011; Gee, 2001; Leung, 2009). For novice teachers, gaining students' trust and respect and establishing their authority is critical. This authority also grants the teachers power regarding what to learn, how it is learnt, and who is involved in the activity (Li, 2020a). As such, teachers tend to demonstrate their authoritative position by taking a predominant role in classroom interaction. The very long teacher turns and brief learner turns (Extracts 2, 3, and 4) suggest the teacher derives the power to direct the conversation. Teachers' power as the institutional authority significantly influences the discourse (Zuengler, 2011), mainly when teachers' pedagogical agenda focuses on knowledge transmission and memorization.

Effective teaching requires teachers to develop a close relationship with students. Hargreaves (2000; 2005) warns that a failure to establish such relationships may make teachers prone to experience emotional misunderstanding. However, because newly qualified teachers very often feel challenged and subject to comparison with other teachers, establishing authority becomes an essential part of identity formation and relationship management. Previous research suggests teachers make authority moves to manage the classroom (e.g., Li, 2012; 2017). This study further demonstrates that novice teachers establish authority by demonstrating subject knowledge, exercising power to control the class, and reinforcing the gap between the teacher and learners. In the extracts above, we see the teachers position themselves as an expert in guiding the students through the task and fulfilling the learning objectives by sticking to their plan. It is also worth noting that when teachers demonstrate authority, both the students and the teacher are doing interactional work together to display assigned identities through 'acts of

classroom alignment' (Ellwood, 2008), which are institutionally desired. The alignment allows the teacher to direct and control the development of exchanges, allocate turns to students, and decide the relevance of student contributions.

There is a close relationship between personal practical knowledge and teacher identity (Beijaard et al., 2004; Li, 2020b). As Li (2020b) observes, "teachers are developing a set of personal practical pedagogical knowledge, and the pedagogical principles developed and held by teachers are the reflection of who they are" (p. 63). Interestingly, the teachers in this study demonstrate a strong awareness of contextual knowledge (e.g., students and tests) and the ability to adjust their pedagogical decisions within that parameter. Contrary to the previous research (e.g., Li, 2020b), little flexibility has been observed in this study when teachers make decisions in their practice. Nevertheless, this does not mean they always rigidly follow the plan or are less confident in improving. As shown in extracts, teachers make interactive decisions *in situ*, and their knowledge and understanding thus are fluid and context-bound. Further, as Li (2017) suggests, a lack of flexibility exists in many areas of novice teachers' considerations, such as lesson plans, the choice and usage of materials (textbooks), the teaching content, and assessment methods. This is because newly qualified teachers are still in the 'launching phase' and lack experience (Gatbonton, 2008).

As the study reveals, there is value in examining teacher cognition from a different theoretical perspective. Compared with the reported data (e.g., questionnaires, interviews, and metaphors), the merit of a discursive psychological approach lies in its emic perspective of participants' understanding of teaching and learning. Although studying teachers' broad life stories and contexts provides valuable insights into their attitudes toward teaching and learning, it is almost impossible and unrealistic to encompass every aspect of a teacher's life in the research through interviews or other research methods, and thus the description might be biased or segmental. Clearly, there is an important relationship between social interaction and teacher cognition, which needs to be understood by both researchers and teachers to maximise opportunities for enhancing effective pedagogy and creating learning opportunities. As we understand it, teachers are active decision-makers in teaching activities and need to make appropriate adjustments according to their micro-contexts (e.g., interaction with the students). From a teacher's perspective, a focus on cognition-in-interaction through the use of CA, provides opportunities for reflection and professional development, culminating in changes to practice. In sum, from a discursive psychological perspective, teacher cognition displays itself in talk as a fluid and constantly changing phenomenon. As a consequence of this observation, the focus of studying teacher cognition is not to compare what teachers do and say; instead, to examine cognition-in-interaction and the display of understanding in talk. Teachers can improve their pedagogy and classroom practice by closely examining the nature of learning and teaching, the effectiveness of pedagogy and interactive decisions, the role of the students and teacher, and the feedback.

Conclusion

This paper has sought to explore novice EFL teachers' cognition from a discursive psychological perspective. As we can see from the findings, novice teacher cognition is very complex, and this study reveals three prevailing themes. Teachers focus on linguistic knowledge, establishing authority, and developing practical pedagogical knowledge within a given context. The multidimensional teacher cognition discussed earlier suggests a close

relationship exists between teacher knowledge, linguistic competence, pedagogical knowledge, context, and identity. The findings have significant implications for teacher learning.

For novice teachers, teaching is a process of searching for appropriate pedagogical knowledge and developing expertise through constructing and deconstructing their understanding of pedagogy, the teaching environment, and who they are. It is, therefore, vital to recognise the significance of the social, cultural, and educational context in which teachers practice, especially the immediate context, such as their classroom and interactions with students and fellow teachers. As evidenced in previous research, teachers who receive the same education might develop different beliefs and practice because beliefs are context-shaped (e.g., Li, 2012; Ruohotie-Lyhty, 2013). Therefore, professional development programmes must address context-specific issues and develop teachers' knowledge and skills in their contexts. Peer dialogue and classroom practice-based reflections, and group discussion could be effective. In this way, teachers can observe their practice and engage in collaborative reflection to gain access to the underlying principles of their practice for further improvement. In addition, teacher education should not only focus on enhancing content and pedagogical knowledge for trainee teachers but also empower the teachers to take charge of their learning and engage in 'deliberate reflection' in and on practice (Li, 2020a). As such, teachers have the skills and confidence to discover their strengths and weaknesses and appropriately engage in innovative practice in contexts. When critically engaging in reflection, they also develop an in-depth understanding of the self in the change process. There are at least two issues for teacher education programmes to consider; first, teacher education programmes need to revisit the curriculum to ensure contextual knowledge is a significant element. Then, for teachers, the reflective practice needs to be integrated into teacher learning activities, which can be one of the enablers for lifelong learning. For example, guiding teachers to analyse their recorded teaching practice allows them to access their unconscious understandings and beliefs about pedagogy, whereas building awareness of engaging in deliberate reflection helps teachers develop themselves as reflective practitioners. In addition, teachers develop personal practical knowledge through constructing and reconstructing their stories and the process of reflection (Clandinin & Connelly, 1987). For in-service novice teachers, a helpful way forward may be to encourage them to engage in action research and collaborative dialogue (Li, 2017), where they can take personal and collective responsibility and ownership of developing knowledge of professional value. It is also suggested that we should aim for a set of manageable and meaningful types of knowledge (Kumaravadivelu, 2012), namely professional knowledge (about language, language learning, and language teaching), procedural knowledge (classroom management), and personal knowledge (personal endeavour). With guided support, teachers can focus on the areas to develop and improve.

Considering what is identified in interactional work, I argue that the complexity of teacher cognition needs to be studied in a social activity in their professional context, particularly from a discursive perspective which makes teachers' knowing, understanding, believing, and stance-taking visible to the reader. In this sense, more research is required to build in-depth knowledge of teacher cognition-in-interaction. There are mainly two areas that future research can be focused on. First, more research is desired to focus on teachers from various social and cultural contexts. As argued earlier, social and cultural contexts significantly shape teachers' cognitions and behaviours, but how do they change teachers' practice and shift their understanding, knowledge, and beliefs? In what aspects do teachers from different social backgrounds differ? What are the most valuable methods to identify the growth points for teachers from different

social and educational backgrounds? Answers to these questions will further inform the design of the teacher development and education programmes and improve teacher learning. Second, more interactional analysis is desired in unpacking teacher cognition. The interactional work observed in this paper suggests that more micro-level analysis could help effectively gain insights into teachers' publicly displayed understanding, knowing, and believing and how teaching as a dynamic social activity is designed and interpreted by the teachers. In addition, the interactions can further shed light on teachers' being, doing, and positioning and how their professional identities interact with their professional knowledge and theories. To conclude, the present study cast some light on teacher cognition-in-interaction through applied conversation analysis. The implications discussed above suggest that researching social interaction is a valid method to gain an insider perspective of teacher cognition.

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Appendix: 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.
- so::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.
- ? A question mark indicates a rising intonation.
- ! Exclamation marks are used to indicate an animated or emphatic tone.
- ↑↓ 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.
- Under Underlines indicate speaker emphasis on the underlined portion of the word.
- CAPS Capital letters indicate that the speaker spoke the capitalized portion of the utterance at a higher volume than the speaker's normal volume.
- °would° This indicates an utterance that is much softer than the normal speech of the speaker. This symbol will appear at the beginning and at the end of the utterance in question.
- £C'mon£ Sterling signs are used to indicate a smiley or jokey voice.

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