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A Philosophical Problematisation of Research on EFL/ESL Teachers' Cognition vs. Action: A Critical Interpretive Synthesis

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Abstract

Teacher cognition, as a chief area within teacher education, is concerned with what teachers think, know, and do (Borg, 2003). One of the knotty strands emerging out of the past 50 or so years of research on teacher cognition is the misalignment between teachers' cognition and practice. This study adopted a critical interpretative synthesis framework to identify factors generating such incongruence by dissecting 12 studies reporting on teachers' cognition vis-à-vis their practice. The emerging themes were translated into each other and synthesised to form two lines of argument. The first one describes sources of teachers' cognition and practice as *ontological, epistemological, and contextual*. Teachers' apprenticeship of observation was found to exert the highest influence on fashioning their cognition and practice by sifting professional learning experiences and granting admission to only those commensurate with personal learning experiences. The second line of argument propounds that *connate, personal, and contextual* factors breed (mis)alignment into teachers' cognition and practice. Furthermore, Cartesian dualism (Descartes, 1596-1650) and Heideggerian hermeneutic phenomenology (Heidegger, 1889-1976) were utilised to critically de- and re-territorialise the developed lines of argument. This interpretive conceptualisation of teacher cognition is rooted in but patently transcends the original studies in that it invites a fresh demarcation of the territory intensely occupied by contextual factors to allow teachers to practice 'cogito, ergo I teach'. Finally, some suggestions are offered for the relevance of the results to teacher cognition research and teacher education and policy.

Keywords: Teacher cognition; Teacher education; Interpretive synthesis; Philosophy of education; Cartesian dualism; Phenomenology

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INTRODUCTION

Beliefs can be traced back to discrepant sources including, but not limited to, environment, knowledge, and past experiences. Teachers also hold beliefs drawn from various sources. In their potpourri of miscellaneous observations and reflections, there is no paucity of elements intrinsically incompatible with each other. For instance, Northcote (2009) found that teachers "held opposing, competing or conflicting educational beliefs about the same issue at the same time" (p. 74). Within the field of teacher education, teacher cognition (TC) is principally focused on exploring teachers' beliefs and accounting for points where those beliefs converge with or diverge from classroom practice. TC can be generally defined as "tacit, often unconsciously held assumptions about students, classrooms, and the academic material to be taught" (Kagan, 1992, p. 65). As noted by Borg (2019), the term TC has been defined inclusively as teachers' *personal theories* (James, 2001), teachers' *inner selves* (Kubanyiova & Feryok 2015), and teachers' *beliefs* (Barrot, 2016). As mirrors to teachers' philosophies of teaching (Verloop et al., 2001), teachers' beliefs have been shown to influence their instructional decisions (Farrell & Lim, 2005; Li & Walsh, 2011; Burns et al., 2015) and thus have been considered as "an indicator of their teaching practices" (Christou et al., 2022). In this article, cognition(s) and belief(s) are used interchangeably.

TC is a fast-growing field of inquiry that has received more attention in recent decades (Mirzaei Shojakhanlou & Saeedian, 2023; Vogt et al., 2020), evidenced by the proliferation of journal articles, dedicated books (Borg, 2006; Li, 2017, 2019; Phipps, 2010), and a few special issues (Language Learning Journal, 2013; Modern Language Journal, 2015). Fang (1996) associated the great enthusiasm for delving into teachers' minds with the advances in cognitive psychology and the increased popularity of ethnographic methodology. Borg, in his interview with Birello (2012), specified that this heightened passion for unpacking teachers' cognition signified a shift in the pendulum of research on learning and teaching from behaviouristic to cognitive approaches. During the 1970s, the dominant

teaching approaches, which reflected a transmissive view of teaching (Kiely & Davis, 2010), focused on the relationship between certain effective teacher behaviours and corresponding learning outcomes (Freeman, 2002). The complexities of the real classroom, therefore, were overlooked in an empirical quest for predictable behaviours through behavioural observations and causal explanations (Yinger, 1986), a troubling situation that Fenstermacher (1994) characterised as a methodological isomorphism between natural and social sciences.

Later, an epistemological change was brought about by cognitive approaches. This epistemological change was submitted to TE by Walberg's (1977) introduction of the term "teachers' mental lives" and marked by a shift "from a unidirectional emphasis on correlates of observable teacher behaviour with student achievement to a focus on teachers' thinking, beliefs, and decision-making processes" (Fang, 1996, p. 47). Henceforth, researchers began to consider teachers' cognitions as personalised, fluid, and sensitive to the contexts in which teaching occurred (Shavelson & Stern, 1981; Shulman & Shulman, 2009). The reason for this change of focus was a growing body of research documenting that the means offered to teachers during TE in the form of toolkits were not followed loosely, let alone closely, by them in the classroom (Graus & Coppen, 2018). The notion of teachers' mental lives has since become a highly influential and frequently researched phenomenon (Borg, 2009; Burns et al., 2015; Couper, 2017). In brief, studies of TC suggest that beliefs, both explicit and implicit, serve to filter information, frame problems, and guide practice.

Statement of the Problem

The results of research on TC fit into one of the following four scenarios, in which:

1. Beliefs correspond with actions (Farrell & Yang, 2019; Van Ha et al., 2021);
2. Beliefs do not reflect actions and vice versa (Oranje & Smith, 2018);

3. Similar beliefs end in dissimilar actions (Moradkhani & Goodarzi, 2020; Yu et al., 2020);
4. Dissimilar beliefs end in similar actions (Ding et al., 2019).

These four scenarios, captured in the form of a SCOBA developed by authors in Figure 1, open a Pandora's Box. To flesh out, the literature suggests that teachers' stated beliefs may not always act as a reliable predictor of their classroom practices (Basturkmen et al., 2004), hence the discrepancy between teachers' beliefs and practices. Studies to unpack these discrepancies, including those of Phipps and Borg (2009) and Buehl and Beck (2015), have, by and large, failed to adequately explain methodically why such discrepancies exist. Philosophically speaking, the whatness (descriptive) aspect of teachers' cognition and practice (TCP) has been communicated at length, but its "whyness" (interpretive), i.e. why beliefs are not translated into corresponding actions, has been largely glassed over, with few exceptions far and wide (Li, 2019; Packer & Winne, 1995). This study, utilising a philosophical, interpretative approach, aimed to delve into the whyness aspect of the research on TC by exploring the possible reasons driving matches (scenario 1, Figure 1) and mismatches (scenarios 2, 3, and 4) between TCP. The absence of such interpretive investigations has rendered a shallow understanding of TC.

Furthermore, TC research has failed to pay due attention to some important questions raised by Joram and Gabriele (1998) more than two decades ago. One of the least heeded questions is the following: If teachers' cognition is moulded by the context of their teaching, what, then, is the significance of TE? Echoing a similar concern, Kubanyiova and Feryok (2015) asked if teachers' beliefs established before TE remained, more or less, unchanged following TE, what the relevance of TE could be. This study sought to confront these questions and offer answers matching their complexity.

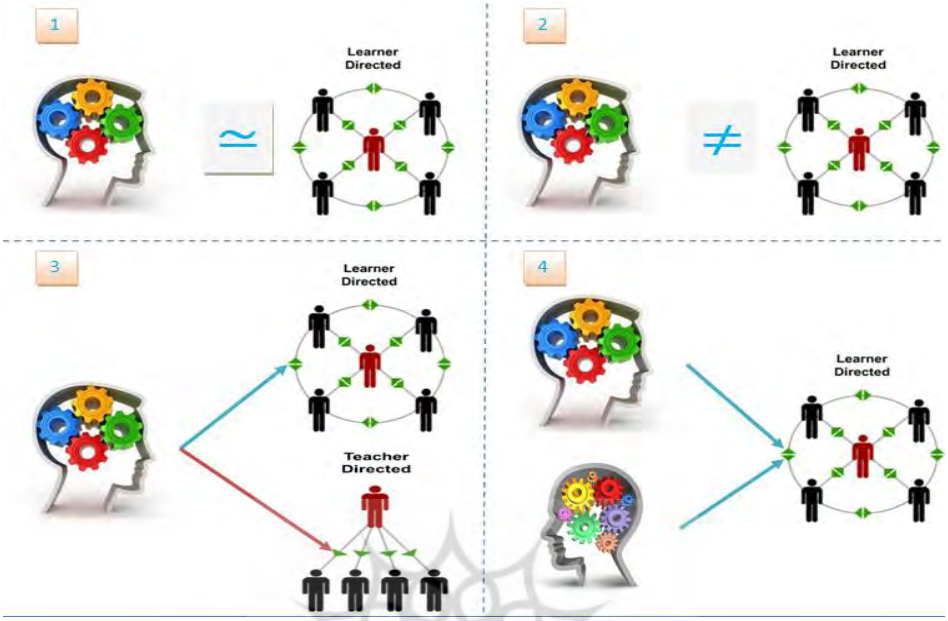

Figure 1: Authors-developed SCOBA of teachers' cognition vis-à-vis practices

Note. This figure comprehends four scenarios. Scenarios number 1 and 2 show that the teacher's cognition aligns and misaligns with his/her practice, respectively. In scenario number 3, two teachers who have similar beliefs act differently in their classrooms. One practices what he/she espoused (i.e., learner-centred teaching) while the other follows a teacher-centred approach contrary to his/her beliefs. Finally, scenario 4 reflects a situation in which two teachers with dissimilar beliefs, say, learner- and teacher-centred beliefs, act similarly in the classroom.

Significance of the Study

The following points reflect the significance of the present study. First, assessing teachers' beliefs can complement observational studies of their practices. The present interpretive synthesis allowed the authors to identify potential pillars underlying both teachers' beliefs and practices. This, in turn, can extend the scope of research on TC from a mere description (whatness) of teachers' beliefs to an explanation of factors shaping those beliefs (whyness). Furthermore, this study aimed to provide a deeper understanding of teachers' beliefs that could be used to promote fit-for-the-purpose TE programmes and ongoing teacher professional development. Thirdly, TC has

been at the centre of TE, which has been crucially influenced by various theories and paradigms principally developed outside the realm of teaching (Li, 2019). This study was an attempt, barely tried before, to bring to the fore two philosophical frameworks and elucidate their potential significance to teaching and TC, which will have theoretical and practical implications for TE.

Theoretical Frameworks

Lincoln and Guba (1985) described ontological, epistemological, and methodological questions essential to conducting research. There is no gainsaying of the seminal role philosophy has played in framing our understanding of education and the issues related to it. Attempts by Dewey (1859-1952) in the US and Peters (1919-2011) in the UK to examine education from a philosophical perspective had substantive effects on their contemporaries' and future generations' understanding of education. As long as TE has existed, there have been debates about what teachers need to know and what teacher education can do to help them acquire such knowledge. Central issues in such debates rest on conceptions of human cognition, including what knowledge is and how it is acquired. However, human cognition is not a focus of the academic disciplines usually associated with TE. Thus, research on TE, in general, and TG, in particular, generally do not include debates on the nature of human cognition. Another point that inspired authors to resort to philosophy was that they did not subscribe to the idea that empirical methods were sufficient to provide a comprehensive description and explanation of issues related to TG. This monopoly of quantitative and qualitative methods on research methodology, as Leś (2020) explicates, stems from "the mistaken assumption that all educational issues and topics are related to the practical and empirical sphere, where theory has little or no impact" (p. 141). Accordingly, it can be suggested that while quantitative and qualitative methodologies, alone or mixed, touch the tip of the iceberg, philosophical explorations reveal the underlying tenets governing a field of

enquiry. This critical interpretive study aimed to, first, expatiate on how cognition is interpreted in two of the most influential modern philosophical frameworks, which consider the relationship between human beings' mind and their context in completely different ways, and, secondly, utilise them to interpret the synthetic findings of research on language TE. These two frameworks are briefly described below.

Based on the "Cartesian perspective" (Descartes, 1596-1650), reflected in the cognitive philosophy of mind, humans are the subject and everything else in the world is the object (mind-body dualism). To contextualise it with regard to TC, teachers, via their subjective power of cognition, can redefine their context and make instructional decisions through conceptualisations or interpretations of their lived environment, which include learners, teaching materials, curriculum, and educational policies (Lim, 2016). Teachers' interpretations of the classroom and learners directly affect "what classroom activities are chosen and how they are carried out" (Woods, 1996, p. 21). In a nutshell, in a Cartesian framework, as Winne (in Packer & Winne, 1995) argued passionately and persuasively in his tête-à-tête with Packer (1995), teachers are deemed, in Lim's (2016) words, "active agents of their own practices" (p. 3). In "Heideggerian hermeneutic phenomenology" (Heidegger, 1889-1976), however, humans are part of the phenomenon (Dasein, being-in-the-world) and it is misleading to assume that they can stand outside the phenomenon and decide what to do with it. Based on this situated meaning of humans in the world, teachers are part of the context and so are their cognitions. A reasonable corollary to this observation is that teachers' cognitions are constructed by the context (situated cognition) and that their beliefs cannot change the outside reality, including the constraints imposed by the context. This Heideggerian framework shifts the emphasis from TC to the broader setting in which TC is located. Based on this perspective, any analysis of the interrelationships between TCP should be made with reference to the context in which teaching takes place, accordingly. This ontological and epistemological confrontation is illustrated

in Figure 2. We intended to employ philosophy to re-establish the relevance of factors proposed to affect TCP.

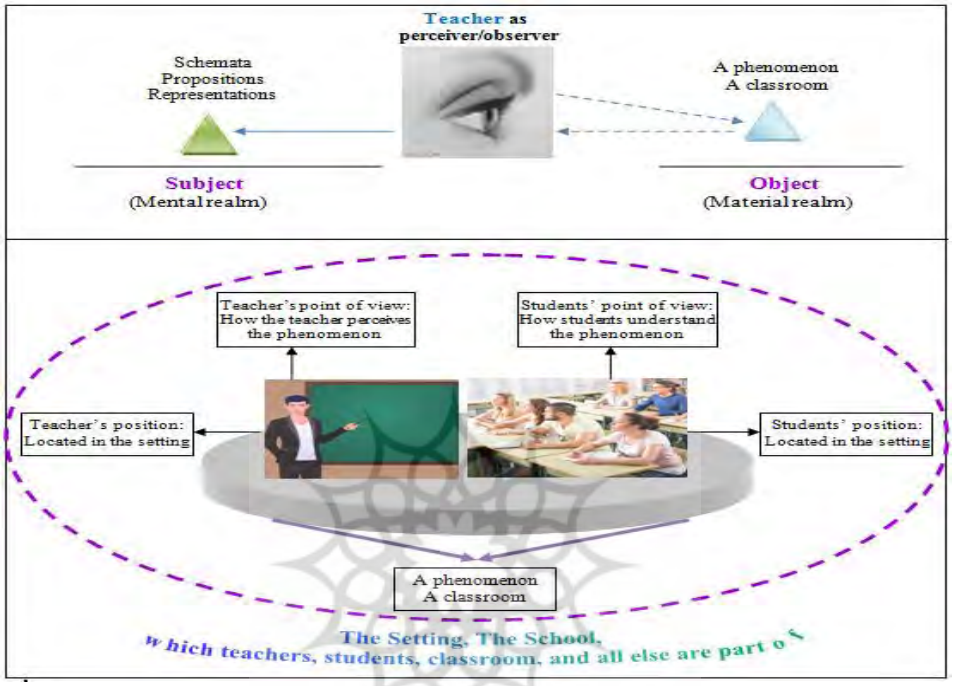

Figure 2: Representations of TC based on Descartes' (the upper) and Heidegger's (the lower) philosophical frameworks

PURPOSE OF THE STUDY

This interpretive synthesis aimed to explore the interplay between teachers' beliefs and their observed practices. To this end, the potential pillars underlying teachers' beliefs and practices were identified by synthesising the findings of 12 studies reporting on the discrepancies between teachers' cognition vs. practice. In so doing, we pursued two objectives. Initially, factors moulding teachers' cognition and practice were identified by delving deep into the primary studies included in the sample. Equally important as what factors shape teachers' beliefs and practices is what factors cause them

to converge or diverge. To address this question, factors that helped or hindered teachers' attempts to enact their espoused beliefs were determined from the data. Afterwards, an attempt was made to employ the results of these two phases of synthesis to develop two *lines of argument* (frameworks). Finally, these frameworks were interpreted using two philosophical frameworks. The following research questions set the boundaries of this research:

1. What does an interpretive synthesis reveal about the factors feeding TCP?
2. What does an interpretive synthesis reveal about the factors causing TCP to align or misalign?
3. How can the synthetic results of this study of TC be interpreted based on Cartesian dualism and Heideggerian hermeneutic phenomenology?

LITERATURE REVIEW

The following review of literature is chiefly chronological in nature to allow readers to follow the developments in the field of TC. Where necessary, the findings are compared and contrasted to highlight areas of similarity and difference. Given that the rise of TC to prominence in English language teaching began in the mid-1990s (Borg, 2019), the authors thought it would be appropriate to review the literature from the same period to date. Manning and Payne (1993), taking heed of Floden and Klinzing's (1990) concern regarding the lack of a theoretical basis in TC research, employed Vygotsky's theory and observed that the life history of pre-service teachers was a crucial predictor of what in-service teachers they would be in the future. In the same year, however, Posner (1993) reported on a program's futile attempt to help pre-service teachers become critical and reflective practitioners. Later, Dunkin et al. (1994) investigated the effects of formal teacher education on 20 student teachers' cognition. Their findings, in conflict with those of Posner (1993), bespoke of a significant effect of formal education on participants' cognition about teaching. They, nevertheless, admitted that part of the teachers' informal education, rooted in their experiences at school, was not

easily replaceable, which somehow resonates with the findings of Manning and Payne (1993). This mixed impact of formal and informal learning experiences on teachers' cognition had concisely been described before by Clark et al. (1985), who reported that "teachers rely as heavily on their own ideas in crafting their teaching practices as on their formal training" (p. 52). In addition, they found that more experienced teachers showed a tendency to shift from 'self-focussed' types of pedagogical knowledge to more professional types of knowledge.

In the light of the evidence evidently not accessible to Clark et al. (1985) nearly four decades ago, we can confidently assume that years of experience and the influence it exerts on teachers' cognition and/or practice is more complicated than how they regarded it. To begin with, it is not always a matter of experiential vs. professional knowledge that distinguishes less experienced teachers from their more experienced counterparts. For example, Tsunemoto et al.'s (2023) study on EFL teachers' beliefs about pronunciation, as one of the key sub-skills, and its assessment afforded new insights on this issue. In their study, less experienced teachers, compared to their more experienced colleagues, were more lenient on rating students' accentedness since they valued comprehensibility more than a native-like accent. Although this finding lends further evidence to the assumption that teaching experience shapes teachers' beliefs and practices, it makes a different distinction between less and more experienced teachers in the following sense. Teachers with more years of experience seemed to prioritise communication over native-like features of pronunciation, which represent traditional vs. more recent approaches to pronunciation, respectively. The byzantine complexity characterising this variable (i.e., years of experience) and its role in TG manifests itself more distinctly when we consider counter-evidence emerging sporadically to suggest that teaching experience plays a limited to no role in triggering any differences between more or less experienced teachers regarding the same topic of investigation (Mahalingappa et al., 2021). The results of the above studies tended to either associate more or less years of experience with certain teaching beliefs and practices or rebuff any

relationship between the two. As if this was not already convoluted enough, Wang et al. (2020), among others, contended based on their experimental data that more years of teaching precipitated a wider gulf between teachers' espoused and enacted beliefs. Yu et al. (2020) reported diametrically opposed findings, according to which novice teachers were found to readily depart from their espoused beliefs and enact unsolicited beliefs whereas experienced teachers rarely did so. Later in the 'Discussion' section, we propose an explanation aimed to partially account for the stubborn contradiction that surrounds this variable in TC research.

Teachers' personal learning experiences accrued as learners have continued to surface TC research even when different theoretical or methodological approaches have been adopted. Using a micro-ethnographic approach and in accordance with the tenets of the constructivist notion of knowledge, Powell (2000) studied the situative cognition of pre-service teachers. His results indicated that teachers' homogeneous thinking systems curtailed their power to react critically to the cases presented to them. Their knowledge appeared to have been fashioned by their experiences at schools. That is, their constructed knowledge was that of situated knowledge grounded in and acquired from contexts in which first-hand experiences were embedded. Another particularly noteworthy point that he made was that situative cognition was, more often than not, impervious to change over an entire lifetime of practice.

In line with the emergent topics and challenges in language teaching, research on language TG matured and some researchers started to focus on topics beyond the main language skills (e.g., writing) and sub-skills (grammar). Two of these topics that have played a crucial role in EFL/ESL language teaching and learning are culture and technology. Oranje and Smith (2018), for instance, aimed to examine the interplay between language teachers' cognitions and intercultural language teaching. Their findings revealed an apparent mismatch between New Zealand teacher participants' beliefs and practices. Their beliefs generally aligned with intercultural language teaching, but their practices lagged behind, with traditional

approaches being predominant. Changes in beliefs, it can be concluded, are not necessarily or immediately followed by changes in practice. Apropos of technology, Ding et al. (2019) explored whether EFL school teachers' beliefs matched their classroom practices. They found participants' beliefs generally corresponded with their practices despite the fact that they held different beliefs (e.g., skill-based, rule-based, or function-based) about language learning and teaching. Most importantly, their findings showed that teachers utilised similar technology tools (e.g., PowerPoint) to implement different teaching practices that were consistent with their beliefs. Although teachers' instruction reflected technology integration, it was not exactly the kind of integration that teacher educators intended to promote. The solution, they suggested, is to examine teachers' content-specific beliefs to foster a genuine interest in the use of technology in them.

Only three ISI-indexed studies on language TC were found to have an international scope. Of these three studies, two were conducted with the aim of comparing EFL Chinese vs. American teachers' cognition and practice. Clark-Gareca and Gui (2018) sought to explore the beliefs of Chinese and American English teachers (n = 124) on effective teaching practices. Although the two groups of teachers shared many similar beliefs, they mainly differed on the teaching approaches they felt most attached to. The Chinese preferred the grammar translation method whereas the Americans supported communicative approaches. Mahalingappa et al. (2021) also studied EFL Chinese vs. American teachers' cognition but focused on oral corrective feedback (OCF). Their quantitative data gained from 331 teachers revealed that socio-cultural factors were chiefly responsible for areas where teachers differed in their practices despite the fact that they held similar views on the importance of OCF. Chinese teachers' preference for explicit correction, for example, was attributed to large class sizes and Confucian philosophy, which, according to authors, had led students to value direct correction more. This role of culture in fashioning students' expectations, which, in turn, may trigger incongruity between teachers' cognition and action, is echoed by Nassaji et al. (2023), who sought to investigate what EFL teachers working

in a language institute thought about OCF and what types of OCF they employed in their classrooms. Numerous instances of incongruity were observed between teachers' stated beliefs and their actual practice concerning the type and frequency of corrective feedback. When confronted with the mismatches, teachers defended their practices by reasoning that their use of recast, as an implicit type of OCF, was based on the fact that students favoured it more since it could possibly save their faces. Furthermore, teachers in Nassaji et al.'s (2023) study blamed the lack of formal education on OCF for their limited use of it in their classes.

Although the above two international studies (Clark-Gareca & Gui, 2018; Mahalingappa et al., 2021) were similar in targeting teachers from the same countries (i.e., China and the US), they differed in at least one important point. The findings of Clark-Gareca and Gui's (2018) study can be judged to be more trustworthy than those reported by Mahalingappa et al. (2021). Although the latter had a fairly larger sample size (331 vs. 124), it elicited teachers' beliefs only through surveys. Clark-Gareca and Gui (2018), on the other hand, collected data through a questionnaire and one-to-one interviews. Hence, their findings can be claimed to be more dependable because interviews can throw light on aspects of beliefs that may be concealed from notice when expressed via questionnaires (Borg, 2006). Both studies, however, shared the same drawback: They did not observe teachers' practices in their classrooms to be able to form more informed judgments about teachers' practices and their relationship to their beliefs. Notwithstanding the foregoing, it should be borne in mind that it is not always easy to conduct classroom observations when dealing with a large sample size. For large-scale studies on language TG with more than 100 participants, we tentatively suggest that classroom observations of, say, at least one-twentieth of participants selected randomly can possibly and modestly address this downside.

The third study with an international scope belonged to Shi et al. (2014), who focused on teaching approaches. In their large-scale study, they collected data from 832 teachers from two European (Hungary and Norway) and two

Asian (Korea and Turkey) countries. Their data revealed that there "were no relationship patterns between new teacher beliefs and their instructional practices across the four countries" (p. 334). They suggested that beliefs did not reflect the changes that, due to the implementation of national educational reforms, were taking place in teachers' practices, resulting in considerable inconsistency between teachers' cognition and instruction. Compared to Clark-Gareca and Gui's (2018) and Mahalingappa et al.'s (2021) studies, Shi et al.'s (2014) study enjoyed a markedly larger and more diverse sample, hence making its results the most trustworthy among the three. In addition, it was the only one that specifically reported on whether teachers' stated beliefs matched or mismatched their espoused practices. Nonetheless, it suffered from the same demerit the other two did: Teachers' practices were inferred based on their beliefs without any observations of their teaching. Unsurprisingly, all three studies highlighted the point that teachers' beliefs and, particularly, their practices were shaped by context and culture. Future cross-cultural studies of this nature, i.e., international in scope, are advised to be more diverse with regard to their data collection tools.

Similar to Shi et al. (2014), Wesely et al. (2021) focused on school language teachers' beliefs and practices about teaching approaches. They noticed that the immediate context of teaching (e.g., district curriculum) and students' needs highly influenced the relationship between teachers' cognition and instruction. They identified this situation as a post-method condition, in which context-driven factors fashion teachers' pedagogical thoughts and decisions. As a result, they, contrary to Shi et al. (2014), seemed to glass over discrepancies between teachers' cognition and practice as one of the by-products of a post-method condition. To them, such instances of inconsistency do not necessarily reflect a problem to be dealt with; rather, they are indicative of a dynamic decision-making process teachers follow to be responsive to the evolving needs of their students and institutions.

In a measured attempt to bring emotions into the equation of research on language TC, Cheung and Hennebry-Leung (2023) adopted Zembylas' (2002) three-level framework of teacher emotions to explore one ESL

teacher's beliefs and practices about teaching literary texts. They baulked at the idea of describing the relationship between the teacher's cognition and instruction as consistent or inconsistent. Instead, they underlined the importance of teachers' emotions (namely, intrapersonal, interpersonal, and intergroup) as a mediating factor that, according to them, had to be considered beyond contextual factors. Their promising study can be challenged on two points. First, their findings are hardly generalisable as their sample was limited to one teacher. Secondly, though their study drew attention to the role of emotions in TC research, it failed to adequately flesh out how different types of emotions may affect teachers' decision-making in the classroom.

To date, few studies have embarked on the task of weaving the various strands of evidence on language TC research together. One of the most cited review studies on TC is that of Borg (2003). His exhaustive review used a framework of TC developed by him as a point of reference to examine 67 studies published from 1976 to 2002. The significance of this review lies in its analytical discussion of findings and its insightful conclusions, which opened new avenues for future research. However, Borg (2003) offers scant information on the stages of data collection and exclusion criteria. This might somehow reduce the dependability of his findings and conclusions. Furthermore, myriads of studies have been conducted since 2003 with a substantive amount of evidence that complement and contradict each other. This messy body of data highlights the need for more review studies that identify major trends in EFL/ESL TC and develop new frameworks to guide future studies. Öztürk and Gürbüz's (2017) data-driven model, called "clusters of language teacher cognition" and developed through grounded theory, partially fulfilled the above gap. Its demerit, nevertheless, is that it was born out of fairly limited data obtained from only three Turkish EFL teachers. Their model, as a result, can hardly be transferable to other contexts with different education systems compared to Turkey. Secondly, factors causing teachers to adopt practices at variance with their beliefs were discussed in passing in Öztürk and Gürbüz's (2017) study. The present

interpretive study sought to synthesise findings and occupy the niches left in the above-mentioned studies of language TC.

METHOD

Research Design

This study adopted Dixon-Woods et al.'s (2006) seven-phase critical interpretive synthesis (CIS) as its research design (Figure 3). CIS is the refined version of meta-ethnography, originally developed by educational researchers Noblit and Hare (1988). In this study, CIS was utilised to construct a critical explanation of data transcending its aggregation. It is a useful approach to exploring complex education phenomena surrounded by competing discourses (Beach et al., 2014). TC research is replete with discrete evidence from different contexts with various underlying methodological assumptions. Thus, CIS was employed to move the research from single sites and local situations, de-parochialise research by cross-cutting dichotomies (Marcus, 1995), and mould a composite whole grounded in primary studies on TC. Finally, CIS is fit for purpose when "researchers are interested in conceptual or theoretical understandings of a particular phenomenon" (Sattar et al., 2021, p. 3). Evidently, this study aimed to undertake conceptual scrutiny of teaching and TC.

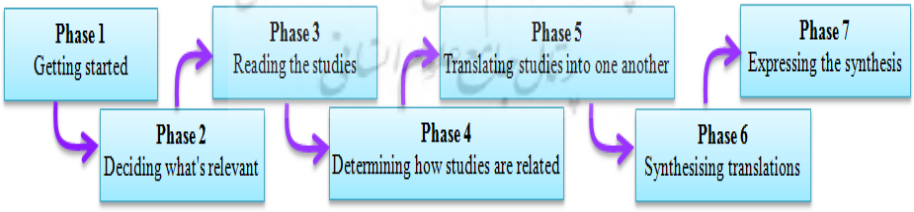

Figure 3: The seven phases of Noblit and Hare's meta-ethnography approach

Data Collection

Four electronic databases, including ERIC, Scopus, JSTOR, and ScienceDirect, were trawled using the following search terms: *teacher(s) cognition(s)* and *teacher(s) belief(s)*. This initial search yielded nearly 3750 returns. The two primary criteria for inclusion were publication in peer-reviewed journals and subject area (i.e., English teachers), respectively. Almost one-fourth of the initial pool of articles (N = 957) met these two criteria. The third and fourth inclusion criteria were publication date (1990-2021) and relevance, respectively. The abstracts of all 957 studies were pored over, and 844 articles were excluded. Finally, the remaining articles were deduped and seven articles were excluded, leaving 106 articles. The specified time period 1990-2021 was selected because TC studies started to surface the field of language teaching in the 1990s (Ellis, 2006, 2009). Also, following Borg's (2006) argument, those studies that did not include classroom observations were excluded.

In the next stage, all 106 articles were retrieved in full and perused. Case studies with only one participant were excluded as they did not offer enough room for third-level interpretation. In addition, those studies that used text- or animated-based vignettes or situation simulations were excluded because they could not replace classroom observations as teachers may behave differently when facing the same situation in the classroom. The consideration of these two exclusion criteria rendered 24 studies eligible for selection. This relatively strict sampling is warranted as the focus in CIS is on developing concepts and generating a theory rather than fashioning an exhaustive summary (Dixon-Woods et al., 2006).

Study Selection

Attending to the recommendations made in the literature concerning the optimal number of studies for conducting a meta-synthesis (Bondas & Hall, 2007), 12 of the 24 studies were selected using a proportional stratified sampling. For this purpose, the 24 articles were chronologically ordered and

divided into four strata (Table 2). Afterwards, the number of articles to be selected from each stratum was decided proportionately based on the total number of articles in that stratum. Finally, the weighted citation index (CI = Number of citations in Google Scholar / (2022 - year of publication) was calculated for each article to select 12 studies (Table 2).

Table 1: The distribution of selected studies by stratum and year of publication

No.	**Strata**	**Year** (number of articles)			**Total**	**Included**
1	2019-2021	2019 (3)	2020 (4)	2021 (5)	12	6 articles
2	2016-2018	2016 (1)	2017 (2)	2018 (1)	4	2 articles
3	2013-2015	2013 (2)	2014 (2)	2015 (2)	6	3 articles
4	1996-1999	1996 (1)	1999 (1)		2	1 article
	1996-2021				24	12 articles

The selected studies were conducted in settings as diverse as Canada (2), China (2), Iran (2), Turkey, Malaysia, North America, Norway, Malta, and New Zealand. The above-detailed process was followed to minimise bias during the study selection, thus improving the reliability of the findings. All included studies were appraised for trustworthiness and relevance using the JBI critical appraisal checklist for qualitative research. A protocol proposed by Munn et al. (2014) was used to calculate a separate dependability score for all of the 12 studies (see Appendix A). The protocol included ‘high’, ‘moderate’, ‘low’, and ‘very low’ scores. The majority of studies (n = 7) gained a moderate score, with only one study receiving a very low score. The search strategy and the results are presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) diagram (Figure 4).

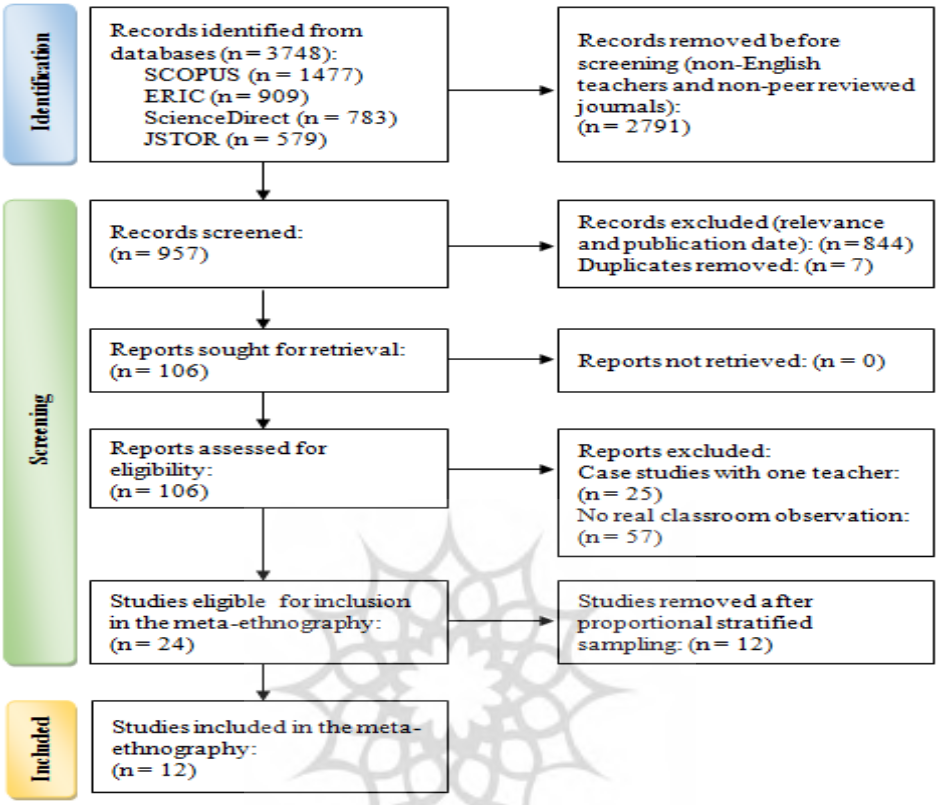

Figure 4: Study screening and selection PRISMA diagram

Data Analysis Procedures

The selected studies were read by the first author to identify the metaphors (i.e. themes or concepts) using Braun and Clarke's (2006) thematic analysis. The notions of first-, second- and third-order interpretations, proposed initially by Schutz (1971), were utilised to guide the analysis process. These three hierarchical types of interpretation refer to the analysis of participants' comments, the analysis of these comments by the authors of primary studies, and the analysis of these analyses by the critical interpreters, respectively.

In the next phase of data analysis, we moved from intra-study to inter-study analysis. Noblit and Hare's (1988) interpretive approach was used to

analyse metaphors across studies. The second author read 10% of the data, and the inter-coder agreement was 97%. Synthesising translations (Phase 6; Figure 3) consists of three possibilities: a) *reciprocal translation*, concepts in one study are translated into another through comparison; b) *refutational translation*, conflicting accounts arising from the primary studies are spotlighted and expounded; c) *line of argument*, a compendious interpretation is formulated to develop a theory or model grounded in the primary studies.

RESULTS

Table 1 captures some details of the included studies. Pronunciation (three studies) and grammar (three studies) were the most investigated topics. Three studies examined paralinguistic topics, and the remaining three dealt with writing, listening, and speaking. All studies employed semi-structured interviews, except two, to elicit teachers' beliefs and class observation to monitor teachers' practices.

Table 2: Features of the primary studies included in the CIS

Author	Focus	Setting	Data collection	Data analysis
Mao & Crosthwaite (2019)	Writing	Chinese schools	Questionnaire Semi-instructed interview Text correction	Thematic analysis
Kartchava et al. (2020)	Speaking	Canadian universities	Questionnaire Hypothetical scenarios Class observation	Factor analysis Two-way ANOVA
Couper (2019)	Pronunciation	New Zealand language institutes	Semi-instructed interview Class observation Post-observation interview	Inductive analysis
Lorenz et al. (2021)	Linguistic and cultural diversity	Norway primary schools	Semi-instructed interview Class observation	Content analysis (NVivo)
Ma & Luo (2021)	Critical thinking	Chinese universities	Semi-instructed interview Class observation	Thematic analysis

Nazari (2020)	Listening	Iranian language institutes	Interview Class observation	Content analysis
Baker & Burri (2016)	Pronunciation	The US	Semi-structured interview Class observation Stimulated recall interview	Coding
Shah et al. (2017)	Pronunciation	Malaysian schools	Semi-instructed interview Class observation	Coding
Farrell & Bennis (2013)	Grammar	Canada	Semi-instructed interview Class observation	Coding
Çapan (2014)	Grammar	A Turkish university	Questionnaire Semi-instructed interview Class observation	Paired sample T-test Content analysis
Aliakbari & Heidarzadi (2015)	Classroom management	Iranian schools	Scale inventory Class observation	Descriptive statistics Pearson coefficients
Borg (1999)	Grammar	Malta schools	Semi-instructed interview Class observation	Coding

The Relationship between Cognition and Practice

The nature of the relationship between teachers' beliefs and their practices was addressed differently in the 12 primary studies that comprised the sample of this CIS. In some studies, this relationship was considered to be *one-sided* and *unidirectional*: "Teachers' practices in the classroom are an expression of their beliefs" (Shah et al., 2017). On the other hand, some studies described the relationship between TCP as *bidirectional* (Mao & Crosthwaite, 2019), *reciprocal* (Baker & Burri, 2016), *dialogical* (Farrell & Bennis, 2013), and *non-linear* (Borg, 1999). These studies, nevertheless, fell short of offering any evidence to substantiate the bi-directionality of TCP. In fact, none, except Çapan (2014), examined the potential effects of practice on cognition.

Cognition vs. Practice: Consonance or Dissonance?

Mao and Crosthwaite (2019) reported a degree of alignment and misalignment between TCP concerning the provision of corrective feedback (CF) to students. A similar patchy picture was recorded by Kartchava et al. (2020), who described the relationship between TCP as multifarious. While the teachers corrected markedly fewer errors than they said they would, they preferred the same corrective techniques in both hypothetical and actual teaching situations. Couper (2019) reported that teachers' cognition did not correspond with their practice at times regarding OCF. Likewise, Shah et al. (2017) observed that teachers departed from their beliefs and gave pronunciation inadequate heed. In another study on pronunciation, Baker and Burri (2016) reported slight differences between TCP.

Germane to grammar, Farrell and Bennis (2013) noted that teachers' beliefs did not always match their practices. In their study, there was a tenuous relationship between novice teachers' beliefs and practices. Çapan (2014) found while teachers' beliefs were largely congruent with their practices, there was little or no change in their beliefs before and after a year-long practicum course. Borg's (1999) study revealed a discrete picture, in which while two teachers' practices were informed by their cognitions, one teacher's practice conflicted with hers, and one teacher's practice varied based on students' levels of proficiency, resulting in instances of consistency and inconsistency.

Factors Feeding Teachers' Cognition and Action

What follows in this section addresses the first research question. Based on Table 2, TCP was found to be fashioned by the following synthetic core constructs: *personal learning experiences*, *professional learning experiences*, and *macro- and micro-contextual factors*. Due to the limitation imposed by space, only truncated accounts of translations are presented below.

Table 3: Second- and third-order interpretations

	Second-order interpretation	Study	Third-order interpretation
Factors feeding teachers' cognition and practice	First language experience	8, 10, 12	Personal learning experiences
	Second language experience	2, 4, 5, 6, 12	
	Peer observation	6	
	1st/pre-service teacher training	5, 10, 12	Professional learning experiences
	2nd/in-service teacher training	4, 6, 12	
	College/university training	2, 6	
	Classroom exigencies	1, 5, 10	Micro-contextual factors
	Social context (cultural values)	5, 8, 10	Macro-contextual factors
	Education/Evaluation system	5, 8	
Factors breathing (mis)alignment between teachers' cognition vs. practice	Students' wants/desires/needs	1, 7, 8, 9, 10	Exigencies of the classroom
	Students' levels of proficiency	6, 10, 12	
	Students' affective variables	2, 3, 7	
	Time constraint	1, 3, 8, 9	
	Lack of resources/facilities	4, 6	
	Curriculum/syllabus	4, 5, 10	
	Class size	1	
	Textbook	5	
	School type	11	Exigencies of the school
	School stakeholders	5	
	Educational demands	1, 8	Exigencies of the educational system
	Educational affordance	2, 3, 4, 5, 8	
	Linguistic norms	8	Sociolinguistic factors
	Cultural values	5	
	Socio-economic setting	11	
	More experienced	2, 9	Years of experience
	Less experienced	11	
	Low confidence	3, 7	Affective factors
	Held unconsciously	4, 9	Nature of beliefs

Personal Learning Experiences

Reciprocal Translation. This synthetic construct entails experiences associated with teachers' *first- and second-language* learning. These experiences, known as "apprenticeship of observation" (Lortie, 1975), exert a strong influence on what teachers think and do (Vinogradova & Ross, 2019). Beliefs informed by teachers' first- and second-language learning experiences are essentially tacit, highly personalised, and impervious to change. As regards the pull of *first-language learning* on TCP, in Shah et al.'s (2017) study, Anita tried to justify her lack of emphasis on pronunciation by recalling her schooling years: "[S]ince young, it was not emphasized at all" (p. 197). Likewise, in Borg's (1999) study, Martha did not promote grammatical terminology and justified her practice by referring to her L1 education: "The system in England ... was very much the anti-grammar system" (p. 104). Her *second-language education* in French reinforced her position since it was heavily loaded with terminology and proved to be counterproductive because she failed to speak French fluently. This was also reflected in Ma and Luo's (2021) study. One participant defended her disregard for critical thinking by referring to previous learning experiences: "In previous secondary schooling experience ..., critical thinking has been hardly emphasized" (p. 9).

Professional Learning Experiences

Refutational Translation. Both intra- and cross-study refutational accounts were considered in data synthesis. To start with *pre-service TE*, Ma and Luo's (2021) study showed that Chinese teachers' cognition was influenced by what teacher educators presented them. Similarly, Tina, in Borg's (1999) study, was found to use an approach rooted in her initial teacher training. On the contrary, Çapan (2014) reported that a one-year practicum had little effect on pre-service teachers' beliefs, except in one dimension (conscious knowledge of grammar). Concerning the *in-service TE*, Nazari (2020) reported that the TE course was effective in prompting some considerable changes in teachers'

beliefs. This finding was at variance with those of other studies. Lorenz et al. (2021) held workshops to encourage three teachers to embrace linguistic and cultural diversity in classrooms. Although teachers showed increased awareness of multilingualism, their practice reflected little change. More panoramically, Eric, in Borg's (1999) study, revealed that he valued the role of grammatical terminology in L2. This, nevertheless, was contrary to his *first teacher training*: "We were told never to use grammatical labels" (p. 108). Further professional training, Eric disclosed, brought about some changes in his beliefs. His practice, though, did not necessarily follow the same urge.

Line of Argument Synthesis (1)

Although the evidence swung back and forth from confirmation to contradiction, since TCP is moulded by a raft of ostensibly disparate factors, an attempt to develop a model integrating all these factors was warranted. Nevertheless, the comprehensiveness of the developed model does not conceal the complexities of the primary data. A synthesis of the above reciprocal and refutational translations resulted in the following core constructs: 1) *ontological factors*, 2) *epistemological factors*, and 3) *contextual factors*. The interplay between these three synthetic constructs and the intra- and inter-relationships between their themes are illustrated in Figure 5.

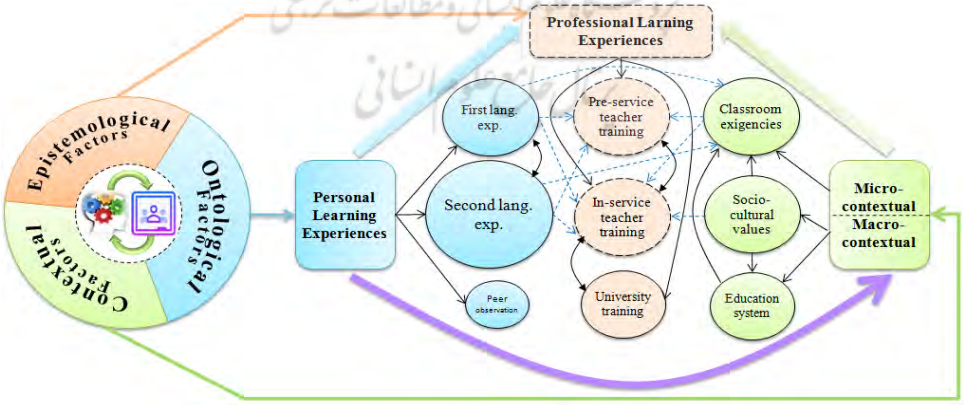

Figure 5: Factors moulding teachers' cognition and practice

Note. The sizes of circles reflect their representation in primary studies, with bigger circles denoting more significance and vice versa. In circles, bold and dotted lines indicate reciprocal and refutational translation, respectively. In arrows, bold lines show intra-relationships within the themes of a core construct; dotted lines show the inter-relationships between the themes of the three core constructs. Single- and double-headed arrows denote one-sided and reciprocal relationships, respectively.

In Figure 5, each of the three slices in the pie claims a territory almost equal to that of the other two since each of these three synthetic constructs was almost equally represented in the primary data: ontological factors (9 studies), epistemological factors (8 studies), and contextual factors (8 studies). As regards the themes incorporated by these three constructs, teachers' *second language experiences* and *peer observation* emerged to exercise the most and least effects on TCP, respectively. Another crucial point captured in Figure 5 is that *teachers' learning experiences* appeared to sway both their *professional learning experiences* and *contextual factors* whereas the opposite was not true.

Factors Breathing (Mis)Alignment between TCP

This section provides answers to the second research question. The following synthetic core constructs contributed to the (in)congruity between TCP: *contextual factors*, *personal factors*, and *connate factors*. Due to the dearth of space, only abridged accounts of translations for one of the themes pertinent to the first two core constructs are presented below.

Exigencies of the Classroom (Contextual Factors)

Reciprocal Translation. A powerful and frequent source of incongruity emerging in the included studies was *students' wants and preferences*. When faced with the discrepancy between her belief and practice, Ann passed the buck and blamed students' inattention to grammar: "The focus of teaching English writing should not only be grammar but also ideas and content. There

are always so many mistakes in their grammar" (Mao & Crosthwaite, 2019, p. 56). In Shah et al.'s (2017) study, although Laily believed native-like pronunciation was important, she behaved otherwise to accommodate learners' needs. Similarly, Baker and Burri (2016) noted that all teachers in their study "utilized the same strategy to address learners' needs" (p. 10). Farrell and Bennis (2013) noted that the novice teacher numerously attached importance to students' desires, thus compromising his beliefs to maintain enthusiasm and rapport with students. This was echoed closely in Çapan's (2014) study. While teachers supported a communicative approach to grammar, they adopted a traditional approach in practice to satisfy students' expectations: "The teaching style of teachers should ... be shaped according to the learners' expectations" (p. 145).

Personal Factors

Refutational translation. On the one hand, Kartchava et al. (2020) concluded that *more experienced teachers* were more likely to bridge the gap between cognition and practice. Novice teachers "were primarily focused on keeping students happy" (p. 4). This preoccupation with learners' feelings, consequently, inhibited them from providing learners with explicit CF though they believed direct correction was essential for learners. Farrell and Bennis's (2013) findings bore striking similarities with those of Kartchava et al. (2018). Whereas both the experienced (Sam) and novice (Troy) teachers expressed similar beliefs, their practices converged with and diverged from their beliefs, respectively (Scenario 3, Figure 1). Sam's decisions were mainly based on "needs associated with learning outcomes" while Troy's were based on "keeping students happy" (p. 174), prompting him to abandon the inductive approach due to the "students' lack of enthusiasm" (p. 173). On the other hand, Aliakbari and Heidarzadeh (2015) reported that *less experienced teachers*' beliefs, compared to those of their experienced peers, reconciled more with their practices. To render fence-mending a forlorn hope in this

refutation-torn region, Mao and Crosthwaite (2019) reported that teaching experience had little impact on the type of CF teachers offered to students.

Line of Argument Synthesis (2)

The following line of argument "distils the translations into more than the parts alone imply" (Atkins et al., 2008, p. 7). Three synthetic constructs were developed to represent the sources infusing consistency/inconsistency between TCP: 1) *contextual* factors, 2) *personal* factors, and 3) *connate* factors.

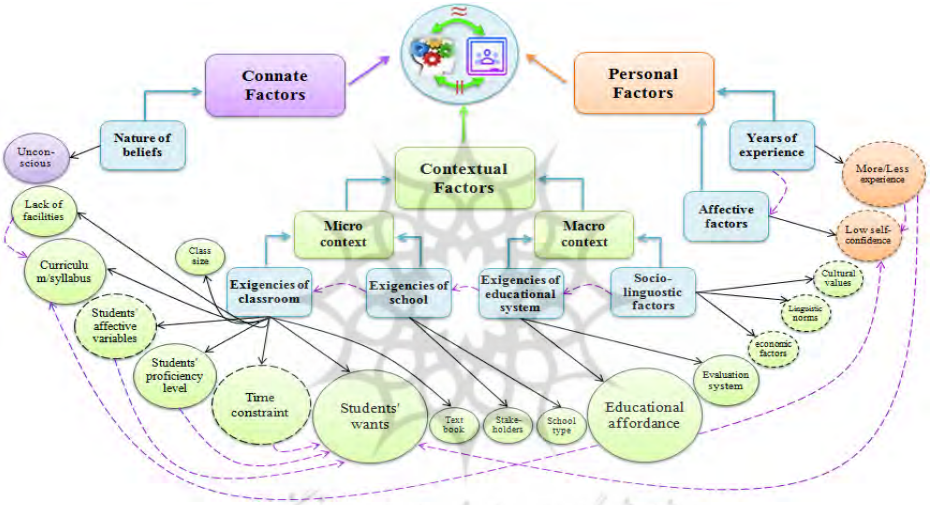

Figure 6: Factors breathing congruity and/or incongruity into teachers' cognition vs. practice

Note. See the caption in Figure 5.

Contrary to the equal pull of core constructs fashioning TCP, the core constructs contributing to the (mis)alignment of TCP did not exercise equal influence. *Contextual* factors stood up for nearly four-fifths of the themes extracted from the primary data, with the remaining themes (one-fifth) being shared unequally between the *personal* and *connate* factors. The *micro-context* construct (i.e., the classroom and the school), in which teachers' practices take place, was found to play a substantively key role in causing

consistency/inconsistency between TCP. In addition, the synthesis of data revealed that *students' wants/desires* and *educational affordance*, followed by the *time constraint*, were the most powerful themes causing teachers' cognition and practice to diverge. As a synthetic construct born out of refutational translation, *personal* factors appeared to both reconcile and drive a wedge between TCP. As regards *connate* factors, little is known about this source of incongruity due to the fact that the unconscious is not readily amenable to inspection.

DISCUSSION

In this CIS, the first- and second-order synthetic constructs were used to develop two lines of argument. To increase the dependability of the developed lines of argument, translated concepts (second-order themes) were tabulated and juxtaposed with synthetic constructs (third-order themes). Furthermore, the description and discussion of each synthetic construct were supported and enriched by numerous quotes from the participants (first-order themes) in primary studies. In what follows, the two developed lines of argument are weighed against the existing relevant literature and allowed to engage in a dialogue with philosophy.

As captured in Figure 5, factors influencing TCP settled into three synthetic constructs: 1) *ontological* factors, 2) *epistemological* factors, and 3) *contextual* factors. These third-order constructs revealed a subtext that was not apparent in the initial themes emerging out of the primary data. For all we know, only four models have been proposed to explicate language TC over the past 50 years or so. These include Nespor's model (1987), Ellis's model (2006), Borg's model (2015), and Öztürk and Gürbüz's model (2017). We decided to compare and contrast the two models developed in this study with the last two models, which were more compendious than the other two models.

The refutational constructs are the direct fruit of the methodology (CIS) adopted in this study, for the same type of evidence may have been

dismissed as atypical. For example, "professional coursework" in Borg's (2015) model and "pre-service education" in Öztürk and Gürbüz's (2017) model of TC are presented as one of the three and four main sources of TC, respectively. Notwithstanding that, this appears to under-represent the evidence communicating the opposite. The present CIS revealed that TE can be both effective and ineffective in modifying TCP. What prevented TE from changing TCP were teachers' *personal learning experiences*, as touched upon but not fully unpacked in either of the above models, and *contextual factors* to a lesser extent. The question then is whether teachers' ontology (personal learning experiences) is empowered by their epistemology (professional learning experiences) or their epistemology feeds on their ontology. Philosophically speaking, the answer is the latter and the present CIS of research on TC substantiates this position. If teachers' cognition is influenced more by their experiences formed during first- and second-language learning (ontology) than the knowledge gained through TE (epistemology), what changes should TE undergo to change this dynamic?

Our developed model is similar to Borg's (2015) and Öztürk and Gürbüz's (2017) models in encompassing the chief factors feeding TC. However, it goes beyond them in two important ways. Borg's (2015) model places the "classroom practice" within the borders of contextual factors. Our proposed model offsets this restrictive characterisation of the classroom by dividing context into micro- and macro-context, in which the former incorporates 10 themes, subsumed under the two sub-categories of the classroom and the school. In Öztürk and Gürbüz's (2017) model, "institutional context", as a major category, consists of organisational atmosphere, curriculum policies, and testing policies. This modelling is even less helpful than that of Borg (2017) in that it fails to make a distinction between the immediate context of teaching (micro-context) and the broader context (macro-context). Therefore, it is not clear how the micro-context interacts with the macro-context. Furthermore, neither model deals in detail with what factors shape the micro- and macro-contexts. The proposed model in the present study not only addresses this lacuna but also enlarges

analytically on such factors (themes) without muting evidence debunking their effects.

More consequentially, both Borg's (2015) and Öztürk and Gürbüz's (2017) models are silent on the degree of the influence each key factor exerts on teachers' cognition and instruction. However, it would be remiss of us not to note that Öztürk and Gürbüz's (2017) model, despite having gone largely unnoticed in the published literature on TC since its inception, has been the only serious attempt to attend to Borg's (2003) call for a unifying framework that explains constructs pertinent to TC research more holistically. Our holistic-but-non-equitable model, on the contrary, illustrates the weight each synthetic construct and its related themes carry, guiding future TC research about the variables that should be given the most attention. Schematically, no other published study on language TC has provided what we have in Figures 5 and 6, which capture consequentially minute detail on the relationships between core constructs of TC and their corresponding themes. Finally, our critique of the literature on TC suggests that 'schooling', 'professional coursework', and 'classroom practice', which represent the elements of TC in Borg's (2015) model, only dimly reflect the factors constituting TCP. For example, *school type* and *school stakeholders*, which are recognised in our model as part of the micro-context, cannot be neatly placed in Borg's model since these two factors can neither be lumped with classroom nor be vaguely called macro-context as they do not equate some other macro-contextual factors, such as national education system and cultural values, in importance (Figure 5).

Similar to Çapan (2014), we suggest that in any teacher training course, first, teachers' beliefs be elicited through available instruments, including interviews. However, we do not support Çapan's (2014) suggestion that beliefs brought to TE be identified to be then changed. We suggest that TE functions as a form of 'teacher introduction' to afford teachers a new way of seeing things, thus allowing them to reflect on their beliefs and previous learning experiences. As regards studies aimed at tracking changes in TCP following TE, since changes in beliefs usually happen gradually, longitudinal

studies are best suited to capture such slight and unhurried changes (Savin-Baden & Major, 2007). Some studies have described the relationship between TCP as bidirectional (Phipps & Borg, 2009). However, some changes in practice do not necessarily reflect a change in cognition but rather a temporary transition to meet the exigencies of the classroom sprung from, say, students' wants/desires. In such cases, only longitudinal research involving repeated observations of teachers teaching different learners can sort the wheat (i.e., a change in practice reflecting a change in cognition) from the chaff.

The idea of teachers holding "competing cognitions" has been in the vogue for a while (Andrews, 2003; Farrell & Kun, 2008; Zhang & Liu, 2014). However, this simultaneous adherence to incompatible belief systems should be principled; otherwise, it results in a hotchpotch of ideas that lack consistency. Principled competing cognitions can help teachers resolve the tension between their thoughts and actions caused by, for example, students' varying *proficiency levels* (Figure 6). In Borg's (1999) study, Tina's use and avoidance of grammatical terminology in advanced and elementary classes, respectively, serve as a good example of rule-governed competing cognitions. These competing cognitions, we maintain, ought to exist a priori to be called principled. Any occasional incongruity between TCP should exhort teachers to re-evaluate their beliefs through explicit and focused reflection on their practices and look for "emergent cognitions" (Couper, 2019). Subsequent confirmatory instances of classroom practices will translate some of these emergent cognitions into "stabilised cognitions", which will allow teachers to have confidence in their beliefs and practices (Kartchava et al., 2020). It is only at this stage that teachers may leave behind concerns originating in students' subjective expectations to attend to those stemming from students' objective needs.

As to the second framework developed in this study (Figure 6), it comprises three synthetic constructs, viz. *connate* factors, *personal* factors, and *contextual* factors, which were found to cause a bridge between what teachers professed and what they practised. Though *contextual* factors were responsible for much of the chasm, we contend that any approval, acceptance,

or acquiescence of beliefs being bent to the will of context, be it *students' wants* or *affective variables*, leads to an endless mélange of equally persuasive justifications laid out to warrant the case for the divorce between cognition and practice. The account of two teachers in Borg's (1999) study is revealing. They justified the incompatibility between their cognition vs. practice by adhering to two starkly opposed rules, the rule of the majority and the rule of the minority. Despite their beliefs, both Eric and Hanna avoided terminology on different occasions to enact vox populi and positive discrimination in practice, respectively. This example buttresses the assertion that once contextual factors are given the green light to rule over the realm of cognition, the anarchy induced by the rise of various factors is inevitable. In addition, teachers whose beliefs follow the majority, or minority, can no longer claim they have fixed, or indeed any, beliefs. On this ground, we suggest that class is not a place of democracy as teachers are not to rule but to teach what they have accumulated through years of personal and professional learning. If this sounds peculiar, one has to imagine a physical education teacher who thinks running is unnecessary since that leaves one or two students breathless. Similarly, a psychology teacher who uses psychological terms (e.g., id, ego, and super-ego) only when the majority of students feel comfortable with them may not be the most inspiring teacher of psychology. Teachers, thus, should be invited to reflect continuously on their cognition vis-à-vis practice to identify instances of disharmony and move to heal those rifts (Lorenz et al., 2021).

Lack of educational affordance, together with *students' wants/desires*, was cited by teachers to be the most powerful source of misalignment between their cognition and instruction, yet a closer inspection of the evidence cast doubt on the veracity of teachers' accounts. Ma and Luo (2021) reported that teacher educators repudiated teachers' claims that they did not receive enough training on how to integrate critical thinking into their teaching. Accordingly, whatever the reasons deterring teachers from practising what they were trained to, blaming the lack of training did not constitute a frank characterisation of the reality. This is also noted by Lorenz

et al. (2021), who clarified that despite teachers' claim that insufficient provision of practical tips prevented them from implementing multilingualism, they availed themselves of none of the activities introduced during workshops. Similarly, some studies reported that teachers offered "false reasons", such as lack of time, to justify their backseat treatment of some skills (Nair et al., 2017). A more charitable explanation for the above instances of discrepancy can be that a change in beliefs does not immediately lead to a change in behaviour. Alternatively, this discrepancy can be accounted for by the fact that teachers hold some unconscious beliefs (*connate* factors, Figure 6) that harbour incongruity. This underscores the significance of engaging teachers in "a habit of constant reflection to find any incongruity between their beliefs and practices" (Mao & Crosthwaite, 2019, p. 49) so that they can take steps to reconcile the unknown with the known. This, in turn, can increase teachers' awareness of those deep-rooted beliefs that guide their practices.

'Years of experience' was the most significant theme within the synthetic construct of *personal* factors that caused both alignment and misalignment. This source of friction in the data can be resolved by heeding two points. First, TC research needs to delineate what these two vague terms, to wit "more" and "less" experienced, denote; otherwise, any conclusion drawn based on the comparison of data will be unreliable and, possibly, misleading. Thus, we suggest that certain 'years of experience categories' be defined to arrest the growth of any source of incongruity rooted in nomenclature. Three studies in this CIS, for instance, seemed to be working on different wavelengths, ergo broadcasting ostensibly mixed messages (Table 5).

Table 4: Inconsistent treatment of years of experience in TC research

Study	Less experienced	More experienced
Aliakbari & Heidarzadeh (2015)	$1 \leq x \leq 10$	$11 \leq x$
Farrell & Bennis (2013)	$1 \leq x \leq 2.5$	$x = 19$
Kartchava et al. (2018)	$0 \leq x \leq 1$	Not defined

Thus, Farrell and Bennis' (2013) and Kartchava et al.' (2020) observations that experienced teachers' beliefs corresponded more with their practices seem to tally with Aliakbari and Heidarzadeh' (2015) conclusion that less experienced teachers' cognition was more congruent with their beliefs. Consequently, a resolution can be proposed in that teaching experience may serve as "a necessary equalizer in minimizing the tensions between [teachers'] beliefs and practices" (Kartchava et al., 2020, p. 4). More experienced teachers, driven by "more experientially informed beliefs" (Basturkmen, 2012, p. 288), are more likely to practice their beliefs than their less experienced counterparts, whose beliefs may be less rigid and stable, which, in turn, may result in more frequent departures. Furthermore, experienced teachers tend to focus on students' needs whereas their novice peers are more inclined to pander to students' wants (Çapan, 2014). While *needs* fit into objective needs, *wants* entail subjective needs (Nation & Macalister, 2010), which vary from class to class and thus can prompt misalignment between less experienced teachers' TCP.

Philosophy and TC

The following two sub-sections address the third research question.

Philosophical Interpretation of the First Line of Argument

As reflected in the title of this article, philosophy was not called upon to gild the lily. Rather, philosophical terms and perspectives were used to problematise the research on TC. Having in mind the philosophical nature of ontology and epistemology, the question is whether epistemology (i.e., teachers' professional learning experiences) can undergo changes without changes in ontology (i.e., teachers' personal learning experiences). At least, philosophically speaking, this is not viable to a great extent. In fact, the nature of any given epistemological approach is decided based on its corresponding ontology; thus, the two cannot be incompatible since epistemology is

conceived from its source ontology. In social sciences, for example, the two most influential ontological approaches have been positivism and constructivism. The former asserts that objective truth exists while the latter posits that there is no single truth. These two ontological understandings of reality have led to epistemological and methodological approaches that comply with them.

As our results showed, teachers' *personal experiences* gained through second language learning were the most influential factor in shaping their cognition and practice. This type of accumulated experience creates its own epistemology, which, in turn, can not only filter any knowledge gained through TE, hence the one-sided arrow in Figure 5 moving from *personal* to *professional* learning experiences, but also bend reality, hence the one-sided arrow in Figure 5 moving from *personal* learning experiences to *contextual* factors. In language TC research, the philosophy behind TE is erroneously established on the ground that objective knowledge, strategies, and tips offered to teachers via TE and professional development programmes can lead to some changes intended by TE administrators in teachers' practices. The result is clear. Teachers follow the epistemology that is rooted in their own ontology (i.e., personal learning experiences) rather than the one imparted to them. This philosophically driven analogy casts light on a huge gap in TE, evidenced by pre- and in-service TE courses rendering unripe fruits. TE programmes, thus, cannot cultivate meaningful and sustained changes in teachers' mind and practice unless they start to include and establish a conversation with teachers' deeply entrenched and highly personalised beliefs formed and fashioned during first- and, chiefly, second-language learning. This conversation, moreover, ought to entail both cognition and practice and reflection on them to bear tangible results.

Philosophical Interpretation of the second line of argument

We would like to commence this section with a question: If teachers' beliefs are so supple to be bent over by a whole host of contextual factors, enlisted

in Table 2 and illustrated in Figure 6, what, then, is the significance of beliefs held by teachers? Based on the Cartesian framework, teachers cannot simply pass the buck and succumb to the context since they, as subjects, have the capacity to redefine, however slightly, the contextual forces (i.e., the objects). Conversely, within a Heideggerian framework, this capitulation to the context is not only given but also ineludible. Adopting any of these two philosophical frameworks can have profound implications for TC research.

While we do not wish to downplay the prominent role contextual factors play in rendering teachers' practices incompatible with their beliefs, our CIS appeared to chime with the agentive role assumed for cognition in the Cartesian framework. Contextual hurdles can be tackled via the adoption of, say, more appropriate teaching methods (Nazari, 2020) (minor premise). Interestingly, teachers' cognition has been reported to be more effective in shaping classroom practice than a certain teaching method or textbook (Li & Walsh, 2011) (major premise). A collation of the aforementioned minor and major premises results in the following syllogism: Cognition can refashion the context.

The above syllogistic conclusion ought not to insinuate that we are brimmed with inordinate confidence in the empirically reliable yet not impressively sufficient evidence afforded by our CIS, nor should it connote that we will be unsuspecting of any emerging potential counter-empirical evidence or philosophical argument. It is simply intended to invite teachers to exercise their will and practice their ELT-informed beliefs rather than living an uncoordinated amphibious mental-physical existence, unwittingly gaining a reputation as social chameleons. This is in line with a proactive vs. reactive cognition-practice symbiosis (Biesta et al., 2015). In an attempt to urge teachers to develop proactive thinking in themselves and their students, Page and Page (2003) expounded that the concept of proactivity underscored that "our behaviour is a function of our decision, not conditions" (p. 50). Since teachers know in advance what circumstantial constraints (e.g., time and exam pressure) they are going to encounter, it is essential that they proactively decide on how to deal with them and practice accordingly.

CONCLUSION AND IMPLICATIONS

In this study, conceptualisations of cognition in Descartes' and Heidegger's philosophy were consulted in interpreting two lines of argument developed about TC. Eventually, the Cartesian interpretation of data was deemed and reasoned to be more consistent with teachers' agentive cognition as it exhorts teachers to exercise their agency, interact actively vs. passively with the context in which their teaching is situated, and endeavour to refashion that context inchmeal where necessary. This concerted effort by philosophy and CIS aimed at unpacking TCP adds to TE knowledge in a number of ways. It provides an explicitly interpretive, new, and unified conceptualisation of TCP that is encapsulated in the first line of argument. This unified approach to TC encourages researchers to consider all the chief sources of TC in their studies to avoid transmitting a reductionist view of changes in TCP (Hulstijn et al., 2014; Huang, 2016). Also, the synthesis highlighted the importance of teachers' cognition in filtering their professional knowledge and fashioning afresh the context of their practice. Future studies, we suggest, need to explore factors that a) affect the extent of such filtering and b) promote such teacher-guided context reformulation. Based on the present synthetic findings, it can be stated that if curriculum reforms are to bring about the desired changes, teachers' cognition has to be taken into serious consideration since teachers have been found "to filter the curriculum in their own preferred ways" (Kardoust & Saeedian, 2021, p. 171). To narrow the gap between the intended and the implemented curriculum, teachers' beliefs should be assigned a pivotal rather than a peripheral role, as a result.

Since research on TC has to be multifaceted to contribute meaningfully to TE, studies aimed at reporting a) sources of cognition, b) their influence on practice, c) the degree of misalignment between the two, and d) factors contributing to the instances of misalignment are of special significance. Such studies will have a symbiotic relationship with the models developed and discussed in this study (first and second lines of argument). That is, as part of the contribution of this CIS, the two interpretive models can

guide research on TC, particularly in fulfilling objectives (a) and (d). Mao and Crosthwaite's (2019) and Lorenz et al.'s (2021) failure to fulfil objective (d) in their studies bears witness to the relevance of the developed models. Correspondingly, the findings of future TC research can augment the breadth and/or depth of the developed models by introducing new factors and/or providing new pieces of evidence that reinforce the present themes encompassed by them.

Three decades ago, Pajares (1992) contended that to arrive at "a collective understanding" of teachers' beliefs (p. 316), research on TC had to incorporate different variables. The two developed models respond to this call by providing 34 themes (variables) that either feed TCP or make them align/misalign. Encouraged by the "fourth ontological generation" of TC (Burns et al., 2015), the developed models capture the relationship between the synthetic constructs and the complex interrelationship between their respective themes. Furthermore, the models seem to narrow the yawning chasm between interpretive and cognitive approaches to TCP by factoring in an exhaustive list of contextual factors (interpretive perspective) and interpreting data through the cognitive perspective (Cartesian framework), which is a dominant theoretical position in TC research (Li, 2017).

Based on the results of this CIS, teachers' beliefs, once established, are difficult to undergo change either through TE or practice. Hence, TE needs to be introduced at an early stage if it is to bring about any changes in teachers' cognition (Çapan, 2014). Practicum courses, in addition, need to be extended in duration to allow gradual changes to emerge in teachers' beliefs and practices, particularly the latter which do not necessarily follow the changes in the former. Another point that merits attention is that any incidentally judicial departure by teachers aimed at attending to, say, a question raised by students should not lead to a general verdict calling their practice vis-à-vis their cognition incongruous. Borg's (1999) interpretation of Martha's practice is a revealing example of minding nuances when describing teachers' beliefs and practices. Her belief in forceful avoidance of terminology, Borg concluded, conflicted with her practice though she did not

use conventional terminology but labels that still resembled metalanguage. Following Uny et al.'s (2017) suggestion and its fruitful implementation in the present study, future critical interpretive syntheses on TC are encouraged to seek out "difference rather than ... similarity or cohesion of ideas and practices" (p. 255) if they are to contribute meaningfully to the relevant literature. The critical and interpretive nature of CIS allowed the authors of this study to occasionally have a different interpretation of first-order themes (participant quotes in primary studies), rebut the second-order themes if they were not supported by the data in the primary studies, and take the results with a pinch of salt. We exercised these interpretive powers when dealing with Baker and Burri's (2016), Aliakbari and Heidarzadeh's (2015), and Nazari's (2020) studies, respectively.

Strengths, Limitations, and Recommendations

The findings of this study, we maintain, are dependable. To enhance the dependability of the developed lines of argument and make findings more accessible to readers, translated concepts (second-order themes) were tabulated and juxtaposed with synthetic constructs (third-order themes). We hope this did not thin the thickness of the description intended by the authors. Given the low to moderate dependability of the existing qualitative evidence (see Appendix A), further exploration of TCP with more dependable studies is recommended. Also, to minimise researcher bias, a priori protocol and two independent reviewers were involved in screening, appraisal, extraction, analysis, and interpretation of data. A fairly large amount of detailed data has been provided so that readers can make their own judgements about the interpretations made throughout the study.

One of the key strengths of this CIS was the open inclusion of all relevant studies up to the penultimate stage of data selection. However, excluding studies for not focusing on both teachers' beliefs and practices can reduce the potential transferability of the findings since the majority of studies in language TC research have focused on only teachers' cognition and/or

espoused practices. To address this limitation, future studies may include a combination of all studies, including those focused on merely teachers' cognition, but this constrains what research questions can be investigated. In addition, the small number of primary studies included (N = 12) can render the findings less transferable. Nevertheless, since CIS is a relatively new method, starting small had the advantage of allowing us to explore the data deeper and develop more powerful lines of argument. There seems to be a general consensus that the synthesis process may be difficult to replicate (Atkins et al., 2008). To make our synthesis more credible, the synthesis process was elaborately explained and multiple perspectives were considered to triangulate the translations. The credibility of the developed models was determined by comparing the results of this CIS with those of other seminal studies, including Borg (2015), on the same or similar topics.

Since only studies with English teachers were included in the present CIS, broader inclusion criteria could potentially expand and strengthen the synthesis arguments. Finally, Ma and Luo (2021) argued that teachers' inclination to integrate critical thinking in their teaching was influenced by their personal factors. The fact that some teachers are more willing than others to comply with what goes against their beliefs underscores the case for the inclusion of teachers' personality traits (e.g., intransigent vs. complaisant) as a variable in future TC research on EFL/ESL teachers. As far as we know, no study has yet examined this issue. In closing, it must be noted that we consider the present evidence-driven interpretation contestable and responsive to future studies in the ways outlined above.

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No potential conflict of interest was reported by the authors.

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Appendix A

Quality Appraisal of Primary Studies Included in the Meta-Ethnography

Author	Title	Q 1	Q 2	Q 3	Q 4	Q 5	Q 6/7	Q 8	Q 10	Dependability
Mao and Crosthwaite (2019)	Investigating written corrective feedback: (Mis) alignment of teachers' beliefs and practice	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Moderate
Kartchava et al. (2020)	Oral corrective feedback: Pre-service English as a second language teachers' beliefs and practices	No	Yes	No*	Yes	Yes	No	No	Yes	Low
Couper (2019)	Teachers' cognitions of corrective feedback on pronunciation: Their beliefs, perceptions and practices	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
Lorenz et al. (2021)	Embracing linguistic and cultural diversity in ML EAL classrooms: The impact of professional development on teacher beliefs and practice	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
Ma and Luo (2021)	Chinese pre-service teachers' cognitions about cultivating critical thinking in teaching EFL	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Moderate

Nazari (2020)	The impact of teacher education on L2 teachers' cognitions and pedagogy of metacognitive listening instruction	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Moderate
Baker and Burri (2016)	Feedback on second language pronunciation: A case study of EAP teachers' beliefs and practices	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Moderate
Shah (2017)	The pronunciation component in ESL Lessons: Teachers' beliefs and practices	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Moderate
Farrell and Bennis (2013)	Reflecting on ESL teacher beliefs and classroom practices: A case study	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Moderate
Çapan (2014)	Pre-service English as a foreign language teachers' belief development about grammar instruction	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Moderate
Aliakbari and Heidarzadi (2015)	The relationship between EFL teachers' beliefs and actual practices of classroom management	No	Yes	No	No	Yes	No	No	YN	Very low
Borg (1999)	Use of grammatical terminology in 2nd language classroom: A quality study of teachers' practices and cognitions	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High

Note. ML = Multilingual; EFL = English as a foreign language; YN = Yes and No. Q1: Congruity between the stated philosophical perspective and the research methodology; Q2: Congruity between the research methodology and the research questions; Q3: Congruity between the research methodology and data collection methods; Q4: Congruity between the research methodology and data representation and analysis; Q5: Congruity between the research methodology and the interpretation of results; Q6/7: A statement locating the researcher culturally or theoretically/stating the influence of the researcher on

the research and vice- versa; Q8: Adequate representation of participants, and their voices; Q10: Conclusions are drawn from the analysis of the available data. * = Studies using only questionnaires and no classroom observation to explore teachers' beliefs were judged to be incongruent (Q 3).

The dependability score was calculated based on the number of 'yes' votes for questions 2, 3, 4, and 6/7. The results, following the protocol suggested by Munn et al. (2014), were translated into a four-level scale (4 = High, 3 = Moderate, 2 = Low, 1 = Very low).