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Is a Degree Relevant? A Comparison of Pedagogical Thought Units of Teachers with and without ELT-related Academic Credentials

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Abstract: This paper studies the difference between the pedagogical thought units of ELT practitioners with English-relevant degrees and those with non-relevant degrees. An entire teaching session of eight EFL teachers' performance was video recorded and their pedagogical thoughts were identified by using stimulated recall technique. The findings revealed that, in general, teachers with English-related degrees significantly reported more pedagogical thoughts than their colleagues with unrelated degrees. With respect to the categories of pedagogical thoughts, although the same families were reported by participants in both groups, there were slight differences in their rankings and significant differences in their frequency.

Introduction

The last two decades of the twentieth century witnessed a shift in the way teaching and teachers were conceptualised in mainstream education (Freeman, 2002), in the sense that they were viewed as 'active, thinking decision-makers who make instructional choices by drawing on complex, practically-oriented, personalized, and context-sensitive networks of knowledge, thoughts, and beliefs' (Borg, 2003, 81). Since then, more attention has been paid to teachers' knowledge base and thinking on the grounds that what teachers do in the classroom originates from their mental acts, which have their roots in attitudes, values, knowledge and beliefs collected through their experience as students and teachers (Gatbonton, 1999; Mullock, 2006).
Terms such as 'teachers' pedagogical knowledge base' (Shulman, 1987) and 'teacher cognition' (Borg, 2003) grew out of this swing of pendulum to describe thoughts that shape teachers' beliefs about teaching and learning and influence their classroom practices (Akbari & Tajik, 2009).

In the area of second language teaching, research on teacher cognition dates back to the mid-1990s (Borg, 2003), with attention being focused on various aspects of teachers' knowledge and beliefs, ranging from grammar instruction (Borg, 1999; Andrews, 1994), second language writing instruction (Burns, 1992; Tsui, 1996) and lesson planning (Bailey, 1996; Bartels, 1999), to teachers' opinions about teaching (Smith, 1996; Cabaroglu & Robert, 2000).
However, as an incipient research area in the English language teaching (ELT) context (Gatbonton, 2008), teacher cognition has not received its due attention and more studies are needed to provide a comprehensive picture of the construct (Akbari & Dadvand, 2011). For example, research in areas such as the effect of training and the impact of context on teachers' pedagogical decisions or teacher personality is needed to demonstrate the influence of such

variables on teachers' performance in second language settings (Crookes & Arakaki, 1999; Nunan, 1992; Richards & Pennington, 1998; Golombek, 1998; Cabaroglu & Robert, 2000).
The present research is part of a series of studies that look at second language teachers' pedagogical knowledge base, and more specifically teachers' pedagogical thought units, taking into account different educational and demographic variables. Earlier published studies in this series dealt with the impact of experience on teachers' thoughts (Akbari & Tajik, 2009), the effect of formal education on their thinking patterns (Akbari & Dadvand, 2011) and teachers' moral thoughts as influenced by their gender and experience (Akbari & Tajik, 2012).
It is the authors' belief that partial replication of previous studies, with changes in variables and data collection contexts, while using the same data collection methodology, can result in the development of a solid, comprehensive knowledge base that can have practical and theoretical implications. One of the problems of ELT (which can be detected in different published papers), especially second language teacher education literature, is the fact that published studies mostly look at research questions or problems as isolated items, and do not address the same question from different perspectives and contexts. The result of such a practice is, at times, inconclusive evidence and contradictory findings.

The present study aimed at addressing the impact of academic degree (ELT-related versus non-ELT) on the type and frequency of ELT teachers' pedagogical thoughts. More specifically, the following research question is addressed in this study:
Is there any difference, in terms of quantity and type, in the pedagogical thought categories of teachers with ELT-related degrees and those of teachers with unrelated degrees?
We intended to find out whether teachers who had a university degree in English-related majors (English literature, English translation, or ELT) were different in terms of their pedagogical thoughts from their colleagues who had non-relevant degrees. For us, differences in the relevance of degrees is an indication of different levels of expertise in language teaching and, consequently, a good approach to determining the impact of ELT-based academic training on the thought processes teachers experience in their classrooms. We believe that differences in the type of pedagogical thought categories as well as their frequency demonstrates what teachers are mainly preoccupied with during teaching (Akbari & Dadvand, 2011). In other words, when a teacher reports a particular pedagogical thought category with higher frequency, it indicates her/his preoccupation with that thought and the actions that would be linked to it. Studying the frequency differences among the two groups of the study demonstrates what the members of each group are mainly aware of.

Teacher Cognition

Teacher cognition is a concept that deals with 'the unobservable cognitive dimension of teaching-what teachers know, believe and think' (Borg, 2003, 81). The term is very inclusive in the sense that it encompasses a wide range of elements that pertain to teachers' mental lives, views of teaching and the way in which these views and mental conceptualisations have an impact on teachers' actions and decisions in the classroom.
From a chronological perspective, the study of teachers' cognition and mental lives can be traced back to the investigation of the decisions practitioners made while teaching in their classes (Shavelson & Stern, 1981). This practical approach, in which the complexity of teachers' cognition was reduced to a simple process of decision making, was a consequence of behavioristic views of teaching and it 'created an easy, almost quasi-behavioural, unit of analysis that could be applied across multiple classroom settings, content areas, and levels of teacher

expertise' (Freeman, 2002, 5). The serious, comprehensive approach to the study of teachers' mental lives started mostly during 1990s, and in language teacher education literature, after 1996 (Borg, 2003); the topic has now become a significant research interest in second language teacher education (Wright, 2010).

Different terminology is in use for the description of teachers' cognition or knowledge base: *pedagogical content knowledge*, or PCK, has a comprehensive view of teacher knowledge that goes beyond training and disciplinary content and includes experience (Grossman, 1990). Clandinin (1985) uses *personal, practical knowledge*, which collectively encompasses a teacher's professional, personal, and experiential history. Other attempts at capturing the concept include *experiential knowledge* (Wallace, 1991), *pedagogic content knowledge* (Shulman, 1987), *local knowledge* (Allwright, 2003) and *pedagogical knowledge base* (Van Patten, 1997).

Of particular relevance to the present study are the research projects addressing ELT teachers' pedagogical knowledge base of Gatbonton (1999, 2008) and Mullock (2006). Mullock defines second language teachers' pedagogic knowledge base as the 'accumulated knowledge about the act of teaching, including goals, procedures and strategies that form the basis for what teachers do in classroom (2006, 48). In this approach to the study of teacher cognition, researchers aim at discovering the thought processes that underlie teachers' conduct and practice in assisting their students to master formal/communicative features of a second language.

Gatbonton investigated patterns of pedagogic thoughts of experienced second language teachers and through the use of stimulated recall arrived at 21 categories of pedagogical thoughts that teachers reported using, with eight thoughts showing the highest frequency of occurrence. The most frequently reported thought category (20 per cent of the total) belonged to *Language Management*, concerned with the language input learners are exposed to as well as their output. *Knowledge of Students* (9 per cent , dealing with learners' personality and needs) came second, followed by *Procedure Check* (8 per cent, checking to ensure learners are performing an assigned task), *Progress Review* (8 per cent, supervising whether learners are making progress in completing a task), *Beliefs* (7 per cent, practitioners' views of language learning and teaching), *Note Student Reaction and Behaviour* (6 per cent being mindful of students' behaviours and responses) and *Decisions* (6 per cent, teachers' pedagogical choices). However, Gatbonton's study suffers from a few methodological flaws that make the interpretation of her categories and their application to similar contexts somewhat difficult.

The first problem with Gatbonton's study, as Mullock (2006, 50) points out, is the fact that 'there are doubts regarding [its] ecological validity' since she used only artificial classes that were formed for her research purpose only. Another defect of the study that jeopardises its internal validity is the use of pre-publication stage course-books, which means the participating teachers had little experience and familiarity with the content they were teaching. In addition, there were some problems with certain definitions; for instance, *Language Management* was defined in such a broad, imprecise way that it could subsume all the aspects of input and output (Mullock, 2006).Finally, the construct of experience, which was part of the study as reported in its title, was not touched upon due to the fact that no comparison was made with inexperienced teachers' knowledge base.

In another study, Gatbonton (2008) addressed this problem; she investigated the knowledge base of novice teachers and compared the results with the findings of her previous study. The results pointed to noticeable similarities between novice and experienced teachers' pedagogical knowledge patterns, with differences in terms of order and frequency. For instance, while *Note Student Behaviour and Reactions* was the dominant category for inexperienced teachers, *Language Management* ranked first for the experienced. In addition, the two studies showed that experienced practitioners generated a larger quantity of pedagogical thought units

than novices (907 and 819 respectively); however, no statistical comparison was made to determine whether this difference was significant. This was the central concern by Akbari and Tajik (2009) which concluded that experienced ELT teachers produced a significantly larger number of pedagogical thought units, supporting the claim that teaching experience can be an influential factor in enlarging teachers' knowledge base.

Mullock (2006) undertook a partial replication of Gatbonton's (1999) study. However, Mullock's used teachers from four intact classes that represented natural teaching contexts of teaching general, business or advanced English for Cambridge Advanced Certificate courses. Her findings were very similar to, and at the same time slightly different from, those of Gatbonton. Mullock also found *Language Management* to be the top category (25 per cent), with *Knowledge of Students* coming second but with a different and higher percentage (21 per cent). *Procedure Check* (10 per cent), *Progress Review* (7 per cent) and *Note Student Reaction and Behaviour* (7 per cent) were the other main categories that Mullock found, with differences in terms of order and value from those of Gatbonton.

Mullock's findings related to the differences between pedagogical thought patterns of experienced and less-experienced participants in the study are interesting. The difference in the variety of categories observed and their quantity were negligible, which is surprising and incompatible with what the literature anticipates, according to Mullock.

For instance, the study came to the conclusion that less-experienced teachers are as concerned as their experienced counterparts with *Knowledge of Students*. Drawing on the studies by Fuller (1969) and Kagan (1992), Mullock concludes that 'we would expect this result to appear only after 1 year of teaching' (2006, 58). An interesting finding of the study was the observation that less-experienced teachers engaged in more self-criticism and commented more frequently on their personality than the more-experienced practitioners, a phase in teachers' professional development that experienced teachers have already gone through and passed.

Another dimension of Mullock's study, in addition to the variable *experience*, was the teachers' qualifications. In Gatbonton's study, for example, all but one of the teachers had a masters degree in applied linguistics/ELT, while most participants in Mullock's research had Certificate in English Language Teaching to Adults (CELTA) with only one participant holding a degree in Teaching English to Speakers of Other Languages (TESOL) and was studying for a Master of Arts degree in linguistics.

In other words, the participants in the two studies were different in terms of their professional training backgrounds, a point which leads to the second variable of interest in this study.

Teachers' Academic Degree

In the ELT literature, *degree* is a variable that has been indirectly treated within the context of the impact of training on teachers' cognition. According to Cumming (1989), for example, trainees' view of teaching evolves, or improves, after being exposed to training programs; beginners normally have a poor, distorted conception of both theoretical and practical issues of second language teaching; moreover, such teachers find it difficult to make sense of the curriculum components and their relative importance. Kagan (1992), however, believes that the effect of training on teachers is insignificant, an assertion challenged by many, including Dunkin (1995).

A study that focused on the effects of training was that of Richards, Ho and Giblin (1996). They investigated the professional development of five teacher trainees in Hong Kong and noticed changes in the trainees' cognition in five areas; the teacher's role in classroom,

knowledge of professional discourse, efforts in preserving continuity throughout lessons, problematic aspects of teaching and evaluation of their own teaching performance. In a similar study, Almarza (1996) looked at changes in the teaching cognition of four postgraduate education students. She found, for example, that the participants showed traces of conformity with the program they had been exposed to, but this conformity was not the same for all the trainees, a point that adds to the complexity of the relationship between training and teachers' conception of their profession. In a similar study, Freeman (1993) detected cognitive changes, but no change in teachers' classroom practice resulting from their evolved cognition was observed. Some other related published papers with almost the same findings include those of Cabaroglu and Roberts (2000) and Peacock (2001).

Borg (2003, 91) believes that the conflicting research results in the literature are due to the disconnection that may exist between teachers' mental change and practical classroom outcomes:

The distinction between behavioral change and cognitive change during or as a result of teacher education, and the relationship between the two, is the key to continuing research on this topic. As we have seen…, behavioral change does not imply cognitive change, and the latter…does not guarantee changes in behavior either.

This mismatch between teachers' thought processes and their performance in the classroom can be due to the influence of contextual factors, such as students' expectations, school principals' demands and administrative restraints like final term exams, which sometimes force teachers do what they do not believe in (Nishino, 2012). Hence, although teachers' cognition is a strong predictor of what teachers do in the class, they are at times overshadowed by variables that are out of teachers' control.

Finally, in an attempt to detect the influence of an academic degree, Akbari and Dadvand (2011) investigated the knowledge base of eight English as a foreign language (EFL) teachers through the use of stimulated recall. Four of the teachers had completed bachelor degrees in English literature while the other four participants had masters degrees in Teaching English as a Foreign Language (TEFL). The findings revealed that graduate teachers reported an average of 5.18 thought units per minute, whereas their undergraduate counterparts produced 2.58 of such units per minute, a difference that was statistically significant using chi-square. The researchers attributed the higher frequency of thought units of graduate teachers to their academic experience, which had increased their theoretical and practical knowledge.

There was no study, however, in applied linguistics literature to deal with the differences in the pedagogical knowledge base of English teachers who had English-related degrees and those who did not.

Methodology

Participants

Eight EFL teachers teaching general English courses in three private language institutes in Tehran were selected through purposive sampling (Ary, Jacobs, & Razavieh, 1990) based on their teaching experience, practising course-book and degree. The participants were categorised into two groups on the basis of their academic degree: Teachers R1, R2, R3 and R4 had a BA with English-related majors(English literature, English translation and TEFL), while teachers NR1, NR2, NR3 and NR4 held academic degrees in non-related majors, including mathematics, geology, architecture and mechanical engineering. All the participants had roughly the same amount of teaching experience (between one to four years) and had undergone teacher training courses, as required of the institutes they worked in.

The students taught by these teachers were all adult EFL learners between 17 to 30 years of age attending either mixed gendered (in two of the institutes) or segregated classes (in one of the institutes). In order to minimise the influence of extraneous variables, intact classes with learners as homogeneous as possible were selected who had almost the same age range, the same first language (Persian) and the same level of language proficiency (intermediate).

Academic degrees

All the participants with ELT related majors had completed a bachelor degree; two had BAs in English translation, one a BA in English literature and one a BA in TEFL. Though there are some variations among the courses covered in these three majors, all those who are awarded a BA are required to pass some language teaching courses (i.e. Teaching Methodology, Language Testing, and Linguistics) as a basic component of their programs. In fact, since teaching is the most potential job for these BA holders, the national board of higher education of Iran has decided to include these courses within the curriculum of all the three majors. As a result, a typical student of these majors is supposed to be familiar with the theoretical and practical dimensions of language teaching upon graduation. Teaching methodology and testing courses are aimed at introducing the essential theoretical concepts of language teaching and testing and making student teachers familiar with some basic theories and developments of the field. Other courses (i.e. Linguistics) are supposed to enhance student teachers' knowledge of language, a component that seems critical for teaching practitioners.

The participants with non-related degrees had been deprived of the formal academic training the former group had enjoyed during their university studies. Furthermore, although participating teachers of both groups had had the experience of attending TTC courses before starting teaching in their institutes, this is not comparable with the formal studies that students of English-related majors are exposed to during approximately four years of university studies. In many instances, TTC courses are offered as intensive programs that do not last more than three weeks. In addition, these courses mainly focused on providing prospective teachers (regardless of their academic degrees) with practical, hands-on activities, instructing them on how to teach various language skills and components. This trend means that such courses offer little to enhance participants' explicit, propositional knowledge of language teaching.

To control for the effect of training programs on the data collected, the study participants' backgrounds were checked to make sure they have all been exposed to TTCs, so that any observed differences in their thought patterns would be attributable to their degree.

Data collection

Following the established practice in studies of teachers' knowledge base, a qualitative mode of inquiry was adopted for data collection (Ben-Peretz, 2011). More specifically, like most of the similar research projects (e.g. Gatbonton, 1999; Mullock, 2006; Akbari & Dadvand, 2011), stimulated recall was used for probing into the teachers' pedagogical content knowledge. This technique, which is used instead of think aloud procedure (Meijer, Beijaard & Verloop, 2002), entails videotaping a class session taught by the participating teacher followed by a viewing session and recollection interview in which the teacher verbalises the thought processes she/he has been engaged in while teaching. The interviews are audiotaped for subsequent analysis. Though this technique cannot provide complete access to teachers' thought processes during teaching, it is 'an indication of the categories of pedagogical knowledge that TESOL teachers use' (Mullock, 2006, 52) and the frequency with which they are recollected in the recall session.

Some efforts were made to enhance the reliability and validity of the elicited stimulated recall data in this study. First, as the passage of time might have decreased the teachers' ability to remember their thoughts during their practice (Gass & Mackey, 2000), measures were taken to minimise the time lapse between the videotaping sessions and recall interviews; in fact, for six of the participants the interval did not exceed half an hour. Two of the participants, however, were teaching late classes and due to the respondents' fatigue, interviews were held in the next morning with a time lapse of ten to twelve hours. In addition, to further increase the reliability of the recalled thoughts, before starting the data collection, the participants were familiarised with the purpose and procedure of conducting stimulated recall protocol, so that the possibility of giving irrelevant, excessive comments on their classroom performance would decrease (Meijer et al., 2002). Finally, in order to minimise the disruptive effect of the camera on teachers' and students' classroom behaviour, the main videotaping phase started in the third session after the camera had been left off on the tripod in the rear of the class for two sessions. Moreover, neither of the researchers was present in the classroom at the time of recording.

Data analysis

A mixed qualitative-quantitative procedure was followed for data analysis. First, teachers' audiotaped recollections were transcribed and segmented into independent units each describing a distinct pedagogical theme, technically referred to as *pedagogical thought units (PTUs)*.

In the next step, on the basis of their content, these PTUs were classified into *pedagogical thought categories*, an umbrella term encompassing thought units with a similar thematic core, and given a label. This process of segmentation, categorisation and labelling was conducted in a bottom-up fashion; that is, although some categories and units were already available from previous studies, care was taken not to restrict the analysis to those units and categories and to allow for potentially new ones to emerge. The following extract from Teacher R3's verbal recollection is an example of how segmentation, categorisation and labelling proceeded:

(1) Here I ask them a question. (2) I want to see whether students know the meaning of column. (3) This is perhaps the first time students have encountered such a word. (4) Because there are two columns in the book, (5) I am trying to give them the meaning [of the word column].

As it can be seen, the above transcript is divided into five separate chunks, or PTUs, each of which expresses a particular pedagogical concern. Following this initial stage of segmentation, the thematic orientations of the PTUs were determined and labelled. For example, in the above quotation, PTU 1 represents teacher's intention to elicit linguistic forms from students and is an example of the pedagogical thought category *Language Management*. PTU 2demonstrates the teacher's concern with finding out what students already know and hence is a thought unit dealing with *Probe Students' Background Knowledge*. PTU 3 involves the teacher's attention to students' abilities and learning habits and therefore is classified as *Knowledge of Students*. PTU 4 deals with teacher's comment on a part of the book and is categorised as *Content Check*. The last thought unit is concerned with the teacher's attempt to give an explanation of the meaning of the word and demonstrates the category *Language Management*. The following table illustrates the definition of all the extracted pedagogical knowledge categories along with an example for each case.

Categories	Definitions	Sample Utterances
Language Management	It deals with PTUs concerned with the input provided for students and output produced by/elicited from students. This includes giving explanation, writing on board, correcting students' mistakes, resorting to the first language, asking students to answer questions, etc.	*Students tell the Persian equivalent of the word.*
Procedure Check	It entails PTUs ensuring that the lesson proceeds smoothly from start to finish, e.g., starting the lesson, giving, explaining and demonstrating procedures.	*I am reviewing the grammar [which was taught in the previous session].*
Noting Student Behavior	It includes teachers' comments on students' physical behavior in class and their reaction toward the teacher and peers.	*Students are watchful to understand when it would be their turn [to answer questions].*
Affective	It includes PTUs dealing with teachers' feelings about the class and their concern with making students feel comfortable, motivated, and not embarrassed.	*I try to speak friendly with students.*
Progress Review	It entails PTUs dealing with teachers' comments on whether students are on the task and whether they are making progress.	*Students are doing grammar exercises.*
Knowledge of Students	It involves PTUs dealing with teachers' comments on students' personalities, likes and dislikes, beliefs, mode of working, etc.	*She [a student] is always silent in the class.*
Self Reflect	It encompasses PTUs dealing with teachers' comments about themselves, their teaching style and preferences, etc.	*I mostly focus on speaking in the class.*
Time Check	It involves PTUs dealing with teachers' comments on time management.	*We have spent twenty minutes on this exercise.*
Comprehensibility	It includes PTUs dealing with revealing teachers' concerns with making students comprehend materials.	*I ask a question to see whether students have understood [the grammar point].*
Group Work	It involves PTUs dealing with teachers' comments on students' pair/group work.	*I ask students to work in pairs and practice the conversation.*
Content Check	It encompasses PTUs dealing with teachers' comments about the book they teach.	*There are two columns [containing formal and informal clothes] in the book.*
Self Critique	It entails PTUs dealing with teachers' comments about themselves in the form of criticism.	*I have an incomprehensible intonation.*
Beliefs	It involves PTUs dealing with teachers' beliefs about teaching and learning.	If exercises are completed in the class, the answers will stick in students' minds.
Decisions	It includes PTUs dealing with choices teachers make in different occasions during their teaching practice.	*I selected the most interesting example.*
Planning Acts	It involves PTUs dealing with teachers' comments on the way they plan their lessons.	*I am thinking what activity to do next.*
Problem Check	It entails PTUs dealing with teachers' concern to notice and/or tackle students' problems if there is any.	*I ask students if they have any problem [with respect to the grammar point].*

Probe Knowledge	It includes PTUs dealing with teachers' comments on their attempts to tap into students' prior knowledge.	*I want to see if students know the meaning of "warm weather" and "cold weather."*
Past Experience	It involves PTUs dealing with teachers' comments on what they have already done.	*I had told them [students] to work on listening at home.*
Level Check	It entails PTUs dealing with teachers' comments on students' proficiency level.	*It is difficult for students at this level to speak completely in English.*
Name Check	It involves PTUs dealing with teachers' comments about students' names.	*I do not remember students' names for the first few sessions.*
Materials Comment	It includes PTUs dealing with teachers' comments on the learning value of different materials and activities as well as their advantages and shortcomings.	*The book is not rich with respect to vocabulary domain.*
Institution Comment	It encompasses PTUs dealing with teachers' comments about the institute in which they teach and the duties assigned to them by the institute.	*They [institute managers] have asked me to tell students to transcribe the listening materials.*

Table 1: Definition of pedagogical knowledge categories

However, the analysis was not always as straightforward as demonstrated above; there were some utterances that could be classified under different pedagogical categories. For example, the second sentence in the following extract from Teacher R1's transcript could be considered as an instance of either *Self-reflect* or *Level Check*:
They are not very advanced students. I don't teach idioms at this level.

In such cases, the ultimate decision was made with reference to the statement's surrounding context. For the above example, the utterance was viewed as an example of *Level Check* since its preceding sentence revealed an example of the same category.

In the next step, those verbal recollections that were not directly related to teachers' thought processes during their teaching practice were omitted from the total pool of PTUs. As a result, irrelevant comments, statements elicited through the interviewer's prompting, utterances with unclear meaning, and segments that were mere repetitions or paraphrases of previous ones were not taken into account for the analysis. Of all the 3391 segments obtained from the participants, 293 (8.64 per cent) were identified as not dealing with the pedagogical thought processes of teachers and were hence excluded from the final analysis. As an example, the following excerpt from Teacher NR5's thought recollection is a comment that has nothing to do with his pedagogical thought processes and therefore has been omitted from the final analysis:
It is good that we are in the class at Ramadan [and therefore forget our hunger].

To achieve higher objectivity in data analysis, another person who had had the experience of conducting this three-phase analysis was consulted during the categorisation and labelling stages whenever doubts existed regarding the appropriate category under which a particular PTU should be classified. The final decision for categorising these dubious PTUs was made as a result of discussion and reasoning among researchers.

Finally, in the quantitative section, the frequency of each pedagogical thought category was counted and the final results were compared within and across groups. These frequency data were considered as a criterion for comparing the pedagogical knowledge base of teachers with ELT-related and non-related degrees in terms of both the average number of reported pedagogical thoughts per minute and the frequency of each reported thought category. Furthermore, in order to determine whether there was any significant difference in the frequency of reported pedagogical thought categories among teachers, chi-Square analysis was conducted.

Results and Discussion

The results of the study are presented in three sections. First, the frequency and ranking of each of the pedagogical thought categories will be discussed with reference to both relevant and non-relevant degree holders. In the second section, a comparison will be made between the most frequently reported thought units in this study and those in the three previous studies. Finally, four macro-categories will be introduced as the overarching model under which all the categories of the first step can be classified.

Reported pedagogical thought categories

Table 2 demonstrates the frequency and ranking of thought categories for both groups of participants. Accordingly, teachers with ELT-related degrees recollected a total of 1853 pedagogical thoughts, an average of 4.41 thoughts per minute, whereas their colleagues who had non-related degrees produced 1245 pedagogical thoughts, an average of 2.96 thoughts per minute. This is, perhaps, the most important finding of our study, indicating that EFL teachers with relevant degrees produced approximately twice the number of pedagogical thought units than those who did not have a degree with English-related majors.

Related Degree Holders		Non-related Degree Holders	
Categories	**Total**	**Categories**	**Total**
1. Lang. Management	387(20.88%)	**1. Lang. Management**	253(20.32%)
2. Procedure Check	345(18.61%)	**2. Procedure Check**	190(15.26%)
3. Progress Review	209(11.27%)	**3. Progress Review**	117(9.39%)
4. Self-reflect	117(6.31%)	**4. Beliefs**	89(7.14%)
5. Beliefs	107(5.77%)	**5. Self-reflect**	82(6.58%)
6. Content Check	98(5.28%)	**6. Note Behavior**	68(5.46%)
7. Note Behaviour	93(5.01%)	**7. Knowledge of Ss**	64(5.14%)
8. Knowledge of Ss	81(4.37%)	**8. Past Experience**	58(4.65%)
9. Comprehensibility	79(4.26%)	**9. Content Check**	56(4.49%)
10. Affective	77(4.15%)	**10. Affective**	53(4.25%)
11. Material Comm.	52(2.80%)	**11. Time Check**	45(3.61%)
12. Time Check	49(2.64%)	**12. Materials Comm.**	30(2.40%)
13. Past Experience	46(2.48%)	**13. Comprehensibility**	20(1.60%)
14. Probe Knowledge	25(1.34%)	**14. Self-Critique**	18(1.44%)
15. Level Check	22(1.18%)	**15. Level Check**	16(1.28%)
16. Self-critique	20(1.07%)	**16. Probe Knowledge**	16(1.28%)
17. Problem Check	15(<1%)	**17. Institution Comm.**	15(1.20%)
18. Group/Pair Work	11(<1%)	**18. Problem Check**	14(1.12%)
19. Decisions	7(<1%)	**19. Planning Acts**	13(1.04%)
20. Institution Comm.	6(<1%)	**20. Decisions**	12(<1%)
21. Name Check	4(<1%)	**21. Group/Pair Work**	10(<1%)
22. Planning Acts	3(<1%)	**22. Name Check**	6(<1%)
Total	***1853***		***1245***

Thoughts per Minute	*4.41*				*2.96*			
Teacher	**R1**	**R2**	**R3**	**R4**	**NR1**	**NR2**	**NR3**	**NR4**
Total Number	*585*	*372*	*471*	*425*	*324*	*254*	*344*	*323*
Thoughts per Minute for Each Teacher	*5.57*	*3.54*	*4.48*	*4.04*	*3.08*	*2.41*	*3.27*	*3.07*

Table 2: Ranking and frequency of categories of pedagogical knowledge of teachers who had ELT-related degrees (N=4) versus teachers who had non-related degrees (N=4)

In order to detect whether the differences in frequency were statistically significant, chi-square analysis was conducted both within and between groups. The results of within-group comparison showed no significant frequency difference among the teachers of either group, which indicates that a relatively homogenous pedagogical thought structure was shared by each group's teachers.

In contrast, such homogeneity did not prevail in across-group comparisons. More precisely, the comparison of the frequency of total thought categories indicated the existence of a significant difference in favour of the teachers with ELT-related degrees ($\chi_2 = 1.19$, $df = 1$, $p<.01$); that is, teachers with relevant degrees enjoyed a significantly larger repertoire of pedagogical thought categories to which they resorted during their teaching. The number and type of university courses covered in ELT-related majors might at least in part explain such a difference. In fact, these courses have a profound effect on changing student teachers' views on teaching and learning leading to a growth of their knowledge base (Clark & Hollingsworth, 2002).

Considering the categories of pedagogical knowledge, the biggest frequency difference was observed in the case of *Procedure Check*, with a chi-square value of 44.9 ($df = 1$, $p<.01$), which shows ELT-related degree holders' concern with ensuring that the lesson proceeds smoothly from the beginning to its end.

Additionally, *Progress check* (teachers' sensitivity toward the improvement made by students) and *Comprehensibility* (teachers' attention to students' comprehension of lessons, ideas and tasks) were other pedagogical categories in which relevant degree holders reported significantly higher frequencies, with chi-square values of 25.96 and 35.16 ($df = 1$, $p<.01$), respectively. If we take these three categories as representative of the thoughts related to methodological issues, their position among the first four pedagogical categories with the highest frequency difference demonstrates relevant degree holders' greater sensitivity toward teaching methodology, a phenomenon that can be attributed to the courses such as teaching methodology and practicum (in case of the participant majoring in ELT) they had passed in their undergraduate programs.

The category of *Language Management* (teachers' concern with the input students receive or the output they produce) was also reported with significantly higher frequency by teachers with ELT-related degrees ($\chi_2 = 28.05$, $df = 1$, $p<.01$). This further confirms the influence of ELT-related undergraduate courses on the respondents' thought patterns. For instance, being exposed to ideas of Krashen (Comprehensible Input Hypothesis), Swain (Output Hypothesis), and Long (Interaction Hypothesis) had enhanced the ELT degree holders' awareness of the important role of interaction in language learning, leading to their stronger sensitivity in this pedagogical category. Furthermore, irrespective of their academic degree, the participants in both groups reported this category with the highest frequency which can be due to its broad definition as well as the fact that language is both the medium and the content of instruction in ELT classes (Mullock, 2006).

In addition, participants with relevant degrees' higher frequency of the pedagogical thoughts on *Affective*, which deals with teachers' feelings about and reactions to students ($\chi_2 =$

4.43, *df* = 1, *p*<.05) and *Note Students' Behaviour*, which involves teachers' thoughts on students' behaviour in the class (χ_2 = 3.88, *df* = 1, *p*<.05) demonstrates their greater awareness of such issues. In fact, English-related majors may have played a significant role in broadening the participants' knowledge of students' learning styles and strategies as well as in the affective domains.

Content Check and *Material Comment* are two other pedagogical categories in which relevant degree holders reported significantly higher frequencies (χ_2 = 11.45, *df*= 1, *p*<.01 and χ_2 = 5.90, *df*= 1, *p*<.05, respectively). These categories encompass teachers' views on different aspects of the book and the difficulty/ease of the materials covered. It seems that teachers who graduate in ELT-related majors are more perceptive toward the book they teach and the tasks and exercises presented in the class. This greater sensitivity was manifested in participants' recollections, which ranged from mere comments on the kind of exercise that was the focus at the moment to more interpretive comments about their learning potential.

Finally, *Self-Reflect* (teachers' thoughts on their attitudes, style of teaching and strategies in dealing with students) is the last pedagogical category in which ELT graduates reported a significantly higher frequency (χ_2 = 6.15, *df* = 1, *p*<.05).This category is indicative of teachers' theoretical concerns with their own practice; that is, teachers who possess an ELT-related degree are more cautious about the critical incidents (Farrell, 2008) that arise in their classrooms which, in turn, makes them demonstrate greater sensitivity toward the positive and/or negative consequences of their teaching preferences.

Among the four pedagogical thought categories in which non-relevant degree holders showed a higher frequency (*Planning Acts*, *Decisions*, *Institution Comment* and *Name Check*) only the first was found to be statistically significant (χ_2 = 6.25, *df* = 1, *p*<.05). The higher frequency of this category, which deals with teachers' comments on the way they plan their lessons and carry them out, indicates that teachers with non-English-related degrees are more consciously involved in the planning process before and during their classroom teaching. By contrast, ELT-related courses might have helped participants in the other group to develop some established schemata (Bullough & Knowles, 1991) that have led them to do the planning subconsciously as a sort of routine activity. However, further research is necessary in this regard to be able to come up with a firm justification.

In the remaining categories, despite the higher reported frequency for ELT-related degree holders, no significant difference was found between the two groups. Furthermore, the striking similarity between the order of the two groups' top-five pedagogical categories (*Language Management, Procedure Check, Progress Review, Self-Reflect* and *Belief*) may indicate the priority of certain pedagogical thoughts among language teachers, irrespective of their academic degree, a phenomenon that with further research might lead to the formulation of a model for language teachers' knowledge base (Mullock, 2006).

Comparison Across Studies

The results were compared with those of Mullock (2006), Gatbonton (2008), and Akbari and Dadvand (2011). Table 3 represents the top six dominant pedagogical thought categories in the studies listed. The comparison revealed some striking similarities. First, these six categories account for between 63 to 81 percent of all the thought units reported by participating teachers. In average, it seems that the first six categories encompass around two third of all the thoughts with which teachers are preoccupied during their practice; it also indicates that teachers usually prioritize a limited number of features during their teaching, hence, the sharp decline between these six categories and the rest of the pedagogical thought categories.

Second, most of the dominant thought categories reported by the teachers in the present study have also been shared by the participants in the other studies. For example, *Language Management*, *Procedure Check*, and *Progress Review* constitute the top pedagogical thought category shared by almost all participants in these studies (the only exception is that *Progress Review* was not reported among the top six categories of MA teachers in Akbari and Dadvand's study). Furthermore, *Self-Reflect* and *Beliefs* have been mentioned among the dominant thought categories by at least one of the other studies. These similarities are further pieces of evidence supporting the postulation of the existence of a common core pedagogical content knowledge for language teachers.

Finally, *Content Check* is the only dominant category reported by ELT related degree holders in the present paper which has not been mentioned among the most frequently used categories in any of the previous studies. Such a discrepancy might be explained in the light of the differences that exist among the participants in the present study and those of the previous ones. In fact, since all the participants in our study had taught Interchange series from the beginning of their career, they had a sound critical look at its strengths and weaknesses, hence, giving a larger number of comments on their course-book.

Rank	Current Study (Relevant Teachers)	Current Study (Irrelevant Teachers)	Akbari & Dadvand (BA Teachers)	Akbari & Dadvand (MA Teachers)	Mullock	Gatbonton (Group 1)	Gatbonton (Group 2)
1	Language Management (21%)	Language Management (20%)	Language Management (43%)	Language Management (31%)	Language Management (25%)	Language Management (18%)	Language Management (22%)
2	Procedure Check (19%)	Procedure Check (15%)	Procedure Check (10%)	Procedure Check (13%)	Knowledge of Students (21%)	Knowledge of Students (14%)	Procedure Check (11%)
3	Progress Review (11%)	Progress Review (9%)	Note Behavior (9%)	Affective (12%)	Procedure Check (10%)	Note Behaviour (10%)	Progress Review (10%)
4	Self-Reflection (6%)	Beliefs (7%)	Progress Review (7%)	Self-Reflection (7%)	Progress Review (7%)	Decisions (7%)	Beliefs (8%)
5	Beliefs (7%)	Self-Reflection (7%)	Affective (7%)	Comprehensibility (6%)	Note Behavior (7%)	Progress Review (6%) Affective (6%)	Knowledge of Students (7%)
6	Content Check (5%)	Note Behavior (5%)	Knowledge of Students (5%)	Note Behaviour (6%)	Affective (5%)	Beliefs (6%) Procedure Check (6%)	Decisions (6%) Affective (6%)
Total	**69%**	**63%**	**81%**	**75%**	**75%**	**66%**	**70%**

Table 3: Comparison of the domain categories of pedagogical knowledge and their frequencies

Macro categories of pedagogical knowledge

Following Akbari and Dadvand's (2011) lead, the 22 thought categories were further classified into four macro groups in order to come up with a more comprehensive, meaningful picture of the overarching pedagogical thought categories: *Language Management*, *Learning Management*, *Classroom Management* and *Knowledge Management*.

Because of its relatively broad definition and high frequency, *Language Management* constituted a single macro category encompassing the input students received and the output they produced. *Learning Management*, which involves the micro thought categories of Procedure Check, Progress Check, Problem Check, Content Check, Level Check, Planning Acts, Comprehensibility, Probe Prior Knowledge, Past Experience, Material Comment and Institution Comment, aims at facilitating and enhancing students' learning processes. *Classroom Management* includes Time Check, Name Check, Decisions, Note Students' Behaviour and Reaction and Group Work and deals with teachers' concerns for effective management of classroom activities. *Knowledge Management*, which incorporates the micro categories of Knowledge for Students, Beliefs, Affective, Self-Critique, and Self-Reflect, has at its heart those dimensions of teachers' knowledge that involve their conscious attention to their own practices and its pedagogical and non-pedagogical effects on students.

Although in all the four macro categories teachers with ELT-related degrees reported higher frequencies compared with their colleagues with non-related degrees, chi-square indices indicated a statistically significant difference in favour of the former group in *Language Management*, *Learning Management* and *Knowledge Management* (see Table 4). This finding demonstrates that language teachers with English-related degrees pay more attention to linguistic interaction in the class, hence their higher frequency for *Language Management*. Compared with their counterparts with non-related degrees, they are also more preoccupied with instructional techniques (i.e. *Learning Management*) and more keen on gaining insight into their own practices and the way learners manage the input.

	The Macro Categories	Relevant Degree Holders	Irrelevant Degree Holders	Chi-Square Index
1	Language Management	387(20.88%)	253(20.32%)	28.05 [a]
2	Learning Management	900(48.56%)	542(43.53%)	88.87 [a]
3	Classroom Management	164(8.85%)	141(11.32%)	1.73
4	Knowledge Management	402(21.69%)	306(24.57%)	13.01[a]

Table 4: Frequency of macro categories of pedagogical knowledge for both groups

[a]Significant at the 0.01 level

Conclusion

Although the current study was limited in the number of participants, it suggests that one of the important features shaping ELT teachers' pedagogical knowledge base is the kind of academic program they have experienced. Considering the frequency of PTUs as a yardstick of professionalism, it seems that individuals with academic degrees in English-related majors are in a better position by showing more mental sophistication and sensitivity as to what is going on in the classroom. These findings can have significant consequences for language teacher recruitment and education: those who are in charge of ELT teacher employment must bear in mind that there are some issues that are more important to the quality of teachers than being a

native or non-native speaker (Clark & Paran, 2007). Additionally, teacher educators must try to come up with distinct teacher education programs that accommodate the differences among applicants with relevant and non-relevant degrees. It can be deduced from the present findings that these two groups of applicants attend pre-service teacher education programs with various background knowledge and needs, making it necessary for them to experience different courses. For example, teachers with non-related English degrees may be required to attend TTC programs that last longer and include topics dealing with the theoretical as well as practical aspects of language teaching to get the participants familiar with the logic behind different teaching techniques.

On the other hand, striking similarities between the top six categories in this study and those of the previous ones (Gatbonton, 1999; Mullock, 2006; Akbari & Dadvand, 2011) reveal that there is a common knowledge base for language teachers, irrespective of their experience, context, and academic degree. The four macro categories of pedagogical knowledge base further confirm this claim. More research is needed to consolidate this knowledge base, which can form the foundation for decisions by policy makers and teacher educators as to the content of teacher education programs.

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