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Pre-service L2 Teachers' Professional Knowledge, Academic Self-Concept and Instructional Practice

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Abstract

Teacher professional development rests on the provision of knowledge, development of skills, and change of attitudes of teacher candidates and in-service teachers. Teachers' professional knowledge, perceptions and teaching practice contribute greatly to student learning. This study sets out to investigate the relationships and inter-relationships among professional knowledge, academic self-concept and self-reported instructional practice which was found as a research gap in the literature. Using a sample of 92 pre-service TEFL teachers in Iran, a significant positive correlation was found between professional knowledge and academic self-concept. The findings also revealed that different domains of professional knowledge are not related to each other for TEFL. Finally, the obtained results indicated that academic self-concept affected instructional practice in total and at the level of sub-dimensions while professional knowledge had an effect on the two dimensions of instructional practice, namely cognitive activation and student learning support but not on the dimension of classroom management.

Keywords: professional knowledge, general pedagogical knowledge, pedagogical content knowledge, content knowledge, academic self-concept, instructional practice, pre-service TEFL teacher

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1. Introduction

In accordance with globalization and the information boom, demands on teachers in general, and language teachers in particular, are also rising. As the most significant elements of a quality education system (Rivkin et al., 2005), teachers are no longer considered the sole transmitters of the restricted and textbook-bound information and knowledge to their students.

Initiated and inspired by Shulman (1986, 1987), professional knowledge was classified into three components of content knowledge (CK), pedagogical content knowledge (PCK) and general pedagogical knowledge (GPK). Such professional knowledge is required in effective instruction and student learning (Konig et al., 2016).

Furthermore, the findings of the various studies reveal that teachers' knowledge and perceptions and what they exactly do in classrooms contribute directly to students' achievement (Darling-Hammond & Bransford, 2007; Grossman & McDonald, 2008). Hence, professional knowledge is only one aspect of teachers' professional competence. Professional beliefs and skills also play a part in teacher competencies (Baumert & Kunter, 2013; Snoek, 2010) and contribute greatly to teacher professional development (Trigwell et al., 1999). The study on self-concept and beliefs has shown that these variables also influence learners' performance (Wang, 2000). Furthermore, academic self-concept can reflect professional knowledge components of student teachers (e.g., Paulick et al., 2016). A number of experts assert that self-concept controls pedagogical practice (Craven & Yeung, 2008) while others believe that instructional behavior is affected by knowledge competency of teachers (Baumert et al., 2010).

Consequently, the significance of teachers' knowledge dimensions and beliefs in terms of student learning and instructional behavior has been highlighted (e.g., Gitomer & Bell, 2016). Instructional practice is concerned with what occurs in the classroom as it affects student learning (Hattie, 2009). It involves three aspects of cognitive activation, classroom management and student support (Konig & Pflanzl, 2016; Voss et al., 2011). However, despite the importance of professional knowledge and academic self-concept in student learning and instructional practice, these constructs have not been extensively investigated in teacher education programs (Konig et al., 2016; Paulick et al., 2016).

Most investigations regarding the components of professional knowledge have

been conducted in sciences especially in mathematics (Schmidt et al., 2007). However, the paucity of investigation in the domain of EFL teacher education is evident. Moreover, since teaching and learning English is different from other disciplines (Borg, 2006), especially in terms of content and medium (Canagarajah, 2013), teachers require both particular knowledge components and particular learning conditions during pre-and in-service teacher training (Tarone & Allwright, 2005). Although a few studies concerning professional knowledge of TEFL teachers have been conducted in the literature (e.g., Akbari & Dadvand, 2014; Gatbonton, 2008; Karimi, 2011), the only study in which three professional knowledge dimensions in the context of TEFL teacher training has been investigated is Konig et al. (2016).

Concerning the components of professional knowledge in the domain of foreign and second language learning and teaching, the study on PCK component is rare (Atay et al., 2000). Even there is no unanimous consensus on the nature of PCK (Bullock, 2011). GPK is a neglected category in teacher knowledge in most fields of study around the world (Konig et al., 2016). Moreover, the influence of teacher candidates' professional knowledge on instructional practice has rarely been explored (Konig & Pflazl, 2016) particularly in an EFL context.

This study generally investigated the main elements or components needed for teacher professional development and specifically second or foreign language teacher education. It juxtaposed those building blocks of teacher professional development, namely knowledge, attitude, and skills (Snoek, 2010) hardly found in any cross-sectional study. Although the significance of teacher knowledge is incontrovertible, few investigations have been carried out if Iranian TEFL teacher education context is concerned. Against this background, this study attempts to investigate the relationship between the two main constructs of academic self-concept and professional knowledge on one hand and the effects of these two variables on instructional practice of TEFL teacher candidates' on the other hand. Furthermore, inter-relationships among various knowledge components and instructional practice dimensions are addressed, as well.

2. Theoretical framework

2.1. Professional Knowledge of Teachers

Although it is hard to define it exactly (Munby et al., 2001), “teachers’ professional knowledge is considered to encompass the knowledge, beliefs, and values that teachers possess and create in the course of their careers as educators” (Bullock, 2011, p. 22). As mentioned, Shulman’s (1986, 1987) work was seminal in classifying teacher knowledge into three dimensions.

2.1.1. Content knowledge component

Since teaching is regarded as a professional enterprise, it requires its own professional knowledge base. CK refers to knowledge of the subject to be taught and is fundamental for teaching (Grossman et al., 2005). Shulman (1986) maintains that CK deals with “the amount and organization of knowledge per se in the mind of the teacher” (p. 9). In TEFL, CK deals with the knowledge of foreign language system and teachers’ competency in it (Kumaravadivelu, 2006). It is usually agreed that CK refers to “the knowledge of the specific subject and related to the content teachers are required to teach. CK is shaped by academic disciplines underlying the subject” (Konig et al., 2016, p. 321). Concerning English language teacher education, CK includes knowledge of the English language as a system of subsystems and proficiency in using English (Banegas, 2020), and knowledge of such linguistics features as phonetics and phonology, syntax, pragmatics, discourse analysis, sociolinguistics, psycholinguistics, and language acquisition, among others (e.g. Kumaravadivelu, 2006; Banegas, 2020). From the sociocultural perspective, teacher candidates should be provided with opportunities to develop their professional identity and agency (Donnini Rodrigues et al., 2018) in which teachers’ content knowledge can be flourished. Konig et al. (2016) maintain that “language teachers are also required to develop a high level of language awareness, language learning awareness, and of intercultural competencies” (p. 322).

Kumaravadivelu (2012) believes that teacher education should focus on a) professional knowledge; b) procedural knowledge; and c) personal knowledge. Professional knowledge relates to the fundamental concepts of language, language learning, and language teaching. Knowledge about language encompasses knowledge of language as system, language as discourse, and language as ideology. Knowledge about language learning includes theoretical and empirical insights

derived from fields such as SLA, cognitive psychology, and information processing. Knowledge about language teaching deals with knowledge about methods of language teaching.

2.1.2. Pedagogical content knowledge component

In Shulman's (1987) words, "PCK is an amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding" (p. 8). In other words, teachers must be knowledgeable in both subject matter and pedagogy and know how to integrate them properly. PCK contributes to effective teaching and plays a significant part in instructional quality (Kunter et al., 2013). This kind of knowledge makes students understand the subject matter (Shulman, 1986). However, Depaepe et al. (2013) maintain that PCK cannot be considered a distinct body of knowledge as it cannot be separated from content knowledge empirically and conceptually. Furthermore, researchers studying PCK either focus on the nature of PCK or the development of PCK. Those studying the PCK development either follow intervention studies in which the impact of intervention or treatment on PCK is surveyed (Atay et al., 2010) or follow ascertaining studies in which teachers' PCK development during a specific period is described (Liu, 2013; Watzke, 2007).

Atay et al. (2010) studied the development of PCK among Turkish teacher candidates. Through focused-group interview and narratives, the data were collected. The intervention included an experiential task in which interactive activities for a novel were designed and presented. Pre-service teachers carried out a number of micro-teachings and then they received feedback from their mentor and the class. They were also required to reflect on their own teaching style. It was found that PCK of teacher candidates was developed through received feedback. Yazdanmehr et al. (2020) attempted to distinguish expert and non-expert ELT teachers in terms of PCK. Using a questionnaire, they found that PCK as a significant characteristic of expert TEFL teachers relates to four other dimensions of expertise in ELT including teacher's experience, cognitive skills, professional growth and learner-oriented teaching. They concluded that teacher's lesson planning, class management, problem solving, learning assessment/feedback and task design should be taken into consideration in teacher education programs.

2.1.3. General pedagogical knowledge component

Shulman (1987) maintains that GPK is “the knowledge of broad principles and strategies of classroom management and organization” (p. 8). Later, other investigators (e.g., Dicke et al., 2015; König et al., 2011; Voss et al., 2011) proposed other aspects of GPK such as knowledge of teaching methods, assessment, learner motivation and dealing with heterogeneity of students. König et al. (2011) and König and Pflanzl (2016) also classified GPK into “structure” where teachers are required to prepare, organize and assess units, “motivation/classroom management” which deals with how teachers persuade students and run the classroom, “adaptivity” which is concerned with diverse individual learners in the classroom, and “assessment” which deals with assessing learners.

A number of studies have attempted to investigate in-service and pre-service teachers’ general pedagogical knowledge. Voss et al. (2011), for example, surveyed 746 pre-service teachers and found a four-factor structure involving “knowledge of teaching methods”, “classroom management”, “assessment”, and “learner heterogeneity”. König et al. (2011) also conducted a study with US, German and Taiwanese mathematics teacher candidates. They found multidimensionality in GPK structure with factors revolving around classroom structure, management and assessment, motivation, and learner heterogeneity.

2.2. Teacher Academic Self-concept

As a significant domain of general self-concept, academic self-concept has to do with an individual’s perceptions regarding his level of competencies in an academic setting (Ferla et al., 2009; Lips, 2004). As a psychological construct, academic self-concept can lead to achievement in educational contexts (Marsh & Craven, 2006). It is regarded as a multifaceted psychological concept since a person may conceive of him/herself from different perspectives (Mercer, 2011). Accordingly, Eccles (2005) enumerates such characteristics for self-concept as organized, hierarchical, evaluative, multifaceted, stable, differentiable and developmental. The academic self-concept and its relation to instructional outcomes like achievement, interest, coursework selection and motivation has been documented in the literature (Arens et al., 2011; Parker et al., 2014). Self-concept is now considered as a measure of success achievement (Guo et al., 2017). Therefore, the self-concept of teachers is regarded as a dimension of success expectancy and a cognitive assessment

representing teachers' conceived control of teaching (Lohbeck et al., 2018).

2.3. Instructional Practice

According to Depaepe and Konig (2018), instructional practice deals with what actually occurs in the classroom context. A number of studies have shown its effect on learner achievement (Hattie, 2009; Wang et al., 1993).

Researchers have distinguished three aspects of the instructional practice including "cognitive activation", "class management" and "providing learning support" (e.g., Konig & Pflanzl, 2016; Voss et al., 2011). Depaepe and Konig (2018) maintain that cognitive activation has to do with presenting tasks and activities which are cognitively demanding and challenging to the students. Classroom management is mainly concerned with time management, preventing disorder and student monitoring. Providing student learning support deals with encouraging learners and providing adaptive instruction. They investigated the relationships among the three variables of general pedagogical knowledge, self-efficacy and teaching practices among 342 master student teachers in Germany. No significant relationship was found between general pedagogical knowledge and self-efficacy. It was also found that SE strongly predicated instructional practice whereas GPK predicated only student support and class structure of instructional practice.

The literature review revealed that the professional competency of teachers has been investigated from different perspectives. However, as far as second or foreign language teacher education is concerned, few investigations have been carried out both in terms of professional beliefs and professional knowledge. In most studies, professional knowledge components have been considered per se. Furthermore, based on the conducted surveys, the association between professional knowledge and professional beliefs on one hand and pedagogical practice on the other hand has not been explored in teacher preparation programs and TEFL teacher education contexts, as well.

2.4. The Present Study

Focusing on three main variables related to teacher professional development (professional knowledge, academic self-concept, and instructional practice), the present study attempts to juxtapose these three constructs and investigates the

relationships among them. The study specifically deals with the following research questions:

- (1) Is there any significant relationship between professional knowledge competency and academic self-concept of TEFL teacher candidates?
- (2) How are different professional knowledge components (CK, PCK, and GPK) for TEFL related to each other?
- (3) What is the relationship between professional knowledge and academic self-concept on the one hand and instructional practice of TEFL teacher candidates on the other hand?

The following hypothesis was formulated based on the first research question:

- (1) There is a significant relationship between professional knowledge competency and academic self-concept of TEFL teacher candidates.

3. Methodology

3.1. Context of The Study

The main context of this research project was Teacher Training University in Iran, mostly known as Farhangian University (henceforth referred to as FU) in recent years. This university, with various branches around the country (called *Pardis*), jointly managed by two Ministry of Science, Research and Technology and Ministry of Education, is chiefly responsible for educating teacher candidates. The English language education department of this university accepts candidates willing to become English language teachers provided that they pass the nationwide university entrance examination held annually.

3.2. Sample and Procedure

This study recruited participants from ELT teacher educators and pre-service TEFL teachers from different branches of FU. Eleven subject matter experts were requested to fill out the questionnaire designed to elicit their opinions regarding the different components of PCK. TEFL teacher candidates who were at the last semester in the academic year of 2018-2019 were also recruited, realizing the fact that they would have encompassing knowledge gained through four-year academic studies to handle the professional knowledge test whose content mainly covered

those subjects taught through eight semesters. The total population of last semester TEFL teacher candidates around the country in the academic year of 2018-2019 was 193 at the time of this investigation. Convenience and snowball sampling procedures were used to select TEFL teacher educators, and purposive and available sampling techniques were utilized to select TEFL teacher candidates from the population. The number of participating candidates for each instrument varied between 92 and 97 (59.8% male, 39.8% female). The mean age was 22.24 years and mean GPA was 17.19. The tests were administered in May and June. Unlike professional knowledge paper and pencil tests, the questionnaires were administered online. To ensure reliable and valid scoring, a coding scheme was developed accordingly.

3.3. Instruments

3.3.1. Curriculum document of Farhangian University

To obtain a thorough understanding of the infrastructure of FU which could contribute to the development of knowledge tests, it became evident that the curriculum of this university and especially its ELT curriculum needed to be carefully content analyzed and examined. In the Curriculum Document of FU, four competencies are introduced: General knowledge competency, general pedagogical knowledge competency, content knowledge competency, and pedagogical content knowledge competency. These competencies are juxtaposed and presented to the student teachers each semester. ELT Curriculum of FU is a voluminous document (more than 350 pages) in which teacher professional development hinges on the provision of knowledge, development of skills, and change of attitudes (p. 6). This document embraces the overall introduction of the course, educational objectives, course syllabuses and detailed descriptions of the courses. Domain-specific courses carry more weight (85 credits) compared to other remaining courses (general pedagogical knowledge, Islamic education courses, and elective courses).

3.3.2. Instructional practice questionnaire

Since observing all participating student teachers' classes was not possible, it was decided to use the self-reported instructional practice survey. Although there are variations in addressing dimensions of instructional practice (Depaepe & Konig,

2018; Konig & Pflanzl, 2016; Voss et al., 2011), Depaepe and Konig's (2018) utilized components ("cognitive activation", "classroom management" and "student learning support") were adopted along with the corresponding subcomponents. Each of these three main components was further divided into two sub-categories (Depaepe & Konig, 2018) making six sub-dimensions of instructional practice. For each sub-dimension, a number of items were developed which were mostly adopted from international surveys (PISA and TALIS). The adopted items were adapted and slightly modified to be used with pre-service TEFL teachers. The constructed questionnaire was content- checked by two ELT experts and minor modifications were made accordingly. The final version ended up with 25 items. The first sub-dimension, that is, "doing cognitive demanding tasks" included 4 items (e.g., I asked the students to discover the rule themselves) and the second sub-dimension, "stimulating students' cognitive independence", also made 4 items (e.g., I gave the students opportunities to express their opinions about the topic). The two sub-dimensions of "classroom management" that is, "preventing disorder" included five items (e.g., I made the students aware of some possible consequences for their misbehavior) and "providing structure" had three items (e.g., I explained beforehand what I expected of the students). Finally, sub-dimensions for 'providing student learning support', that is, "encouraging students" (e.g., I really listened carefully to my students' comments and feedback) and "dealing with student heterogeneity" (e.g., I provided different tasks for the students who had different ability levels) had five and four items, respectively.

3.3.3. Academic-self-concept questionnaire (ASCQ)

To achieve the designated goals and address the TEFL teacher candidates' academic self-concept reflecting three components of knowledge, that is CK, PCK, and GPK, Paulick et al.'s (2016) instrument was adopted. Paulick et al. (2016) themselves used an instrument developed by Braun et al. (2008) for self-evaluated student competencies. Braun et al.'s (2008) scale consisted of five competencies, namely knowledge competency, methodology competency, presentation competency, communication competency, cooperative competency, and personnel competency. However, only the items related to knowledge competency were utilized by Paulick et al. (2016). The adopted instrument was content checked and ended up having twelve items. It consisted of four main items ("I can give an overview of the topic of the subject area of CK/PCK/GPK"; "I can clearly present

complicated issues of the subject area of CK/PCK/GPK"; "I can use important definitions and terms from the subject area of CK/PCK/GPK"; "Now I see myself in the position to process a typical question of the subject area of CK/PCK/GPK"). Each item, however, was repeated three times to cover the three aspects of professional knowledge.

3.3.4. Professional knowledge test

While a number of tests have been developed to assess ELT teachers' professional knowledge for certification/licensure purposes (e.g., Praxis Series Tests), such tests are not simply accessible to the researchers. Considering the objectives of this study, the early attempt was then directed toward developing a professional knowledge test as a multidimensional construct involving three components. These three components were assessed through a series of paper-and-pencil tests in which the teacher candidates were required to call back information from their declarative memory to answer a set of test items (see Appendix).

3.3.4.1. CK test

Developed and validated as a CK test, this instrument was initially attempted as part of a bigger project of FU (a comprehensive assessment plan) by Kiany, ShayesteFar and Amoosi (2017). As it was already undertaken, the same CK test was adopted in this study. However, to save time, avoid weariness and have a desired length, only half of the items were retained and the rest were discarded.

3.3.4.2. PCK test

PCK test was developed in this study. Articulated and expressed by ELT teacher educators through the questionnaire survey, three dimensions of PCK, namely "knowledge of curriculum", "knowledge of instructional strategies" and "knowledge of assessment" were adopted. Then, the major concepts for each preferred PCK component were derived both from the teacher educators' expertise and experience and ELT Curriculum of FU. In "knowledge of curriculum", TEFL teacher candidates were expected to know basic ELT curriculum concepts, definitions, and goals of the curriculum, be able to sequence and order teaching materials, to analyze and collect materials in terms of learning goals, and be familiar with syllabus types. In "knowledge of instructional strategies", teacher candidates are expected to know various types of instructional strategies which help them to

make materials intelligible to the learners such as dialog-based instruction, lecturing, group-based instruction, counseling and web-based instruction, as well as game-based instruction. “Knowledge of assessment” deals with methods of assessing students’ language learning, language skills and sub-skills. Based on the topics and themes, 24 multiple-choice and short-answer items were developed. The developed instrument was content-checked by the panel of experts and content validity ratio was estimated, as well. It was then pretested with 15 TEFL teacher candidates before administrating among pre-service TEFL teachers. Classical test theory was applied to analyze test items in terms of difficulty and discrimination. The findings indicated that item 7 of “knowledge of instructional strategies” and item 3 of “knowledge of assessment” were difficult ($P \leq 0.30$), as far as item difficulty index was concerned. The remaining items were found to be moderately difficult. Moreover, the results of item discrimination analysis also showed that items 2 and 3 of “knowledge of curriculum”, and items 3 and 8 of “knowledge of assessment” enjoyed weak discrimination power ($D \leq 0.19$). Hence, these items were possible candidates for elimination or complete revision.

3.3.4.3. GPK test

GPK test was developed in this research project as well. To begin with, the constructs needed for developing such a test were initially explored. The ELT Curriculum of FU and existing literature on GPK were reviewed. By comparing two frameworks given by König et al. (2011) and Voss et al. (2011) and considering overlapping aspects, four dimensions were chosen for the goal of the study. These content domains were motivation/classroom management, structure, assessment, and student heterogeneity. The knowledge of classroom management/motivation has to do with time management and strategies to deal with disorder and student misbehavior. Knowledge of structure is mainly concerned with lesson organization and planning and lesson evaluation. Knowledge of assessment relates to types and functions of assessment, test development, reliability, and validity. Finally, student heterogeneity deals with learning groups with different ability levels in the classroom, students’ learning process, and students’ characteristics and styles of learning. Based on the descriptions, 24 items were developed in true-false, short-answer and multiple-choice formats. The developed instrument was content checked by ELT, education and psychology experts and content validity ration was also estimated. It was then pretested with 15 TEFL teacher candidates before administrating among pre-service TEFL teachers. Classical test theory was applied

to analyze test items in terms of difficulty and discrimination. The results revealed that item 2 of “knowledge of classroom management and motivation” and items 1 and 6 of “knowledge of student heterogeneity” were difficult ($P \leq 0.30$) and, thus, needed modification and improvement. Furthermore, items 3 and 6 of “knowledge of classroom management and motivation”, item 1 of “knowledge of structure”, and items 1 and 2 of “knowledge of student heterogeneity” were detected as poor ($p \leq 0.19$), so they were decided to be eliminated or completely revised accordingly.

3.4. Analyses

The self-reported instructional practice survey and academic self-concept questionnaire were validated using the Rasch model (Winsteps Software, Version 4.3.4). The results provided the basis for the unidimensionality of these two instruments, an indication of the construct validity of the scales (unexplained variance in first contrast was 2.4 and 2.7 for ASCQ and instructional practice survey, respectively) (for more information on validation process see Zangani et al., 2020). Furthermore, each knowledge test was scaled separately. Due to the small sample size, classical test theory was applied (using R software) to analyze test items. Item difficulty and item discrimination, as two criteria for maintaining, revising, and discarding items, set the ground for validating CK, PCK and GPK test items. Ideal items are moderately difficult and discriminating. The reliability of the instruments was investigated via Cronbach alpha. Inter-rater reliability was also estimated using interclass correlation and Cohen's Kappa statistic. There was moderate agreement between the two raters in GPK test, $\kappa = .407$, $p < .05$ and substantial agreement between two raters in PCK test $\kappa = .690$, $p = .000$. The results of intraclass correlation showed that the obtained reliability index was .856, showing 85% consistency in rating the CK items. To answer the research questions, a set of bivariate correlations were conducted between teacher candidates' professional knowledge, academic self-concept, and instructional practice (after removing unpaired observations). To answer the last research question, a conceptual model was estimated. Such a model was needed to specify the causal relationships among the underlying theoretical constructs and variables of the study derived from a thorough literature review. Path analysis (using Lisrel, Version 8.5) was adopted to study the simultaneous effect of professional knowledge and academic self-concept on TEFL teacher candidates' self-reported instructional

practice at the general and differentiated (sub-dimensions) levels. Path analysis is a type of multiple regression which is mainly used to evaluate causal models. It was attempted in this study as the goodness of fit indices for SEM (structural equation modelling) and CFA (confirmatory factor analysis) were not in acceptable limits. We also controlled for such background variables as age, gender, and GPA.

4. Results

Table 1 reveals such descriptive statistics as mean, standard deviation, skewness and kurtosis for the five instruments utilized in this study. The reliabilities of the instruments were estimated in total and for individual items using Cronbach alpha and person separation index in the Rasch model (see Table 2).

Table 1

Descriptive Statistics of TEFL Teacher Candidates' CK, PCK, GPK, Academic Self-concept, and Instructional Practice

	N	Mean	SD	Skewness	Kurtosis
CK	92	2.35	0.97	-0.53	-1.05
PCK	95	1.26	0.58	-0.49	-0.01
GPK	95	1.09	0.56	-0.66	1.21
ASC	92	2.69	0.85	-0.541	-0.573
IP	97	2.84	0.80	-0.608	0.255

Table 2

Reliabilities of Utilized Instruments

	CK	PCK	GPK	ASCQ	IP
Cronbach's α	0.79	0.84	0.68	0.60	0.83

To investigate the first two research questions, bivariate correlations between manifest variables were computed. The findings indicated that academic self-concept and professional knowledge, as Table 3 shows, were moderately and positively correlated, $r = .340$, $p = .001$. Hence, professional knowledge accounts for 11.5% of the academic self-concept variance and vice versa. However, no significant relationships were found between three domains of knowledge competency (CK, PCK and GPK) and academic self-concept counterparts. CK academic self-concept did not correlate with knowledge domains and PCK and

GPk academic self-concepts either. PCK academic self-concept correlated positively and moderately with test scores in content knowledge ($r = 0.37, p = .000$) and GPk self-concept ($r = 0.26, p = .012$) as well. GPk self-concept was found to be positively correlated with test scores in content knowledge ($r = .20, p = .049$) as well as with PCK self-concept ($r = .260, p = .012$) (see Table 4).

Table 3
Correlation between Academic Self-concept and Professional Knowledge

		ASC	P. knowledge
Academic self-concept	Pearson Correlation	1	.340** .001
Professional knowledge	Pearson Correlation	.340** .001	1

Table 4
Correlations between Components of Professional Knowledge and ASCQ

		ASCck	ASCpck	ASCgpk	CKTotal	PCKTotal	GPkTotal
ASCck	Pearson Correlation	1	.196	-.150	.150	.081	.054
ASCpck	ASCpck Pearson Correlation		.061 1	.153 .260*	.152 .373**	.447 .014	.607 -.074
ASCgpk	ASCgpk Pearson Correlation	.196		.061 -.150	.012 1	.000 .206*	.895 .079
	CKTotal	.153	.012		.049	.458	.947

As Table 5 reveals, a moderate and positive correlation was found between CK and PCK domains of professional knowledge ($r = .391, p = .000$). Similarly, there was a significant relationship between PCK component and GPk aspects of professional knowledge ($r = .207, p < .05$). However, no relationship was found between CK and GPk ($r = .20, p > .05$). In other words, domain-specific knowledge was different from general pedagogical knowledge.

Table 5
Correlations among Different Domains of Professional Knowledge

		CKTotal	PCKTotal	GPKTotal
CKTotal	Pearson Correlation	1	.391**	.202
PCKTotal				
GPKTotal				
PCKTotal	Pearson Correlation	.391**	1	.207*
GPKTotal	Pearson Correlation	.202	.207*	1
		.054	.049	

Moreover, when sub-components of PCK and GPK were concerned, significant positive inter-correlations were observed among the three subcomponents of PCK, that is, “knowledge of curriculum”, “knowledge of instructional strategies” and “knowledge of assessment” (from .296 to .580, $p=.000$). In regard to GPK subcomponents, significant positive inter-correlations were found between classroom management/motivation and structure ($r = .336$, $p = .001$), classroom management/motivation and student heterogeneity ($r = .518$, $p = .000$), and structure and student heterogeneity ($r = .340$, $p = .001$). No significant correlations were found between knowledge of assessment and other GPK subcomponents (see Table 6).

Table 6
Correlations among the Various Subcomponents of Professional Knowledge

		PCK Curriculum	PCK Strategies	PCK Assessment	GPK Mot/Mang	GPK Structure	GPK Assessment	GPK Hetrog
PCKCurriculum	Pearson Correlation	1	.580**	.390**	.303**	.383**	.095	.343**
PCKStrategies	PCKStrategies		.000	.000	.004	.000	.370	.001
PCKAssessment	Pearson Correlation	.580**	1	.296**	.177	.272**	-.006	.182
GPKMot/Mang	PCKAssessment	.000		.004	.093	.009	.953	.084
GPKStructure	Pearson Correlation	.390**	.296**	1	.107	.345**	.191	.124
GPKAssessment	GPKMotmang	.000	.004		.313	.001	.069	.243
GPKHetro	Pearson Correlation	.303**	.177	.107	1	.336**	.041	.518**

		PCK Curriculum	PCK Strategies	PCK Assessment	GPK Mot/Mang	GPK Structure	GPK Assessment	GPK Hetrog
CKTotal	GPKStructure	.004	.093	.313		.001	.696	.000
		.383**	.272**	.345**		1	.087	.340**
	GPKAssessment							
	GPKHetro				.336**			
	CKTotal Pearson Correlation							
	GPKAssessment Pearson Correlation	.000	.009	.001	.001		.410	.001
		.095	-.006	.191	.041		1	.186
						.087		
	GPKHetrog Pearson Correlation	.370	.953	.069	.696	.410		.075
		.343**	.182	.124	.518**	.340**		1
							.186	
	CKTotal Pearson Correlation	.001	.084	.243	.000	.001	.075	
		.238*	.210*	.295**	.160	.210*	.118	
								.144
		.023	.046	.005	.127	.045	.263	.171

Concerning correlations among the subcomponents of PCK and GPK, as it is evident in Table 6, it was found that there were significant and positive correlations between “knowledge of curriculum” and classroom management/motivation ($r = .303, p = .004$), “knowledge of structure” ($r = .383, p = .000$) and “knowledge of student heterogeneity” ($r = .343, p = .001$); between “knowledge of instructional strategies” and “knowledge of structure” ($r = .272, p = .009$); and between “knowledge of assessment” (PCK) and “knowledge of structure” ($r = .345, p = .001$). Finally, it should be pointed out, significant positive correlations were found between CK as a composite construct and “knowledge of curriculum” ($r = .238, p = .023$), “knowledge of instructional strategies” ($r = .210, p = .046$), “knowledge of assessment” ($r = .295, p = .005$), and “knowledge of structure” ($r = .210, p = .045$).

To study the simultaneous impact of academic self-concept and professional knowledge on teacher candidates' self-reported instructional practice in total and its components, path analysis was carried. To do the path analysis, first, the assumptions were checked. The Kolmogorov-Smirnov test of normality was conducted and the data was found to be normally distributed.

Figure 1

Path Analysis of the Simultaneous Influence of Professional Knowledge and ASC on TEFL Teacher Candidates' Instructional Practice at the General and Differentiated Levels (standardized level)

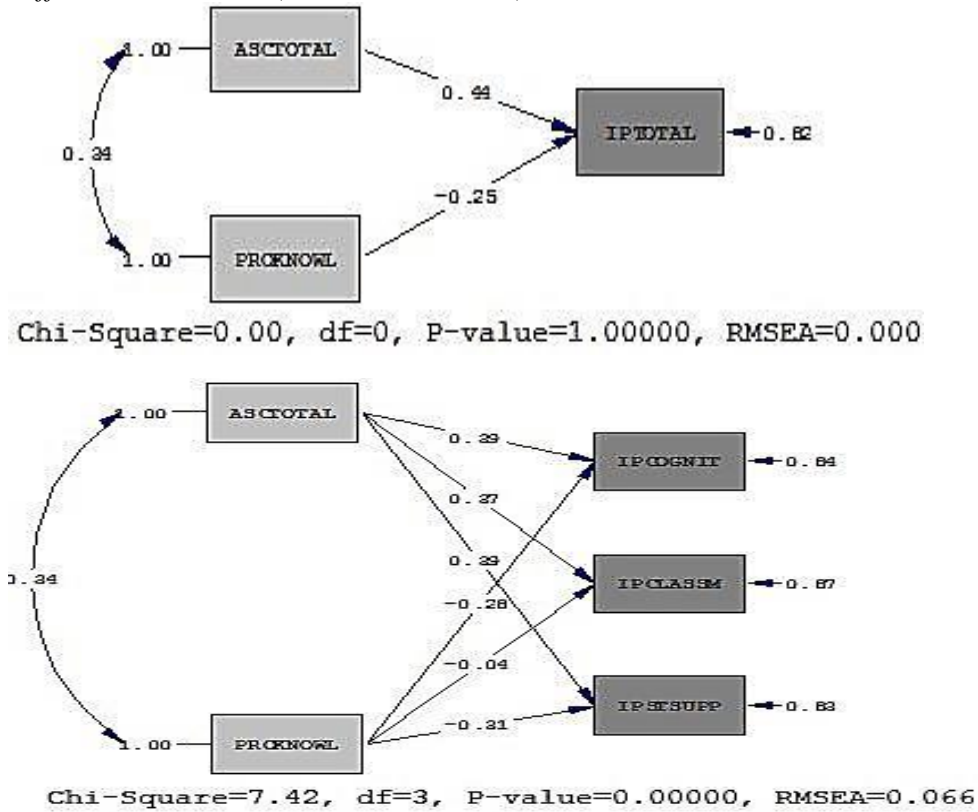
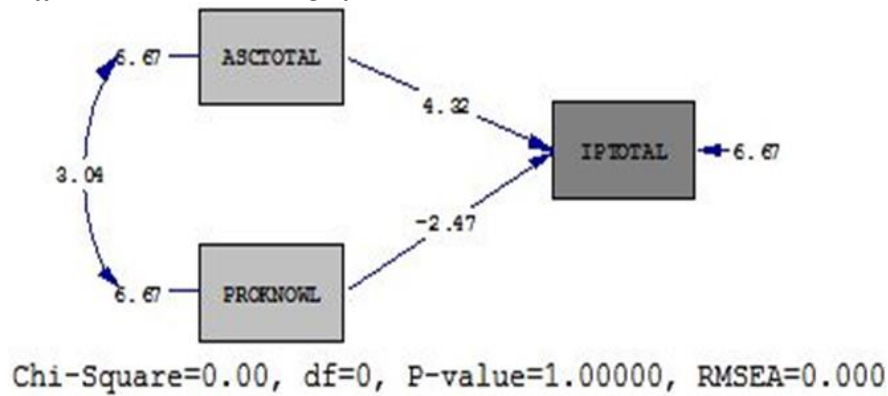


Figure 2

Path Analysis of the Simultaneous Influence of Professional Knowledge and ASC on TEFL Teacher Candidates' Instructional Practice at the General and Differentiated Levels (significant level)



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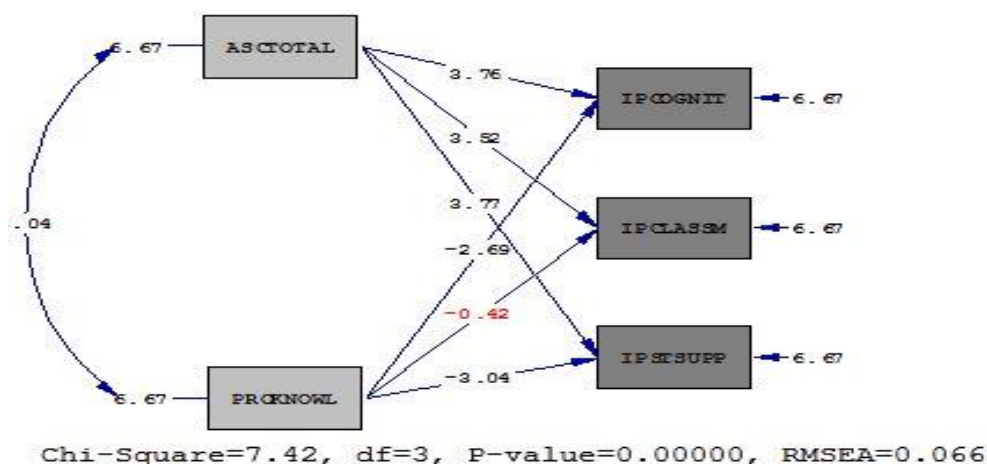


Figure 2 displays path analysis of the concurrent influence of professional knowledge and ASC on TEFL teacher candidates' IP at the general and differentiated levels (significant level). If the relationship between variables in both standardized (Figure 1) and significant levels (Figure 2) are the same, it implies that the proposed hypothesis is correct. The given goodness of fit indices with its main variables for the model was saturated. The saturated model which produces a perfect fit is one in which its parameters are equal to data values. In a similar vein, as Table 7 shows, the model including subcomponents of instructional practice also fitted the data.

Table 7
Goodness of Fit Indices for the Proposed Conceptual Model

Model	X2 /df	RMSEA	RMR	GFI	CFI	NNFI	IFI
Main variables		saturated model (absolute fit indices)					
Subcomponents	2.47	.066	.021	.97	.92	.91	.95

Figure 2 reveals the results of the concurrent effect of academic self-concept and professional knowledge on teacher candidates' instructional practice as estimated by the variables of "cognitive activation", "classroom management", and "student support". The model shows that there was a significant influence of TEFL teacher candidates' academic self-concept on pedagogical practice. The obtained significant path coefficient was 4.32 which was larger than 1.96. The effect was found to be direct. This figure also shows that professional knowledge predicts significantly but

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negatively instructional practice ($p = .000$). The obtained significant path coefficient between the two variables was -2.47 which was larger than 1.96. The effect was indirect, though. Furthermore, academic self-concept explains three dimensions of instructional practice. Academic self-concept significantly and positively predicted cognitive activation, classroom management and student support ($p = .000$). The obtained t values were 3.76, 3.52 and 3.77, respectively. Hence, academic self-concept directly affects dimensions of instructional practice. Similarly, professional knowledge was found to affect significantly negatively cognitive activation and student support. The obtained t values were -2.69 and -3.04, $p = .000$, respectively. On the contrary, when classroom management was viewed, it was found that the obtained significant path coefficient between professional knowledge and classroom management was -.42 which was smaller than 1.96. Therefore, it was concluded that professional knowledge cannot account for classroom management.

5. Discussion

As stated before, the overall goal of this study was to explore TEFL teacher candidates' professional knowledge, academic self-concept and self-reported instructional practice. Regarding the first hypothesis, the study assumed that TEFL teacher candidates' academic self-concept is an indicator of their professional knowledge in general as the literature survey reveals that self-concept is now considered as a measure of expectancies of success (Guo et al., 2017). Thus, any changes in teachers' beliefs and perspectives regarding instruction and learning contribute directly to their professional development (Trigwell et al., 1999). However, in the present study, no significant relations were observed in all corresponding knowledge domains. Non-significant correlations between sub-domains in this study can be due to the fact that teacher candidates' academic self-concept develops gradually (Eccles, 2005) in the beginning years of training and it can be flourished as they get more knowledge and practice during the subsequent years of instruction.

The findings of this investigation were in line with Paulick et al.'s (2016), as both found a significantly moderately positive relationship between the two variables of academic self-concept and professional knowledge, indicating that professional knowledge is related to academic self-concept of pre-service teachers. However, unlike the present study, Paulick et al. (2016) found significant positive correlations between three scales of academic self-concept and corresponding professional

knowledge components. The samples they used and educational system, however, were different as they focused on pre-service biology and physics teachers which makes the comparison somehow inappropriate. As mentioned before, TEFL is different from other subjects in which language is used both as content and medium of instruction and teacher candidates need to develop language and intercultural awareness and acquire distinct competencies and strategies to deal with foreign language classes (Borg, 2006). Furthermore, like Paulick et al. (2016), a significant and moderate relationship was observed between test scores in CK and PCK academic self-concept and as they both embrace domain-specific knowledge.

The obtained findings indicated that different domains of professional knowledge are not correlated with each other for TEFL. As a result, the second hypothesis was not accepted both at the general level and at the level of subcomponents. The results yielded in this study corroborated the findings of the other investigations (Baumert et al., 2010; König et al., 2011; König et al., 2016). König et al. (2011) found that knowledge components of CK and PCK differs from GPK and the relationship between CK and PCK is stronger than that between PCK and GPK, as it was found in this research project. Both CK and PCK in Iranian teacher education system cover specific subject-matter courses around the main topics and themes for developing knowledge of content or amalgamation of content and pedagogy, teacher candidates need for efficient student learning. In other words, the correspondence and proximity between CK and PCK courses in terms of content and topic were higher than between CK and GPK courses.

Unlike König et al.' (2016) study in which high inter-correlations were observed between knowledge components of CK and PCK and between PCK and GPK in TEFL, in the present study, a moderate correlation was yielded between CK and PCK components and a weak correlation between PCK and GPK competency. In König et al.'s, a significantly moderate correlation was found between the two components of CK and GPK, but no significant correlation was found in this study. The similar results also were found in other subject areas such as mathematics in which a high correlation was observed between knowledge components of CK and PCK (Blomeke et al., 2011; Voss et al., 2011).

The findings also revealed significant positive inter-correlations among the three PCK subareas. The obtained moderate correlations indicate that pedagogical content knowledge develops gradually as teacher candidates obtain more experience

(Watzke, 2007) and it flourishes as they start their teaching career (Liu, 2013). Hence, PCK development rests on teaching experience which justifies low to moderate inter-correlations among PCK subareas in this study.

Finally, the results of the path analysis indicated that academic self-concept affects instructional practice positively and significantly while professional knowledge predicts significantly but negatively instructional practice. Path analysis was also carried out to assess the effect of academic self-concept and professional knowledge on the sub-dimensions of instructional practice. It was found that academic self-concept explains all three sub-dimensions of IP whereas professional knowledge failed to correlate significantly with classroom management. Depaepe and Konig (2018) investigated the concurrent influence of general pedagogical knowledge and self-efficacy on teacher candidates' instructional practice. Aligned with the findings of this study, Depaepe and Konig did not also find any relationship between general pedagogical knowledge and teaching practice as reported by teacher candidates themselves. However, unlike this study, GPK accounted for differences in sub-dimensions of instructional practice in their study except for cognitive activation for which correlation was not significant.

6. Conclusion

This study was unique in the sense that it touched upon the main elements or components needed for teacher professional development in general and second language teacher education in particular. It juxtaposed those building blocks of teacher professionalism, namely knowledge, attitude and skills (Snoek, 2010) hardly found in any cross-sectional study. Although weak to moderate correlations were obtained, the study makes a novel contribution to TEFL student teachers' professional knowledge, academic self-concept, and instructional practice by investigating the relations and interrelations among the various components and subcomponents of the study.

As the current research base was limited, this study can contribute to the enhancement of knowledge and attainment of far better understanding of pre-service TEFL teacher preparation program. A significant relationship was observed between professional knowledge and academic self-concept both in correlational study and path analysis. It was also found that professional knowledge and academic self-concept affect instructional practice. It shows the significant role the

formation of teacher candidates' self-perceptions plays in gaining knowledge. Teacher education programs mainly focus on transferring knowledge to teacher candidates. No explicit attempts are made to augment student teachers' attitudes, beliefs, and motivational orientations as they influence knowledge and instructional practice. Thus, developing teacher candidates' academic perceptions related to teaching and learning should be highlighted. Furthermore, it is believed that to have optimum instruction and enhance student achievement, student teachers must be equipped with different knowledge components along with skills and positive attitudes and self-concept. Lohbeck et al. (2018) propose a number of strategies for developing positive self-concepts such as making mastery experiences and reattribution training. By reattributing they meant, attributing success to one's own ability and effort and attributing failure to outside factors.

Although this study attempted to contribute to the literature on professional knowledge and academic self-concept and their association with instructional practice, a number of flaws can, nevertheless, be propounded. The first limitation concerns the small sample of our study which may have influenced the relations among the variables and confined the generalizability of the findings. As mentioned, it was not possible to recruit more participants due to the restricted population of last semester TEFL teacher candidates at the time of investigation. Future studies can recruit large samples to explore the relationships between manifest and latent constructs.

The second limitation pertains to research instruments. As the sample of teacher candidates was small, the constructed professional knowledge tests were not validated through item response theory (IRT). Instead, we used the classical test theory. Future studies can cross-validate our instruments applying the Rasch model provided that they use large and adequate sample. Although we tried our best, the tests we developed were not the representative sample of items to assess teacher candidates' knowledge competency. Following the lead of König et al. (2016) we relied on cognitive perspective of teacher knowledge rather than situated perspective.

Since it was not possible to access and observe all classes of teacher candidates, we utilized self-reported instructional practice. As such, the possibility of rating bias or social desirability by teacher candidates may have affected the obtained results adversely. Future studies can utilize observation and video-recording of teacher candidates' actual practices to enhance the validity of the information obtained.

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Appendix

Item examples from the professional knowledge test

Knowledge component and subcomponent	Item example	Correct answer
CK of teaching methodology	<p>In a Suggestopedic approach to language teaching, a pseudo-passive state is ideal for a. a. establishing power against lack of psychological barriersb. overcoming psychological barriers in order to take advantage of learning potentialsc. removing psychological barriers of learning situation d. taking advantage of learning processes for communication.</p>	B
PCK of curriculum	<p>Which of the following sentences indicates a component of syllabus, and which indicates a component of curriculum? A. Determining teaching methods and materials. B. What will be taught and tested. C. The order in which items will appear in the course. D. Identifying the needs of the group of learners.</p>	A: cur B: syl C: syl D: cur
GPK of structure	<p>In preparing a lesson for adolescents, a language teacher attempted to use different components and put some activities on different orders. Decide whether the following statements regarding his lesson planning are correct or incorrect. A. He put the demanding tasks earlier on and the lighter ones later. B. He put activities which tend to fragment the class like group or pair work or computer-based work at the end of the lesson. C. He put lively</p>	A: cor

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Knowledge component and subcomponent	Item example	Correct answer
	activities (controversial discussion or activities involving physical movement) before quieter activities (like dictation). D. He gave the homework in the course of the lesson, and simply remind the students what it was at the end.	B: inco C: inco D: cor