

PEDAGOGICAL CONTENT KNOWLEDGE OF FOREIGN LANGUAGE TEACHERS: A REVIEW

Meijiao Shi ^{1*}, Chalernpol Tapsai²

^{1*,2}*College of innovation and management, Suan Sunandha Rajabhat University, Bangkok, Thailand,
E-Mail: s63484945100@ssru.ac.th^{1*}, chalernpol.ta@ssru.ac.th²*

ABSTRACT

Pedagogical Content Knowledge (PCK), as a crucial component of teacher knowledge, has been extensively studied, with recent attention focusing on the PCK of foreign language teachers. This paper provides a comprehensive review of the background, concept and research status of PCK in the context of foreign language teaching. By revisiting the concept of PCK proposed by Shulman and subsequent developments by scholars, various models of PCK are discussed, including the Technological Pedagogical Content Knowledge (TPACK) that integrates technology. Additionally, concerning the PCK research specific to foreign language teachers, this paper synthesizes the findings of scholars both domestically and internationally, covering the essential elements, sub-elements, as well as research paths concerning different objects, experiences, and disciplines. Finally, the article outlines the current shortcomings in research and suggests potential directions for future studies.

Keywords: Pedagogical Content Knowledge, Foreign Language Teachers, Research Review.

INTRODUCTION

Pedagogical Content Knowledge (PCK) is the specialized knowledge that teachers possess in specific subject areas, playing an indispensable role in educational practice. With the emergence and development of the PCK concept, research on the PCK of foreign language teachers has gradually gained scholarly attention. This paper aims to delve into the uniqueness and significance of teacher knowledge in foreign language teaching by reviewing the evolution of the concept of pedagogical content knowledge, the construction of its frameworks, and the current research status on PCK for foreign language teachers. Firstly, we will start by tracing the origin of subject pedagogical content knowledge and the introduction of the PCK concept, elucidating its central position in the field of education. Subsequently, we will review relevant concepts and frameworks of PCK, conducting a detailed analysis of its essential components, particularly its manifestations in foreign language teaching. Finally, this paper will summarize key findings from current research on PCK in foreign language teaching, and explore potential directions for future studies, aiming to provide more effective theoretical support for the practice of foreign language education.

LIRETATERREVIEW

Review of Relevant Concepts and Frameworks of PCK

Pedagogical Content Knowledge (PCK) is a crucial component of teachers' knowledge, representing a knowledge system that distinguishes subject experts from teachers (Cochran et al., 1993)^[1]. Currently, the most influential aspect of teacher knowledge research is "Pedagogical Content Knowledge" (PCK), a concept widely used in literature, considered a specific form of professional knowledge. PCK has proven to be an effective investigative model designed to capture the knowledge that makes one an effective teacher (Fernandez, C., 2014)^[2].

Shulman (1986a) initially proposed "Pedagogical Content Knowledge" alongside "Content Knowledge" and "Curricular Knowledge" as a subcategory of "Content Knowledge." He argued that PCK comprises two aspects: Knowledge of Representations and Knowledge of Learning Difficulties and Strategies for Overcoming Them. Furthermore, Shulman (1986: 9) emphasized the topic specificity of PCK, stating that it is related to topics commonly taught in a specific subject area. As research progressed, Shulman (1987) isolated PCK as one of the seven categories of teacher knowledge, distinct from "Content Knowledge" mentioned in 1986. He highlighted that Subject Pedagogical Content Knowledge involves the comprehensive use of educational and subject knowledge to understand how teaching a specific topic is organized and presented to specific students, underscoring its topic specificity. PCK effectively integrated the earlier controversies surrounding content knowledge and pedagogical knowledge^[3].

Shulman's categorization of teacher knowledge and the concept of "Subject Pedagogical Content Knowledge" had a significant impact on subsequent teacher knowledge research, garnering attention from numerous scholars. The Journal of Teacher Education dedicated a series of articles to the topic of "Subject Pedagogical Content Knowledge" in its 1990 Volume 41, indicating the growing importance of PCK in teacher education research (Kang Xiaowei, 2012)^[4]. Many subsequent researchers further explored this concept, using it as a theoretical framework for their studies.

Cochran et al. (1993) argued that Shulman's understanding of Subject Pedagogical Content Knowledge was theoretical and static, proposing the concept of Pedagogical Content Knowledge Knowing (PCKg) to emphasize the dynamic nature of true Subject Pedagogical Content Knowledge, constantly evolving based on teaching experiences.

Hashweb (2005) redefined PCK as the result of teachers' personal pedagogical constructions, shaped by a collection of teaching events derived from continuous planning, teaching, and reflective development on the taught subject^[5].

With the advent of the digital age, teachers face challenges in adapting to and effectively incorporating emerging educational technologies into their subjects. Prensky (2001) characterized today's students as "digital natives" and teachers as "digital immigrants," highlighting the transformative impact of technology on current teachers' knowledge structures. In this context, scholars began proposing a technological perspective on studying the composition of teachers' subject pedagogical content knowledge and the interconnectedness of its elements. Mishra and Koebler (2006) introduced the concept of Technological Pedagogical Content Knowledge (TPACK), encompassing technological knowledge, content knowledge, and pedagogical knowledge.

Since Shulman (1986a) coined the term PCK, it has gained momentum in investigating teachers' knowledge domains and found wide application. Shulman introduced the concept of content knowledge for teaching, which many scholars, building upon Shulman's research and considering subject characteristics, developed into the "knowledge base for teaching," constructing various models.

Grossman (1990), building on Shulman's (1987) work, conducted empirical research, categorizing teacher knowledge into subject knowledge, general pedagogical knowledge, subject pedagogical content knowledge, and knowledge related to educational background. Grossman expanded the understanding of PCK for English teachers, adding "knowledge and beliefs about purposes" and "knowledge of curriculum materials" to the initially proposed "Knowledge of Representations" and "Knowledge of Learning Difficulties and Strategies"^[6].

Marks (1990), focusing on the field of mathematics, identified four categories of PCK through interviews with eight fifth-grade mathematics teachers: Subject Matter for Instructional Purposes, Students' Understanding of the Subject Matter, Instructional Processes for the Subject Matter, and Media for Instruction in the Subject Matter.

Fernandez, C. (2014)^[7], in a comprehensive review of significant PCK models, presented the following synthesis based on his research:

Table 1: Summary of Common PCK Models

1	Elbaz (1983) Proposed five components: self-knowledge, environment knowledge, content knowledge, curriculum development, and instructional strategies.
2	Shulman and Wilson, Richert (1987) Defined seven categories of teacher knowledge: content knowledge, general pedagogical knowledge, curriculum, pedagogical content knowledge,

	students and their characteristics, educational contexts, and knowledge of purposes, aims, objectives, and educational philosophies.
3	Grossman (1990) Systematized Shulman's proposal into four components: content knowledge, general pedagogical knowledge, pedagogical content knowledge, and context knowledge.
4	Calderhead (1996) Identified five components: self-knowledge, subject matter knowledge, students' knowledge, curriculum, and teaching methods.
5	Putnam and Borko (1997) Recognized three components: general pedagogical knowledge, content knowledge, and pedagogical content knowledge.
6	Carter (1990) Suggested that the characteristics of teachers' professional practice require idiosyncratic, situational, intuitive knowledge that hardly fits basic and applied categories, in other words, knowledge inherent in technical rationality.
7	Consensus model: In the PCK Summit model five main domains are defined for teachers' profession: i) knowledge of assessment; ii) pedagogical knowledge; iii) content knowledge; iv) knowledge of students and v.) curricular knowledge. These five knowledge influences and are influenced by the professional knowledge of a particular topic. This professional knowledge includes knowledge of instructional strategies and representations of content, student understanding, scientific practices and habits of mind.

In the specific academic field, a representative PCK model is the "Pentagon Model of PCK for Science Teachers" proposed by Park & Chen (2012). This study divides the PCK for science teaching into five components: knowledge of instructional goals, knowledge of student understanding, curriculum knowledge, assessment knowledge, and pedagogical content knowledge. These five elements interact with each other, emphasizing the importance of personal reflection and knowledge integration in the formation process of teachers' PCK.

In 2012, during the PCK Summit held in the United States, scholars not only redefined PCK but also proposed a consensus PCK model, as illustrated in the following figure. This model starts from the teacher's knowledge structure, moving from macro to micro, from distant to close, along the research path of teacher knowledge, specific topic PCK to teacher's personal PCK. It deduces the generation of PCK and its impact on student learning outcomes. The knowledge foundation that teachers should possess includes evaluation knowledge, pedagogical knowledge, content knowledge, student knowledge, and curriculum knowledge, which is a universally applicable classification proposed for the teaching profession. These knowledge components interact with specialized knowledge in specific topics. In specific topics, teacher knowledge is further divided into pedagogical strategy knowledge, content representation knowledge, student understanding knowledge, scientific practice knowledge, and cognitive habit knowledge. These knowledge components, after being filtered and adapted based on teacher beliefs, teaching goals, and teaching contexts, give rise to the personal PCK that teachers form and apply in classroom teaching. This, in turn, undergoes further filtering and adaptation based on student beliefs, prior knowledge, and behavior, ultimately influencing student learning outcomes. The model integrates the traits of PCK summarized in existing research, connecting its elements with specific classroom practices, revealing the essential attributes of PCK such as individuality, subject specificity, and situational context.

Research Status of Pedagogical Content Knowledge for Foreign Language Teachers

Compared to the more mature research on PCK for science and math teachers, research on the PCK of foreign language teachers is relatively scarce (Atay et al., 2010)^[8]. However, this does not imply that PCK is not important for the knowledge of foreign language teachers; on the contrary, scholars (Richards 1998; Zhang & Zhan 2014; Evens 2016) have proposed from different perspectives that PCK research is crucial for the knowledge of foreign language teachers. The research on PCK for foreign language teachers unfolds in two main paths: one is the research on the conceptual content of PCK, and the other is the research on the developmental path of PCK for foreign language teachers.

In terms of research objects, existing studies include single-object studies targeting specific groups and diverse-object studies targeting different groups of teachers. Researchers classify teachers based on their teaching experience into pre-service teachers (e.g., Hlas & Hildebrand 2010) and in-service teachers^[9]. They also categorize them based on the educational levels of students they teach, such as primary school, middle school, university, and adult education. In-service teachers are further categorized into novice teachers (e.g., Watzke 2007) and experienced teachers (e.g., Johnson & Goettsch 2000; Meijer et al. 1999, 2002; Walker 2012). Diverse-object studies simultaneously focus on two categories of teacher

groups, such as novice teachers and experienced teachers (Zhang & Zhan 2014), or pre-service teachers and in-service teachers (Luo 2004; Kissau & Algozzine 2013). Some studies (Atay et al. 2010) do not specify the educational level of the students they teach.

Regarding research content, Evens et al. (2016), based on the three major databases (ERIC, Wos, Psyeinf) and literature with PCK and "foreign language" or "second language" as the main topics^[10], classify existing research into two categories: the nature and characteristics of PCK for foreign language teachers and the construction of PCK for foreign language teachers. The former focuses on the impact of teachers' personal professional qualities (such as teaching experience and educational background) on PCK. The latter can be divided into intervention studies and studies on the formation and development of PCK for teachers at specific stages of their professional careers. In terms of its nature and characteristics, most studies are based on Shulman's (1986, 1987) definition of PCK, considering it as a unique combination of subject matter knowledge and pedagogical knowledge specific to the teaching profession. For example, Zhang & Zhan (2014) define PCK as how to teach specialized knowledge in a specific subject, which is the knowledge that makes a teacher a good teacher^[11]. Additionally, scholars like Van DreVerloop & De Vos (1998), Meijer, Verloop & Bejaard (1999, 2002) provide alternative definitions, emphasizing that PCK is a special practical knowledge formed by teachers in their teaching practices and developed through reflection on their practices. Walker (2012) focuses on language teachers and, in terms of its components, explores two aspects. Firstly, what elements should be included in the PCK for foreign language teachers. For instance, Andrews, S. (2001, 2003) constructs a model for ESL teacher PCK. This model emphasizes the importance of teacher language awareness, considering language awareness and subject matter knowledge equally important, and listing pedagogical knowledge as part of PCK, which contradicts Shulman's viewpoint that considers these two types of knowledge as separate elements of teacher knowledge rather than part of PCK. Secondly, how these elements influence teaching^[12]. For example, Liu (2013) in a case study of an ESL teacher educator shows that among the components included in PCK, PK has a more positive effect on the teaching of second language teachers.

Chinese scholars have continuously conducted research on the PCK of foreign language teachers. Han Gang (2011:6) divides English teacher PCK into subject knowledge, theoretical knowledge, and practical knowledge, further subdividing them into 10 subcategories (such as language and cultural knowledge), each of which integrates procedural knowledge, strategic knowledge, and declarative knowledge^[13].

Wang Yuping (2013), based on Cochran's (1993) dynamic pedagogical content knowledge (PCKg) and the characteristics of the English discipline, proposes that the PCK structure for foreign language teachers includes four basic components: subject knowledge, knowledge about students, knowledge about teaching contexts, and knowledge of foreign language teaching strategies^[14]. Zheng Zhilian et al. (2013), using a specific curriculum as an example, explore seven categories of inherent elements included in pre-service English teacher PCK: knowledge of the nature of English subject teaching, subject content and skill knowledge, educational professional knowledge, teacher self-knowledge, learner knowledge, curriculum and textbook knowledge, and critical reflection knowledge^[15].

He Lifen (2016), based on a comparative study of the current status of English teacher PCK from the perspectives of Chinese and foreign students, analyzes the situation through a dynamic perspective of PCK. This study classifies English teacher PCK into four categories: English subject knowledge, pedagogical knowledge, knowledge of English teaching goals and environment, and student knowledge^[16].

With the increasing emphasis on "Content and Language Integrated Learning" (CLIL), research on the PCK of subject teachers involved in such integrated disciplines has also attracted scholarly attention. Representative studies include Morton (2016) and Troyan et al. (2017). Morton (2016), in the context of content-based instruction, analyzes the knowledge structure that teachers need for integrating content and language, emphasizing the complexity of this context, where content knowledge and language knowledge simultaneously serve instructional goals^[17].

Troyan et al. (2017), based on the basic concepts of PCK and referencing the TPACK model, propose the "Integration Pedagogical Content Knowledge Model" (I-PCK Model.)^[18]. In this model, content knowledge is divided into "Content Knowledge for Language Teaching" (CK-L) and "Content Knowledge for Content Teaching" (CK-C). These two are fused with general pedagogical knowledge (GPK) to form "PCK Specific to the Language Teaching Discipline" (PCK-L) and "PCK of the Specific Subject Matter Being Taught" (PCK-C). The fusion of "PCK Specific to the Language Teaching Discipline" and "PCK of the Specific Subject Matter Being Taught" results in "Content Knowledge for

the Integration of Language and Content" (CK-L/C). The core of this model is I-PCK, the integration of these three types of knowledge.

CONCLUSION AND OUTLOOK

Through a comprehensive study of the PCK of foreign language teachers, a series of important conclusions can be drawn. Firstly, PCK, as a crucial component of teacher knowledge, plays a vital role in the effectiveness of teaching and student learning outcomes. It is crucial for a deep understanding of teaching strategies, curriculum design, and subject content.

Secondly, the framework and models of PCK have undergone continuous development and improvement. From the initial Shulman framework to later multi-layered, diversified PCK models, this evolution reflects an ongoing deepening understanding of teacher professional knowledge. This development provides a solid foundation for more in-depth research in the future.

In particular, PCK holds a central position in foreign language education. Through a systematic review of the concept, framework, and research status of PCK (PCK) in the field of foreign language teaching, the importance of PCK in the entire foreign language education system has become clearer. Foreign language teachers need to possess profound linguistic subject knowledge, combined with teaching practice, to form PCK applicable to different language learning environments.

In future research, we recommend deepening the understanding of foreign language teacher PCK in the following areas. First, attention should be paid to the impact of emerging educational technologies on PCK, exploring the role of educational technology in foreign language teaching in the digital age. Secondly, conduct more in-depth interdisciplinary research to promote the sharing of PCK experiences across different disciplines. Finally, delve into the specific mechanisms of how technology integration affects PCK to better guide foreign language teachers in integrating technology in actual teaching and improving teaching effectiveness. Through these efforts, we can better serve the development of foreign language education and ensure that PCK theory better guide's practice.

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to Suan Sunandha Rajabhat University for invaluable help throughout this research.

REFERENCES

- Cochran, K. F., DeRuiter, J. A., & King, R. A. (1993). Pedagogical content knowing: An integrative model for teacher preparation. *Journal of Teacher Education*, 44(4), 263-272.
- Fernandez, C. (2014). KNOWLEDGE BASE FOR TEACHING AND PEDAGOGICAL CONTENT KNOWLEDGE (PCK): SOME USEFUL MODELS AND IMPLICATIONS FOR TEACHERS' TRAINING. *Problems of Education in the 21st Century*, 60(1), 79-100.
- Shulman, L. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1-23.
- Kang Xiaowei. A review of contemporary Western teacher knowledge research [J]. *Foreign Education Research*, 2012, 39(08):84-91
- Hashweh, M. Z. (2005). Teacher pedagogical constructions: a reconfiguration of pedagogical content knowledge. *Teachers and Teaching*, 11(3), 273-292.
- Grossman p l. The making of a teacher: Teacher knowledge and teacher education [M]. New York: Teachers College Press, 1990.

- Fernandez, C. (2014). Knowledge Base for Teaching and Pedagogical Content Knowledge (Pck): Some Useful Models and Implications For Teachers' Training. *Problems of Education in the 21st Century*, 60(1), 79-100.
- Atay, D., Kaslioglu, O., & Kurt, G. (2010). The pedagogical content knowledge development of prospective teachers through an experiential task. *Procedia-Social and Behavioral Sciences*, 2(2), 1421-1425.
- Hlas, A. C., & Hildebrandt, S. A. (2010). Demonstrations of pedagogical content knowledge: Spanish liberal arts and Spanish education majors' writing.
- Evens, M., Elen, J., & Depaepe, F. (2016). Pedagogical content knowledge in the context of foreign and second language teaching: A review of the research literature. *Porta Linguarum: Revista Internacional de Didáctica de las Lenguas Extranjeras*, (26), 187-200.
- Zhang, F., & Zhan, J. (2014). The knowledge base of non-native English-speaking teachers: Perspectives of teachers and administrators. *Language and Education*, 28(6), 568-582.
- Walker, E. (2012). Literacy-oriented pedagogy in the advice of experienced language teachers as prospective practicum assessors. *Pedagogies: An International Journal*, 7(2), 182-198.
- Han Gang. Construction of English teacher subject teaching knowledge [M]. Shanghai: Shanghai Foreign Language Education Press, 2011.
- Wang Yuping. On the development path of foreign language teacher PCK [J]. *Foreign Languages World*, 2013, (02):69-57
- Zheng Zhilian, Ye Zhixiong. A study on the construction of pre-service English teachers' subject teaching knowledge and its ways - Taking the course "Educational Experience" of Zhejiang Normal University as an example [J]. *Teacher Education Research*, 2013, (01):65-69
- He Lifen. Comparative analysis of the current situation of subject teaching knowledge of Chinese and foreign
- Morton, T. (2016). Conceptualizing and investigating teachers' knowledge for integrating content and language in content-based instruction. *Journal of Immersion and Content-Based Language Education*, 4(2), 144-167.
- Troyan, F. J., Cammarata, L., & Martel, J. (2017). Integration PCK: Modeling the knowledge (s) underlying a world language teacher's implementation of CBI. *Foreign Language Annals*, 50(2), 458-476.