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Investigating the Classroom Implementation of Mandarin Teachers' Pedagogical Content Knowledge (PCK): Exploring Effective Strategies and Practices for Teaching Chinese as a Foreign Language in the Philippines

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Abstract

This mixed-methods explanatory sequential research investigated the Pedagogical Content Knowledge (PCK) cognitions and practices of Filipino high school teachers of Mandarin. The PCK framework highlights the crucial interplay between pedagogical and content knowledge, aiding educators in selecting the most suitable teaching techniques to effectively present the subject matter. This study combined both quantitative and qualitative data from self-assessment reports, semi-structured interviews, and classroom observations, providing a clear picture of the participants' PCK. Using descriptive statistics and thematic analysis, this study fully captured the participants' PCK. The qualitative data revealed that the participants' confidence level on their pedagogical content knowledge was considered high. While the qualitative data uncovered the participants' eighteen PCK practices, and their cognitions on the significance of using appropriate techniques to maintain motivation, achieve lesson's objectives, cater students' needs, and bridge challenges in teaching Chinese Mandarin. Lastly, anchored from the findings, this study provided recommendations such as deepening the participants' understanding of the PCK framework and strengthening each professional knowledge, contributing to improving the participants' capability to effectively teach Mandarin.

Keywords: Chinese as a foreign language (CFL); pedagogical content knowledge (PCK); Chinese language teaching; language acquisition; language teaching; special program in foreign language

Introduction

Teaching effectiveness has been attributed to different factors, depending on the perspective of teaching being investigated. Due to the complexity of teaching, several factors may influence teaching effectiveness, including the quality of the teacher-student relationship (Hughes et al., 2017; McCormick & O'Connor, 2015; Roorda et al., 2017), the teacher's pedagogical and content knowledge (Ball et al., 2008; Shulman, 1986), teaching strategies (Prince, 2004), classroom management (Allen & Spaulding, 2018; Emmer & Stough, 2001), assessment and feedback (Hattie & Timperley, 2007), and the teacher's professional development (Darling-

Hammond & Richardson, 2009). Over the past years, substantial research has been conducted to enrich the discussion on teaching effectiveness, leading to recommendations on how teaching can be further enhanced. Furthermore, several frameworks encapsulating both theoretical and practical knowledge of teaching have been proposed to provide guidance to both pre-service and in-service teachers. One of the most influential frameworks illustrating the professional knowledge required for effective teaching is the Pedagogical Content Knowledge proposed by Shulman (1986).

Basically, the Pedagogical Content Knowledge (PCK) framework illustrates the interplay between the teacher's content knowledge and pedagogical knowledge, resulting in a new form of professional knowledge that embodies both pedagogical and content knowledge. According to Shulman (1986), a teacher who possesses PCK has the ability to present the subject matter in a form that is understandable to the students, regardless of their interests and abilities. Therefore, possessing PCK means having the capability to simultaneously utilize content knowledge and pedagogical knowledge to ensure that learning is appropriate for the students. The idea of PCK goes beyond understanding the content and teaching; it also involves conceptualizing teaching activities that are suitable for presenting a particular content and restructuring teaching methods until the content becomes digestible for the students.

The existing literature revealed that investigating teachers' PCK can be beneficial in different ways and may be helpful for education managers and teachers. First, teachers' PCK has an influence on improving the teaching of the subject matter (Alkis-Kucukaydin & Ulucinar, 2016; Gess-Newsome & Lederman, 2017; Jeong & Kim, 2019). Second, understanding PCK is crucial in further enhancing teachers' ability to effectively integrate technology in teaching (Koehler & Mishra, 2015; Niess, 2016). Third, examining teachers' PCK leads to the development of professional development program that aims to improve teaching practices (Magnusson et al., 2015). Fourth, investigating teachers' PCK is a crucial factor that contributes in the enhancement of the students' outcomes (Blomeke et al., 2014; Hill et al., 2008; Shi & Baker, 2022).

Park and Chen (2012) asserted that quality of teacher's PCK is dependent on the interconnection between its components and the strength of each component individually. Therefore, to have PCK, it is crucial to establish a strong foundation in both content and pedagogical knowledge, which is typically achieved during pre-service training and education. However, this context is inapplicable to the participants of this study, the Filipino teachers of Chinese language, because they achieved Chinese proficiency during in-service training and did not have any exposure to the language during their pre-service education. Thus, this study is interested in uncovering how PCK was demonstrated by the participants in their Mandarin classrooms.

For the past years of offering Chinese as a foreign language in the public school system of the Philippines, no study has yet investigated the PCK of the Filipino teachers of Chinese. The existing literature on PCK investigated teachers of other subjects, and of other education levels, thus, population gap exists. Further, the methodology that was employed by this study is the mixed-methods explanatory sequential research, providing equal attention to quantitative and qualitative data, opposing to the existing literature which only utilized either quantitative or qualitative data. Guided by these research gaps, the present study aimed to describe the classroom implementation of Mandarin teachers' pedagogical content knowledge (PCK) and identify effective strategies and practices for teaching Chinese as a foreign language in the Philippine context. Specifically, this study aimed to describe teachers' Pedagogical Content Knowledge (PCK) in terms of:

- Self-assessment report
- Classroom practices
- Cognition

The findings of this study identified strengths and weaknesses of the Filipino high school teachers of Mandarin in terms of utilizing suitable teaching strategy in presenting Chinese lessons, thus, providing baseline data for future training related to PCK. Further, the results of this study can be used in designing teachers' pre-service or in-service trainings and professional development programs that would contribute in further equipping the teachers with skills necessary to effectively teach Chinese as a foreign language in the Philippines, leading to the uplifting of the overall quality of instruction.

Research method

Research design

To fully capture the teachers' PCK, this study utilized mixed-methods research design, specifically, the Explanatory-Sequential Design. The explanatory-sequential design involves using qualitative data to support the interpretation of quantitative data; thus, quantitative data is to be collected first and to be followed by qualitative data (Edmonds & Kennedy, 2017). For the first phase of data collection, the study extracted quantitative data from the self-assessment report and analyzed them using descriptive statistics such as percentage, frequencies, mean, and standard deviation. While the second phase of data collection involves extracting qualitative data from classroom observations and semi-structured interviews which were analyzed using thematic analysis of Braun and Clarke (2006). The Thematic Analysis includes the following steps: (a) familiarizing the data, (b) assigning code to the data, (c) developing themes among codes, (d) reviewing identified themes, (e) defining & naming themes, and (f) finalizing the analysis. The result of the thematic analysis will be analyzed individually and collectively, and then to be used to further clarify the interpretation of quantitative data. Figure 1 shows the flow of data collection and analysis of this study using explanatory-sequential design.

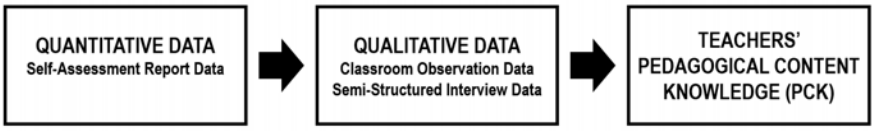

Figure 1. Conceptual framework

Participants

To ensure that this investigation accurately describes the PCK of Filipino High School Teachers of Mandarin, the researcher established inclusion and exclusion criteria that serve as the basis for choosing participants. To be included in this investigation, the participant shall meet the following predetermined qualities: (a) the teacher shall be from the schools identified as outstanding schools in the implementation of the Mandarin language program; (b) the teacher shall have completed the Mandarin teacher's 2-year training program prescribed by the Department of Education; and (c) the teacher shall be engaging in online Mandarin teaching during the conduct of the study. On the other hand, failure to meet any of the above-mentioned criteria will automatically disqualify the participant from partaking to the study. Furthermore, participants have the discretion to withdraw from the study in case of unforeseen circumstances that would severely

affect their ability to participate or become non-compliant to the protocols established by the researcher. Among the teachers of the three (3) identified schools, nine (9) of them met the inclusion criteria and have complied with the study protocols.

Study protocol

To uphold the highest ethical standards, the proponent of the investigation stringently adhered to the guidelines of the University's ethics review committee. The Department of Education's relevant bureaus and units gave permission and consent for the study to be carried out. Observing classroom teaching, conducting semi-structured interviews, and distributing questionnaires were the three methods employed to gather the data. As part of the first round of data collection, the respondents were asked to complete a 5-point Likert scale developed and validated by Schmidt and colleagues (2020), which gave the researcher a preliminary understanding of how the respondents perceived their pedagogical content knowledge (PCK). In the second phase, the researcher performed classroom observations by watching, transcribing and coding the participants' recorded three consecutive classes, capturing the in-action demonstration of their PCK. In the third phase, using the same Likert Scale as an interview guide, semi-structured interviews were conducted in order to give the researcher a deeper understanding of the participants' PCK practices and perceptions, revealing their PCK cognitions.

In addition to the three phases of data collection, the proponent of this investigation implemented data validation mechanisms to enhance the reliability and validity of the data. Data verification procedures help maintain validity and reliability, leading to more precise results and analyses of the study (Morse et al., 2002). Data verification can be conducted from different perspectives, including those of the researcher, participants, and third party (Creswell & Miller, 2000). For qualitative studies, it is recommended to have at least two verification mechanisms (Creswell & Poth, 2017). In this study, the researcher used data verification mechanisms such as member checking, inter-rater reliability assessment, and audit trail.

Results

Participants' perceptions of their pedagogical content knowledge (PCK)

Pedagogical Content Knowledge (PCK) refers to the teacher's knowledge about choosing a suitable approach or strategy in teaching a particular content (Koehler & Mishra, 2007). In contrast with the Pedagogical Knowledge, which refers to participants' general knowledge and beliefs in teaching, the Pedagogical Content Knowledge is the blending of teachers' knowledge of the content or subject matter and pedagogy, resulting in subject-specific teaching. In the context of this study, the pedagogical content knowledge refers to the participants' knowledge of teaching Chinese Mandarin. The participants' ratings on statements describing their pedagogical content knowledge generated an average of 4.53 (strongly agree), manifesting the participants' high level of confidence in their PCK. The statement indicating the participants' ability to evaluate students' performance in Chinese Mandarin garnered the highest rating (4.67). This was followed by statements indicating abilities to select effective teaching approaches to guide student thinking and learning in Chinese Mandarin and develop exercises to consolidate students' knowledge in Chinese Mandarin (4.56). Lastly, developing appropriate tasks to promote students' complex thinking in Chinese Mandarin got the lowest rating (4.33). The participants' rating of each statement related to pedagogical content knowledge was shown in table 1.

Table 1. Participants' perceptions of their pedagogical content knowledge

Pedagogical Content Knowledge Items	Mean Scores	Standard Deviations
I know how to select effective teaching approaches to guide student thinking and learning in Chinese Mandarin.	4.56	0.51
I know how to develop appropriate tasks to promote students' complex thinking in Chinese Mandarin.	4.33	0.51
I know how to develop exercises with which students can consolidate their knowledge in Chinese Mandarin.	4.56	0.50
I know how to evaluate student's performance in Chinese Mandarin.	4.67	0.46
Mean score for Pedagogical Content Knowledge	4.53	

legend: 1-1.80 (SDA), 1.81-2.60 (DA), 2.61-3.40 (N), 3.41-4.20 (A), 4.21-5.00 (SA)

In addition to the data presented in Table 14, which revealed the participants' ability to choose an appropriate strategy, develop suitable tasks and exercises, and evaluate students' learning in their Chinese classrooms, the researcher further established the participants' PCK using classroom observation data. The researcher classified the observed classroom practices into different language teaching approaches and methods identified by Richards and Rogers (1986) and Cook (2016). It was revealed that the participants utilized multiple teaching techniques in their Chinese classrooms. The observed teaching techniques of the participants reflected different language teaching approaches or methods such as the grammar-translation method, situational language teaching, audio-lingual method, communicative language teaching, and total physical response.

Teachers' pedagogical content knowledge (PCK) practices

To visibly illustrate the language teaching practices employed by the participants, the researcher labeled the teaching episodes in each classroom observation or lesson using codes adopted from Baker (2011) through Nvivo 12. The Nvivo 12 generated a figure depicting the chronological occurrence of teaching episodes in each classroom observation. In each figure, teaching episodes were represented by codes and colored lines. The code corresponds to a particular teaching activity which detailed description can be seen in the codebook of the study in Appendix A. On the other hand, the colored line indicates the duration of a particular teaching episode. For clarity purposes, it should be noted that the participants, in some cases, simultaneously used two practices or techniques; thus, there were instances that a particular teaching episode, especially vocabulary and grammar teaching, was coded with two (2) codes.

The coding of participants' classroom observations showed the combination of the different subject-specific techniques employed by each participant in the delivery of their lessons. To provide a clearer picture of the participants' teaching techniques aligned with the content, the researcher consolidated all the techniques in 1 table, assigned the value of 1 to techniques evident in participants' lesson, and assigned 0 to techniques that were not observed. table 2 reveals that participants employed 18 techniques that are aligned with the lesson's content in their teaching, further verifying their high confidence level in their PCK as reflected in the self-assessment report. The choice of technique in each lesson is mainly dependent to the lesson's content, resulting to the use of content-appropriate way of teaching. Furthermore, the data revealed that the most widely used technique among the participants was the use of translation method in vocabulary teaching (TPACK-Word-Translation) with a 74.07% rate of frequency, while the least used technique was kinesthetic (TPACK-Kinesthetic) with a 3.70% rate of frequency. Furthermore, the least number

of teaching techniques combined in a lesson was four (4), while the greatest number was eleven (11).

Table 2. Frequency of teaching techniques aligned with the content

	TECHNIQUES	T1-3	T1-1	T1-2	T2-1	T2-2	T2-3	T3-1	T3-2	T3-3	T4-1	T4-2	T4-3	T5-1	T5-2	T5-3	T6-1	T6-2	T6-3	T7-1	T7-2	T7-3	T8-1	T8-2	T8-3	T9-2	T9-3	T9-1	F
1	TPACK-Word-Video	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	14,81
2	TPACK-Word-Translation	1	1	1	1	1	1	1	0	0	1	1	1	0	0	1	1	1	1	1	1	1	0	0	0	1	1	1	74,07
3	TPACK-Word-Review	1	1	0	1	0	0	1	0	0	1	1	1	1	0	0	1	1	1	1	1	1	1	0	0	1	0	0	59,26
4	TPACK-Word-Picture	1	1	1	0	1	1	0	0	0	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	40,74
5	TPACK-Word-Comparison	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	7,41
6	TPACK-Watch Video Presentation	0	1	0	0	1	0	0	0	1	1	0	0	0	1	0	0	0	1	0	0	0	1	1	0	0	1	1	37,04
7	TPACK-Visual Identification Activity	1	0	1	1	0	1	0	1	0	0	0	0	1	1	1	0	0	0	1	1	1	1	1	1	1	0	0	55,56
8	TPACK-Sentence-Translation	1	1	1	1	1	0	0	1	1	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	1	1	1	59,26
9	TPACK-Sentence-Review	1	1	1	1	0	0	1	0	1	0	0	0	0	0	1	1	1	1	1	1	1	0	1	0	0	0	0	51,85
10	TPACK-Sentence-Formula	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	37,04
11	TPACK-Production Practice	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	1	0	22,22
12	TPACK-Modelling	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	0	0	0	25,93
13	TPACK-Kinesthetic	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,7
14	TPACK-Dialogue Activity	0	0	0	0	1	1	0	0	0	1	1	1	0	0	0	1	1	0	1	1	0	0	1	0	0	1	0	40,74
15	PCK-Repetition Drill	1	0	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	1	1	0	70,37
16	PCK-Pronunciation Activity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	1	0	0	0	22,22
17	PCK-Hand Gestures	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	7,41
18	PCK-Comprehension	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	11,11
	TOTAL	9	8	7	7	8	6	5	4	4	6	5	5	5	5	6	7	7	7	9	11	9	4	7	4	6	7	5	

On the other hand, looking at the aspect of the participants' use of teaching techniques aligned with the lessons' content, it was revealed that the participants employed at least six (6) techniques across their lessons. It must be noted that these six (6) techniques were not only observed in one single lesson; instead, they were observed in at least one of the three lessons of the participants. It was revealed that Teacher Fan used the least number of techniques (6) and Teacher Sy used the most significant number of techniques (12). This was a surprising result, given that Teacher Fan has the most extended years of teaching experience and the most significant number of years handling Chinese Mandarin subject, while Teacher Sy was one of the participants with the least number of years handling the subject and had a shorter teaching experience. Table 3 below shows the number of subject-specific techniques employed by each participant.

Table 3. Participants' teaching techniques aligned with the content

	Techniques	Teachers								
		CHAN	ONG	NAN	FAN	UY	CHU	ING	UN	SY
1	TPACK-Word-Video	0	0	1	0	0	0	0	0	1
2	TPACK-Word-Translation	1	1	1	1	1	1	1	0	1
3	TPACK-Word-Review	1	1	1	1	1	1	1	1	1
4	TPACK-Word-Picture	1	1	0	1	1	0	0	0	1
5	TPACK-Word-Comparison	0	0	0	0	1	0	0	0	0
6	TPACK-Watch Video Presentation	1	1	1	1	1	1	0	1	1
7	TPACK-Visual Identification Activity	1	1	1	0	1	0	1	1	1
8	TPACK-Sentence-Translation	1	1	1	0	0	1	1	0	1
9	TPACK-Sentence-Review	1	1	1	0	1	1	1	1	0
10	TPACK-Sentence-Formula	1	1	0	0	0	0	1	0	1
11	TPACK-Production Practice	0	0	0	0	0	0	1	1	1
12	TPACK-Modelling	1	1	0	0	0	0	1	1	0
13	TPACK-Kinesthetic	0	0	0	0	1	0	0	0	0
14	TPACK-Dialogue Activity	0	1	0	1	0	1	1	1	1
15	PCK-Repetition Drill	1	1	1	1	1	1	1	0	1

16	PCK-Pronunciation Activity	0	0	0	0	0	1	1	1	0
17	PCK-Hand Gestures	1	0	0	0	1	0	0	0	0
18	PCK-Comprehension	0	0	0	0	0	0	0	1	1
TOTAL		11	11	8	6	10	8	11	9	12

To clearly illustrate the interplay of PK and CK, the table below shows the participants' PCK practices employed in the delivery of the content using the identified language methods and approaches.

Table 4. Participants' PCK practices

Content	Pedagogy	PCK Practices	Codes
Vocabulary	Grammar-Translation Method, Audiolingual Method, Situational Language Teaching, Communicative Language Teaching, and Total Physical Response.	The teacher highlighted the difference in tones (tone markings) of the vocabulary by comparing syllables with different tones.	TPACK-Word-Comparison
		The teacher used digital image to explain the definition of the vocabulary.	TPACK-Word-Picture
		The teacher used English translation to explain the definition of the vocabulary.	TPACK-Word-Translation
		The teacher demonstrated the vocabulary's pronunciation, definition, and usage using video materials.	TPACK-Word-Video / TPACK-Watch Video
		The teacher used visual-prompt (image/animation) or text-based material (flashcard/word card) to lead the students in recalling the newly learned vocabulary.	TPACK-Word-Review
		The teacher used visual-prompt (image/animation) or text-based material (flashcard/word card) to test students' comprehension of the newly learned vocabulary.	TPACK-Visual Identification
		The teacher guided the student in reading a given word in the slide presentation or digitized textbook.	TPACK-Production Practice
		The teacher modeled the correct pronunciation of the vocabulary through slow and loud reading.	TPACK-Modelling
		The teacher asked the students to identify the newly learned word based on the given prompt with accompanied body movement.	TPACK-Kinesthetic
		The teacher asked the students to repeat or read after him.	PCK-Repetition Drill
		The teacher asked the student to perform a tongue twister or recite set of words with similar sounds or containing a same syllable. (E.g. si shi, si shi si, shi si)	PCK-Pronunciation Activity
		The teacher used hand gestures to enhance retention and comprehension (E.g. directions, numbers)	PCK-Hand Gestures
Grammar	Grammar-Translation	The teacher discussed the meaning of the sentence using its direct translation.	TPACK-Sentence-Translation

Method, Audiolingual Method, Situational Language Teaching, Communicative Language Teaching, and Total Physical Response.	The teacher modeled the correct construction of the sentence pattern, and/or use slide presentation to serve as guide in producing sentence's correct structure.	TPACK-Modelling
	The teacher asked the students to use the newly learned sentence patterns through a dialogue activity. A visual-prompt or text-based prompt may be presented as basis for the dialogue.	TPACK-Dialogue Activity
	The teacher used Formula to clearly highlight the different parts or components of the lesson's sentence pattern.	TPACK-Sentence-Formula
	The teacher used of visual-prompt or text-based material to let students' recall the newly learned sentence patterns.	TPACK-Sentence-Review
	The teacher asked the students to respond to a given prompt using the newly learned sentence patterns. The activity tested students' comprehension of the newly learned sentence patterns.	TPACK-Visual Identification
	The teacher asked the students to view a video presentation related to the lesson's sentence pattern, which may briefly discuss the sentence's structure, meaning, and/or usage.	TPACK-Watch Video
	The teacher asked questions about the presented video, dialogue, or text to check the comprehension of the students.	PCK-Comprehension

Participants' cognition of pedagogical content knowledge (PCK)

In addition to the observed Chinese Mandarin teaching techniques, the participants' responses during the interview also reflected their cognition of pedagogical content knowledge. Their responses generated four themes: Chinese Mandarin teaching techniques, Chinese Mandarin assessment, pedagogical content knowledge development and importance of pedagogical content knowledge. The participants' cognition on their Chinese Mandarin teaching techniques was already presented in the previous part of this paper, and the remaining three themes will be presented in this part.

The participants have mentioned the different assessment strategies (CPCK-Assessment) they employed in their Chinese Mandarin teaching during the interview. It is important to note that these assessment strategies also reflected the language teaching approaches or methods the participants had used in their Chinese Mandarin teaching. The most common assessment method among the participants was the paper-and-pencil assessment, which flexibility allows the teacher to use it in any language teaching approach or method.

In addition to paper-and-pencil assessment employed by Teacher Chan, Teacher Ong, Teacher Nan, and Teacher Ing, performance-based assessment has also been used by the other participants such as voice recording, role playing, and video recording, allowing them to demonstrate both of their Chinese Mandarin language knowledge and skills. According to the participants' responses, they can assess the students' understanding of the lesson by asking them to apply it through the performance task in which the students were given a particular scenario or situation outside of their classrooms where they will be using the newly learned vocabulary and sentence patterns, thus, demonstrating situational language teaching. The participants' practices

reinforced the use of the Chinese Mandarin outside their classroom, allowing them to have a more authentic assessment of their students' learning. The response of Teacher Sy is worth highlighting because aside from the mastery of the language knowledge, the students may also practice their language skills through simulations where they use the language to communicate or interact with their family members. Thus, performance-based tasks also reflect Communicative Language Teaching. Another participant whose assessment task also reflected the CLT was Teacher Un, who said, "In speaking, I put questions for them to answer. Sometimes, I post it in Hanzi so that they will not just simply answer, they will also have to learn it". Teacher Un does not only test the students' language knowledge but also their ability to respond to a question, thus, exemplifying CLT. The Dialogue Activity employed by Teacher Un was among the activity types identified by Littlewood (1981) for Communicative Language Teaching.

In addition to the performance tasks of role play and video recording, the voice recording was also employed by one of the participants. Teacher Nan asked the students to watch or listen to a video and record themselves while imitating the vocabulary and sentences included in the video, which clearly demonstrates the Audiolingual Method. Teacher Nan assessed students' learning by checking on their pronunciation and ability to construct sentences from the given set of vocabulary. This activity may also be related to the practical speaking test employed by Teacher Fan, though instead of having it recorded, it is being done live during their class.

Teacher Sy also employed speaking assessment to gauge her students' understanding of the lesson. The difference from that strategy of Teacher Fan is that Teacher Sy's strategy was anchored from the Grammar-Translation Method, which involves the translation of a sentence or vocabulary to the target language. This was highlighted in her interview and said, "they have this graded recitation, wherein I will be saying a certain phrase, and they try to translate it in Mandarin, and I think that is one way of gauging whether they have really understood the lesson or not."

The participants' knowledge of varied assessment strategies can be attributed to their pre-service and in-service trainings. Looking in to the participants' educational background, it was revealed that they are all graduates of teacher education course, which in a way contributed in to their foundation knowledge on assessment.

On the other hand, the participants shared the different techniques to further develop their pedagogical content knowledge (CPCK-Development) during the interview. One of the mentioned techniques is collaboration and brainstorming with colleagues during their Learning Action Cell (LAC) sessions or just a simple conversation or consultation. This technique of developing PCK was clearly reflected in the participants' responses during the interview.

In addition to consultation with colleagues, participants also mentioned exploring online resources to gather ideas on presenting a particular lesson better. For instance, it was mentioned by the participants that they watched online videos or read online resources to get ideas that can be applicable in delivering their lessons, making the Chinese Mandarin teaching more interactive and engaging. Aside from consulting colleagues and watching online videos, it was also mentioned that one's own experience learning Chinese Mandarin has been instrumental in the PCK development. Thus, the in-service trainings attended by the participants have contributed to the enhancement of their subject-specific teaching practices. Lastly, the PCK development of the participants was a result of their training. Based on the participants' responses, the different techniques or strategies they employed in able for them to develop their way of teaching Chinese Mandarin were uncovered.

Lastly, the participants expressed their perceived significance of PCK in their responses in the open-ended questionnaire. They shared their beliefs on using appropriate techniques to deliver

the lesson's content. Participants' responses mentioned that using appropriate techniques is helpful as it helps maintain the students' attention and motivation, resulting in the achievement of the lesson's objectives. Furthermore, it was also mentioned that the use of appropriate techniques requires flexibility and variation to fully cater to the target students' needs and bridge the challenges encountered in teaching.

In summary, the participants' narrative accounts revealed the following regarding their pedagogical content knowledge: First, participants' confidence level on their pedagogical content knowledge was considered high, which suggest that their high confidence level of PK has compensated their low confidence level of CK. Despite the perceived limitation in CK, the participants were still able to demonstrate PCK, which can be attributed to their rich PK. Second, the participant's pedagogical content knowledge was reflected in the grammar and vocabulary teaching where the participants used strategies appropriate in presenting the Chinese language sentence structures and words. The participants' CK was reflected in their ability to explain the vocabulary's and sentence structure's meaning and usage. On the other hand, their PK was reflected in the use of varied approaches and methods including Grammar-Translation Method, Audiolingual Method, Situational Language Teaching, Communicative Language Teaching, and Total Physical Response. Depending on the participants' understanding of the lesson's content, they chose techniques anchored from the mentioned approaches and methods to effectively deliver their lessons in vocabulary and grammar, resulting to subject-specific teaching. This was further supported with the participants' cognitions wherein their teaching techniques and assessment strategies specifically chosen for their Chinese lessons were reflected. Third, considering that PCK is combination of PK and CK, the participants' pre-service training in their teacher education course also contributed in establishing their knowledge foundation in PCK. The participants' cognition on pedagogical content revealed that their PCK was a product of their own experience (as a foreign language student), consultation with colleagues, self-exploration, and trainings. This was further supported by their profile which reflected the relevant trainings they have attended for SPFL-Chinese Mandarin. Lastly, participants' cognition of their PCK reflected the significance of using appropriate techniques to maintain motivation, achieve lesson's objectives, cater students' needs, and bridge challenges in teaching Chinese Mandarin.

Discussion

It is worth mentioning that the participants' PCK was an interplay between their knowledge in Chinese Mandarin (CK) and knowledge about teaching (PK); thus, their PCK confidence level may also be influenced by these two separate knowledge domains. The PCK rating, which is higher than their CK rating and lower than PK rating, provided evidence of the direct influences of CK and PK to PCK. The participants' low CK rating was complemented with their high PK rating, suggesting that although participants' knowledge on the subject matter (CK) was limited, they have rich knowledge on teaching (PK) which they can use to design varied teaching and learning activities in presenting their lessons, thus, still demonstrating subject-specific teaching (PCK). Considering the fact that the 89% (8/9) of the participants are also English teachers, the varied language teaching strategies they are using in English may also be applicable in teaching the Chinese Mandarin. This was further confirmed by the self-assessment report data that revealed the participants' beliefs on having the ability of choosing appropriate teaching strategies, designing suitable tasks & exercises, and evaluating students' performance in their Chinese Mandarin classrooms. The participants' PCK was also manifested in the teaching techniques they demonstrated in their teaching, which reflected the use of varied teaching approaches and methods

such as Grammar-Translation Method, Audiolingual Method, Situational Language Teaching, Communicative Language Teaching, and Total Physical Response. The vocabulary translation was the technique widely used by the participants. The use of translation in language teaching is anchored in the Grammar-Translation Method (GTM), which was defined as a traditional language teaching style focusing on the explicit explanation of grammar rules (Cook, 2016) and providing translation equivalents of vocabulary items (Richards & Rogers, 1986). This concurs with Pekkanli (2012), which found that ELT teachers' and students' widely used technique to teach and grasp the meaning of the vocabulary or sentence in a foreign language classroom is translation. Foreign language students believe that translation contributes to reading comprehension and memorizing vocabulary (Calis & Dikilitas, 2012). However, despite the evidence suggesting the significance of translation in language teaching, more empirical studies should be explored to establish its effectiveness (Carreres, 2006).

The use of translation and other techniques were also highlighted in the participants' interviews. Furthermore, in their responses, the participants revealed their varied practices to develop their PCK, including their own experience, consultation with colleagues, self-exploration, and seminars or training. The participants explored different approaches to develop their capabilities of delivering more subject-specific teaching. The findings also revealed that the participant with the greatest number of years of teaching experience employed the least number of techniques. This is contrary to the findings of Evens et al. (2015) which indicated that teachers' experiences in educational practice is among the significant factors influencing their PCK, and that their continuing teaching experience and repeated performance can lead to the acquisition of in-depth knowledge in a particular domain of PCK. On the other hand, the finding was supported by Asl et al. (2014), who found out that the more years the teachers teach, the more pedagogical-content knowledge they lose. This supports the findings of Harris & Hofer (2010), which claimed that experienced teachers employed routinization of learning activities which seem to be effective for their learners and for them. The frequent use of a particular learning or teaching activity can be efficient since the teachers no longer need arduous preparation. However, this limits the teachers in exploring other activities or strategies which may be more effective and engaging.

Considering the existence of routinization of teaching techniques among the experienced teachers, Calafato (2021) emphasized that teachers' training programs should not only focus on knowledge of theories in teaching, but also developing teachers' knowledge and ability to comprehensively teach the different aspects of language. Especially that the importance of PCK was clearly reflected in the participants' cognitions and revealed that subject-appropriate teaching helps maintain students' motivation, achieve lesson objectives, cater to students' needs, and bridge challenges in teaching Chinese Mandarin.

In addition to varied teaching techniques and PCK development techniques, the participants' assessment practices were also reflected in their interviews. It was revealed that the participants employed paper-and-pencil assessment and performance-based assessment. The paper-and-pencil assessment was done through online platforms such as Google Form, Nearpod, and other software, which will be further discussed in the succeeding part of this study. On the other hand, the participants' performance-based assessment includes speaking tests and role-playing, which can be live or recorded. Performance-based assessment improves language learning quality by contributing to enhancing students' enthusiasm, confidence, and language skills (Salma & Prastikawati, 2021). Through performance-based assessments such as speaking tests and role-playing, the teachers are provided with first-hand observation of the students' actual competence, thus, contributing to a more accurate assessment. Furthermore, role-play demonstrated a positive

impact on the students' enthusiasm and communicative competence (Raz, 1985). The role-playing provides the students with evidence of their successful language use in a real-life communication setting, fostering retention and enhancing self-confidence (Salies, 1995). On the other hand, speaking tests involve using the language to respond to a given visual prompt such as text, picture, question, or a problem. Both the role-play and speaking test aimed to encourage the students to use the language appropriately and correctly. The use of performance-based assessment affirmed the initial observation of the study, which is the adaptation of Communicative Language Teaching in the participants' Chinese classrooms. The CLT promotes students' engagement in the classroom through activities that require them to use the language to share information, negotiate and interact (Richards & Rogers, 1986). It should be noted that the SPFL-Chinese Mandarin curriculum, along with English, Filipino, and Mother Tongue curricula, is anchored to the Language Arts and Multiliteracies Curriculum (LAMC). Guided by the corresponding principles of LAMC, the SPFL-Chinese Mandarin curriculum aims to provide learners with frequent meaningful interactions to help them develop their communication skills through practice using the target language. Thus, the participants' use of Communicative Language Teaching adhered to the SPFL-Chinese Mandarin curriculum design.

The findings suggest that PCK is a complex interplay between pedagogy and content, and can be manifested in different aspects of teaching such as teaching strategies, classroom management, and assessment. Moreover, constant training is necessary to continuously update teachers' PCK. It should be noted that the participants' use of varied multiple teaching techniques is in compliance with the Department of Education memorandum (DM-CI-2020-00162) which highlighted the recommended teaching strategies for the online distance learning delivery modality. The said document suggested the use of varied strategies and formats in the presentation of the lesson that are within the learners' capacity. Thus, the participants' choice of technique was not only influenced by the content but also to the available resources of the students.

Conclusion

Employing mixed-methods explanatory sequential research design, this study explored the Pedagogical and Content Knowledge (PCK) of Filipino secondary school teachers of Chinese. The study viewed teachers' PCK through the multiple varied data sources including self-assessment questionnaires, classroom observations, and semi-structured interviews. Both the quantitative and qualitative data were collected, organized, and analyzed accordingly. The findings of the study provided a clear vignette of teachers' PCK cognitions and practices in teaching Chinese as a foreign language in the Philippines. Based on the gathered data, the following are the findings and recommendations of this study:

First, the teachers have a high level of awareness of their PCK as reflected in the computed mean score of their responses in the questionnaire. Considering that PCK is the interplay between the individual professional knowledge of the framework, it is necessary to conduct PCK needs assessment to establish the current status of the teachers' professional knowledge. The assessment will establish baseline data for crafting structured PCK training that allows the teachers to gradually develop their professional knowledge and to seamlessly design their subject-specific teaching.

Second, the teachers' classroom observations revealed that participants employed 18 techniques that are aligned with the lesson's content in their teaching, further verifying their high confidence level in their PCK as reflected in the self-assessment report. These teaching practices

were observed in the lesson's review, vocabulary and grammar teaching, practice, and assessment parts.

Third, the teachers' PCK cognitions generated four themes: Chinese Mandarin teaching techniques, Chinese Mandarin assessment, pedagogical content knowledge development, and importance of pedagogical content knowledge. The participants' cognitions provided an overview on how teachers perceived, interpret, and processed their PCK.

Lastly, based on the findings of this study, it is recommended that education managers should conceptualize professional development programs that would further equip the teachers with ability to develop varied teaching techniques appropriate in teaching the different aspects of the Chinese language. Further, future researchers may explore the approaches on PCK development employed by teachers of other discipline and how it may be significant in students' learning outcomes.

Declaration of conflicting interest
The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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