

Enhancing Thai language teachers' learning management skills through a TPACK, PBL, CBL, and CLIL model

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ABSTRACT

This study aimed to identify the need for developing a model to enhance language teachers' learning management skills in the Thai context by integrating TPACK, PBL, CBL, and CLIL. It also focused on designing the model and testing its effectiveness. The participants included 390 language teachers for the needs analysis, 5 language education experts for model evaluation, and 30 language teachers for the model implementation phase. Data were collected through needs analysis questionnaires, a proposed model for learning management skills, evaluation forms, satisfaction surveys, and interviews. The data were analyzed using the PNI-modified method for needs assessment and descriptive statistics for evaluating the model. The findings indicated that the model significantly improved teachers' learning management skills, and participants expressed high satisfaction with its implementation. This study contributes to teacher development by integrating essential pedagogical approaches to improve language teaching practices.

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1. Introduction

The teaching profession is undergoing inevitable and constant changes, particularly as the demands of the 21st century place increasing emphasis on the qualifications expected of learners (Kim et al., 2019). In this evolving landscape, today's students are not only required to master fundamental subjects such as science, mathematics, language, and technology but they are also expected to develop a wide range of additional skills that are essential for success in an increasingly complex world (Martinez, 2022; Teo, 2019). These include soft skills, such as effective interpersonal communication and collaboration, as well as cognitive abilities like critical thinking, problem-solving, and analytical thinking (Mitsea et al., 2021). Consequently, the expectations placed on students directly influence the evolving roles of educators.

As a result, the role of language teachers has expanded significantly. They are now responsible not only for teaching linguistic proficiency but also

for preparing students to meet broader educational expectations (Widiawati, 2022). Language teachers must take on the new responsibility of helping students acquire essential communication skills while simultaneously fostering critical thinking, creativity, and intercultural competence—skills that are increasingly vital in a globalized world. Furthermore, they must continuously refine their teaching methods to align with the evolving educational goals of the 21st century (Romero and Bobkina, 2024). Therefore, it is both an opportunity and a burden for language educators, who need to stay current with advances in language pedagogy, technology integration, and diverse learning strategies. The expanding scope of their duties underscores the need for continuous professional development.

Despite these growing demands for higher learner qualifications, the Thai educational system has been criticized for its lack of preparedness. Many schools in Thailand, particularly in rural areas, are viewed as under-resourced in terms of both teaching staff and educational tools (Pongsudhirak, 2020). Moreover, schools often rely on passive teaching methods and operate in classrooms with minimal technological support (Cleesuntorn, 2015). This is especially concerning in the context of language learning, which requires exposure to rich input, active practice, and opportunities for students to produce language output (Swain, 1995). Given these

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challenges, it is not surprising that Thailand ranks low in language proficiency compared to other countries (Pholphirul et al., 2023). The current state of language education in Thailand, particularly in rural areas, therefore requires urgent attention and improvement to meet the demands of 21st-century learning and global competition.

To address these challenges, integrating instructional principles could help tackle the shortcomings of the current system and meet the needs of 21st-century learning. Considering that learners are now expected to develop skills in language, technology, communication, and cultural understanding, it is essential to apply a combination of the following frameworks: TPACK, PBL, CBL, and CLIL. Specifically, TPACK enables learners to engage with technology in meaningful ways (Koehler et al., 2014; Koehler and Mishra, 2009), PBL fosters critical problem-solving skills (Barell, 2006; Koh and Chapman, 2019), CBL connects learning to real-life, contextual content (Richards and Rodgers, 2001; Villalobos, 2013), and CLIL supports the development of language skills alongside subject knowledge (Coyle et al., 2010; Harrop, 2012). By equipping teachers with the ability to manage their classrooms using these integrated principles, the overall educational experience for students, particularly in the Thai context, can be greatly enhanced.

Building on this premise, the current study aims to develop language teachers' learning management skills within the Thai educational context by integrating TPACK, PBL, CBL, and CLIL. This research seeks to contribute to the field of teacher training by offering a comprehensive model that enhances both teacher and student competencies, ultimately preparing them for the demands of modern education.

2. Literature review

2.1. TPACK

The TPACK framework provides a comprehensive approach to integrating technology into teaching by combining three core types of knowledge (Koehler et al., 2014). To be specific, Content Knowledge (CK) refers to subject expertise, Pedagogical Knowledge (PK) focuses on how to teach that subject, and Technological Knowledge (TK) involves understanding the tools available (Habibi et al., 2020; Koehler et al., 2014; Koehler and Mishra, 2009). Recent studies have found the benefits of TPACK in language classrooms. For example, Greene and Jones (2020) found that TPACK integration in ESL teaching improves student engagement and learning outcomes by blending technology with pedagogy and content knowledge. Habibi et al. (2020) suggested that TPACK positively impacted pre-service language teachers' use of ICT in Indonesia, enhancing their teaching practices. Rienties et al. (2022) showed that virtual exchanges significantly boosted both TPACK knowledge and

language proficiency, showing how technology-supported interactions can improve foreign language learning.

Therefore, it seems that the combination of content knowledge, pedagogical knowledge, and technology knowledge has the potential to enable teachers to create engaging, technology-rich learning experiences in language classes. For example, a teacher could apply the TPACK framework by using digital storytelling tools and interactive grammar exercises to enhance learning. Instead of traditional worksheets, students might engage in a vocabulary quiz where they match words to images using a learning management system. Additionally, the teacher could assign a group project where students create short video presentations in the target language, discussing various cultural topics. This approach not only improves language proficiency but also develops technological skills and encourages collaboration, making learning more interactive and engaging.

2.2. PBL

PBL, a student-centered instructional method where students actively engage in solving real-world problems is presented as an instructional method that shifts the focus from passive content consumption to active learning, requiring learners to inquire, research, and collaborate to find solutions. According to Barell (2006), PBL creates authentic contexts where students must use the target language to address complex issues. Moreover, authentic problem-solving scenarios, which are important for raising students' opportunity to engage with the language allow students to apply language in practical situations (Rasyid et al., 2023). Amerstorfer (2020) found it enhanced preservice English teachers' learning by promoting autonomy and reflective practice. Chang et al. (2022) demonstrated that PBL, combined with collaborative strategies in a flipped classroom, improved language proficiency and engagement. Similarly, Kök and Duman (2023) found that PBL significantly boosted English learners' problem-solving skills and language acquisition. An example of PBL in language learning is assigning learners problem-solving tasks related to real-world situations. For instance, they might be asked to plan a cultural exchange event, which requires them to apply target language skills in research, collaboration, and presentation. This approach encourages deeper engagement with the language and its practical use.

2.3. CBL

CBL is an instructional approach where language learning is integrated with subject content often considered a tool to let students acquire language skills while engaging with meaningful and relevant material (Villalobos, 2013). According to Spenader et al. (2020), the focus of the instructional method is on using language as a tool to understand, explore, and

express content knowledge, which enhances both linguistic proficiency and subject understanding. CBL has been accepted to be a potential method for learners who need to use the language in academic or professional settings, as it connects language acquisition with real-world application (Glynn and Spenader, 2020; Miller et al., 2021; Spenader et al., 2020). Specifically, Glynn and Spenader (2020) found that Critical content-based instruction can transform world language classrooms by encouraging critical thinking and deeper cultural engagement through content integration. Miller et al. (2021) demonstrated how CBL can be effectively used to prepare Japanese students for study abroad programs by integrating relevant content that enhances both language and intercultural competencies. Moreover, a study by Spenader et al. (2020) explored the use of culture as content, showing that Content-Based Instruction fosters deeper cultural understanding and language proficiency by merging cultural content with language learning. In practice, students could study environmental issues by reading articles, watching documentaries, and engaging in discussions on sustainability, all in the target language. This would develop both their language skills and knowledge of the subject, making the learning process more authentic and meaningful.

2.4. CLIL

CLIL has emerged as an instructional approach that focuses on combining language learning with subject content, where both are taught simultaneously (Coyle et al., 2010). To simplify, in CLIL classes, teachers are teaching academic subjects in a foreign language to develop both linguistic and cognitive development. The benefit of CLIL on language development is how it provides students with chances to be exposed to authentic language use while engaging with academic content. This would make language learning more practical and relevant (Harrop, 2012). Scholars have also found the benefits of CLIL in recent studies. For example, Feddermann et al. (2021) found that CLIL had a positive effect on second language learning, showing distinct advantages when separating the effects of preparation, student selection, and CLIL itself. Likewise, Jaekel (2020) discovered that self-efficacy and CLIL positively influenced students' language proficiency, indicating that CLIL improves language skills through increased confidence and strategic language use. In addition, San Isidro and Lasagabaster (2022) conducted a longitudinal study revealing that CLIL fosters positive attitudes and motivation among students and their families, enhancing their engagement with language learning over time. Practically, students might learn about global history while studying in the target language. For instance, while discussing significant historical events, students would use relevant vocabulary, conduct research, and present findings in the foreign

language, blending content understanding with language proficiency development.

It can be noted that integrating the principles of TPACK, PBL, CBL, and CLIL offers a promising opportunity to enhance language teachers' instructional capabilities. By equipping them with knowledge of these frameworks, teachers can create dynamic learning management plans that engage students on multiple levels. For example, language teachers can design activities where students use technology to research community problems and solve them through project-based tasks while teaching about their cultural backgrounds in English. This blending of technological, content, and problem-solving approaches fosters authentic language use and deeper learning. Combining these principles encourages creativity and real-world application in language classrooms.

Moreover, previous studies have demonstrated the effectiveness of TPACK, PBL, CBL, and CLIL in language classrooms and their potential to improve student outcomes. These studies, however, mainly focus on student development, leaving a gap in understanding how these principles could be applied to teacher training. Testing these integrated frameworks on teachers would significantly contribute to the field. Therefore, this study aims to develop language teachers' learning management skills in the Thai context by examining needs, creating a development model, and implementing it to enhance their use of TPACK, PBL, CBL, and CLIL.

3. Methodology

3.1. Participants

The study involved three groups of participants with the following details. The first group consisted of 390 language teachers from the Thai educational context. These participants contributed to the needs analysis of learning management skills related to TPACK, PBL, CBL, and CLIL. They were selected through convenient random sampling, as they were employed in Northeastern Thailand, the designated area of Mahasarakham University, where the authors are affiliated. The second group included five scholars specializing in language education and pedagogy, who participated in the model evaluation process. They were chosen through purposive sampling based on their teaching experience, educational background, and publication records. The third group comprised 30 language teachers who volunteered for the project. They took part in a workshop where the proposed model was implemented.

3.2. Research instruments

The needs analysis questionnaire evaluated the requirement for learning management skills related to TPACK, PBL, CBL, and CLIL across four main areas: (1) knowledge of learning management, (2)

learner-centered learning management, (3) integration of technology in learning management, and (4) evaluation and assessment. The questionnaire contained 21 items, with six items assessing learning management knowledge and five items for each of the remaining areas.

A 5-point Likert scale was used, where participants rated both their current level of success (how well they believe they perform) and their perceived importance (how essential they consider developing these skills). The IOC values ranged from 0.5 to 1.0, and the reliability of the questionnaire, tested using Cronbach's alpha, was 0.86.

The model was developed using the data in the need analysis process. In detail, it consists of the activity in developing participants' skills regarding Learning management knowledge, Learner-centered learning management, Use of technology in learning management, and Evaluation and assessment. In the learning management skill development and technology sessions, the focus of the model was on the use of TPACK, PBL, CBL, and CLIL as well as the potential to integrate the instructional model in language classrooms. The model was implemented in a workshop training. It was evaluated by 5 experts and adjusted following the comments before being implemented by the participants.

The model evaluation form consisted of 5 aspects regarding the quality of the model components including rationale (3 items), objective (1 item), content (3 items), process (3 items), and evaluation (2 items). Therefore, there were 12 5-Linkert scale evaluation items in total. The IOC of each item was 0.5-1.0, and the reliability of the evaluation form was 0.88 tested by Cronbach's methodology.

The self-evaluation form was designed to assess participants' learning management skills both before and after the implementation of the instructional model. It consisted of 20 items across four aspects: 1) Learning management knowledge, 2) Learner-centered learning management, 3) Use of technology in learning management, and 4) Evaluation and assessment, with five items per aspect. Participants rated themselves on a 1-5 scale, giving a maximum possible score of 100. The IOC ranged from 0.5 to 1.0, and the form's reliability was high, with a Cronbach's alpha of 0.98.

A questionnaire was used to assess participants' satisfaction with the model, designed on a 5-point Likert scale. It contained 20 items distributed across four aspects: 1) usefulness, 2) feasibility, 3) appropriateness, and 4) correctness and coverage of the model, with five items in each aspect. The IOC ranged from 0.5 to 1.0, and the reliability of the questionnaire, tested with Cronbach's alpha, was 0.96, indicating a high level of internal consistency.

A semi-structured interview was conducted with participants focusing on three main areas: 1) their opinions after participating in the model, 2) their level of satisfaction with the model, and 3) their recommendations for improving the model. The IOC of each interview question was 0.5-1.0, and the interview reliability tested with Cronbach's alpha,

was 1.0, indicating a high level of internal consistency.

3.3. Data collection

The data collection process involved three stages. First, a needs analysis was conducted using a questionnaire to identify gaps and requirements for developing the model. Next, the model development and evaluation phase employed a model evaluation form to assess its feasibility and accuracy. Finally, during the model implementation, the model was applied, and various tools were used to gather data: the learning management evaluation form to assess effectiveness, a satisfaction questionnaire to gauge participant feedback, and semi-structured interviews to collect qualitative insights for model improvement.

3.4. Data analysis

The data from the needs analysis questionnaire were analyzed using the PNI-modified, which represents the proportional gap between the desired outcomes (importance) and current achievement (success). A higher PNI-modified score indicates a greater need for development. The data from the model evaluation, learning management skills evaluation, and satisfaction questionnaire were analyzed using mean scores and standard deviations, with score interpretations ranging from very low (1.0-1.50) to very high (4.51-5.0). The interview data were analyzed through thematic analysis to identify key patterns and insights.

4. Results

Table 1 presents the participants' needs for the development of learning management skills in TPACK, PBL, CBL, and CLIL. The results show that learning management knowledge had the highest need for development, with a PNI-modified value of 1.00, indicating a significant gap between the current degree of success ($M=2.42$, $SD=1.19$) and the importance ($M=4.81$, $SD=0.38$). Learner-centered learning management followed with a PNI-modified value of 0.85. The use of technology in learning management had the lowest priority (PNI-modified=0.61), suggesting less urgency in development compared to other areas. The overall high score of 0.78 reflects a significant need for development across all aspects, particularly in knowledge and learner-centered approaches, indicating an opportunity to enhance these teaching skills for language educators.

Table 2 provides the evaluation results of a specific educational model, highlighting aspects such as Rationale, Objectives, Content, Process, and Evaluation. Each category was assessed for Appropriateness and Feasibility, with all dimensions scoring very high. The mean scores for appropriateness ranged from 4.67 to 4.80, and for

feasibility, they ranged from 4.80 to 5.00, indicating strong agreement on the model's relevance and practicality. Overall, the evaluation yielded a mean

score of 4.71 for appropriateness and 4.88 for feasibility, underscoring the model's effectiveness and applicability in educational settings.

Table 1: The participants' needs for development of TPACK, PBL, CBL, and CLIL learning management skills

Learning management skills of TPACK, PBL, CBL, and CLIL	D		I		PNI-modified	Priority
	\bar{x}	SD	\bar{x}	SD		
1. Learning management	2.42	1.19	4.81	0.38	1.00	1
2. Learner-centered learning management	2.60	0.91	4.81	0.36	0.85	2
3. Use of technology in learning management	2.92	0.94	4.70	0.42	0.61	4
4. Evaluation and assessment	2.87	0.95	4.75	0.41	0.66	3
Overall	2.69	1.01	4.77	0.39	0.78	-

SD: Standard deviation; D: Degree of success; I: Importance; PNI-modified: (I-D)/D

Table 2: The result of model evaluation

Evaluation aspects	Appropriateness			Feasibility		
	\bar{x}	SD	Degree	\bar{x}	SD	Degree
1. Rationale	4.77	0.42	Very high	4.87	0.27	Very high
2. Objectives	4.80	0.40	Very high	5.00	0.00	Very high
3. Content	4.67	0.43	Very high	4.87	0.27	Very high
4. Process	4.67	0.53	Very high	4.80	0.30	Very high
5. Evaluation	4.70	0.40	Very high	5.00	0.00	Very high
Overall	4.71	0.45	Very high	4.88	0.21	Very high

Table 3 shows the comparison between participants' learning management skills before and after the intervention. The pre-evaluation mean score (M=54.07, SD=8.12) was significantly lower than the post-evaluation mean score (M=81.87, SD=4.97). The t-value (t=16.30, p<0.001) indicates a

statistically significant improvement in participants' learning management skills after the intervention. This result can be interpreted as strong evidence that the implemented model had a positive and significant effect on enhancing participants' learning management skills.

Table 3: The comparison between participants' learning management skills

Learning management	n	\bar{x}	SD	df	t	Sig.
Pre-evaluation	30	54.07	8.12			
Post-evaluation	30	81.87	4.97	27.80	16.30	0.00

Table 4 presents the participants' satisfaction with the model across four evaluation aspects: usefulness, feasibility, appropriateness, correctness, and coverage of the model. Each aspect received a "very high" satisfaction rating, with mean scores ranging from 4.52 to 4.56. The highest satisfaction

was observed in the usefulness of the model (M=4.56, SD=0.64), while the lowest was in the correctness and coverage of the model (M=4.52, SD=0.63). The overall average satisfaction was very high, with a mean score of 4.54 (SD=0.64).

Table 4: The participants' satisfaction with the model

Evaluation aspects	\bar{x}	SD	Degree of satisfaction
1. Usefulness	4.56	0.64	Very high
2. Feasibility	4.53	0.67	Very high
3. Appropriateness	4.54	0.65	Very high
4. Correctness and coverage of the model,	4.52	0.63	Very high
Average	4.54	0.64	Very high

The data from the interview can be organized into the following themes:

- Opinions on the model: Participants expressed that integrating TPACK, PBL, CBL, and CLIL is highly effective for teaching languages. They appreciated learning how these principles can be combined to create a more dynamic language-learning environment.
- Satisfaction with the model: The workshop training was well-received, with participants noting that it was self-challenging and beneficial for improving teaching techniques both inside and outside the classroom.
- Challenges: It was reported that one of the key challenges faced by Thai language teachers in implementing a model that incorporates TPACK, PBL, CBL, and CLIL is the difficulty in designing

- learning activities that effectively integrate all these pedagogical principles. Each of these components requires a careful balance of technology, problem-solving, case analysis, and language learning within the subject content. They reported that it is quite complex to create lessons that not only align with these frameworks but also ensure smooth transitions between them, maintain student engagement, and meet the learning objectives.
- Recommendations: Participants suggested focusing on sub-techniques within each principle. For example, in TPACK, teachers could learn how to select appropriate technologies for classrooms with limited resources. In CBL, techniques for teaching students to engage with community members could be further explored.

5. Discussion

It could be interpreted by the result of the study that the integration of TPACK, PBL, CBL, and CLIL offers significant benefits for language learning. Therefore, these frameworks provide beneficial components such as technology support, cultural engagement, real-world problem-solving, and content-integrated learning which are essential for developing the learning management of teachers. In other words, by combining technology with content and problem-solving, language teachers can create authentic learning experiences that immerse students in the language and cultural context, thereby enhancing their linguistic and cognitive development. The results of the study join the previous research (Amerstorfer, 2020; Chang et al., 2022; Feddermann et al., 2021; Glynn and Spenader, 2020; Greene and Jones, 2020; Habibi et al., 2020; Jaekel, 2020; K ok and Duman, 2023; Miller et al., 2021; Rienties et al., 2022; San Isidro and Lasagabaster, 2022; Spenader et al., 2020) who also found the benefits of the aforementioned principles in education. The results provide a contribution to the area as it also proves the principles also profit teacher education and teacher training.

The results of the study indicate that teachers are willing to develop their teaching skills, particularly in relation to the integration of TPACK, PBL, CBL, and CLIL. The results suggest the growing recognition among educators of the need to shift the role of teachers in traditional methods to facilitators in such active learning methods. According to Kim et al. (2019), the trend to adopt more dynamic, student-centered approaches is followed by competent teachers in the modern era. Likewise, the desire for professional development reflects a broader trend in education where teachers acknowledge the importance of continuous improvement to meet the demands of modern classrooms (Martinez, 2022; Widiawati, 2022). Lastly, in the 21st century, frameworks like TPACK, PBL, CBL, and CLIL are crucial as they address the skills needed in today's rapidly changing educational landscape. It can be assumed by the results of the current study that these principles encourage teachers to consider the students' important qualifications in language learning such as critical thinking, collaborative learning, and technology engagement. In an era that demands both academic knowledge, practical skills, and soft skills, these methods among other active learning instruction can prepare learners for real-world challenges and equip teachers with the strategies to foster holistic student development (Fornari and Poznanski, 2021).

6. Conclusion

This study aimed to provide a solution for language classrooms in the Thai educational context by developing a model that integrates TPACK, PBL, CBL, and CLIL. Through a needs analysis, the study identified key areas for teacher development and

applied the model to enhance Thai language teachers' learning management skills. The findings highlight the benefits of these principles, showing how their integration can improve teaching practices and support holistic student development. Additionally, the study confirms that these frameworks significantly contribute to teachers' professional growth.

The results have broader implications beyond language education, suggesting that TPACK, PBL, CBL, and CLIL can be adapted for other subjects like math, science, and social studies. The key is finding the right combination of principles tailored to each discipline. Further studies could explore this integration in different fields, assess its impact on student outcomes, and develop comparative studies with larger sample sizes.

However, the study has some limitations. It involved a small sample size and lacked a comparative group, which limits the generalizability of the findings. The absence of a comparative group makes it difficult to determine whether the observed improvements were due to the model itself or other external factors. Including a comparative group in future research would allow for a more rigorous evaluation of the model's effectiveness by contrasting it with other teaching methods. Moreover, the focus was solely on language teachers, despite the model's potential to develop teachers in various disciplines. Addressing these limitations in future research could strengthen the model's applicability and impact.

List of abbreviations

TPACK	Technological pedagogical content knowledge
PBL	Problem-based learning
CBL	Context-based learning
CLIL	Content and language integrated learning
ESL	English as a second language
ICT	Information and communication technology
IOC	Item-objective congruence
PNI	Proportional need index

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Compliance with ethical standards

Ethical considerations

This study received ethical approval from Mahasarakham University (Approval No. 190-186/2024), with informed consent obtained and confidentiality ensured.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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