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Research Article

Needs Assessment for Developing Teacher Instructional Abilities and an e-Coaching System of Thai Teachers Under the Office of the Private Education Commission

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Abstract

This research study aimed to study the needs for teacher instructional ability development, to study the needs for an e-coaching system to enhance teacher instructional abilities, and to explore teachers' preferences for e-coaching system features. The target population was teachers under the Office of the Private Education Commission, with a sample size of 412 selected using a multistage random sampling technique. The data collection involved administering a survey questionnaire to gather respondents' demographic information, the needs for teacher instructional ability development, the needs for an e-coaching system's development, and respondents' preferences for the system's features. Data were analyzed using descriptive statistics (frequency, percentage, mean, and standard deviation) and the modified Priority Need Index (PNI modified).

The research findings revealed significant needs for both teacher instructional ability development and an e-coaching system. Furthermore, the study identified several key areas in which teachers expressed a pressing need for development, including the ability to design instruction for 21st-century learning ($PNI_{Modified}$ = 0.17), the highest-rated need. Other prominent needs included the ability to perform authentic and systematic assessments ($PNI_{Modified}$ = 0.13) and the ability to integrate ICT into instruction ($PNI_{Modified}$ = 0.11). Regarding the need for an e-coaching system, the most pressing requirement was technology for progress tracking and assessment ($PNI_{Modified}$ = 0.16). Among the preferred features of the e-coaching system, the teacher resource library within the system was deemed the most crucial (*M* = 4.17).

Keywords: coaching, e-coaching system, instructional ability, teachers in private schools

Introduction

Effective instruction plays a vital role in fostering student comprehension, skill development, positive attitudes toward learning, and practical application of knowledge in everyday life (McKeown, 2019). In the rapidly evolving world characterized by rapid transformations in economy, society, politics, and information technology, the roles and abilities of teachers, especially in Thai private schools, must adapt to meet the demands of 21st-century learning, which emphasizes skills, knowledge, and expertise (Amels et al., 2020; Cheng & Szeto, 2016).

Thai private teachers encounter several challenges that call for coaching interventions to enhance their instructional abilities. One prominent challenge is the limited access to training opportunities, particularly in smaller private institutions due to resource constraints (Kasetvetin, 2019). This lack of access to formal teacher development programs hinders their ability to stay updated with effective teaching methodologies and educational advancement (Said et al., 2023). Another significant challenge faced by Thai private teachers is the pressure for academic performance (Agyapong et al., 2022; Charnchai, 2014). Compared to public schools, private institutions face higher expectations from students and parents to achieve exceptional academic results (Charnchai, 2014). Additionally, Thai private teachers encounter limited support networks within their school setting (Klechaya, 2012). Unlike public schools with larger staff and faculty, private teachers have fewer opportunities for collaboration and peer learning.

In response to these challenges, diverse approaches have been explored to enhance the teaching profession (Baker, 2022; Tam, 2015). Coaching, a professional development approach, serves as a means to facilitate the professional growth of teachers and foster the ongoing and sustainable development of educational institutions (Stoetzel & Shedrow, 2020). Its primary goal is to enhance teachers' knowledge, skills, and personal attributes, enabling them to effectively guide and support students in achieving their learning objectives (Baker, 2022). Additionally, coaching is regarded as a process of learning aimed to improve and advance instructional abilities through interactive engagement between the coach and the

coachee, thereby fostering cognitive growth and knowledge acquisition (Stahl et al., 2018).

Despite the potential benefits of coaching, teachers often perceive it as an added burden, particularly when facing heavy workloads (Tanner et al., 2017), leading to resistance towards feedback and suggestions from their coaches (Kho et al., 2019). To address these challenges, coaching flexibility becomes crucial for successful coaching interventions (Hakro & Mathew, 2020). Coaches should actively explore strategies to maintain regular communication with teachers while accommodating their scheduling constraints (Gallagher et al., 2023). Additionally, implementing a systematic progress-tracking mechanism enhances teachers' self-awareness and commitment to ongoing self-improvement (Rae et al., 2006). This, in turn, mitigates obstacles encountered during coaching initiatives.

Leveraging technology to support communication has become increasingly popular in coaching practices (Maré & Mihai, 2018). Technology offers valuable platforms for communication and provides diverse learning resources, such as video-based case studies, enriching the coaching experience (Anderson, 2019). Additionally, technology empowers teachers to record their instructional methods, allowing for subsequent examination and reflection (Hubackova et al., 2011). By incorporating technology, coaching can enhance efficiency, save time and resources, and promote sustainable institutional development and lifelong learning (Green & Gilbert, 1995; Venter, 2018). This approach cultivates teachers' proficiency in successful instruction while alleviating perceived burdens.

This study aimed to assess the needs for teacher instructional ability development, the needs for an e-coaching system to enhance teacher instructional abilities, and to explore their preferences regarding the features of the e-coaching system. The findings of this research can be used to inform the design and development of an e-coaching system that effectively augments teachers' instructional proficiency.

Objectives

1. To study the needs for teacher instructional ability development
2. To study the needs for an e-coaching system to enhance teacher instructional abilities
3. To explore the teachers' preferences for the e-coaching system features

Research Methodology

The study employed the survey research method as the primary approach for data collection. The data collection process involved the use of online questionnaires.

Research Process

The research began with a literature review to develop the questionnaire, followed by expert validation. A pilot study with 30 respondents was conducted to refine the questionnaire. Afterward, data were collected from selected schools. Descriptive statistics and the PNImodified method were used for data analysis.

Population and Sample

The population of this research consisted of teachers under the Office of the Private Education Commission (OPEC). To determine the appropriate sample size, the researchers employed the principle of infinite population. The sample size was calculated using the formula proposed by Cochran (1977), with a confidence level of 95% and a margin of error of 5%. As a result, 386 participants were included in the study, and the response rate to the research questionnaire was subsequently computed. The average response rate was approximately 80%, according to Wirachchai (1999).

To account for potential incomplete responses and ensure an adequate sample size, the researchers adjusted the sample to include 480 respondents using a multi-stage sampling approach. The sampling process involved dividing the regions into five parts: the northern, northeastern, central, and eastern regions. Subsequently, 15 provinces were randomly selected, with four schools chosen from each province, totaling 60. Within each selected school, a quota of eight respondents was set, resulting in a cumulative sample size of 480 respondents.

Research Instruments

1. The researchers conducted an extensive review of pertinent concepts and existing literature related to coaching, e-coaching, and the development of teacher instructional abilities. The researchers then defined a conceptual framework and determined the parameters that guided the formulation of questions in the questionnaire for the needs and requirements

for the development of an e-coaching system to enhance teacher instructional abilities. The research questionnaire was divided into four main sections, as outlined below.

Part 1 General Demographic Information of the Respondents With Six Items

Questions in this section were checklist type, including gender, age, number of teaching hours, working experience, experience participating in teacher professional development programs, and modes of professional development programs they ever participated in.

Part 2 Existing Instructional State and the Desired State With 48 Items

The questions were 5-Likert Scale in the form of Dual-Response Format to inquire about the existing instructional state and expected state. It was divided into five main components: 1) learning management based on curriculum ability, 2) instructional design for the 21st-century learning ability, 3) authentic and systematic assessment ability, 4) ICT-integrated instruction ability, and 5) differentiated instruction ability.

Part 3 Opinions on Current Coaching and use of Technology Support for Coaching and the Expected Condition With 12 Items

The questions were in the 5-Likert Scale in the form of Dual-Response Format, divided into two parts.

1. Coaching process: This part was to study coaching steps to develop teacher instructional abilities. The steps included setting goals, self-evaluation and reflection, option selection, and willingness to achieve goals.

2. Technology support coaching: This part was to study the needs for the development of an e-coaching system with technology to enhance teacher instructional abilities

Part 4 Preferences for an e-Coaching System Features With 8 Items

The questions in this section employed a 5-Likert scale to gather respondents' perspectives on the desired features to be incorporated into the e-coaching system. This section was organized into distinct categories focusing on technology-supported coaching. Specifically, these categories encompassed communication support technologies, technology-supported progress tracking and evaluation, and technology-supported recording and sharing of learning.

2. The researchers submitted the proposed questionnaire to the research advisor for a comprehensive evaluation of its content validity, ensuring the appropriateness and relevance of the included questions. Following this review, necessary improvements were made to enhance the questionnaire's quality.

3. Subsequently, three experts in the field were invited to evaluate the content's appropriateness using the Index of Consistency (IOC) as a measurement tool.

4. The results obtained from the IOC analysis revealed that the consistency indices for all questions ranged from 0.67 to 1.00. This indicated that the questions met the predetermined criteria for content validity and were deemed suitable for data collection.

5. Considering the experts' input, the researchers made revisions to the questionnaire, incorporating the recommended changes and refinements to further enhance the questionnaire's quality.

6. Finally, the revised questionnaire was administered to 30 teachers with similar characteristics to the study sample. This was done to evaluate the internal consistency reliability of the questionnaire using the Cronbach alpha coefficient. The obtained results indicated a high degree of reliability, with an alpha coefficient value of 0.962, affirming the questionnaire's consistency and reliability, thus validating its suitability for data collection.

Data Collection

1. The researchers requested a letter for cooperation in data collection from the Faculty of Education, Chulalongkorn University.

2. The researchers then emailed the letter requesting cooperation and the online questionnaire to the selected sample schools.

3. The data collection phase spanned approximately one month, specifically from March to April 2023. 412 completed questionnaires were used for analysis (85.83%).

Data Analysis

The researchers used descriptive statistics to analyze the frequency and percentage of the data to describe the respondents' demographic information, while the Modified Priority Need Index (PNI Modified) formula (Wongwanich, 2008) was employed to identify the needs for developing teacher instructional abilities and the needs for an e-coaching system.

To examine the respondents' preferences for the e-coaching system features, the data were analyzed using descriptive statistics, specifically means and standard deviation. These statistical measures provided insights into the central tendencies and variability of the respondents' perspectives regarding the desired features of the e-coaching system.

Results

The research findings are categorized into four distinct parts as follows: 1) demographic information of the respondents, 2) results of needs assessment to develop teacher instructional abilities, 3) results of needs assessment for an e-coaching system to enhance teacher instructional abilities, and 4) the results of teachers' preferences for the e-coaching system features.

Part 1: Demographic Information of the Respondents

Based on Table 1, the majority of respondents were female, accounting for 86.89% of the total sample. Regarding age distribution, the largest proportion fell within the 25-30 age range, representing 20.63% of the respondents. Furthermore, a significant portion of teachers reported having a teaching workload of 16-20 hours per week, comprising 30.83% of the sample. In relation to teaching experience, the majority of teachers had 3-5 years of experience, constituting 19.17% of the respondents.

Regarding professional development activities, the findings in Table 1 indicated that the most prevalent experience among teachers was participation in training workshops, with 92.47% of the respondents having engaged in such activities. Moreover, the most common professional development approach was on-site training, with 75.00% of the respondents participating in this type of training. A detailed breakdown of these respondent characteristics and professional development experiences can be found in Table 1.

Table 1

An Analysis of Demographic Information

(n = 412)

Data	Categories	Number	Percentage
Gender	Male	54	13.11
	Female	358	86.89
Age	Below 25 years	62	15.05
	25-30 years	85	20.63
	31-35 years	78	18.93
	36-40 years	41	9.95
	41-45 years	66	16.02
	46-50 years	33	8.01
	Above 50 years	47	11.41
Teaching hours per week	1-5 hours	43	10.44
	6-10 hours	52	12.62
	11-15 hours	40	9.70
	16-20 hours	127	30.83
	21-25 hours	105	25.49
	26-30 hours	45	10.92

Table 1
(continued)

Data	Categories	Number	Percentage
Teaching experience	Below 1 year	26	6.32
	1-2 years	63	15.29
	3-5 years	79	19.17
	6-10 years	69	16.75
	11-15 years	56	13.59
	16-20 years	42	10.19
	Above 20 years	77	18.69
Professional development experience	Training workshops	381	92.47
	Academic conference	303	73.54
	Professional learning community	250	60.68
	Coaching and mentoring	308	74.75
Professional development approach	On-site	309	75.00
	Online synchronous	284	68.93
	Online asynchronous	232	56.31
	Hybrid	257	62.38

Part 2: Needs for Teacher Instructional Ability Development

The findings of the needs analysis for developing teacher instructional abilities are presented in Table 2. The data illustrated a descending order of the modified Priority Needs Index ($PNI_{Modified}$), ranging from 0.09 to 0.17. The highest ranked need, with $PNI_{Modified}$ = 0.17, was the ability to design instruction for 21st-century learning (D = 3.71, I = 4.35). The next identified need, with $PNI_{Modified}$ = 0.13, pertaining to the ability to perform authentic and systematic assessment of student learning outcomes (D = 3.88, I = 4.38). Another noteworthy need, with $PNI_{Modified}$ = 0.11, was the ability to use information and communication technology (ICT) for teaching (D = 3.94, I = 4.41). Furthermore, the data revealed a need (D = 4.00, I = 4.41; $PNI_{Modified}$ = 0.10) related to the ability to design instruction in accordance with the curriculum, standards, and indicators. Lastly, a need with $PNI_{Modified}$ = 0.09 (D = 4.06, I = 4.44) revolved the ability to design differentiated instruction that caters to individual differences, nurturing a conducive atmosphere, providing guidance, and attending to the needs of each student.

Table 2
Result of Needs for Teacher Instructional Ability Development

Needs for teacher instructional ability development	Existing state (D)	Meaning	Desired state (I)	Meaning	PNI	Rank
Instructional design for the 21st century learning ability	3.71	High	4.35	High	0.17	1
Authentic and systematic assessment ability	3.88	High	4.38	High	0.13	2

Table 2
(continued)

Needs for teacher instructional ability development	Existing state (D)	Meaning	Desired state (I)	Meaning	PNI	Rank
ICT-integrated instruction ability	3.97	High	4.41	High	0.11	3
Learning management based on curriculum ability	4.00	High	4.41	High	0.10	4
Differentiated Instruction ability	4.06	High	4.44	High	0.09	5

Part 3: Needs for Development of an e-Coaching System to Enhance Teacher Instructional Abilities

Table 3 illustrated that the modified Priority Needs Index (PNIModified) of two main components contained values ranging from 0.06 to 0.19. The priorities of needs were ranked in descending order as follows: 1) ICT-integrated coaching (D = 3.65, I = 4.13; PNIModified = 0.13) and 2) coaching process (D = 3.92, I = 4.28; PNIModified = 0.09). The highest Priority Need Index was ICT for coaching success assessment (D = 3.41, I = 4.06; PNIModified = 0.19) while the lowest was reflecting current reality (D = 3.93, I = 4.17; PNIModified = 0.06).

Looking at the results of the analysis of the needs of the coaching process, the modified Priority Needs Index values were between 0.06 - 0.12. For instance, Priority Needs Index of facilitating coach support for achieving success had PNI = 0.12; Priority Needs Index of exploring options for professional development had PNI = 0.11; Priority Needs Index of defining objectives for professional development plan had PNI = 0.08 and Priority Needs Index of reflecting current reality had PNI = 0.06.

On the other hand, the results of the analysis of the need for ICT-integrated coaching revealed the modified Priority Needs Index (PNIModified) range between 0.09 - 0.19. Specifically, The Priority Needs Indexs of ICT for progress tracking and assessment, ICT for development archive and learning sharing, and ICT for communication were 0.16, 0.12, 0.11, respectively. For more detailed information on the modified Priority Needs Index, please refer to Table 3.

Table 3
Result of Needs for e-Coaching System Development

Needs for teacher instructional ability development	Existing state (D)	Meaning	Desired state (I)	Meaning	PNI	Rank
1. Coaching Process	3.92	High	4.28	High	0.09	2
1.1 Facilitating coach support for achieving success	3.88	High	4.35	High	0.12	1
1.2 Exploring options for professional development	3.88	High	4.29	High	0.11	2
1.3 Defining objectives for professional development plans	3.97	High	4.29	High	0.08	3
1.4 Reflecting current reality	3.93	High	4.17	High	0.06	4
2. ICT-integrated coaching	3.65	High	4.13	High	0.13	1
2.1 ICT for communication	3.65	High	4.06	High	0.11	3
2.1.1 ICT for capturing and analyzing classroom observation videos	3.65	High	4.12	High	0.13	1

Table 3
(continued)

Needs for teacher instructional ability development	Existing state (D)	Meaning	Desired state (I)	Meaning	PNI	Rank
2.1.2 ICT for streamlined appointment scheduling	3.59	High	4.03	High	0.12	2
2.1.3 ICT for seamless coach communication and consultation	3.59	High	4.00	High	0.11	3
2.1.4 ICT for notetaking during live coaching sessions	3.76	High	4.09	High	0.09	4
2.2 ICT for progress tracking and assessment	3.63	High	4.21	High	0.16	1
2.2.1 ICT for coaching success assessment	3.41	Medium	4.06	High	0.19	1
2.2.2 ICT for progress tracking	3.79	High	4.38	High	0.16	2
2.2.3 ICT for task reminder	3.68	High	4.21	High	0.14	3
2.3 ICTfor development archive and learning sharing	3.69	High	4.12	High	0.12	2
2.3.1 ICT for development performance archive	3.79	High	4.24	High	0.12	1
2.3.2 ICT for inter-teacher experience sharing	3.59	High	4.00	High	0.11	2

Part 4 Respondents' Preferences for an e-Coaching System Features

Table 4 illustrates the findings of the feature preferences for the e-coaching system. According to the respondents, the most desired feature for inclusion in the e-coaching system was the teacher resource library (*M* = 4.17), where teachers can access a wide range of educational materials, such as lesson plans, worksheets, presentations, videos, and other resources that can be used in their classrooms. Following closely was the Single Sign On (SSO) (*M* = 4.08), offering convenience to teachers to assess the system with their existing credentials. Additionally, mobile responsiveness, which allows seamless device integration, was considered necessary, receiving a mean score of 4.06. On the other hand, gamification features had the lowest level of perceived need among the respondents, receiving a mean score of 3.50. These results shed light on the preferences and priorities of teachers regarding the desired features for an e-coaching system.

Table 4
Respondents' Preferences for an e-Coaching System Features

Feature preferences	*M*	*SD*
Teacher resource library	4.17	0.74
Single Sign On	4.08	0.84
Mobile responsiveness	4.06	0.79
Ubiquitous system access	4.03	0.79

Table 4

Respondents' Preferences for an e-Coaching System Features

Feature preferences	*M*	*SD*
Collaborative lesson planning	4.02	0.79
24/7 teacher helpdesk	3.98	0.92
Real-time formative assessment tool	3.87	0.81
Instructional best practice sharing	3.87	0.83
Online discussion board	3.75	0.84
Coaching appointment management tool	3.70	0.91
Google and iCloud calendar integration	3.62	0.96
Performance tracking	3.62	0.95
Gamification (rewards, badges and other incentives)	3.50	0.90

Discussions

The research findings shed light on significant needs for the development of instructional abilities among Thai private teachers, as well as the needs for an e-coaching system to support their professional growth. These findings build upon previous research studies that have also recognized the crucial role of teachers' instructional skills and the potential benefits of integrating Information and Communication Technology (ICT) in education.

In terms of teacher instructional ability development, the study identified key areas that demand attention. First, Thai private teachers need to enhance their ability to design instruction for 21st-century learning. This finding aligns with previous research that emphasizes the importance of preparing students with skills such as critical thinking, problem-solving, creativity, and digital literacy to thrive in the modern world (Carlgren, 2013; Higgins, 2014). Secondly, the research highlighted the need for the ability perform authentic and systematic assessment. This aspect resonates with earlier studies that advocate for assessment practices that go beyond traditional exams and standardized tests (Fook & Sidhu, 2010; Shepard et al., 2018). Formative assessment, project-based assessments, and performance assessments are among the strategies that can provide more comprehensive insights into students' progress and understanding (Shepard et al., 2018). Thirdly, the research underscored the needs for Thai private teachers to embrace ICT for teaching. This finding is consistent with the growing body of research emphasizing the potential of technology to enhance education (Muralidharan et al., 2016; Prayudi et al., 2021). Integrating ICT in the classroom can facilitate active learning, improve engagement, and provide access to a vast array of educational resources (Hidayati, 2016).

Regarding the e-coaching system, the research highlights three crucial needs that align with previous studies on technology integration in education. First, employing ICT for coaching success assessment can provide valuable data to assess the effectiveness of coaching programs for individual teachers (Rutjes et al., 2019). Regular and data-driven feedback can support continuous improvement and professional growth among teachers (Rutjes et al., 2019). Secondly, utilizing ICT for development archive and learning sharing is in line with research emphasizing the importance of collaborative learning communities (Holmes, 2013). By creating a digital platform to share best practices, resources, and successful teaching strategies, teachers can learn from one another and collectively improve instructional practices (Vescio et al., 2008) (Nugroho et al., 2021). Lastly, using ICT for communication within the e-coaching system can enhance the effectiveness of the coaching process (Karo & Petsangsri, 2021). Communication tools such as chat, video conferencing, and discussion forums can facilitate timely and meaningful interactions between coaches and teachers (Karo & Petsangsri, 2021).

Furthermore, the specific features desired by Thai private teachers in an e-coaching system, such as a teacher resource library, Single Sign-On (SSO) capability, and mobile responsiveness, reflect the demand for a user-friendly and comprehensive platform (Purkayastha et al., 2017). The desire for a teacher resource library aligns with previous research on the importance of providing teachers with easy access to a wealth of instructional materials and teaching resources (Gallagher et al., 2023). The inclusion of Single Sign-On (SSO) capability (Yulin & Feng, 2012) and mobile responsiveness (Biviji et al., 2021) addresses teachers' need for convenience and accessibility, allowing them to engage with the coaching system seamlessly and on various devices.

Recommendations

Based on the research findings, schools and stakeholders working with Thai private teachers can consider implement the following recommendations to enhance teacher instructional abilities and establish an effective e-coaching system:

1. Thai private schools should prioritize the implementation of comprehensive professional development programs for Thai private teachers. These programs should focus on enhancing teachers' instructional abilities, including designing instruction for 21st-century learning, conducting authentic and systematic assessment, and effectively using ICT for teaching.

2. Stakeholders should collaborate to establish a robust e-coaching system tailored to the needs of Thai private teachers. The system should incorporate features such as ICT-based coaching success assessment, development archive and learning sharing, and efficient communication tools. The system's user interface should be intuitive and mobile-responsive, ensuring easy accessibility for teachers on various devices.

Recommendation for Future Research

This study is limited to needs analysis. Therefore, future studies should investigate the effectiveness and impact of integrating e-coaching systems in teacher professional development. Specifically, the focus should be on evaluating the outcomes of using e-coaching systems to enhance teacher instructional abilities and promote continuous growth. Additionally, exploring the perceptions and experiences of teachers and stakeholders regarding the implementation of e-coaching systems would provide valuable insights for refining and optimizing these systems.

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