Kasetsart Journal of Social Sciences 43 (2022) 727–734

Kasetsart Journal of Social Sciences

journal homepage: http://kjss.kasetsart.org

Phenomenon-based teaching competency development for teacher educators in higher education in Thailand

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Article Info

Article history:
Received 10 June 2021
Revised 23 August 2021
Accepted 2 September 2021
Available online 27 July 2022

Keywords:
competency development program,
PhenoBL,
phenomenon-based learning,
teacher educators,
teaching competency

Abstract

Phenomenon-based learning (PhenoBL) is a successful teaching approach from Finland. The current study focused on PhenoBL training programs for teacher educators in Thailand. The objectives were to: (1) investigate the PhenoBL components, teacher education competency; (2) implement and assess a PhenoBL teaching competency development for teacher educators (PTCD); and (3) assess student teachers' satisfaction from the teacher educators who attended the training and taught them. PhenoBL training was conducted for 85 teacher educators from three regions of Thailand. Forty-five responded to the online questionnaire that evaluated the PhenoBL training and participant ability to use PhenoBL. Teacher educators were asked to teach using PhenoBL approach and applied knowledge gained from PTCD. Data were collected from three regions of student teachers enrolled in three courses taught by teacher educators who attended the PTCD, and 60 student teachers responded to the satisfaction questionnaire. The results were analyzed using descriptive and one-way ANOVA.

Introduction

Finland has introduced a new concept named "phenomenon-based learning (PhenoBL)," which has received accreditation for improvement in Finland's educational system (Symeonidis & Schwarz, 2016). There are five components of PhenoBL, namely, authenticity, holisticity, multidisciplinary, real-world topics, authentic phenomena, holistic viewpoints, inquiry-based and problem-based learning processes, and enhancement of relevant and transparent content. The authentic assessment measures and assesses performance based on learners' progression instead of rote memorization (Silander, 2015a).

Teacher education is an undergraduate degree program that aims to prepare potential teachers with pedagogical content knowledge (PCK), skills and experiences to advance in their educational profession.

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https://doi.org/10.34044/j.kjss.2022.43.3.26
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Teacher educators are university professors who teach at tertiary education, responsible for teacher trainings and delivering teaching methods to student teachers, accredited by the Teacher's Council of Thailand (2018). Teacher educators are all those who teach or coach student teachers with the aim of supporting their professional development (Kim & Lee, 2005). The teacher standards are based on teacher competencies used by teacher educators to assess future teachers (Struyven & De Meyst, 2010).

Teaching competency is necessary to enhance teacher education professionalism (Sedek et al., 2016); it was defined as an integration of the knowledge, skill, and attitude required for successful implementation of subject matter education (Kim & Lee, 2005; Tigelaar et al., 2004). Theoretical teaching competency is comprised of content knowledge and classroom management. Teaching competency is related to the quality of teaching and learning of the university.

As a traditional teaching method, a lecture is one of the most popular teaching methods of higher education. Although the study found no evidence that active learning improved overall mastery of the subject, there was evidence that active learning could improve cognitive outcomes (Michel et al., 2009). In Thai higher education context, teacher educators were still using traditional methods, which could obstruct student teachers' mastery learning of the content knowledge.

In moving away from a traditional teaching method into a more progressive teaching method, the content covered PhenoBL concepts, where knowledge and teaching competency should be provided to the teacher educators. By acknowledging the teacher educators' background knowledge, modules were designed emphasizing key differences of PhenoBL. PhenoBL teaching competency development [PTCD] is a two-day training to develop teacher educators' teaching competency by synthesizing the PhenoBL components. There are five PhenoBL components; namely, contextuality, holisticity (looking at the teaching context in wider perspectives), authenticity, problem-based inquiry, and an active learning process (Symeonidis & Schwartz, 2016; Silander, 2015b; Silander, 2015c). Therefore, we brought the strengths of PhenoBL to use in the Thai context in order to have active learning and allow more phenomenon to be used in the classroom.

The objectives of this study aimed to: (1) investigate the PhenoBL components, teacher education competency; (2) implement and assess a PhenoBL teaching competency development for teacher educators (PTCD); and (3) assess student teachers' satisfaction from the teacher educators who attended the training and taught them.

Literature Review

PhenoBL enables teachers to simplify their teaching through the selection of real-world topics, authentic phenomena, holistic viewpoints, inquiry-based and problem-based learning processes, and enhancement of relevant and transparent content.

Teacher education is a program to train student teachers both theoretical and practical competencies (Tack & Vanderlinde, 2014). Theoretical competency consists of one or more skills, mastery of which is used in teaching subject matters, whereas practical competency is related to teachers' performing subject-matter education in classes. Great quality teaching in higher education matters for student learning outcomes (Sedek et al., 2016). Instructional competency is comprised of delivering content knowledge, PCK and classroom management (Kim & Kim, 2016). Teaching competency is related to the quality of teaching and learning of the university.

Thai teacher education in Thailand is provided by teacher training programs. There are two routes for obtaining a K-12 teaching accreditation, which are attending a five-year bachelor's degree program, and a one-year certificate program. In this study, we focused on the five-year teacher education at the university level according to the Office of the National Education Commission (2002) and Office of the Higher Education Commission (2006).

According to Kim & Kim (2016), teaching competency development consists of understanding of subjects, teaching-learning methods, inducing learners to engage in learning, understanding of learners, learning environments and circumstances, evaluation of learners, and individual qualification. Specifically, in Thailand, according to the study of teaching competency development in higher education (Office of the Education Council, 2017); teaching competency development of teacher educators were focused on delivering content

knowledge and less focused on skills development, which will not provide professional competence (Office of the National Education Commission, 2002).

Teaching and learning in higher education are primarily focused on the content knowledge and delivered passively in a lecture. Paradoxically, most of the learning content and knowledge are obsolete and irrelevant for application in real-world situations (Poirier, 2017). As such, few studies have demonstrated how to shift the focus from the teachers' interests to those of the pupils and the impacts on student development. These issues urged teacher educators to rethink teaching and how the PhenoBL approach could be integrated in their instructional method. In implementing PhenoBL approach, teacher educators designed the lessons around holistic views of phenomena that urge students' engagement (Sahlberg, 2015).

PhenoBL is based on multiple theories: autonomous learning, active learning, constructivism, and transformative learning, which correspond to the growing trends in education. In implementing PhenoBL in the classroom, learners construct their own knowledge rather than just passively receiving information. Analysing the policy and strategy for higher education, science, research and innovation (2020–2027), the teacher education program is facing a challenge due to the curriculum being focused on a pedagogical content knowledge and less on instructional competency training. In addition, the PhenoBL approach is a new concept and so may be difficult to comprehend if teacher educators are not well prepared.

In Thailand, PhenoBL training from Finland were introduced to teacher educators in several universities that had acknowledged the benefits of PhenoBL and had invested time and budget for teacher educators. In designing Thai PhenoBL Teaching Competency Development for teacher educators in higher education, there are factors to consider: subject matters, instructional methods, students' engagement, classroom management, and evaluation (Kim & Kim, 2016).

Methodology

PhenoBL Components and Teacher Education Competency

By answering objective 1, content analysis was used to analyze PhenoBL teaching and learning components, teaching competency, and teacher education competency from research articles, theses, document and research articles from Finland and other countries. For the criteria for selecting the document, valid inferences were used by interpreting and systematically evaluating texts (such as phenomenon-based learning, PhenoBL, phenomenon learning, PhenoBL components, PhenoBL competency), which were classified into themes.

PhenoBL Teaching Competency Development for Teacher Educators (PTCD)

In developing a PhenoBL teaching competency development (PTCD) for Thai teacher educators, the two-day PTCD consisted of five modules corresponding to the seven teaching competency components of Kim & Kim (2016). Three experts reviewed the content validity and congruency of each module and provided feedback. After implementing the PTCD, teacher educators rated the knowledge gained and possibility to use the PhenoBL approach in their teaching. Later, the instructors used the PhenoBL approach to teach the contents. Three groups of student teachers from three regions were asked to respond to a five-point Likert scale, ranging from 1 (strongly agree) to 5 (strongly disagree) questionnaires.

Assess Teacher Educator

After attending the PTCD, teacher educators from three regions designed their own lesson plans and taught using the PhenoBL approach incorporating their own content knowledge. Using a questionnaire survey to assess teacher educators' teaching performances, student teachers responded to the five-point Likert scale satisfaction questionnaire.

Participants

Participants 1

Implementing the PhenoBL competency development programs, teacher educators from three regions of Thailand (southern, central, and northeastern) volunteered to participate in the PTCD. There was a total of 85 participants completing the PTCD.

Participants 2

After the completion of PhenoBL competency development programs, each teacher educator who attended the PTCD training was asked to teach using the PhenoBL approach. Forty-eight student teachers who attended the micro teaching courses taught by three teacher educators using PhenoBL approach responded to the PhenoBL satisfactory questionnaire.

Data Collection

Responding to the analysis of PhenoBL content, keywords searches from articles, theses, and websites were conducted. Defining the searches into categories gave five categories: concepts, teaching methods, components, assessment, and technology use in classroom.

In designing the PTCD content aiming to develop teacher educators' instructional competency, the five modules were constructed using a content analysis from synthesizing research articles. The PhenoBL teacher educators evaluated the content and congruency. By educational expert reviews (100%) agreed with the contents of each module. The module was developed and implemented using on-site training in three regions in Thailand. There were five modules: (1) teaching skill development; (2) PhenoBL concepts and theories; (3) PhenoBL classroom management and technology use in the classroom; (4) PhenoBL lesson planning; and (5) evaluation and assessment.

In analyzing the teacher educators' knowledge gained after attending the PTCD, the online PhenoBL teaching competency development questionnaire was developed to assess the PTCD sessions. The self-administered questionnaire was sent to all 85 attendees, and 48 samples (57.14%) sent their responses.

After attending the PTCD, the teacher educators designed and implemented such in their teaching. The satisfaction of undergraduate teachers towards teaching with PhenoBL approach was then assessed. Using the online PhenoBL teaching and learning satisfaction questionnaire, 60 questionnaires were sent back out to 82 student teachers from three regions of Thailand.

Data Analysis

Teacher educators and PTCD

After extensive searches for PhenoBL components, the codes to the data were assigned, and patterns and themes were searched for, refined, and categorized into subthemes. Criteria for selecting the document were the keyword search; which were competency development, and PhenoBL teaching competency. There were five PhenoBL themes, which were used to design the PTCD. There were seven teaching competencies which were finalized into four themes (mastery of content knowledge, classroom management, teaching methods, and assessment).

Descriptive data analysis was used to report knowledge gain from attending PTCD, perceptions towards PTCD, and ability to deliver using PhenoBL approach. Analysis of Variances (ANOVA) was used to analyze comparison between teacher educators' genders, classroom management, perceptions, usefulness of PhenoBL instructional method, and course satisfaction between three regions using one-way ANOVA.

Student learning and satisfaction

Descriptive analysis was used to assess the teacher educators delivering instruction using the PhenoBL approach. To compare the usefulness and satisfaction between three groups (three regions), one-way ANOVA was used to analyze teacher educators using PhenoBL approach from student teacher's perspectives, learning process, usefulness of PhenoBL, and course satisfaction.

Results

Theoretical and practical competencies are a predictor of teacher's success (Sedek, et al., 2016). Instructional competency comprised of seven teaching competency indicators: which are (1) teaching competency development consisting of understanding of subjects; (2) teaching-learning methods; (3) inducing learners to engage in learning; (4) understanding of learners; (5) learning environments and circumstances; (6) evaluation of learners; and (7) individual qualification (Kim & Kim, 2016).

PTCD

Five modules for PTC were retrieved from the PhenoBL rubrics (2015b). After extracting PhenoBL components and teaching competency development for teacher educators, the PTCD was designed by

integrating both components. The PTCD consisted of five modules: (1) teaching skill development; (2) PhenoBL concepts and theories; (3) PhenoBL classroom management and technology use in the classroom; (4) PhenoBL lesson planning; and (5) evaluation and assessment. In designing the modules, teaching competency indicators by (Kim & Kim 2016) were used. Module 1 corresponded to understanding the subject being taught along with the change in the new era and selecting authentic phenomenon for teaching. Modules 2, 3 corresponded to teaching and learning method, principles, concepts, and pedagogy related to PhenoBL. Module 3 corresponded to the learning environment (Kim & Kim, 2016), learning process, classroom management in relation to PhenoBL, differences between traditional and PhenoBL classroom environments and the use of technology to support teaching and learning (Symeonidis & Schwarz, 2016). Module 4 was aimed to assist teacher educators to design the holistic and multidisciplinary lesson plans (Sahlberg, 2015). The last module corresponded to the PhenoBL evaluation and assessment of authenticity and learning progress (Kim & Kim, 2016 Sahlberg, 2015).

Teacher Educators' Assessment towards Knowledge Gained

After teacher educators attended PTCD, they assessed the knowledge gained and the possibilities to implement the PhenoBL approach in their teaching. An online questionnaire survey of PhenoBL perceptions toward the training program was used. More than half of the attendees were females (65%). Most respondents were aged between 30–40 years (23%), with average teaching experience of 6–7 years (43%).

According to Table 1, the respondents reported that they gained knowledge from attending the PTCD at the highest level ($\bar{x}$ = 4.57). However, they were reluctant to state which they would be able to use PhenoBL in the classroom ($\bar{x}$ = 2.78).

An online questionnaire survey of PhenoBL perceptions toward the training program regarding three aspects was sent to the 78 teacher educators who attended the PhenoBL training courses. Forty-eight questionnaires (80%) were sent back via the online questionnaire on student learning and course satisfaction. The questionnaire survey was used to analyze the implications of PhenoBL in classroom settings. Perceptions of PhenoBL, changes in teaching and learning perspectives, and evaluation perceptions.

A one-way ANOVA between subjects was conducted to compare gender and learning process, classroom management, and evaluation. There was a significant difference between genders regarding the learning process, classroom management, and evaluation at the $p < .05$ level for the three conditions F (3, 188) = 1,299.065, $p = .000$, as shown in Table 2.

Table 1 Knowledge gained from PTCD and ability to use PhenoBL

(n = 48)

Criterion	Mean	*SD*
PhenoBL Problem-Inquiry-based Learning Process	4.53	0.28
PhenoBL Classroom Management	4.73	0.03
PhenoBL Assessment and Methods	4.46	0.06
Total	4.57	0.12
Ability to Use PhenoBL in Classroom	2.78	0.98
Total	2.78	0.98

Student Teachers' Learning Process and Satisfaction towards PhenoBL Instructions of Teacher Educators

The teacher educators who participated in the training program later designed their own lesson plans and implemented PhenoBL approach in their classrooms. There were three different courses delivered to student teachers from three different regions.

Table 2 Comparison between genders and learning process, classroom management, and evaluation perceptions

(n = 48)

Source of Variation	SS	df	MS	F	*p*-value	F crit
Between Groups	310.654	3	103.551	1,299.065	.000	2.653
Within Groups	14.986	188	0.080			
Total	325.640	191				

Table 3 Student Teachers' Learning Process and Satisfaction towards PhenoBL Instructions of Teacher Educators

(n = 60)

Criterion	Course 1 (n = 25)		Course 2 (n = 26)		Course 3 (n = 9)	
	Mean	*SD*	Mean	*SD*	Mean	*SD*
Student Learning Process	3.92	0.56	4.04	0.72	3.90	0.57
Active Learning Activities	3.85	1.01	4.42	0.70	4.50	0.53
PhenoBL Classroom Management (Student-centered)	4.77	0.51	4.08	0.69	4.60	0.52
Usefulness of Delivery Modes	3.62	0.75	3.73	0.67	4.40	0.70
Collaborative Learning (exchanging ideas)	4.96	0.87	4.12	0.82	4.70	0.48
Course Satisfaction	4.42	0.86	4.27	0.67	4.90	0.32

Student teachers rated overall course satisfaction of the three courses delivered by three teacher educators in three different locations with the highest scores ($\bar{x}$ = 4.42, 4.27, 4.90). Interestingly, the PhenoBL classroom management was rated the highest ($\bar{x}$ = 4.77) among all criteria. Course 1 and 3 showed that collaborative learning was rated highest ($\bar{x}$ = 4.96, 4.70), whereas, for course 2, the active learning was rated highest ($\bar{x}$ = 4.42).

A one-way ANOVA between subjects was conducted to compare the usefulness of PhenoBL and course satisfaction among the three groups of students attending three different courses. There was a significant difference between groups of students on the usefulness of the PhenoBL and course satisfaction at the $p < .05$ level for the three conditions $F(2, 59) = 4.579$, $p = .014$, as shown in Table 4.

Discussion

Teaching competency is a combination of knowledge, skill and attitude in order to implement teaching. Teacher educators are accountable for student teachers' performances by improving teaching competency (Kim & Kim, 2016), that should be directed toward collaborative learning and multidisciplinary (Sahlberg, 2011). Studies conducted in a variety of contexts suggested that teachers' beliefs related to new instructional methods play a role in defining the nature and extent to which they incorporate the new practice into teaching (e.g. Peterson et al., 1989; Richardson, 1990). It is important to understand what teachers believe about teaching a wide variety of subjects in order to differentiate how these beliefs play a role in supporting and/or preventing teachers from effectively implementing a variety of teaching strategies (Lynch & Star, 2013).

Teaching competency is a core competency of teacher educators (Tack & Vanderlinde, 2014), but they should engage students by shifting from lecture to different approaches. PhenoBL approach could enhance teaching competency in which it is effective in encouraging student teachers' collaboration and learning process, rather than effective delivery of content.

The PTCD presented that the teacher educators gained PhenoBL related knowledge and later implemented such in their teaching. Each module in the PTCD corresponded to develop teacher educators' teaching competency (Kim & Kim, 2016) in both theoretical competency and practical competency. The result showed that teacher educators gained teaching competency from attending the PTCD at the highest level ($\bar{x}$ = 4.57). Although, they were uncertain whether they would be able to use PhenoBL in the classroom ($\bar{x}$ = 2.78), they could yield acceptable student teachers' satisfaction towards teacher educators' teaching with PhenoBL approach resulting from PTCD. The student learning process was rated high in all three courses ($\bar{x}$ = 3.92, 4.04, 3.90), which means student teachers were satisfied with

Table 4 Usefulness of PhenoBL and course satisfaction between three groups using one-way ANOVA

(n = 60)

Source of Variation	*SS*	*df*	*MS*	*F*	*p*	*F crit*
Between Groups	4.605	2	2.302	4.579	.014	3.153
Within Groups	29.669	59	0.503			
Total	34.274	61				

this new change in their teaching and learning. The satisfaction may be due in part by the changes in instructional quality, which was more active and student-centered (Michel et al., 2009). The results of implementation of PTCD reflected the effectiveness of teaching competency. In teaching pedagogical content knowledge, teacher educators could incorporate PhenoBL practices in their teaching.

Teaching competency includes both theoretical competency and practical competency. It is arguable that the PhenoBL approach could be used in both theoretical competency and practical competency, but such could vary greatly since teacher educators may possess different levels of teaching competency and the ability to apply PhenoBL approach in their teaching. Teacher educators' teaching competency may choose different phenomenon and delivery methods, which is difficult to determine.

Conclusion and Recommendation

A challenge was that the content that could use the PhenoBL approach might not be appropriate for theory-based and heavily context-based courses in Thai context. PTCD was developed to assist teacher educators to incorporate PhenoBL in their teaching. Teacher educators could apply PhenoBL in the classroom by integrating more real-world phenomena. Teacher educators could be more flexible and allow student teachers to demonstrate holistic viewpoints in analyzing classroom-related problems and learn from outside the classroom.

Teaching competency could be enhanced by training, since teacher educators utilized the PhenoBL components, and incorporating them into teaching competency. Future research could explore to what extend PTCD could reach teacher educators in wider teacher education programs, and how the teacher educators implement PhenoBL approach in their teaching arenas.

Conflict of Interest

There is no conflict of interest.

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