



---

**Research Article**

The current issue and full text archive of this journal is available on Thaijo at:

<https://so01.tci-thaijo.org/index.php/emi>

---

Received 18 October 2023

Revised 24 October 2023

Accepted 1 November 2023

---

## **Training Course Construction on Professional Learning Community (PLC) for Vocational Teachers in the Eastern Region**

**Kriengsak Boonya**

Faculty of Education, Burapha University

\*Corresponding Author, e-mail: [kriengsak@go.buu.ac.th](mailto:kriengsak@go.buu.ac.th)

### **Abstract**

The research on training course construction on professional learning community (PLC) for vocational teachers in the eastern region was carried out with two main objectives; 1) to develop a training course curriculum on the PLC for vocational teachers in the eastern region and, 2) to validate the effectiveness of the developed training program on the PLC for vocational teachers in the eastern region. The participants in this study were 20 vocational teachers in the eastern region. The researcher analyzed the data with the following statistics; 1) the mean and standard deviation were used to compute the descriptive data, the IOC score, the difficulty level, the discrimination level. The E1 and E2 score were used for determining the quality of the research tools, and 2) the *t*-test was used to determine the differences in the means between the pretest and post test scores.

The results of the study were as follows;

1. The developed training course curriculum on the PLC for vocational teachers in the eastern region consisted of four elements: 1) objectives, 2) content, 3) learning experiences, and 4) evaluation.
2. The results of the effectiveness validation of the developed training program according to E1/E2 were that E1 = 83.62, and E2 = 86.10.
3. The results of the training implementation with 20 vocational teachers in the eastern region showed that the post-training scores exceeded the pre-training scores.
4. In regard to the follow-up after training, it was found that the aim of knowledge and the recommendations after the training on the Professional Learning Community were at high levels in all aspects.

**Keywords:** Vocational Teachers, Professional Learning Community (PLC), Training Curriculum Course Development

## Introduction

At present, Thailand has increasingly developed and promoted investment particularly in the industrial sector. It has been notably expanded and thus industrial businesses have grown rapidly. Working in industrial workplace can be regarded as a very interesting working setting. The number of industrial workplace or industrial operators has extensively increased thanks to the continued expansion in the industrial sector as well as the greater role of the industrial sector in the country's economy. Once the number of industrial operators has increased, the demand for workers has thus risen accordingly. Meanwhile, the Thai social shift from agricultural society toward industrial society has prompted the labor in the agricultural sector to transform toward the labor in the industries. Therefore, the number of workers in the industries has continued to increase; and this situation has led to greater domestic employment in the country, which can contribute to the overall development and prosperity of the country as a whole.

“Vocation creates the nation” is a key objective for vocational education development, which is aimed at ensuring international standard quality and enhancing vocational learners' knowledge, professional skills, managerial skills, and other key skills required by the market in the industries in the current Thailand 4.0 era. Therefore, development of vocational teachers based on the PLC concept is a crucial policy of the Office of Vocational Education Commission, Ministry of Education, in order to train teachers to be genuine teachers who dedicate cares and effort to their students.

The researcher is interested in studying the development of PLC training course construction in vocational schools in the eastern part of Thailand in order to apply the findings to certain ways of vocational teacher development based on the PLC concept. This is a key objective of vocational education management in order to ensure that the Thai vocational education is up to international standards, alongside the enhancement of the country's competitiveness and the Thai education as well as the development of vocational learners in Thailand 4.0 era.

## Research questions

1. What are some features or characteristics of PLC training course curriculum?
2. What are some different outcomes of the PLC teaching course vocational teachers in the eastern region?
3. What are post-training follow-up outcomes?

## Research Objectives

1. To develop a training course curriculum on a Professional Learning Community for vocational teachers in the eastern region;
2. To validate the effectiveness of the developed training program on a Professional Learning Community for vocational teachers in the eastern region.

## Hypothesis

The researcher's hypothesis is that the participants' post-training scores would exceed the pre-training scores.

## Expected benefits

1. A PLC training course would be developed and available in vocational schools in the eastern region.
2. A guideline on how to drive the PLC concept toward effective practical implementation of PLC training in vocational schools would be established.
3. Faculty of Education can collaborate with the Office of Vocational Education Commission in driving the PLC training course toward practical implementation in educational institutes.
4. Management, teachers, and educational personnel under the Office of Vocational Education Commission would establish the training course on PLC for practical implementation at educational institutes.

**Stage I:** Development of a training course curriculum on PLC for vocational teachers in the eastern region

In developing a training course curriculum, the researcher applied the concept presented by Wongyai (1994, as cited in Moondet, 2013, pp. 6-7). In this concept, three systems for procedure of integrated curriculum development, i.e., outline system, implementation system, and evaluation system, were suggested.

**Stage II:** Development of vocational teachers in the eastern region by carrying out the developed training course on PLC for vocational teachers in the earning region

For this step, the researcher experimented with the developed training course curriculum on PLC for vocational teachers in the eastern region, which was conducted through a training workshop. The scopes of the study project were as follows:

## Population and samples

### Population

The participants in the study were selected vocational teachers in the eastern region

### Samples

The samples used in the research were 20 vocational teachers, which were chosen by means of the purposive sampling.

There were two variables identified in this stage:

1. Independent variable: Development of vocational teachers in the eastern region with the training, which was divided into two phases.

1.1 Pre-training

1.2 Post-training

2. Dependent variables: There are two dependent variables, as follows.

2.1 Pre-training and post-training scores obtained by the participants

2.2 Post-training follow-up outcomes

The content presented in this training course was based on the content from the PLC curriculum for vocational teachers in the eastern region. The training was carried out in a form of the training workshop presenting the content from the curriculum on PLC-based vocational education management established by Office of Vocational Education Commission, Ministry of Education. Therefore, the training course on PLC for vocational teachers in the eastern region, which was conducted to serve the purpose of this study, consisted of the following content.

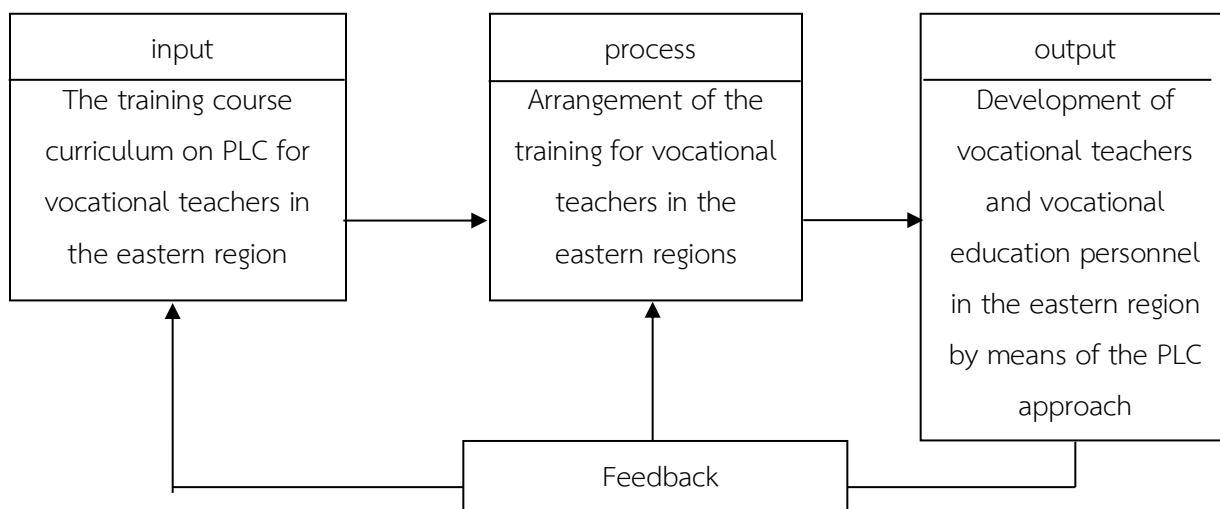
1. Formation of the PLC
2. Analysis and identification of problems/ required areas for development
3. Designs and establishment of a plan for learning/activity/and innovation management
4. Feedback, knowledge exchange, and revision
5. Management of learning/activities/ innovations
6. Outcome evaluation/Reflection of the outcomes of learning/activity/innovation management
7. Conclusion and publication of the established plan for learning/activity/innovation management

The curriculum development took three months before completion, and the training workshop lasted two days.

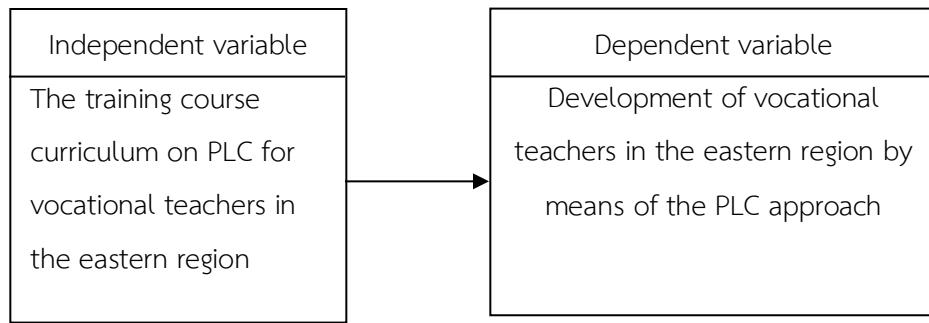
**Stage III:** The post-training follow-up for outcome evaluation last four months. This step was proceeded to assess the extent of how effectively the trained teachers managed to apply the knowledge on PLC to their teaching, and the evaluation also determined the degree of benefits from the knowledge acquired from the training workshop on the teachers' teaching.

The research applied the system theory presented by Katz and Kahn (1978, as cited in Kak Moondet, 2013, p. 9). The theory consisted of process, output and input. The input was the training course curriculum on PLC, which was brought to the process of the training course on PLC. The conducted training course finally produced output, which was the outcome of the teaching based on the PLC concept.

To achieve the set objectives of the study, the researcher identified scopes of the development of vocational teachers in the eastern region by carrying out the designed training course on PLC for vocational teachers in the eastern region. The details about how the study was conducted can be demonstrated below:



**Figure 1** The scope of the study on development of vocational teachers in the eastern region by using the training course curriculum on the PLC for vocational teachers in the eastern region



**Figure 2** Conceptual framework

The achievement of the training before and after the training session was determined by the comparison to find out the differences of the means.

E1 Efficiency refers to the effectiveness of the mean scores obtained from doing the tests or conducting activities during the PLC-based teaching

E2 Efficiency refers to the effectiveness of the percentage mean score from the post-test ( $E1/E2 = 80/80$ )

**Table 1** Experiment Plan.

Group	Pre-test	Treatment	Post-test
Test Group	T1	x	T2

T1 refers to the pre-test.

X refers to the experiment by applying the developed training course curriculum.

T2 refers to the post-test.

Steps of experiment procedure are as follows:

1. Have the participants complete the pre-test.
2. Conduct the training, with technologies applied to the support the training.
3. Have the participants complete the post-test
4. Evaluate the training by the evaluation from

### **Data analysis**

The researcher carried out the data analysis by means of the package program:

1. The mean and the standard deviation of pre-test and post-test scores and the evaluation results were computed.
2. The statistics used for determination of the quality of the research tools were the IOC, the difficulty level, the discrimination level, E1 and E2.
3. The comparison of pre-training and post-training scores by *t*-test
4. Post-training follow up, percentage, mean, and standard deviation

### **Part I: Development of a training course curriculum on PLC for vocational teachers in the eastern region**

The curriculum construction entailed knowledge about PLC-based learning management, which was synthesized from the curriculum on the learning management based on the PLC process for vocational teachers in different fields at the basic level developed by the Bureau of TVET Personnel Competency Development, Office of the Vocational Education Commission, Ministry of Education (Bureau of TVET Personnel Competency Development, 2018). The content in the curriculum is as follows:

1. Definition of PLC
2. Objectives of PLC
3. Convictions of PLC
4. Principles of PLC
5. Key elements of PLC
6. Classification of PLC
7. Work procedure (process) of PLC

The curriculum pattern consists of key elements based on the concepts of Taba (1962, p. 214). The key elements include the objectives, which can refer to general objectives about enabling the participants to acquire knowledge and understanding about the models, methods, and benefits of PLC. Extensive knowledge and understanding on the PLC would help provide guideline on how to drive and design the PLC according to the PLC process.

In terms of the objective around knowledge acquisition, the training was aimed at providing the participating vocational teachers with knowledge on PLC in the following aspects:

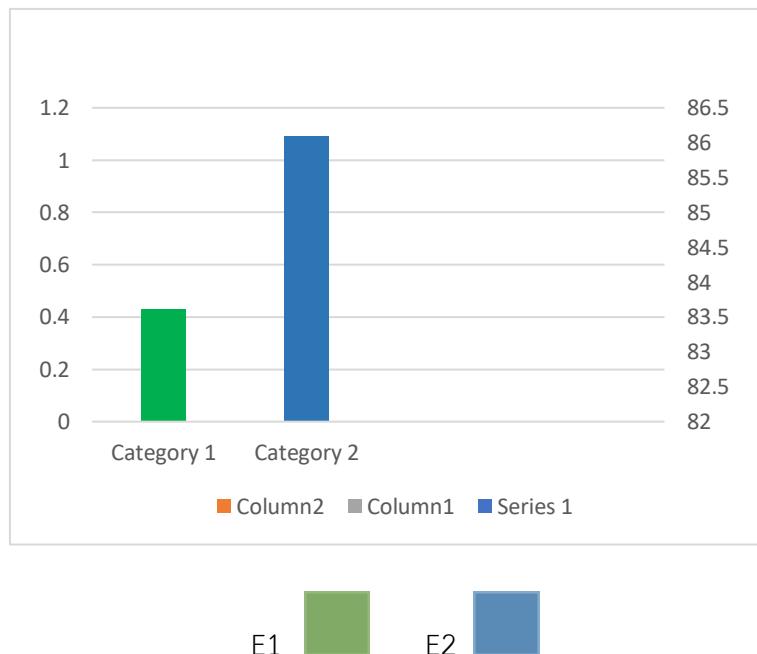
1. Formation of the PLC
2. Analysis and identification of problems/ required areas for development
3. Designs and establishment of a plan for learning/activity/ and innovation management
4. Feedback, knowledge exchange, and revision
5. Management of learning/activities/ innovations
6. Outcome evaluation/ reflection of the outcome of learning/activity/innovation management
7. Conclusion and publication of the established plan for learning/activity/innovation management

In terms of skills, the training participants were expected to acquire the following skills:

1. Formation of the PLC
2. Analysis and identification of problems/ required areas for development
3. Designs and establishment of a plan for learning/activity/ and innovation management
4. Feedback, knowledge exchange, and revision

**Part II: Development of vocational teachers in the eastern region by carrying out the developed training course on PLC for vocational teachers in the eastern region**

Figure 3 The difference between the scores obtained during the training (E1) and those gained after the training (E2) for vocational teachers in the eastern region.



**Figure 3** above demonstrates that the participating vocational teachers in the eastern region obtained the scores during the training (E1) at 83.62 and those gained after the training (E2) marked at 86.10

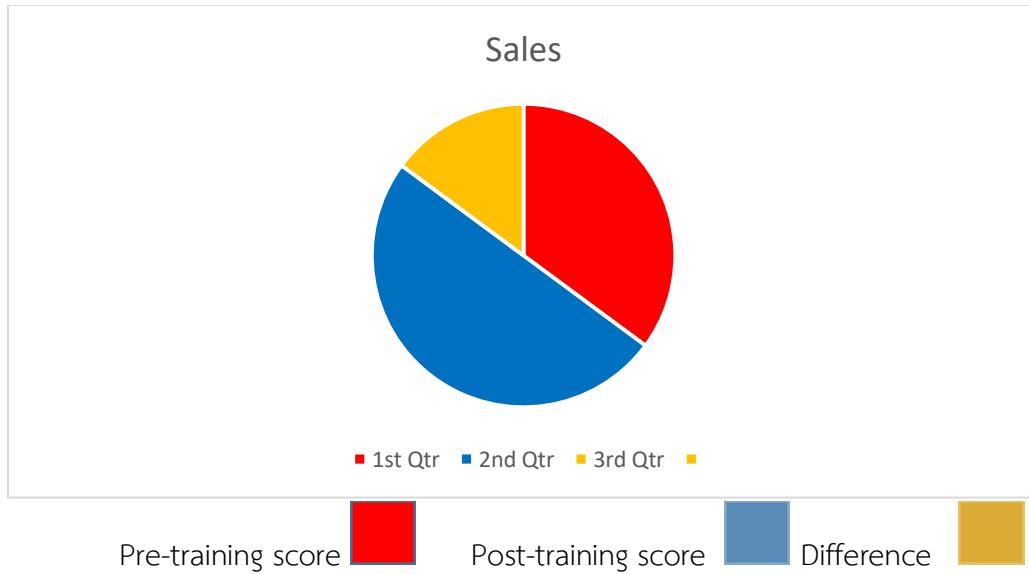
**Part III:** Comparison of the outcomes of the development of vocational teachers through the PLC training program for vocational teachers in the eastern region before and after the training

Figure 4: Pre-training and post-training scores; the difference between pre-training and post-training scores

---

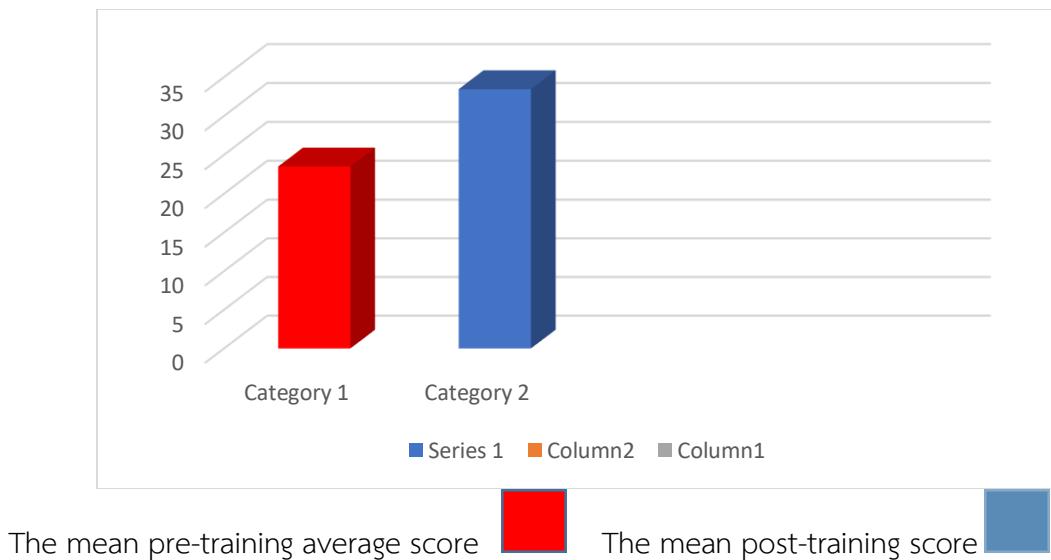
Pre-training scores	Post-training scores	Difference	Interpretation
Mean	23.50	33.45	9.95

---



**Figure 4** showed that the participating vocational teachers in the eastern region earned the mean score of 23.50 before attending the training, and after the training they obtained the mean score of 33.45. These scores showed the difference at 9.95. The figures reflected that the participants' scores increased after the training

The chart showed the means of the score the participants obtained before and after the training course on the PLC for vocational teachers in the eastern region



**Figure 5** The chart showed the comparison of the scores the participants gained before and after the training course on PLC for vocational teachers in the eastern region According to Figure 5, the mean of the scores the participants gained after the training was higher than the mean obtained before the training

**Table 2** Analysis of variance and the t-test of the pre-training – post training scores.

Category	n	$\bar{X}$	SD	df	**t	p
Pre-training	20	23.500	2.115	19	**16.697	.028
Post-training	20	33.450	0.887			

\*P<.001

Table 2 showed the result of the analysis of variance and the t-test of the pre-training – post-training scores, revealing the t-value at 6.697, the df at 19, and the significance at .028. The figures showed that difference between the pre-training and post-training scores of the participants marked statistical significance of 0.001.

**Part IV:** Post-training follow-up, the aiming of knowledge and the recommendations after the training on the PLC for vocational teachers in the eastern region

It was found that the means and deviation, the aiming of knowledge and the recommendations after the training on the PLC were at high levels in all aspects.

### **Research findings and discussion**

The training course construction on the PLC for vocational teachers in the eastern region consisted of four elements, namely objectives, content, learning experiences, and evaluation. The researcher constructed the curriculum, based on the concept presented by Taba (1962, p. 214), who suggested that a curriculum should consist of four components, i.e., objectives, content, learning experiences, and evaluation. This concept proves the most comprehensive, and it can also help simplify an implementation of a curriculum, enabling learners to study and understand the curriculum easily. This concept can be integrated for the learning of the entire system. With a number similar and different concepts regarding training course curriculum development presented by academicians, thus a constructor of training course curriculum may apply any concepts that best accord with particular context of a particular training course.

#### **Conclusion: PLC activity procedure**

There are seven steps for organizing PLC-based activities.

1. Formation of the PLC - teachers, educational personnel, local scholars, and related parties help to form a PLC.
2. Analysis and identification of problems or required areas of development - PLC members help analyze problems related to learning management, learners' quality and capacity, as well as certain things required to support learner development.
3. Designs and establishment of a plan for learning/activity/ and innovation management – PLC members work together to design and establish a plan for learning/activity/innovation management, which can be implemented in order to solve certain problems or support the development of the learner's quality as identified in the second step. The chosen plan should be the best one that can lead to the success of problem solving or development of learners, and the plan should also meet the objectives of learning in terms of knowledge, skills and preferred or specified characteristics (the learning management plan specified by the educational institutions).
4. Feedback, knowledge exchange, and revision – PLC members help to express their opinions, provide feedback on some ideas, and exchange knowledge regarding the constructed plan for learning/

activity/and innovation management. All members shall examine the feasibility of the planned learning activity and assess to what extent it would successfully enhance learners' learning activities based on the specified objectives.

5. Management of learning/activities/ innovations – A model teacher from the established PLC organizes learning activities and performs an observation. After the established plan for learning/activity/innovation management passes the trial stage and the feedback on such trial is provided by the members for further revision and improvement, the established plan will subsequently be implemented in the actual classrooms. During the learning activity session, at least one PLC member is required to be present and observe the learning activity. In light of this observation, a field note recording observed issues from the activity is required to be systematically carried out; in addition, the learning activity should also be taped, especially during an important part of the session.

6. Outcome evaluation/reflection of the outcome of learning/activity/innovation management: there is a debriefing session for all PLC members to question about the learning experience they have just had, in order to gather information relating to their opinions on the learning/activity/ innovation management. The debriefing session shall particularly answer the following four questions:

1. To what extent have the learner' knowledge acquisition and learning behavior development met the specified objectives?
2. How do you know whether the learners have gained or developed certain learning behaviors as specified in the objectives?
3. What are possible ways to handle with those learners who have failed to acquire knowledge and demonstrate the behaviors as specified in the objectives?
4. What are some ways to be pursued with the learners who have already acquired and achieved desirable amount of knowledge and learning behaviors?

The PLC members shall answer all these questions and express their opinions. All opinions answering all four aforementioned questions shall be taken into account by the host teacher, who will complete the outcome of the learning management. The teacher should also note points of pleasant practical guideline as well as the weak points for further improvement.

7. A conclusion and publication of the established plan for learning/activity/innovation: The outcome from the learning management practice is concluded, which will be referred to when the next step of planning for learning management is carried out. The host teacher is required to complete an official record of the concluded outcome. This procedure serves at least two objectives.

1. The record can demonstrate the development of learning management development as set by the mutual goals. It can reflect that learners can be developed to an extent that their learning behaviors meet the set goals. It can also show mutual lessons experienced by learners. This can be regarded as a crucial and valuable piece of information. It can be a high-quality classroom action research. In case learners remain unable to reach the goals, all related parties may collaborate in analyzing the causes and figuring out ways to improve the plan for learning/activity/innovation management. All procedure shall be proceeded until the goals specified in particular steps are ultimately achieved.

2. The concluded outcome shall lead to the next step of planning for learning management; this can ensure that the new round of learning management will prove more effective and exactly serve the purposes of learning.

Regarding the result of the training on PLC for vocational teachers in the eastern region, the content applied to construction of the training course curriculum was synthesized from the content obtained from research findings. Therefore, the content was clear and directly responded to participants' demand. It was also appropriate to the training participants. The training evaluation results showed that the participants passed the training and that they acquired knowledge and understanding about PLC-based teaching. The participants' post-training mean score exceeded the pre-training mean score. In terms of the efficiency of the mean score acquired from the test or PLC-based training activity for vocational teachers, the E1 marked at 83.62. Regarding the efficiency of the percentage of the mean score of the post-test, E2 was equivalent to 86.10. The efficiency proved accurate as the given hypothesis. Furthermore, the results of post-training follow-up reveal that generally the aiming of knowledge acquisition and the recommendations after the training course on the PLC for vocational teachers in the eastern region were at the high levels in all aspects. Apparently, vocational teachers managed to apply the PLC concept to their actual teaching, implying that this training proved beneficial for them. This is relevant to the study carried out by Yamkasikorn (2016) on the Professional Learning Community: The challenges to teachers' changes in themselves. The advancement of educational reform depends largely on development of individual teachers. The mutual capability as well as the link toward an enhancement of students' broad-based learning potential across schools can be regarded as a chronicle of success, which has been internationally reaffirmed (Stoll et al., 2016, p. 211). Hence, creating a mutual capability is a key condition. Given its complexity, collaborations to create a capacity require motivation, certain skills, positive mutual learning, favorable organizational conditions, and supportive infrastructure. It is therefore very challenging to integrate all aforementioned factors to create mutual learning among teachers.

Despite the challenge, however, it has been confirmed by many countries that this certain way of teacher development can be regarded as a sustainable one. Over the past 40 years, the development of teachers in Thailand has been carried out in the way that teachers were invited to join a classroom or a training session and listen to instructors. There might be some collaboration activities at the particular time of the training sessions, and the participating teachers might have been motivated by what they had gained from the training and applied it to their actual teaching tasks with their own students. However, while some aspects could be practical, some could not. In addition, when certain problems occurred and the teachers could not consult with their fellow teachers or any helpers, they eventually gave up and instead turned back to their conventional teaching methods they were more familiar with. However, the current circumstances as a consequence of globalization and rapid changes, new techniques are essentially required in order to shape up as new ways of learning management to ensure that the learning effectively keeps up with the rapid changes. Therefore, an establishment of a PLC in an entire school is very essential; and this will lead to the best way to stimulate teachers' learning, which will ultimately lead to their most effective learning management, which would bring maximum benefits to their students.

A professional learning community (PLC) has been developed from the relationship as well as the devotion of teachers and educational personnel in terms of collaborative professional development for teaching profession both in an entire school or a classroom. The PLC is a crucial mechanism for potential success in establishing an educational institute to become an institute of learning given the concept that teachers shall act as creators of the thought and intellect- based culture or as ones who always apply knowledge, thoughts, and intellect as professional tools. Therefore, a PLC will promote a thought-based culture and it will act as a mechanism, creating an atmosphere of a learning society as well as enhancing learners' academic achievement.

In conclusion, the training was aimed at encouraging vocational teachers to develop themselves and be well equipped for their teaching. They are encouraged to apply the PLC concept to their teaching and learning management; and in the mean time they should be able to work well with others. Furthermore, they are expected to be well capable of team work, welcoming views both from their supervisors and colleagues, based on the PLC concept. Ultimately, they will become very knowledgeable, acquire extensive experiences in creation of teaching innovations, and possess the most effective skills in vocational teaching performance.

## References

Bureau of Personnel Competency Development. (2018). *Classroom Management by the PLC Process for vocational teachers in each profession*. Bureau of Personnel Competency Development: Office of the Vocational Education Commission Ministry of Education.

Katz, D., & Kahn, R. L. (1978). *The Social Psychology of Organization* (2<sup>nd</sup> ed.). New York: Wiley & Son.

Moondet, K. (2012). *Training Course Construction on Learning Measurement and Assessment of Learning*. Petchabun: Faculty of Education, Petchabun Rajabhat University.

Stoll, L., Bolam, R., Mcmahon, A., Wallace, M., & Thomas, S. (2016). *Professional learning Communities: A Review of the literature in Journal of Educational Change* (2006)7, 221-258; (<http://schoolcontributions.cmswiki-wikispaces.net>; Access on 25 June 2016)

Taba, H. (1962). *Curriculum Development: Theory Practice*. New York: McMillan.

The Office of National Economic and Social Development The eastern development plan 2017-2022 (revision). Retrieved January 7, 2020, from [https://www.nesdb.go.th/more\\_news.php?cid=732&filename=index](https://www.nesdb.go.th/more_news.php?cid=732&filename=index)

Wongyai, W. (1994). *The Process of Curriculum Development and Teaching for Practicalities*. Bangkok: Suwerayasarn.

Yamkasikorn, M. (2016). “*Professional Learning Community: The Challenges to Teachers’ Changes in Themselves.*” in the 2016 Academic Conference organized by the Teachers Council of Thailand on the subject “*The Research on Learning Innovations and Education Management for Sustainable Development*”. Bangkok: The Secretariat Office of the Teachers Council of Thailand.