

Chapter 4

Research Results

The objectives of this research are (1) to construct the development model of learning management skills that enhance critical thinking for the Thai language lecturers at Rajamangala University of Lanna and (2) to study the result of using the constructed development model on the learning management skills that enhance critical thinking. The findings can be divided according to the objectives as the followings.

1. The results of developing the development model for learning management skills that enhance critical thinking for the Thai Language lecturers

1.1 The study on the condition of the learning management in the course of Thai Language 1. The results of data analysis can be summarised as the followings.

The introduction to the lesson as the whole picture is standing in a moderate level ($\mu=3.48$ and $\bar{X}=3.42$). Consideration per item reveals that the item that has the highest average score is the “lecturers’ keeping the students informed of the learning objectives before the lecturing” ($\mu=3.82$ and $\bar{X}=3.73$) while the item with the least average score is the “identification of the problems of the current situation so that students can calculate the answer” ($\mu=3.23$ and $\bar{X}=3.22$).

The implementation of the instructional shows that the instructional to develop critical thinking in general as the whole picture is in a moderate level ($\mu=3.35$ and $\bar{X}=3.29$) while consideration per item points that the highest average score is “lecturing with learning contents for students” ($\mu=3.95$ and $\bar{X}=3.87$). The item that shows the least average score is “instructing by allowing the students to explain their own opinion in their worksheet paper” ($\mu=2.77$ and $\bar{X}=3.00$).

In the step of conclusion of the lesson as the whole picture is standing in a moderate level ($\mu=3.43$ and $\bar{X}=3.36$). Consideration per item shows that the item with the highest average score is “the summary of the concept and learning content every time” ($\mu=3.59$ and $\bar{X}=3.43$). The items that shows the least average score is “opening the chance for students to discuss about the summary in each time” ($\mu=3.32$ and $\bar{X}=3.27$).

The measurement and evaluation as the whole picture is in a moderate level ($\mu=3.45$ and $\bar{X}=3.35$). Analysis per item points that the highest average score is “always informing the students to know about the methods to evaluate before the class” ($\mu=3.95$ and $\bar{X}=3.60$). The item that gains the least average score is “to allow the student to evaluate their own thinking process” ($\mu=2.86$). From the students’ part the least score is on “to inform the students to know about the result of evaluation every time” ($\bar{X}=3.19$).

The lecturers' opinion about the notion of critical thinking is an important skill as the whole picture is standing at the highest level ($\mu=4.77$). The students similarly think that the notion "of critical thinking as an important skill" is also at a high level ($\bar{X}=4.08$) and they think lecturers' need "to enhance the critical thinking skill" as the whole stands at the highest level ($\mu=4.69$). For themselves, the students believe they have "the need to get enhancement on critical thinking" at high level ($\bar{X}=4.09$).

1. On the aspect of suggestion to the learning management of the Thai Language 1 that promotes critical thinking, which can be summarised as the followings.

1.1 Thai Language lecturers

1.1.1 They should allow the students to train to get information from reading, listening to news and then presenting their own opinions toward what they have read or listened to classmates (15 samples).

1.1.2 They should focus on "the learning by doing" activities such as offering real situation as examples which are taken from articles for the students to analyse, interpret and discuss to exchange ideas together in individual or in group (12 samples).

1.1.3 The lecturers should explain the importance of critical thinking for students to understand and to apply it in daily life (10 samples).

1.1.4 The lecturers should study the learning contents of the Thai Language 1 Course in order to insert the process of critical thinking promotion into the learning content of the subject. After this process they can create the proper learning management plan (9 samples).

1.2 Students

1.2.1 The lecturers should ask the students to follow thinking and should allow the students to share their opinions with classmates (102 samples).

1.2.2 The lecturers should bring interesting events as teaching materials and examples to train students to follow the thought that the students can see the real practice of thinking in real life (88 samples).

1.2.3 The lecturers should be friendly to the students so they can study without stress and happily with the learning, and thus students dare to speak and show their own opinion (60 samples).

1.2.4 The lecturers should discuss and share opinion with the students and make revision of learning after every learning session (42 samples).

1.2.5 They should have learning materials that are easy to read and the students can bring back to review the lesson by themselves (30 samples).

2. On the aspect of suggestion on development model of learning management skills to enhance critical thinking, which can be summarised as what follows.

2.1 The lecturers should arrange the training in workshop meetings that the lecturers are aware of the importance of critical thinking and of guideline in learning management to enhance critical thinking (18 samples).

2.2 The lecturers should organise the activity that is easy to understand. It may be made in form of self-directed learning manual because the lecturers have other burdens both on teaching and many tasks (15 samples).

2.3 There should be activities that the Thai language lecturers can work together in seeking ways to find the learning management method that develops systematical thinking (10 samples).

2.4 The lecturers should discuss together about the learning management method to enhance critical thinking, including test the real teaching in order to adjust it into a more appropriate and efficient method (7 samples).

2.5 The lecturers should ask the students to do the test on satisfaction among students toward the learning management and problem solving on the learning incurred in the classroom (5 samples).

1.2 The result of the development model on learning management skills that enhance critical thinking

The researcher collects the result of studying in the real situation of learning in the course of Thai language 1, the opinion and needs to enhance critical thinking, the suggestions from lecturers and students, the study on secondary data analysis of materials and text books and other related literature on learning management, training, collaborative learning and reflective approach. The development model on developing learning management skills that enhance critical thinking skill of the Thai Language lecturers at Rajamangala University of Lanna is composed of three steps as what follows.

1. Step of the training

Objectives

1. To allow the Thai language lecturers to have knowledge and understanding the learning management that enhances critical thinking.

2. To allow the Thai language lecturers to discuss and build a learning management plans that enhance critical thinking in the course of Thai Language 1.

Development activities

1.1 Self-directed training

The implementation of self- directed training step is the activity where the Thai language lecturers study the self-directed learning manual on the learning management that enhances critical thinking for the Thai Language lecturers in Rajamangala University of Lanna. The researcher sends the manual to the Thai language lecturers and requests all of them to study the manual for a week. The self-directed manual has these following components.

- 1) The explanation for using the self-directed learning manual.
- 2) The learning unit of the self-directed manual, composed of three learning units.

1. General knowledge on critical thinking

- 1.1 Definition of critical thinking,
- 1.2 The importance of critical thinking,
- 1.3 The process of critical thinking,
- 1.4 The characteristics of persons with critical thinking,

1.5 The measurement of critical thinking.

2. Development of critical thinking

3. The learning management that enhances critical thinking

3.1 The promotion of critical thinking in the course of the Thai Language 1.

3.2 The learning management activity that enhances critical thinking.

3.3 The model of learning management that enhances critical thinking.

3.4 Building the learning management plan that enhances critical thinking.

3) Activities at the end of Learning Units.

1.2 The workshop meeting

The implementation of training for workshop techniques by the Thai language lecturers who participate in the workshop meetings is done according to the standard methods of lectures, discussions and implementation. The topics of the meeting have continuous relationship with the self-directed manual, which consists of the meeting activities in three periods as what follows.

1. Listening to lectures to explain, principles, concepts on learning management that enhances critical thinking in the course of Thai language 1 (for 3 hours).
2. Discussing together on the method that brings the learning management that enhances critical thinking to use in the course of Thai language 1 (for 3 hours).
3. Preparing together the learning management plan that enhances critical thinking in the course of Thai language 1 (for 6 hours).

Evaluation

The evaluation in the step of training will evaluate the use of the self-directed manual and the workshop meeting on the learning management that enhances critical thinking, which can be divided into the evaluation steps as the followings.

1. To evaluate the general knowledge of the learning management that enhances critical thinking by using the test on general knowledge of the learning management that enhances critical thinking
2. To evaluate the efficiency of the learning management plans that enhance critical thinking in the course of the Thai language 1 with the evaluation form on the learning management plan which will be evaluated by the experts on the promotion of critical thinking.
3. To evaluate the opinions/attitude toward the efficiency of the self-directed learning manual of the learning management that enhances critical thinking with the evaluation form for the self-directed learning manual.
4. To evaluate the results of the workshop meetings using the evaluation form (on the result of workshop meetings) among the lecturers who have attended the workshop meetings.

2. Step of monitoring in the classroom

Objectives

1. To monitor the results of application for the learning management plans that enhance critical thinking together among the students.
2. To encourage the Thai Language lecturers to exchange their opinion toward the learning management through the reflective learning in the classroom.

The development activities

2.1 Planning

The implementation in the planning step begins when the researcher and the Thai language lecturers hold the meeting to make the plan to bring the learning management plans in the course of Thai Language 1 that they have designed and prepared for the workshop meetings, which already pass the quality evaluation by the experts. The suggestions from the experts are used to revise the learning management plans into a better applicability. The researcher explains the understanding on the use of tools, measurement forms on critical thinking, recording forms on learning management situation, evaluation form on observation of the learning management, the questionnaires on the attitude/opinion, and discussion on exchanging the ideas after participated the learning management.

2.2 Implementation and Observation

The implementation in this step is that the lecturers who participate in the project that produces the learning management plan that enhances critical thinking in the course of Thai Language 1 to use with the students (samples) group. One lecturer is allowed to select the students in one classroom to do the trial test of using the learning management plans that enhance critical thinking. These plans have been designed together in the workshop meeting, starting from having the test before and after the learning on critical thinking. After that the lecturer implements the learning management plan to use with the students in selected classroom, which are the sample groups, through activities in many steps set in the learning management plan. Then the observation of the learning management from the lecturers in the same campus is made on the behaviour of the lecturers and students while the lecturers use the learning management plan. Then the lecturer tests the students with the test form on critical thinking after the learning (post-test) again. Finally, the lecturer asks the students' opinion toward the learning management that enhances critical thinking.

2.3 Reflection

The implementation of this step is that the Thai language lecturers gather the result from the implementation and observation steps. These are the data on the teaching and learning situation, problems and obstacles in the learning management (to discuss and exchange after the learning management analysis), and criticism and reflection of the implementation among the lecturers in the same campus. Such data is important to draw conclusion of the learning management that leads to making plan step in order to make revision for the learning management plan in next sessions.

Evaluation

The evaluation in the monitoring step in the classroom is divided into the following processes.

1. To evaluate the scores and results on critical thinking levels of the students before and after the learning with the measurement form on critical thinking.
2. To evaluate the attitude toward the learning management that enhances critical thinking of the students by using the questionnaire on the attitude toward the learning management.

3. Step of summary and evaluation

Objectives

To summarise and evaluate after conducting the learning management that enhances critical thinking in the course of the Thai Language 1 in the classroom as the whole picture, the step is necessary to build the development model, gather opinions, and pick suggestions.

Development activities

The implementation of this step is done with the Thai language lecturers' attending the group meeting in order to draw conclusion and evaluate the learning management that enhances critical thinking in the course of Thai Language 1 after the use of learning management that enhances critical thinking. The summary and evaluation processes are done according to the following steps.

1. The researcher summarises the evaluation and the opinion toward critical thinking and the learning management plans that enhances critical thinking and the learning management that enhances critical thinking in the course of the Thai Language 1 in order to draw conclusion and suggestion for further application in next semester.
2. The researcher summarises the evaluation and attitudes toward the development model of learning management skills that enhance critical thinking in all the implementation processes.

Evaluation

Evaluation in the step of summary and evaluation will be done by considering on the attitude/opinion of the lecturers who participate in the research project toward the result of the learning management that enhances critical thinking and toward the development model, the obstacles, the problems and other suggestions.

Table 1 Means and standard deviations, result of the development model evaluation on learning management skills that enhance critical thinking by 5 experts

Evaluation List	Results		Meaning
	\bar{X}	S.D.	
1. On appropriateness			Contain appropriateness
1.1 Development model consists of three implementation steps, which are step for training, step for monitoring in the classroom and step for summary and evaluation	4.60	0.55	Highest
1.2 Development model. The implementation of each step is appropriate and consistent	4.40	0.55	High
1.3 The proposed development model is appropriate for developing the learning management skill that enhances critical thinking	4.80	0.45	Highest
1.4 The development model is appropriate for the lecturers who participate in the development	4.60	0.55	Highest
Total on appropriateness	4.60	0.50	Highest
2. On correctness and coverage			Contain correctness and coverage
2.1 Development model that has correct implementation steps, which cover sufficient for the development of lecturers' skill who participate in the development	4.20	0.45	High
2.2 The development model has correctness, coverage for the development on the learning management skill that enhances critical thinking	4.00	0.71	High
2.3 Results gained from the development model which covers both the lecturers and students in university	4.40	0.55	High
Total on the correctness and coverage	4.20	0.56	High

List of evaluation	Results		Meaning
	\bar{X}	S.D.	
3. On usefulness			Contain usefulness
3.1 Development model that is useful for the development of learning management of the lecturers who participate in the development	4.60	0.55	Highest
3.2 Application of the development model to use and create usefulness in developing the teaching and learning of the university	4.20	0.84	High
3.3 Implementation the development model to use and creation of benefits for the quality of the students in the university	4.40	0.55	High
Total on the benefits/usefulness	4.40	0.63	High
4. On variability/possibility			Contain variability/possibility
4.1 The development model that can be really used in developing the learning management skill of the lecturers	4.40	0.55	High
4.2 The development model that has possibilities to gain acceptance from the lecturers who participate in its development	4.20	0.84	High
4.3 The development model that is easy to understand and not complicated	4.20	0.45	High
4.4 Result of using the development model make the lecturers be able to promote critical thinking of students	4.60	0.55	Highest
Total on possibilities	4.35	0.59	High
Grand Total on 4 aspects	4.40	0.57	High

Table 1 shows how the development model of learning management skills that enhance critical thinking is evaluated by the experts. It shows that on the whole picture (of all aspects) the evaluation is at high level ($\bar{X}=4.40$). Consideration per aspect shows that the aspect of appropriateness is at the highest level ($\bar{X}=4.60$), and the correctness and coverage is at high level ($\bar{X}=4.20$). The benefits/usefulness is evaluated at high level ($\bar{X}=4.40$) and the possibilities is also evaluated at high level ($\bar{X}=4.35$).

1.3 Result of trial usage of the development model of the learning management skills that enhance critical thinking

1. The results of the test on general knowledge of learning management that enhances critical thinking before and after studying the self-directed learning manual of both of lecturers show that the lecturers's average score increases (pre- versus post-test) above the average score of 15 onto 22. While the results on the evaluation on the self-directed learning manual show that all listed items are at above high level on the format and publication of the document ($\bar{X}=3.5$), on the content of the manual ($\bar{X}=4$) and on the benefits gained ($\bar{X}=4.5$).

2. Result of evaluating the workshop meeting of the lecturers shows at the high level on the aspect of knowledge gained from the meetings ($\bar{X}=3.5$), on the meeting arrangement ($\bar{X}=3.5$), and on the learning management plan that enhances critical thinking which the lecturers participate in the workshop have prepared (five plans, three hours for each plan). The plans are evaluated by an expert and then the researcher brings the scores to compare against the set criteria to find the the expert's evaluation in a good level (73.60 percent).

Table 2 Results of in-class lecturers and students behavior observation from the knowledge management 1st - 2nd

Descriptions	Lecturer A		Lecturer B	
	1	2	1	2
Lecturers				
1. Stimulating and introducing to the lesson interestingly	Good	Very Good	Good	Very Good
2. Using guided-thinking questions	Fair	Good	Fair	Good
3. Creating pleasant atmosphere, giving encouragement, and giving praise to the students	Fair	Very Good	Good	Very Good
4. Discussing and giving opportunity to the students to give their opinions	Good	Very Good	Good	Good
5. Summarizing the points in the thinking and the applying activities	Good	Good	Good	Very Good
Total	Good	Very Good	Good	Very Good
Students				
1. Showing enthusiasm and attention in the learning activities	Fair	Good	Fair	Good
2. Discussing and exchanging opinions among group members	Poor	Good	Fair	Very Good
3. Discussing among the lecturer and friends from different groups	Fair	Good	Fair	Good
4. Clearly present the project reflecting the thinking skill	Fair	Good	Fair	Good
5. Summarizing and asking the curious points with the lecturer in class	Fair	Good	Good	Good
Total	Fair	Good	Fair	Good

Table 2 shows the behaviors of lecturer A and B that have been developed from Good to Very Good level. In terms of the students, the students in both classes have developed their behavior from Fair to Good level. The information above is taken from the first to the second observation.

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The reflection after the implementation of the learning management (twice) by Lecturer A and Lecturer B

The first time reflection can be summarised as the followings.

Lecturer A: In the first learning management, some five students missed the class because of the holiday season was coming. The students did not fully understand the ongoing activities and the sub-group activities had to be arranged into the groups of two to three students. The expression of thought was quite good but the general discussion was still limited because the students dared not express their opinion toward the lecturers.

Lecturer B: For the first learning management implementation, the students provided cooperation at good level but there was problem in group work because the students came from many majors. They were too timid not talk or discuss in the groups. Answering questions was still limited because the students preferred to remain silent.

After the exchange of experience between the two lecturers, the conclusion was drawn for further improvement as the followings.

Lecturer A: suggests that who sets the learning management in next session must not only explain the importance of this learning approach to the students but also explain about the importance of critical thinking and other related activities. The students are expected to understand and know what points to correct after the last learning session.

Lecturer B: shares that we must urge the students to be active in the group activities that the student are relaxed and ensured enough time to do the activities. The students introduce themselves in the groups so they know each other first and feel familiar with one another.

The second time: The conclusion is drawn as the followings.

Lecturer A: The students join the group activities with better results. The students understand the ongoing activities, especially the group activities. The students express their own opinion very well. The students summarise the activities and discuss in the class in better manner than what happened before.

Lecturer B: The students show better cooperation in the second learning management. They discuss in the sub-group more actively than before, and they present their thoughts in quite good manner. The participation to exchange ideas with the lecturer is better although some students still hold back the expression of their opinion.

After the exchange of the two lecturers, the guideline conclusion for correction is made as the followings.

Lecturer A: The next learning management plan should emphasise on asking questions to students, giving enough time to answer questions, and offering support each time they answer the questions. The lecturers point to the benefits of thinking to find various answers for the discussion.

Lecturer B: The lecturer must specify the method to present the result of thinking in front of the classroom and motivate the students' thinking by asking questions one by one, which is possible given the small size of the class.

3. Results of learning management that enhances critical thinking of the lecturers who participate in the research project reveal that the students from two classrooms have the average (post-test) scores on critical thinking higher compared to that before the learning (pre-test). Before the learning the average score is 17.93 and after the learning the average scores becomes 20.60. This increase has a statistical significance at the level of $P < .01$.

4. For their attitudes toward the learning management that enhances critical thinking, the students show the level of “agreed a lot” in all lists. As a whole picture of the attitudes, the average score is at high level ($\bar{X} = 4.02$). On lecturers the average score is $\bar{X} = 4.08$, on content $\bar{X} = 3.85$, on the learning management activities $\bar{X} = 3.98$, on the media in learning management $\bar{X} = 4.02$, on measurement and evaluation $\bar{X} = 4.03$, and on the attitude toward the whole picture of the learning management $\bar{X} = 4.07$.

5. The attitude/opinion of the lecturers who participate in the experiment toward the development model that enhances critical thinking is reported below. From the summary and evaluation, they share an opinion that the model is appropriate and can help developing the learning management skill that enhances critical thinking. The lecturers show an opinion that it is useful for developing the students in expressing their own opinions and in training to work in groups as well. The learning management plan is appropriate and they have suggestion that the contents of article can lead them to think properly into many issues. However, it would be better for the management plan to increase the time for training.

The result of experiment of the development model to the Thai language lecturers shows that the experiment can motivate the lecturers to increase knowledge and understanding on the learning management that enhances critical thinking. The lecturers can also arrange the learning management that enhances critical thinking to the students well although there is the extra need to revise and adjust the plan into a more effective one.

1. Training step

1.1 The training step with the self-directed learning manual. The lecturers who participate in the experiment evaluate that the manual is appropriate but there should be adjustments on some parts of the contents to improve the manual especially on the language to be easily understood. There should also be a learning management plan that has been implemented to be included as the sample of the manual, and the experiment should allow more time for the lecturers to study the manual from 1 week to 2 weeks.

1.2 The step of meeting. It is an appropriate exercise but this experiment involves only two lecturers and the researcher. With only three teachers involved the arrangement is convenient on the meeting hours; however, to approach a more realistic life situation, more lecturers from different campuses should have been invited and a more realistic time arrangement should have been arranged to invite them to the meeting. The most appropriate time should be two days. The knowledgeable and experienced trainers on learning management that enhances critical thinking in the Thai Language 1 Course are invited that the lecturers get knowledge and useful concept for the learning management that enhances critical

thinking in Thai Language 1 Course. On the evaluation of the learning management plan, more experts should be added from one to three experts in order to get diversified perspectives from the evaluation and to improve the learning management plan. The learning management plan should add one or two more plans to cover the contents of the subject.

2. Monitoring step in the classroom

The lecturers who participate in the experiment agree that it is a good method, but it should be focused on friendly cooperation. There should be identification to the lecturers who participate in the research project to be aware of how to implement it in accordance with the development model. The obstacles found are that the experiment (trial use) is done in semester 3/2009 (summer semester); the reflection after the implementation reveals that the discussion after the learning session cannot be done continuously because the time for the learning management plan is in the holiday vacation of Songkran Festival which lasts for many days. The lecturers who participate in the trial use of the development model propose that the observation of the teaching and learning should be done until the lecturers who are observed and students can perform it well according to the learning management plan.

3. Step of summary and evaluation

The lecturers who participate in the experiment (trial use) see that this step is appropriate. In the flashback (think back) of the situation of working together, the lecturers are clear about the strong and weak points from the discussion to lead to the improvement for future use. The lecturers who participate in the experiment (trial use) propose that the appropriate is after the examination of the students that the lecturers can finish their other responsibilities and can spare time to attend the meeting.

1.4 Result of the development model adjustment on learning management skills that enhances critical thinking.

The researcher collects the result of trial usage development model, the opinion and suggestions from lecturers who participate in the experiment (trial use) to adjust model which as the followings.

1. Step of the training

Objectives

1. To allow the Thai language lecturers to have knowledge and understanding on the learning management that enhances critical thinking.
2. To allow the Thai language lecturers to discuss and build a learning management plan that enhances critical thinking in the course of Thai Language 1.

Development activities

1.1 Self-directed training

The implementation of self-directed training step is the activity where the Thai Language lecturers study the self-directed learning manual on the learning management that enhances critical thinking for the Thai language lecturers in

Rajamangala University of Lanna. The researcher sends the manual to the Thai language lecturers and requests them study the manual for 2 week. The self-directed manual has these following components.

- 1) The explanation in using the self-directed learning manual.
- 2) The learning unit of the self-directed manual, composed of three learning units.

1. General knowledge on critical thinking

- 1.1 Definition of critical thinking.
- 1.2 The importance of critical thinking.
- 1.3 The process of critical thinking.
- 1.4 The characteristics of persons with critical thinking.
- 1.5 The measurement of critical thinking.

2. Development of critical thinking

3. The learning management that enhances critical thinking

- 3.1 The promotion of critical thinking in the course of the Thai Language 1.
- 3.2 The learning management activity that enhances critical thinking.
- 3.3 The model of learning management that enhances critical thinking.
- 3.4 Building the learning management plan that enhances critical thinking.
- 3) Activities at the end of Learning Units.
- 4) Sample of the learning management plan that enhances critical thinking

1.2 The workshop meeting

The implementation of training for workshop techniques by the Thai language lecturers who participate in the workshop meetings is done according to the standard methods of lectures, discussions and implementation. The topics of the meeting have continuous relationship with the self-directed manual, which consists of the meeting activities in three periods as what follows.

1. Listening to lectures from expert to explain, principles, concepts on learning management that enhances critical thinking in the course of Thai language (for three hours).
2. Discussing together on the method that brings the learning management that enhances critical thinking to use in the course of Thai language 1 (for three hours).
3. Preparing together the learning management plan that enhances critical thinking in the course of Thai language 1 (for 6 hours).

Evaluation

The evaluation in the step of training will evaluate the use of the self-directed manual and the workshop meeting on the learning management that enhances critical thinking, which can be divided into the evaluation as the followings.

1. To evaluate the general knowledge of the learning management that enhances critical thinking by using the test on general knowledge of the learning management that enhances critical thinking
2. To evaluate the efficiency of the learning management plans that enhance critical thinking in the course of the Thai language 1 with the evaluation form on the learning management plan which will be evaluated by 3 experts on the promotion of critical thinking.
3. To evaluate the opinions/attitude toward the efficiency of the self-directed learning manual of the learning management that enhances critical thinking with the evaluation form for the self-directed learning manual.
4. To evaluate the results of the workshop meetings using the evaluation form (on the result of workshop meetings) among the lecturers who have attended the workshop meetings.

2. Step of monitoring in the classroom

Objectives

1. To monitor the results of application for the learning management plans that enhance critical thinking together among the students.
2. To encourage the Thai language lecturers to exchange their opinion toward the learning management through the reflective learning in the classroom.

The development activities

2.1 Planning

The implementation in the planning step begins when the researcher and the Thai language lecturers hold the meeting to make the plan to bring the learning management plans in the course of Thai Language 1 that they have designed and prepared for the workshop meetings, which already pass the quality evaluation by the experts. The suggestions from the experts are used to revise the learning management plans into a better applicability. The researcher explains the understanding on the use of tools, measurement forms on critical thinking, recording forms on learning management situation, evaluation form on observation of the learning management, the questionnaires on the attitude/opinion, and discussion on exchanging the ideas after participated the learning management.

2.2 Implementation and Observation

The implementation in this step is that the lecturers who participate in the project that produces the learning management plans that enhances critical thinking in the course of Thai Language 1 to use with the students (samples) group. One lecturer is allowed to select the students in one classroom to do the trial test of using the learning management plans that enhance critical thinking. These plans have been designed together in the workshop meeting, starting from having the test before and after the learning on critical thinking. After that the lecturer implements the learning management plans to use with the students in selected classroom, which are the sample groups, through activities in many steps set in the learning management plan. Then the observation of the learning management from the lecturers in the same campus is made on the behaviour of the lecturers and students while the lecturers use the learning management plan. Then the lecturer tests the students with the test form

on critical thinking after the learning (post-test) again. Finally, the lecturer asks the students' opinion toward the learning management that enhances critical thinking.

2.3 Reflection

The implementation of this step is that the Thai language lecturers gather the result from the implementation and observation steps. These are the data on the teaching and learning situation, problems and obstacles in the learning management (to discuss and exchange after the learning management analysis), and criticism and reflection of the implementation among the lecturers in the same campus. Such data is important to draw conclusion of the learning management that leads to making plan step in order to make revision for the learning management plan in next sessions.

Evaluation

The evaluation in the monitoring step in the classroom is divided into the following processes.

1. To evaluate the scores and results on critical thinking levels of the students before and after the learning with the measurement form on critical thinking.
2. To evaluate the attitude toward the learning management that enhances critical thinking of the students by using the questionnaire on the attitude toward the learning management.

3. Step of summary and evaluation

Objectives

To summarise and evaluate after conducting the learning management that enhances critical thinking in the course of the Thai Language 1 in the classroom as the whole picture, the step is necessary to build the development model, gather opinions, and pick suggestions.

Development activities

The implementation of this step is done with the Thai language lecturers' attending the group meeting in order to draw conclusion and evaluate the learning management that enhances critical thinking in the course of Thai Language 1 after the use of learning management that enhances critical thinking. The summary and evaluation processes are done according to the following steps.

1. The researcher summarises the evaluation and the opinion toward critical thinking and the learning management plan that enhances critical thinking and the learning management that enhances critical thinking in the course of the Thai Language 1 in order to draw conclusion and suggestion for further application in next semester.
2. The researcher summarises the evaluation and attitudes toward the development model of learning management skill that enhances critical thinking in all the implementation processes.

Evaluation

Evaluation in the step of summary and evaluation will be done by considering on the attitude/opinion of the lecturers who participate in the research project toward the result of the learning management that enhances critical thinking and towards the development model, the obstacles, the problems and other suggestions.

2. Result of using the constructed development model on learning management skills that enhance critical thinking

Table 3 Percentage of the changes of scores on the test of the knowledge and understanding on learning management that enhances critical thinking before and after the lecturers' studying the manual (7 lecturers)

Lecturers	Full scores	Before studying the manual	After studying the manual	Percentage of the changes
1	30	17	24	41.18
2	30	15	23	53.33
3	30	20	28	40.00
4	30	19	25	31.58
5	30	19	24	26.32
6	30	18	25	38.89
7	30	18	26	44.44
Average score	30	18	25	38.89

Table 3 shows that the percentage of the changes of scores on the test on general knowledge of learning management that enhances critical thinking as the whole picture of the Thai Language lecturers increases 38.89 percent in average.

Table 4 Comparison of the average scores of the test on general knowledge on learning management that enhances critical thinking before and after the lecturers' studying the manual (7 lecturers)

Scores before studying the manual		Scores after studying the manual	
\bar{X}	S.D.	\bar{X}	S.D.
18	1.63	25	1.91

Table 4 shows that the average scores from the test on general knowledge levels of learning management that enhances critical thinking, the Thai language lecturers can increase the average score from 18 to 25.

Table 5 Comparison of the test scores on general knowledge from the learning management that enhances critical thinking before and after studying the manual by the lecturers (7 lecturers) through the test of Wilcoxon (Wilcoxon Matched-pairs Signed-Rank Test)

Ranks		N	Mean Rank	Sum of Ranks
Post - Pre Ranks	Negative	0 ^a	.00	.00
	Positive Ranks	7 ^b	4.00	28.00
	Ties	0 ^c		
	Total	7		

a. Post < Pre

b. Post > Pre

c. Post = Pre

Table 5 shows that seven Thai language lecturers can gain higher score after their studying the manual than before them studying the manual.

Table 6 Result of Wilcoxon's test (Wilcoxon's Matched Pairs Signed-Rank Test) Comparison of the test scores on general knowledge from learning management that enhances critical thinking before and after studying the manual by the lecturers (7 lecturers)

Test Statistics^b	
	Post - Pre
Z	-2.388^a
Asymp. Sig. (2-tailed)	.017

a. Based on negative ranks.

b. Wilcoxon Signed Rank Test

Table 6 shows the result of the Wilcoxon's Test, the scores of the test on general knowledge of learning management that enhances critical thinking increase from pre-test to post-test with statistical significance at the level of $p < .05$.

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Table 7 Percentage of the changes from the test on general knowledge from learning management that enhances critical thinking before and after the studying the manual by lecturers, classified per aspect (7 lecturers)

Score on aspect of	Full scores	Before studying	After studying	Percentage of the changes
Meaning/definition	2	1.43	2.00	39.86
Objectives	4	2.14	3.57	66.82
Method	17	10.43	14.00	34.23
Benefits/usefulness	5	3.43	4.29	25.07
Results	2	0.57	1.14	100.00
Toal of 5 aspects	30	18.00	25.00	38.89

Table 7 shows the percentage of the changes of scores from the test on general knowledge of learning management that enhances critical thinking, classified per aspect of the Thai language lecturers after their studying the manual. In all aspects as a whole the students can increase the average score (in average by 38.89 percent).

Table 8 Means and standard derivations of the measurement results of the self-directed learning manual by the 7 lecturers

Descriptions	Level of Agreement		
	\bar{X}	S.D.	Meaning
1. Layouts and Publishing			
1.1 Layout is beautiful.	4.29	0.49	High
1.2 Fonts are obvious and easy to be seen.	4.00	0.58	High
1.3 Printing is correct with proper text layout.	3.57	0.53	High
Total	3.95	0.59	High
2. Substances of the manual			
2.1 Contexts are proper and covered.	4.57	0.53	High
2.2 Contexts are consequent and proper.	3.71	0.76	High
2.3 Language used is proper.	4.00	0.82	High
2.4 It is easy to understand and comprehend.	4.14	0.38	High
2.5 Follow-up activities are proper.	3.86	0.69	High
2.6 Measurement is proper.	3.71	0.49	High
2.7 The manual is proper and covered the contexts.	3.57	0.53	High
Total	3.94	0.66	High
3. Benefits			
3.1 Acknowledging the contexts of learning management to enhance critical thinking	4.14	0.69	High
3.2 Being able to apply the learning management to enhance critical thinking to the students	4.71	0.49	Highest
Total	4.43	0.65	High
Totals	4.02	0.66	High

Table 8 shows the measurement results of the self-directed learning manual from 7 Thai language lecturers. The results indicate the overall image of the 3 parts that the lecturers agree with the use of the manual at high level ($\bar{X}=4.02$). After considered in each part, the benefits part has got the high agreement ($\bar{X}=4.43$) follows by the layouts and publishing part ($\bar{X}=3.95$) while the substances of the manual has got the high agreement ($\bar{X}=3.94$). Furthermore, the lecturers have indicated that the manual is well facilitating and is able to study at all time.

Table 9 Means and standard derivations of the measurement results of the workshop meeting by the 7 lecturers

Descriptions	Level of Agreement		
	\bar{X}	S.D.	Meaning
1. Knowledge from the workshop			
1.1 Acquiring knowledge of the learning management to enhance critical thinking	4.57	0.53	Highest
1.2 Contexts are proper and related to the workshop.	4.43	0.53	High
1.3 Being able to apply the learning management to enhance critical thinking	4.71	0.49	Highest
Total	4.57	0.51	Highest
2. Workshop management			
2.1 Duration is proper.	4.00	0.82	High
2.2 The speaker is knowledgeable.	4.14	0.69	High
2.3 The process of the workshop is suitable.	4.14	0.38	High
2.4 The participation during the workshop	4.29	0.49	High
2.5 Related documents are suitable and proper.	3.86	0.69	High
2.6 Audio visual aids are suitable and proper.	3.57	0.53	High
2.7 Snacks and meals are suitable.	4.00	0.58	High
2.8 Venue of the workshop is proper.	3.71	0.76	High
2.9 Facilities are suitable and proper.	4.00	0.58	High
Total	3.97	0.62	High
Totals	4.12	0.65	High

Table 9 shows the measurement results of the workshop from 7 Thai language lecturers. The results indicate the overall image of both parts that the lecturers have agreed with the workshop at high level ($\bar{X}=4.12$). After considered in each part, the knowledge from the workshop has got the highest agreement ($\bar{X}=4.57$) follows by the workshop management at high level ($\bar{X}=3.97$).

Table 10 Results of the evaluation of the learning management that enhances critical thinking in the Course of Thai Language 1 from 3 experts

Expert No.	Scores	Percentage	Meaning
1	94	75.20	Good
2	104	83.20	Very good
3	111	88.80	Very good

Table 10 shows the evaluation of the learning management plan that enhances critical thinking in the course of Thai Language 1 in which the lecturers attend the meeting together as evaluated by three experts on promotion of critical thinking. These experts bring the scores result to compare with the set criteria, identified in percentage and found that one expert evaluates that the learning management plan is at good quality level (75.20 percent) and two experts evaluate that the learning management plan is at the quality level of very good (83.20 percent and 88.80 percent respectively).

Table 11 Results of in-class lecturers and students behavior observation from the knowledge management 1st – 3rd at campus A

Descriptions	Lecturer 1			Lecturer 2		
	1	2	3	1	2	3
Lecturers						
1. Stimulating and introducing to the lesson interestingly	Good	Good	Good	Good	Very Good	Very Good
2. Using guided-thinking questions	Fair	Good	Very Good	Good	Very Good	Very Good
3. Creating pleasant atmosphere, giving encouragement, and giving praise to the students	Fair	Good	Very Good	Good	Good	Very Good
4. Discussing and giving opportunity to the students to give their opinions	Good	Good	Very Good	Good	Very Good	Very Good
5. Summarizing the points in the thinking and the applying activities	Good	Good	Very Good	Good	Very Good	Good
Total	Good	Good	Very Good	Good	Very Good	Very Good
Students						
1. Showing enthusiasm and attention in the learning activities	Poor	Good	Very Good	Fair	Good	Very Good
2. Discussing and exchanging opinions among group members	Fair	Fair	Good	Fair	Good	Very Good
3. Discussing among the lecturer and friends from different groups	Poor	Fair	Good	Fair	Good	Very Good
4. Clearly present the project reflecting the thinking skill	Fair	Fair	Very Good	Fair	Fair	Very Good
5. Summarizing and asking the curious points with the lecturer in class	Fair	Good	Good	Fair	Good	Good
Total	Fair	Fair	Good	Fair	Good	Very Good

Table 11 shows the behaviors of lecturer 1 and 2 that have been developed from Good to Very Good level. In terms of the students, the students in lecturer 1 class have developed their behavior from Fair to Good level and students in lecturer 2 class have developed their behavior from Fair to Very Good level. The information above is taken from the first to the third observation.

Table 12 Results of in-class lecturers and students behavior observation from the knowledge management 1st – 3rd at campus B

Descriptions	Lecturer 3			Lecturer 4		
	1	2	3	1	2	3
Lecturers						
1. Stimulating and introducing to the lesson interestingly	Fair	Good	Very Good	Good	Very Good	Very Good
2. Using guided-thinking questions	Fair	Good	Very Good	Fair	Very Good	Very Good
3. Creating pleasant atmosphere, giving encouragement, and giving praise to the students	Fair	Good	Very Good	Good	Good	Good
4. Discussing and giving opportunity to the students to give their opinions	Good	Good	Very Good	Good	Good	Very Good
5. Summarizing the points in the thinking and the applying activities	Good	Good	Very Good	Good	Very Good	Very Good
Total	Fair	Good	Very Good	Good	Very Good	Very Good
Students						
1. Showing enthusiasm and attention in the learning activities	Fair	Good	Very Good	Fair	Good	Very Good
2. Discussing and exchanging opinions among group members	Fair	Good	Good	Poor	Good	Very Good
3. Discussing among the lecturer and friends from different groups	Fair	Good	Very Good	Fair	Good	Very Good
4. Clearly present the project reflecting the thinking skill	Fair	Good	Very Good	Fair	Good	Good
5. Summarizing and asking the curious points with the lecturer in class	Fair	Good	Good	Poor	Fair	Good
Total	Fair	Good	Very Good	Fair	Good	Very Good

Table 12 shows the behaviors of lecturer 3 that have been developed from Fair to Very good level and lecturer 4 that have been developed from Good to Very good level. In terms of the students, the students in both classes have developed their behavior from Fair to Very Good level. The information above is taken from the first to the third observation.

Table 13 Results of in-class lecturers and students behavior observation from the knowledge management 1st – 3rd at campus C

Descriptions	Lecturer 5			Lecturer 6			Lecturer 7		
	1	2	3	1	2	3	1	2	3
Lecturers									
1. Stimulating and introducing to the lesson interestingly	Good	Very Good	Very Good	Fair	Good	Very Good	Good	Very Good	Very Good
2. Using guided-thinking questions	Fair	Good	Very Good	Fair	Very Good	Very Good	Fair	Very Good	Very Good
3. Creating pleasant atmosphere, giving encouragement, and giving praise to the students	Good	Good	Good	Fair	Very Good	Very Good	Good	Very Good	Very Good
4. Discussing and giving opportunity to the students to give their opinions	Fair	Good	Very Good	Good	Good	Very Good	Good	Very Good	Very Good
5. Summarizing the points in the thinking and the applying activities	Fair	Good	Good	Good	Good	Very Good	Good	Good	Good
Total	Fair	Good	Very Good	Fair	Good	Very Good	Good	Very Good	Very Good
Students									
1. Showing enthusiasm and attention in the learning activities	Fair	Good	Very Good	Fair	Fair	Good	Fair	Fair	Good
2. Discussing and exchanging opinions among group members	Fair	Good	Very Good	Fair	Fair	Very Good	Fair	Very Good	Very Good
3. Discussing among the lecturer and friends from different groups	Fair	Good	Good	Fair	Good	Very Good	Poor	Fair	Good
4. Clearly present the project reflecting the thinking skill	Fair	Good	Very Good	Fair	Good	Good	Fair	Good	Very Good
5. Summarizing and asking the curious points with the lecturer in class	Fair	Good	Good	Fair	Good	Very Good	Fair	Good	Very Good
Total	Fair	Good	Very Good	Fair	Good	Very Good	Fair	Good	Very Good

Table 13 shows the behaviors of lecturer 5 and 6 that have been developed from Fair to Very Good level and lecturer 7 that have been developed from Good to Very Good level. In terms of the students, the students in 3 classes developed their behavior from Fair to Very Good level. The information above is taken from the first to the third observation.

The reflection after the third learning management of the Lecturers in Campus A.

The first time can be summarised as the followings.

For The first Lecturer, the learning management followed the plan. It went well but the lecturer had a problem in teaching because the students came to the class late. The students were busy with the documents regarding application for loans from the Students Affair Division. That was why they joined the class late. The activities were delayed. Some students brought the documents to fill up in the class that they could not concentrate fully. Therefore the activity did not run as planned in the itinerary. The students did not express their opinion openly. The activity was stalled and the lecturer was quite moody with the unexpected events; the learning climate was not so encouraging.

The second Lecturer found little problem in the first learning management. The lecturer spent time to explain the introduction/leading step quite extensively that the students understood the activities that they were going to do. The students participated well in the activity but they showed slackened spirit in discussion together and with the lecturer. The lecturer smiled while teaching but the lecturer still lacked some smooth skills of asking questions to persuade the students to think.

After the exchange of the two lecturers, the guideline for the solution can be summarised as the followings.

First Lecturer: In next learning management the lecturer should explain the step of implementing each activity clearly from the start for the students to appreciate the value of thinking critically. Because for some time the students paid little attention to the study, the lecturer needed to talk carefully and slowly to make the students understand and to stimulate their thinking during the introduction to the lesson period with better enthusiasm.

Second Lecturer: Since the students have problem in expressing their own thoughts, the adjustment should be made by asking questions to every students. In doing activity according to the plan, the students must also be well-informed that they appreciate the value of the learning management activity to train their critical thinking.

The second time can be summarised as the followings

First Lecturer: the lecturer shares that the activity arrangement of the student is better. More cooperation appears than the previous session although the problems in their expression of thought remain. Some students can not catch up with the Activity Sheet 1. They do not engage much in discussions. However the students can present the thoughts in front of the class rather well.

Second Lecturer: the lecturer told that In the activity management in second time, the students cooperate well in doing activity. They are determined with work but during the presentation of group's thoughts, some groups listen inattentively to the other's presentation because they are also busy with their own work. The lecturer therefore reprimands them. During the evaluation of thoughts, the students rush to finish the activity. The lecturer points out the importance of revision of their own thinking process to the students. The lecturer pays attention to the students quite well.

After the experience exchange of the two lecturers, the summary can be made as following for the correction in next session.

First Lecturer: suggests that in the next learning session, the students should be informed about the itinerary of the activities in each step, and they should not be worried of expressing their opinion freely because they are worried about getting low marks in activity. The students should feel at ease that there is no certain correct answer. They are allowed to express their opinion reasonably and fully to their own judgment.

Second Lecturer: shares that should adjust the step of presentation and make each of the students listen to classmates because the lecturer has questions to ask about the presentation in front of the classmates. The student would pay more attention to the presentation of their classmates' groups. The students do not need to worry about the score for the presentation of their own group.

The third time can be summarised as the followings.

First Lecturer: told that the learning activity of the students is getting better. They show more enthusiasm in expressing their own thoughts. The activity is conducted according to the plan but some students dare not express their opinion when asked by the lecturers. The representative of the group in the presentation is still the same person as the last week's sessions. As the whole picture, the students start to understand the activity more.

Second Lecturer finds that the students cooperate in doing activity very well. They pay more attention to the class. The lecturer thinks that the students who belong to the sample groups pay better attention to the class. In addition, in the first period of class in the morning they feel fresh and retain good concentration for the class. They do all activities in every step well and the lecturers can run the activity smoothly.

After the exchange of the two lecturers, the guideline for solution can be summarised as the followings.

First Lecturer: The lecturer should specify that the group representatives who present the group work should rotate among the group members without repetition of the same person every time in front of the class. The lecturers should present the issues clearly for more discussion.

Second Lecturer: The teaching and learning activities run well but the thing that should be adjusted is the allotted time for presentation of the group work result in front of the classroom. Because some groups use rather extensive time to present their works. Therefore the time is not enough to summarise all groups' results at the end; spare time for the evaluation activity is still needed.

The reflection after three implementations of learning management of the Lecturers in Campus B

The first time can be summarised as the followings.

Third Lecturer: In the first learning management, the students do not understand their own roles in doing activity in each step. They peep toward each other in doing activity individually because they are afraid that they may not get good scores. They also try to ask their friends when working. After they get into the sub-group activity, they continue working on their own work and they fail to show their opinions in front of friends.

Fourth Lecturer: For the first learning management, there is a problem on the concentration of the students who belong to the sample groups because they do not

really understand the ongoing activities. They discuss very little when they are in small groups. The lecturer needs to stimulate or urge them more often.

After the experience exchange of the two lecturers, the guideline for correction is drawn as the followings.

Third Lecturers: The next learning management, the students should be informed not to worry about scores or marks when doing activities in each step because the way to get the answer is not fixed. They should be encouraged that they need to show their own reasoning clearly for what they think. This encouragement will help the students to be able to do activity without peeping or copying their friend's work.

Fourth Lecturer: Since the students talk in the small groups, the lecturer must explain about the importance of doing activity in the training to improve the thinking process and must stimulate the sharing of opinions fully in the next learning management. The lecturer must walk around the groups to stimulate and urge the thinking processes.

The second time can be concluded as the followings.

Third Lecturer: The students follow the activities better. The expression of thinking is quite good but certain groups fail to present their work properly. The representative of the group read too much report from the paper. The lecturer offer suggestion after the presentation of report to improve this practice. For the summary of thinking together among the groups and lecturers, the students show more opinions.

Fourth Lecturer: The second learning management session shows that the students can do the activity better. Students understand more and work in group better although some students still remain timid in showing opinion. When asked, the students claim that they are scared to answer the questions.

After the exchange of the two lecturers, the guideline for the solution in the next session can be summarised as the followings.

Third Lecturer: In the early period of learning management, the lecturers should review the previous activity to remind the students to understand the training steps for thinking and try to suggest the students to present their report in better and more interesting way.

Fourth Lecturer: The lecturers should review the previous activities in order to tell students what the points they need to correct or to solve. The lecturers should explain the training for thinking in steps, try to point to students the importance of showing opinions, encourage them not to be afraid to answer, and give some more time for the students when asked the questions.

The third time can be concluded as the followings.

Third Lecturer: The learning climate is better. The students give good cooperation in doing activities. They show opinion more openly. The articles for the students to read are about the movie stars whom they favor and thus they show their opinions more freely.

Fourth Lecturer: The students express their opinions more, draw conclusion together, and discuss with lecturers and classmates. The group activity is becoming better and they discuss together with the lecturers although the lecturer must call the students by their names to ask questions before they answer or express their opinion.

After the exchange of the two lecturers, the guideline for solution in the next session can be concluded as the followings.

Third Lecturer: From the previous two learning management sessions, the students start to understand their own roles in activities. The lecturers try to keep the students relaxed from fear to express right or wrong opinions. The lecturers summarise the value of reasoning in critical thinking.

Fourth Lecturer: The teaching and learning activities can be done according to the plan respectively. The students can express their thoughts well but need to adjust on their expression on reasoning in term of discussion to clarify it. The lecturer explains about the importance of thinking process from the learning activities.

The reflection after the implementation of the three time learning management of the Lecturers in Campus C

The first time can be summarised as the followings.

Fifth Lecturer: In the first learning management, the students feel uncomfortable in doing activities. They think the lecturers will do the measurement like the last time because the students feel the measurement form is rather difficult and they do not clearly understand about the activities.

Sixth Lecturer: The first learning management achieves quite a good cooperation from the students. The time for doing activity, however, misses the planned schedule because many groups present their works in extended time slot in front of the class.

Seventh Lecturer: In implementing the plan for the first time, the students do not understand about the activities. They spend too much time to practice the steps for thinking individually. The students also have problems in answering the question no. 3 in the worksheet no. 1 without a red pen and a ruler. They borrow from each other and thus they spend a lot of unnecessary time. In addition, in group activities some students express their own opinions although rather very shortly.

After experience exchange of three lecturers, the guideline for correction is drawn as the followings.

The Fifth Lecturer: The lecturer must use an interesting introduction to the lessons that keep the students relaxed because the students of this major tend to study hard and pay much attention to the lessons. When they join activities they become very conscious and worry about the possibility of getting low scores or marks. The lecturers must readjust this opinion among the students.

The Sixth Lecturer: The lecturer must adjust the time to begin activities in each step to fit to the numbers of students and try to motivate all groups to express their opinions freely.

The Seventh Lecturer: The lecturer must explain the steps in activities for the students to understand and see the importance of learning to develop their thinking process. The lecturer should also try to urge the students to think according to the issues of the stories they read.

The second time can be summarised as the followings.

The Fifth Lecturer: The students follow activities and steps better. The small group discussion runs well. The presentation in front of the class is good but the

representative is the same person from the previous class session. Furthermore, the thinking evaluation needs more clarification from the lecturer.

The Sixth Lecturer: The teaching and learning sessions run well. Good cooperation from student also appears. The students can keep up with the time allotted in the class but there is little dispute over who will be the representative to present the groups' work in front of the class. There is not much discussion with the lecturer about this trouble.

The Seventh Lecturer: In the second learning management, the students can perform activities and share opinions well. This achievement arises because the lecturer follows up closely with the groups while the students do activities.

After experience exchange of three lecturers, the guideline for future correction can be drawn as below.

The Fifth Lecturer: The students understand more but timidly come out to present the work. The lecturer asks to switch around the representative of the group to train them all to present the group work in front of the class.

The Sixth Lecturer: The lecturer must tell each group to scramble the representative of the group to present the work in front of the class to improve the group discussion into a more enthusiastic one where ideas and thoughts expressed better.

The Seventh Lecturer: The lecturer summarises the importance of training on thinking process and its application into daily life.

The third time can be summarised into the followings.

The Fifth Lecturer: runs the learning management well. The students cooperate very well and understand better the activity that they do and they also present their works with good reasoning.

The Sixth Lecturer: The students and lecturer launch the learning activity together. The students understand and discuss together with friends but some of them still pay little attention to their friends' presentation.

After the exchange of experience between the two lecturers, the guideline for correction can be summarised into the followings.

The Fifth Lecturer: The lecturers think that there will be the changes in the group composition among the students that they may gain different worldviews from other friends when discussing in the small groups and formulating more questions.

The Sixth Lecturer: The lecturer thinks of giving more moral support to the students and utilising stimulating complimentary words when the students show their opinion logically in their analysis.

The Seventh Lecturer: This lecturer misses participation in the third implementation because he attends the meeting to revise the curriculum of new Eastern language in Lampang Province and attends the seminar of Thai Language instruction for foreigners in Bangkok.

Table 14 Average score on critical thinking before and after the learning of students who get the learning management that enhances critical thinking (total of seven classrooms)

Student Majoring in/Campus	No.	Score before learning		Score after learning		t-value
		\bar{X}	S.D.	\bar{X}	S.D.	
1. Majoring in A/Campus A	23	20.83	3.70	27.04	3.76	21.37**
2. Majoring in B/Campus A	28	22.57	3.41	27.43	4.11	16.03**
3. Majoring in C/Campus B	20	22.35	2.30	28.55	2.46	16.10**
4. Majoring in D/ Campus B	26	20.96	4.27	26.64	4.45	10.26**
5. Majoring in E/ Campus C	32	21.63	3.51	27.03	3.52	11.36**
6. Majoring in F/ Campus C	25	21.96	2.47	28.12	2.51	15.45**
7. Majoring in G/ Campus C	38	20.97	3.06	27.16	4.06	20.20**
Total	192	21.57	3.34	27.34	3.69	39.57**

**p < .01

Table 14 shows the results for the comparison of the average score on critical thinking of students from seven classrooms before and after getting the learning management that enhances critical thinking from the lecturers who participate in the project. It reveals that for the whole picture the students gain higher average scores on critical thinking after the learning than before the learning with statistical significance at the level of $P < .01$. Analysis per classroom reveals that the students from seven classrooms who get the learning management that enhances critical thinking in the course of Thai Language 1 reach higher average score for critical thinking after the learning than before the learning with statistical significance at the level of $p < .01$

Table 15 Percentage of the changes on critical thinking before and after the learning among the students who are subjects of the learning management that enhances critical thinking in the course of Thai Language 1, classified per aspect.

Scores on	Full score	Before the learning	After the learning	Percentage of the changes
Identifying the problem issue	7	3.66	4.53	23.77
Data gathering	7	3.46	4.59	32.66
Considering and classifying data	7	3.65	4.83	32.33
Formulating the hypothesis/assumption	7	3.60	4.51	25.28
Inferring	7	3.63	4.52	24.52
Taking overall evaluation	7	3.58	4.36	21.79
Total of 6 aspects	42	21.57	27.34	26.75

Table 15 shows that the percentage of the changes of the scores on critical thinking classified per aspect of the students after the learning. They can improve their average score from 21.79 percent to 32.66 percent. As the whole picture, all aspects of the students' thinking skill development register an increase of 26.75 percent.

Table 16 Means and standard deviations on the opinions/attitude of the students who are sample groups towards the learning management that enhances critical thinking (192 students)

List	Level of agreement		
	\bar{X}	S.D.	Meaning
1. On lecturers			
1.1 Lecturers inform the learning objectives to students.	4.32	0.68	High
1.2 Lecturers lead (introduce) to the issues of thinking interestingly.	4.21	0.69	High
1.3 Lecturers urge the students to think freely.	4.29	0.66	High
1.4 Lecturers use the questions to urge students to follow the thinking.	4.33	0.63	High
1.5 Lecturers provide the opportunities to express opinion freely.	4.35	0.72	High
1.6 Lecturers stimulate the group process.	4.24	0.71	High
1.7 Lecturers listen to students' opinions.	4.41	0.66	High
1.8 Lecturers discuss and express opinion and draw conclusion with students.	4.30	0.64	High
Total on lecturers aspect	4.31	0.67	High
2. On content			
2.1 The content is appropriate and easy to understand.	4.08	0.69	High
2.2 Content is interesting and promote critical thinking.	4.19	0.68	High
2.3 Content is up to date to the situation.	4.14	0.74	High
2.4 Content is consistent to daily life.	4.22	0.76	High
Total on the content	4.16	0.72	High
3. On learning management activity			
3.1 Students think the activities stimulate interest in learning.	4.13	0.71	High
3.2 Students think the activities promote learning by themselves.	4.17	0.67	High
3.3 Students think the learning activities train problem solving.	4.15	0.64	High
3.4 Students think they have opportunity to share opinion freely.	4.19	0.62	High
3.5 Students think the activities help training of critical thinking skill.	4.24	0.61	High
3.6 Students think the activities help training on group work or teamwork.	4.17	0.68	High
3.7 Students think the activity helps developing reading, listening, speaking and writing skills.	4.20	0.68	High
Total on the learning management activities	4.18	0.66	High

List	Level of agreement		
	\bar{X}	S.D.	Meaning
4. On the media for learning management			
4.1 The media used is appropriate in promoting critical thinking.	4.09	0.67	High
4.2 The media used is appropriate for learning activity.	4.05	0.81	High
4.3 The media used is up to date to current situation.	4.08	0.77	High
4.4 The media used can facilitate better understanding of learning contents.	4.16	0.74	High
Total on the media for learning management	4.09	0.75	High
5. On measurement and evaluation			
5.1 Students think the evaluation is appropriate.	4.07	0.67	High
5.2 Students evaluate the thinking process by themselves.	4.11	0.68	High
5.3 Students think that the self-evaluation develops critical thinking.	4.18	0.75	High
5.4 Lecturers informed the evaluation results to students so they improve their learning development.	4.10	0.78	High
Total on measurement and evaluation	4.12	0.72	High
6. On the attitude toward the whole picture of the learning management			
6.1 Students like this learning approach.	4.16	0.68	High
6.2 Students think the method can stimulate their interest in learning.	4.14	0.74	High
6.3 Students think the methods help developing their critical thinking.	4.24	0.70	High
6.4 Students think the methods can be applied in daily life.	4.30	0.68	High
Total of the attitude towards the whole picture of learning management	4.21	0.70	High
Grand total of 6 aspects	4.19	0.70	High

Table 16 points that the students' from the sample groups 'agreed at high level in all aspects' ($\bar{X}=4.19$) for the learning management that enhances critical thinking in general. Consideration per aspect shows that the students agree at high level on the aspect of lecturers ($\bar{X}=4.31$), on contents ($\bar{X}=4.16$), and also on learning management ($\bar{X}=4.18$). They also reach at high level on media for learning management ($\bar{X}=4.09$) and on measurement and evaluation ($\bar{X}=4.12$). Overall picture for their opinion on learning management that enhances critical thinking stands at high level ($\bar{X}=4.21$).

On others' opinion of students toward the learning management that enhances critical thinking. From the returned answers to the open-ended questionnaires, the summary can be given as what followings.

1. The students express opinion that this learning management is interesting. The activities of the learning are enjoyable that the students do not merely sit to listen. They are happy and feel free because they can share opinion with friends. The learning contents are familiar to them and they are to share opinion (95 samples).

2. The students have opinion that the learning management is the activity that helps developing their group work with friends. It helps using thinking reasonably for discussions (72 samples).

3. The students think that the learning management contains activities that develop the Thai language skills because the training involves listening, reading, speaking and writing (60 people).

4. The lecturers play an important role in students' learning especially on promoting critical thinking because the lecturers are facilitators who provide teaching media and facilitate the learning for students to think systematically (58 samples).

5. The students show opinion that the learning management can facilitate the critical thinking process of oneself because the stories they have read are something familiar to them. They can apply it easily to daily life (44 people).

On the aspect of students' suggestion toward the learning management that enhances critical thinking. The returned answers for the open-ended questionnaires can be summarised as the followings.

1. Lecturers must explain to student to make them understand the importance of teaching and learning that enhances critical thinking. It must be a direct experience from situation in daily life (91 samples).

2. Lecturers must explain and summarise the thinking result to the students every time, especially when there is the drawing conclusion activity taking place that the students are trained on critical thinking process and can revise previous knowledge every time (75 samples).

3. Lecturers must try to stimulate the students to express their own thoughts, especially those who do not show opinion. The lectures must create confidence among the students. The lecturers must train student to present their own works in front of the classroom that they can present properly their works in front of classroom (66 people).

4. Lecturers must have other activities and other instructional media to supplement the diversified learning to stimulate/urge the learners' interest and thoughts (52 samples).

The conclusion and evaluation from the group meeting of the Thai language lecturers who participate in the research project on the learning management that enhances critical thinking. The conclusion is taken from the census of the group meeting as the followings.

The lecturers who participate in the research project summarise the critical thinking as an important skill for learning, that is, we are use logic for living in the society. This learning management helps the students to received systematic thinking system through training by anticipating a situation, a controversial news, or

information that must critically analysed into proper conclusion and reasonable decision-making.. It is clear that the learning management plan is appropriate because the situation contents in the reading of the texts (or articles) are appropriate and conducive for critical thinking. The news, articles, or controversies of issues are chosen among those that need critical thinking before the digestion of the issues. Especially in the learning management plan Number 3, which is about movie stars and their news. Students are interested and discussing this subject widely. It shows that this kind of information is interesting for the students who are mostly teenagers. They are interested in such news. Therefore in promoting critical thinking, the consideration for choosing the topic that is used as the instructional media must be consider also the direct interest of the learners'. The students should also be allowed to make inquiries of their own interest and present it to the lecturers that they claim more parts in the learning participation.

The important thing for the learning management that enhances critical thinking is personality of the lecturer that he or she should be friendly. Personality can facilitate the effective learning climate to keep the studens at ease, convenient, stress-free and provocative for expression of opinion. The lecturers must stimulate the students' interest to develop critical thinking skill because most Thai students are familiar with just being passive listeners or receivers of information from the lecturers. Furthermore, the lecturers must be also open-minded and attentive to listen to students' opinions. In addition, the lecturers must be up to date to the latest development and can keep up with the current situation that the lecturers can discuss with students in contemporary interesting issues.

Attitude of Thai language lecturers who participate in the research project toward the development model of learning management skills that enhance critical thinking. From the census of the group meeting, the summary can be stated as the followings.

1. Step for training

1.1 Self-directed training

The lecturers who participate in the research project can show their opinion toward the training by studying the self-directed learning manual. The manual could prepare them well before the training or meeting sessions. In conventional practice, before attending any training or meeting, the participants are informed only about the topic of the meeting or training but they know little in about the detail in advance. So the participants usually do not know much about the details of the training or the meeting. When they actually attend the meetings, they do not have any prepared information to present in the meeting or training. In addition, the self-training also saves time because the lecturers have no necessity to stop the instruction session and other burdens to attend the meeting for several days in order to develop certain skills.

1.2 Workshop meetings

The lecturers who attend the research project show opinion that the workshop meeting is a continuous implementation from the self-training session. This fact adds the important contents for the learning management that enhances critical thinking from the experienced trainers. The lecturers who participate in the research project think that the collaborative learning approach facilitates them to brain-storms for

ideas, which differs from other trainings because most of the other trainings are in lectures only. In addition they can utilise the guideline from the learning management plan that enhances critical thinking that they have produced together, they can apply with the students to create the feeling of participation in the learning instructional development.

2. Step for monitoring in the classroom

The lecturers who participate in the research project offer an opinion that the step of implementation develops the teaching and learning process. They have never accomplished this feat before. It is tantamount to bring the knowledge and understanding from the training to implement in the classroom with the students, or to apply the knowledge into the steps of implementation because normally some lecturers do not really implement it in this manner. Therefore they do not know how to apply the knowledge gained from training to use with the students and thus helping the students to achieve the pre-set learning achievement. This step is the step of learning together among the lecturer circles, which is normally unable to communicate to one another because they are busy with their own instruction. Utilising this method, the lecturers notice the strong and weak points of their methods that they can improve later for their own advantage. They can discuss through conversation, reflection from the lecturer circles. This is the applicable method to the teaching development and the method leads the lecturers to be open-minded and attentive to others' opinion; and they can gain richer and diversified perspectives of the instruction.

3. Step on conclusion/summary and evaluation

Having summarised and evaluated the meetings, the lecturers who participate in the research project show opinion toward the meeting that the meetings are important implementation steps on consultation or discussion in order to draw conclusion about the learning management and to solve problems. The lecturers are also trained to use the learning management plan (including the method to solve the problem of learning management in the classroom), to know the problems and their solutions for other lecturers, and to get guideline to solve the problem of learning management to enhance critical thinking through the lecturers's worldview. The students' perspectives are the mirror to reflect the implementation, which are always useful for the development of learning management that enhances critical thinking. This reflection creates the different worldview to develop independently to find guideline to solve problems together in order to improve the set of instruction that enhances effective thinking of the students.

Attitude of Thai language lecturers who participate in the research project toward the model of learning management that enhances critical thinking, with conclusions made after analysis of the group meetings as the followings.

1. The lecturers who participate in the research project offer an opinion that participating in the development of learning management skill that enhances critical thinking bring them benefits on many aspects. One of these aspects is on teaching and learning that enhances critical thinking because the lecturers understand the processes

and steps in developing systematic thinking and using techniques from lecturers to stimulate students' proper thinking. The course of Thai Language 1 can implement the topic of "Receiving Information". The lecturers think that the learning management that enhances critical thinking can develop the four skills of language among the students.

2. The lecturers who participate in the research project show opinion that this development creates the feeling of participation in the development process because they start to work together from the starting point until the conclusion and evaluation. They acquire the learning together in making plan, brain-storming for ideas, listening to other opinions and reflection, as well as offering advice to one another. Indeed, they learn from experiences of colleagues, which is a good sharing exercise, and they also solve their weak points together in order to achieve the target of instructional development in the course of Thai Language at university level.

3. This development not only benefits the lecturers but also the students who absorb critical thinking methods because this learning is implemented along with real-life situation. The learning plan can be really feasible and applicable in next semester. The lecturers are required to develop various instructional media according to the context of each campus that can facilitate the proper learning in the classroom.

4. This development is considered to complete the cycle on giving knowledge from the training and applying it into classroom implementation. The summary and conclusion from the implementation, which are normally done after the training, are continuously implemented in the ever-evolving plan to discard some training steps that are inconsistent with real-life situation. However, this model development allows the realisation of the gained knowledge from the training, the exchange of knowledge, and shared experiences among the lecturers, all of which can build the realistic learning management plan. The plan can be integrated in the course of Thai Language 1 in the topic of "Receiving Information".

5. This development plan also trains the reflection of the learning management for the lecturers through discussions and consultation with the lecturer groups. This instructional method has never been implemented before. Nobody has attended such a project before. It is the first time in implementation and it opens the participants to be open minded to listen to others, or utilise fresh information to improve their instructions in next sessions. This implementation brings new perspective in teaching and new problem solving method in the classroom. Because certain lecturers do not finish teaching course properly or face limited hours of teaching, these lecturers may get a new set of concepts in enhancing their own teaching. The implementation is considered as a collaborative learning and producing the guideline to improve the teaching with colleagues.

This research shows that such development model can create a positive attitude and awareness toward the learning management development through the collaborative learning among the lecturers who follow the three steps of implementation. These steps are (1) step of training, which means the study of the self-directed manual and workshop, (2) step of monitoring in the classroom, and (3) the step of drawing conclusion and evaluation.