

# Factors of Online Learning Model to Enhance Knowledge Construction in Multicultural Society for Workers Competencies in Southernmost Provinces of Thailand

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**Abstract**—This study aimed to analyze factors of online learning model to enhance knowledge construction in multicultural society for workers competencies in industrial factories in three southernmost provinces of Thailand. The sample consisted of 162 factory administrators, work supervisors, human resource developers, technology innovators, and the study was divided into two phases: the first phase was to analyze and synthesize literature related to the online learning model to enhance knowledge construction in multicultural society for workers competencies, and the second phase was to analyze factors for the online learning model to enhance knowledge construction in multicultural society for workers competencies in industrial factories in three southernmost provinces of Thailand. The findings revealed six factors: 1) Factor of learning activities design on the online learning, 2) Factor of process for knowledge construction, 3) Factor of support and management of online learning, 4) Factor of administration and management system of online learning, 5) Factor of Knowledge Inquiry method, 6) Factor of communication tools.

**Index Terms**—Online learning, knowledge construction, workers competencies, multicultural education.

## I. INTRODUCTION

The southernmost provinces of Thailand, Pattani, Yala, Narathiwat, and Satun are dominated by Malayu-speaking Muslims around 80% and the others are Buddhist Thais and Chinese Thais, while for whole country Buddhist Thais are the majority. Most Thai Muslims are Malay descent, reflecting the common cultural heritage Thailand's southernmost provinces share with Malaysia [1]. It is the land of multicultural society including Thai Muslim, southern Thai, and Chinese Thai to identify the uniqueness of the area. However, the southernmost Thai provinces are poorer than the rest of the country, and their main business sectors – agriculture, fishing and tourism – have been hurt by the violence. Several thousand people have been killed in Muslim separatist unrest in the far south which flared in January 2004. Civilians bear the brunt of the violence [2]. In spite of the fact that there is the unrest situation in this area, people still live and work in peace and understand each other. In schools, colleges, workplace like government services, business and industrial factories, they have stayed and worked together in

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peace and been taught to be aware of the cultural diversity. In workplace like in factories in the southernmost areas, it also reflects the multicultural society by Thai Muslims, Buddhist Thai, and Chinese Thai workers. The realization of cultural diversity has strengthened the economic development as well as social development [3]-[5].

The human resource development (HRD) is very important for the organization in the modern world in order to keep up with changes in the 21st century. Three southernmost provinces in Thailand including Pattani, Yala, and Narathiwat are the land of multicultural society including Thai Muslim, southern Thai, and Chinese Thai to identify the uniqueness of this area. Thai Muslims are the majority of 80%. Therefore, the multicultural issues are crucial in this area to support and strengthen the community with cultural diversity.

In the knowledge-based society and in the 21st century society, the society needs not only the labor from our employees, but also their competencies to work in the modern world. All workers and employees need to be developed their competency in working as well as the ways of life. On the job training is not limited to the face-to-face workshop, but the new technology can create the new learning environment for them “to work and to learn” and “to learn and to work”. Technology innovation will be implemented in HRD in work place.

This study intended to propose a model of online learning to support the workers based on the knowledge construction in three southernmost provinces in Thailand as well as to foster the way of life in cultural diversity and to support and increase the working competencies and the quality of lives of workers and people who live and work in the factories in the sensitive areas of the southernmost provinces of Thailand.

## II. THE PURPOSES OF STUDY

This study is to analyze factors of online learning model to enhance knowledge construction in multicultural society for workers competencies in industrial factories in three southernmost provinces of Thailand.

## III. RESEARCH METHODOLOGY

The research method consisted of two phases:

Phase I - to analyze and synthesize the literature and documents related to the development of a factors of online learning model to enhance knowledge construction in multicultural society for workers competencies in industrial

factories in three southernmost provinces of Thailand. Those included the concepts, principles, theories, and researches on technology innovation and multicultural education in workers competencies.

Phase II – To analyze the factors of online learning model to enhance knowledge construction in multicultural society for workers competencies in industrial factories in three southernmost provinces of Thailand.

This phase included two stages:

- 1) To create the variable factors for a online learning model in five areas:
  - Knowledge construction
  - Distance education
  - Cultural diversity
  - Multicultural education
  - Online learning of workers competencies in industrial factories.

Based on the experts' opinion on the suitable components and processes (Variables) pertaining to a online learning model for multicultural classrooms, the following steps were:

  - a) Create a table allowing experts to analyze and rate each variable,
  - b) Assess the expert responses in this table,
  - c) Use the information obtained from the experts' opinions phase to develop the questionnaire, and
  - d) Assess the quality of the questionnaire for reliability by content validity and a pilot study using the alpha coefficient.
- 2) To analyze the factors using factor analysis with the principal component analysis. The researchers selected the subjects in the workers who work in industrial factories to develop a variable at factor loading of .50 or higher. A factor should include at least three variables to be considered as the factor.

#### IV. RESEARCH RESULT

- 1) The samples consisted of 162 factory administrators, work supervisors, human resource developers, technology innovators in southern part of Thailand. It included: the majority of sample were female (n=106; 66%); The majority were around 31-40 years old (n=61; 43%); the majority of the sample group possess a master degree (n=87; 61%); and working experiences for 6-10 years (46%).
- 2) The factor analysis revealed as follows:
  - Hypothesis testing in correlation matrix method by Bartlett's test of Sphericity was significantly at the low level (sig = .0000).
  - Analysis and comparison of Bartlett's Test of Sphericity size by using KMO (The Kaiser-Meyer-Olkin) or measure of sampling adequacy were at .916 which meant that the data was closed to 1 and indicated that those were more suitable for analysis.
- 3) The analysis of factors for a online learning model to enhance knowledge construction in multicultural society for workers competencies in industrial factories in three

southernmost provinces of Thailand implemented the principal component analysis technique. The result revealed that a model had six factors with 73.089 percentage of variance.

- 4) This analysis was based on Orthogonal rotation by varimax method with factor loading of .50 or higher lead to six factors with thirty five variables as follows:
  - Factor one: the learning activities design on the online learning - has ten variables with weight of .866-.512.
  - Factor two: the process of knowledge construction - has eight variables with weight of .737-.574.
  - Factor three: the support and management of online learning - has six variables with weight of .736-.552.
  - Factor four: administration and management system of online learning - has five variables with weight of .712-.565.
  - Factor five: the knowledge inquiry method - has three variables with weight of .687-.620.
  - Factor six: the communication tools - has three variables with weight of .839-.590.

TABLE I: THE FACTORS OF ONLINE LEARNING MODEL TO ENHANCE KNOWLEDGE CONSTRUCTION IN MULTICULTURAL SOCIETY FOR WORKERS COMPETENCIES IN INDUSTRIAL FACTORIES IN THREE SOUTHERNMOST PROVINCES OF THAILAND (LOADING DETAIL)

Variables	Text	Factor loading
	<b>Factor one</b>	
27	- Instructional activities design to facilitate learners.' idea extension to the other.	.765
18	- Challenged course development for learners. to create their knowledge.	.758
28	- Provide learning experiences for learners. development in cognitive, affective, and psychomotor.	.676
19	- Create atmosphere to facilitate learners. to have group discussion, active participation in online learning with respect to diversity.	.666
25	- online classroom communication design for planning, knowledge sharing and construction.	.660
20	- Learners.' collaborative learning and activities process.	.649
21	- New learning environment on online learning included active participation of learners. with different skills and talents.	.629
26	- Instructional activity design on online learning to share learners.' different views, and awareness of cultural diversity.	.621
23	- Instructional activity design based on collaborative learning for knowledge sharing.	.607
24	- Empower learners to show their knowledge and talent.	.512

Variables	Text	Factor loading
	<b>Factor two</b>	
8	- Integrate the social experiences in learning process.	.737
6	- Link learners.' external experiences with classroom experiences.	.674
5	- Promote Knowledge construction experiences for learners.	.644
4	- Encourage the critical thinking.	.618
2	- Identify the meaningful context for learners.	.601
3	- Link the experiences on online learning to the real world.	.597
7	- Diverse the learning experiences for new vision of learners.	.595
9	- Interpolate the social experiences into the learning process.	.574
	<b>Factor three</b>	
13	- Mindful learning on online learning.	.736
14	- Learners' adaptation of new knowledge to prior knowledge.	.726
15	- Learning by sharing knowledge and skills with others and offering social support.	.640
11	- Accommodation of diverse learning.	.621
10	- Learners' clear explanation of what they have learned and applied it for daily life.	.587
12	- Learners' reflection their explicit knowledge and see the link between prior knowledge and new knowledge that has been learned.	.552
	<b>Factor four</b>	
29	- A good security system for Online learning.	.712
31	- Statistical system to track learners' activities and to monitor learning participation in online learning.	.688
33	- Learners' achievement record to support teacher planning and management of class activities and learners achievement analysis.	.678
30	- Online learning equipped with both contents and social network in classroom.	.676
32	- Summative and formative evaluation.	.565

Variables	Text	Factor loading
	<b>Factor five</b>	
17	- Inquiry is the key issue of online learning process.	.687
38	- Goal of learning should be based on learners' needs; accordingly, inquiry-based learning should be promoted in online learning.	.671
16	- Encourage learners to search for instructional resources.	.620
	<b>Factor six</b>	
34	- Webboard is a tool for learners to communicate and create an online community.	.839
36	- Communication through chat rooms is important for creating an online social network.	.605
35	- Reflective Journal is a tool for learners communicate and exchange knowledge, ideas, and attitudes.	.590

In the Table I showed that the factor loading detail of Online learning model to enhance knowledge construction in multicultural society for workers competencies in industrial factories in three southernmost provinces of Thailand

### V. CONCLUSIONS

In conclusion, the results of this study revealed that the Factors can be grouped into 6 sets as follows:



Fig. 1. Online learning model to enhance knowledge construction in multicultural society for workers competencies in industrial factories in three southernmost provinces of Thailand.

In Fig. 1 the Online learning model to enhance knowledge construction in multicultural society for workers competencies in industrial factories in three southernmost provinces of Thailand was presented. The model composed of 6 components: 1) the learning activities design on the online learning for on-the-job training. 2) the process of knowledge

construction from workers' working experiences, 3) the support and management of online learning to facilitate the learning process, 4) the administration and management system of online learning for quality development, 5) the knowledge inquiry method for the continuous improvement, and 6) the communication tools based on electronic tools, e.g. social media, blog, forum, etc.

Factor one: the learning activities design on the online learning was a factor that focused on the new learning environment and instructional activities used in the online learning. It should support the diverse learning styles as well as the community of practices and scholars.

The teacher should design and develop the challenged course for learners to create their knowledge by including both cooperative and communicative learning activities. The learners could clearly explain what they have learned from task and problem learning activities. Moreover, The awareness of cultural diversity should be included in the online learning.

Factor two: The process of knowledge construction and tracking learner progress focuses on the actual learning situation and the actual problem-solving context by using social experience to enhance the learning process, and encourage critical thinking. A variety of techniques were used to build deep experiences and broaden learners' views. An evaluation process to monitor learners during these activities is important.

Factor three: support and management of online learning was a factor in designing an environment to setup the activities on online learning. The virtual social network skills on online classroom could be established by giving the learners opportunities to write or create a project where each student could add their own story or extend the story of others. The learners could share stories within a topic and could then search for different points of view and practice the cooperating for sharing and learning activities.

Factor four: Administration and management system of online learning was a factor to management and security system that supports operational activities and data collection. For example, the learner achievement record can help the lecturer or facilitator in planning and managing the class and activities and also in analyzing the learners' achievement. The class attendance statistic records can be used for tracking the learning behavior and activities of the learners within the virtual social network. The evaluation system can be used to monitor learners during and after the mission and to determine the effectiveness of the various media-types being used.

Factor five: Knowledge inquiry method was a factor to encourage the learners to inquire resources for supporting learning activities on their class. The target of learning should be based on the learners. Accordingly, the teacher or facilitator should have designed the inquiry approach in the online learning.

Factor six: Communication tools were a factor for communicating on social artifacts. The tools could enable the learners to link to the social networks to communicate with other learners from different places. It aimed to encourage the learners to build up their social network on online learning. The communication tools consisted of webboard, chatroom or

reflective journal, etc.

## VI. RECOMMENDATIONS

### A. Recommendations for the Research Application

The Factors are flexible and can be modified to proper situation, learners, subjects and objectives of learning.

### B. Recommendations for the Next Research

- 1) Make the Factors more complete, research and develop learning media to encourage both synchronous and asynchronous online learning activities.
- 2) Develop the Factors to cover the basic education which is an early preparation for teacher learners in being the member of ASEAN economic community.

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