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# COLLABORATIVE E-LEARNING FOR THE DEVELOPMENT OF STUDENTS' LEARNING OUTCOMES BASED ON THAILAND QUALIFICATIONS FRAMEWORK

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## Key Findings

1. Collaborative E-Learning (CEL) system
2. The model of success information system development
3. Measuring and evaluating students' learning outcomes according to Thailand Qualifications Framework.

## Introduction

In This research is to develop the effectiveness Collaborative E-Learning (CEL) to support five TQF-LOs. They are moral and ethics, knowledge, cognitive skills, social skill, and numerical analysis, communication and IT skills. The sustainable system development is used for building CEL. The alignment of LOs, pedagogy & assessment is discussed. The results revealed that the components of success IS development model are stakeholders, IT, methodology, and environment. The students who use CEL will have better LOs comparing to those using traditional one.

## Conceptual Framework

The conceptual framework of Collaborative e-Learning development for TQF learning outcomes improvement can be shown in Figure 1.

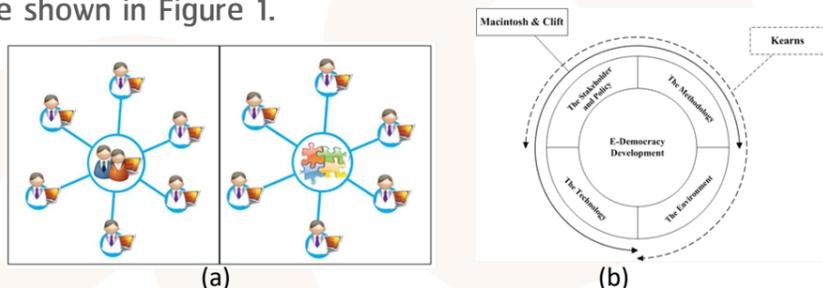


Figure 1. (a) Model of CEL, (b) IS Development

## Research Methodology

The search methodology for supporting three research questions can be shown as the below research processes.

Research Question	Input	Process	Output
To study the student' acceptance factors of using Collaborative E-Learning (CEL) (Research Question #1)	- Document: journal, book, proceedings on CEL, TAM, and Personality - Experts & students	- Study & analyze CEL, TAM, acceptance factors. - Survey data from expert & students - Consolidate the result	- Acceptance factors on CEL (extended TAM) with personality and website quality
To study the components of success information system development model (Research Question #2)	- Document: journal, book, proceedings of IS development - Experts	- Study & analyze success IS dev. - Survey the data from experts - Consolidate the result	- Model of success information system development.
To develop the prototype of Collaborative E-Learning (CEL) (Research Question #3)	- Document: efficient system - Theory of quality system development - IT experts	- Build & test CEL prototype & define PBL issue - Survey data from 3 experts - Modify the system	- CEL prototype for supporting students' learning outcomes. - PBL on CEL
To develop information system for measuring and evaluating students' learning outcomes according to Thailand Qualifications Framework (TQF-LOs) after using CEL (Research Question #4)	- TQF document - Document on PBL - Student group of research study (classroom & CEL) - Lecturer (Observation and Measurement)	- Build diagram of CEL usage for measuring TQF-LOs - Study LOs - Develop IS for measuring and evaluating LOs - Finalize the research & writing up	- IS for measuring and evaluation TQF-LOs. - Measurement strategy: e-Participation, e-Assignment, e-Examination. - Research summary and Thesis

Figure 2. Research Processes

## Preliminary Results

The students' survey data shows that the important interpersonal factors of accepting CEL system are work responsibility, self-discipline, open mind to society, brave and activism, unfear, accept new values, respectively. In addition, the survey shows that the key factors of technology acceptance model are system reliability, user experience (knowledge and understanding, openness and usability). An architecture of CEL system is shown in Figure 3. The result of two experiment groups shows that the pre-test and post-test scores of group 1, who uses traditional learning, are 12.60 and 13.68, which increase 8.57%. The pre-test and post-test scores of group 2, who uses CEL, are 12.76 and 15.00, which increases 17.55% (See Figure 4).

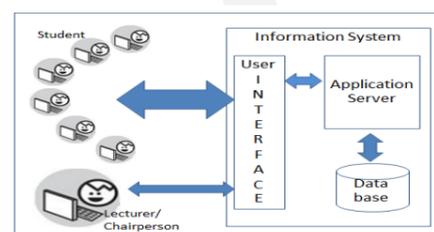


Figure 3. Architecture of Collaborative E-Learning (CEL)

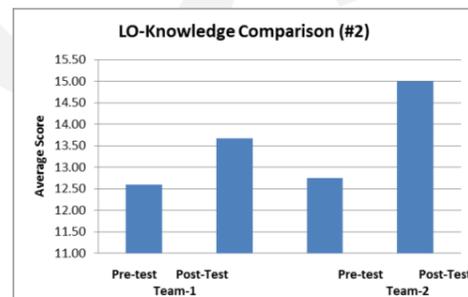


Figure 4. Students' Pre-test & Post-test Scores from Traditional and CEL systems

## Conclusion

The sustainable information system development consisting of four key components. They are stakeholder and policy, information technology, system development methodology and environment. Collaborative E-Learning (CEL) can be employed for increasing the development of the students' learning outcomes (LOs) based on Thailand Qualifications Framework (TQF) comparing to those using the traditional approach.

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## Acknowledgement