

A Development of Prototype System for Support End-User Training

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Abstract - End-User Training (EUT) is a method used for learning information systems or applications. At present, there still are a number of challenges that need to be solved. Consequently, this paper proposes a framework of hybrid self-regulated and collaborative learning for EUT which aims at contributing to the improvement of EUT performance. The proposed framework emphasized on five EUT dimensions. The first dimension is end-users consisting of two core factors (i.e., trainee and task / job characteristics). The second dimension is learning content consisting of 2 components (i.e., material size and combination). The third dimension is training and learning methods consisting of four core methods (i.e., instructor-led training, Technology-Mediated Learning (TML), self-regulated and collaborative learning). The fourth dimension is learning outcomes consisting of seven core knowledge level (i.e., command-based knowledge, tool procedural, business procedural). The last dimension is differences. In addition, this paper introduced a prototype for end-users to self-regulated and collaborative learning.

Keywords - End-User Training, Self-Regulated Learning, Collaborative Learning, Prototype System

I. INTRODUCTION

Nowadays the use of Information Technology (IT) and Information Systems (ISs) in organizations is growing rapidly. Training is one of the most common methods that organizations employ to enhance the productivity of individuals and aids the communication of organizations' goals to new personnel. In terms of software, End-User Training (EUT) is used to train and learn ISs. EUT is one of the most effective ways to increase end-users effectiveness in computing and IT using Technology-Mediated Learning (TML) [1] to support training and learning in organizations. Thus, EUT is crucial to the success of ISs [2]. Different training and learning processes are developed for specific training methods that involve technology-support learning [3] and TML [4, 5]. Training and learning strategies are an important part of the training method which is composed of different types of IT tools and trainees [6]. In addition, they are very important to the EUT process, especially Self-Regulated Learning Strategies (SRLS) which learners use them for self-managed learning, and Collaborative Learning (CL). SRLS has a better outcome when learning to use ISs [7]. The comparative analysis of EUT methods shows that all training methods are significantly different [8]. However, there is still lack of answers for the best training methods. Appropriate end-user training methods are an essential factor that contributes to learning during training. Therefore, organizations need to implement

and apply training strategies for new ISs. There are several learning techniques applied to EUT, e.g., behavior-modeling methods [9] and enactive learning [4]. EUT implementation factors influence decision making at each phase of the process (i.e., learner, software, task / job, and organizational characteristics) [10]. The impact of individual differences on a training process involves structures of appropriate training methods that have a direct impact on learning outcome.

The purpose of this research is to design and develop Learning Management System (LMS) for support end-user training.

This paper is structured as follows. First, briefly describes a proposed framework. Second, presents a system prototype. Third, presents results. Finally, concludes the paper and suggests future work.

II. THE PROPOSED FRAMEWORK

Key success factors of EUT were scrutinized and identified in [11, 12] which consist of needs assessment, application software-computer self-efficacy (e.g., spreadsheet and word-processing), SRLS, learning goal orientation, and pre-training self-efficacy. The proposed framework of hybrid self-regulated and collaborative learning for EUT consists of three phases which are pre-training, training and learning process, and post-training as shown in Fig. 1. This framework also emphasized on five dimensions. The first dimension is end-users consisting of two core factors (i.e., trainee and task / job characteristics) [10, 13, 14]. The second dimension is learning content consisting of two components (i.e., material size and combination) [13, 14]. The third dimension is training and learning methods

consisting of four core methods (i.e., instructor-led training, TML, self-regulated learning, and collaborative learning) [4, 13-15]. The fourth dimension is learning outcome consisting of seven core knowledge level (i.e., command based knowledge, tool procedural, business procedural, tool conceptual, business conceptual, business motivational, and meta-cognition) [13, 15-17]. The last dimension is individual differences consisting of six core factors (i.e., motivation to learn, learning style, self-efficacy, computer self-efficacy, SRLS, and learning-goal orientation) [2, 7, 13, 16, 18].

III. A PROTOTYPE SYSTEM

A prototype system tool was design, and open source software is used in this developed to support communication and interaction between trainers / instructors and learners [19]. The development of training support tool is elaborately described as follows.

A. Requirements Analysis

A requirement analysis is a preliminary step that used to describe a proposed framework. Training needs assessment is a step which uses to create tools for support end-user training. Activities in the system and functions performed by the system will be easy to use. The results of the analysis used to create Use Case Diagram to demonstrate the functionality of the system in end-user's perspective as shown in Fig. 2.

B. System Design

The design of training support tool is a process of communication and interaction with actors consist of learner interface and interaction as shown in Fig. 3. The system design shows the system works in view of users as a prototype for the development of training support tool.

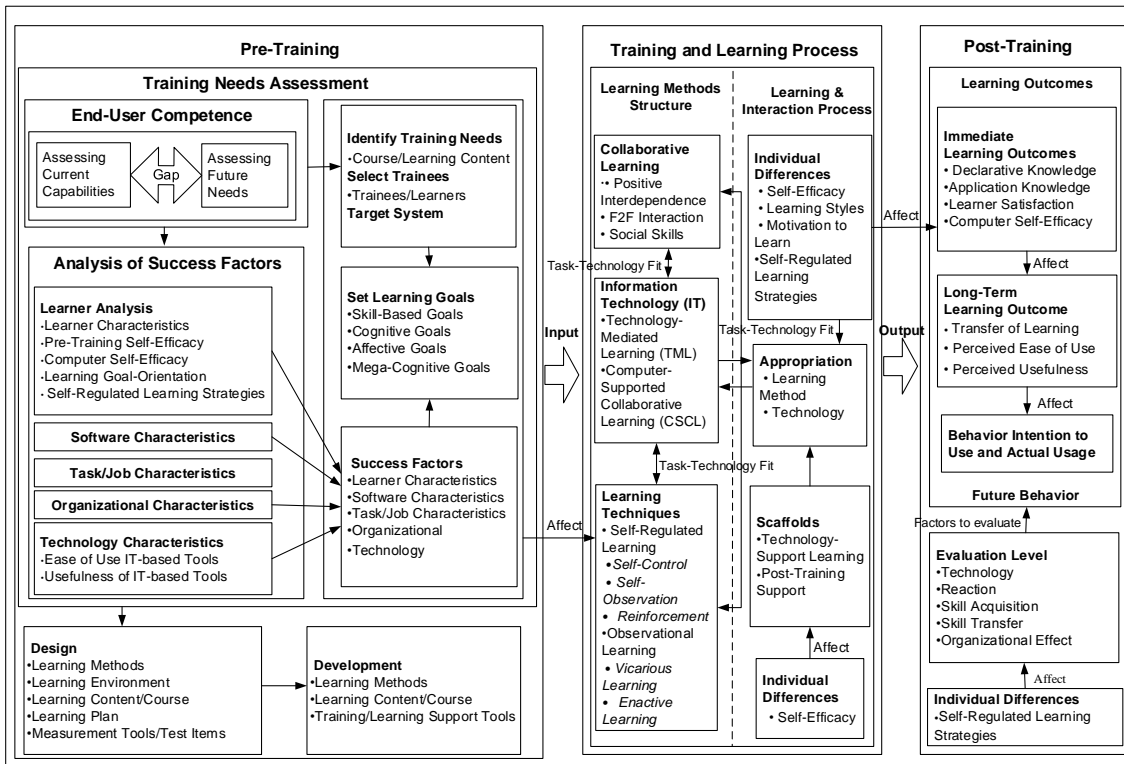


Fig. 1 The Proposed Framework

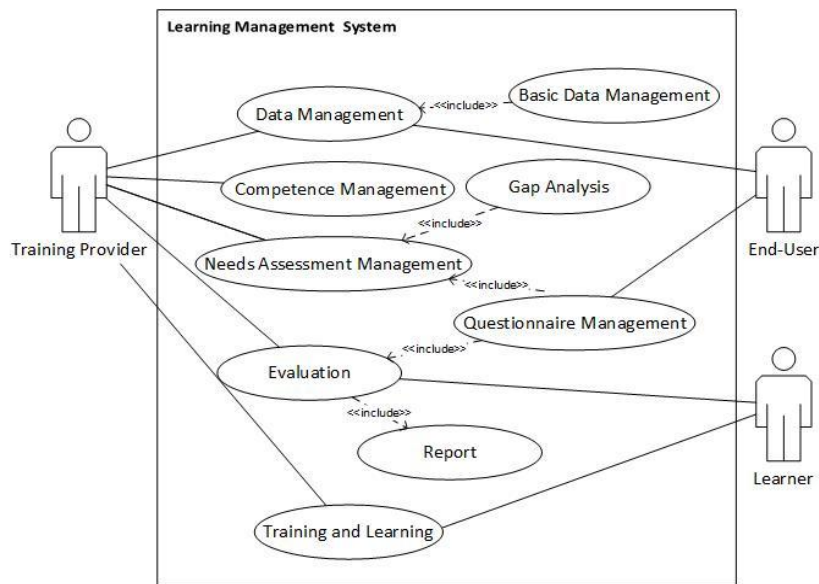


Fig. 2 Use Case Diagram

In Fig. 2, Use Case Diagram including training provider / course creator and end-user/learner which interact with the system. Component Diagram of subsystem shown as Fig. 3.

C. Development

Development is a process of results derived from the design step for training and learning process. This step consists of the development of learning strategies, learning methods, and learning contents. Training support tool is the system that deployed to trainees / learners to assessing the need for training. Its use in the

training and learning process, and evaluation of learning.

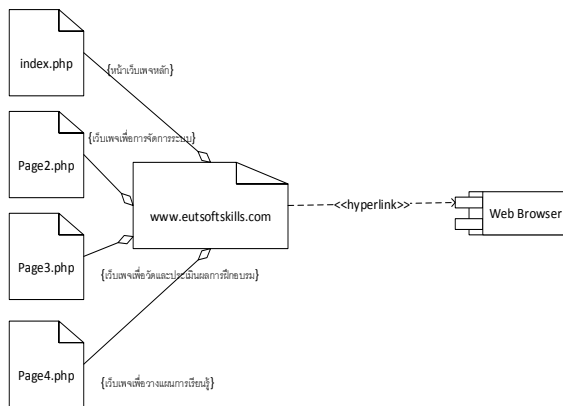


Fig. 3 Component Diagram

D. Testing System

At this stage, will test a training support tool that developed before implementation. Twelve of practitioners participating in the study, consisting of four trainers, one designer, one content developer, two system administrators, and four developers. They implemented a EUT framework with sixty end-users.



Fig. 4 Screenshot of LMS

User interface design in training needs assessment assists training providers to manage a questionnaire, end-user competence, training need assessment, summarize and reporting as shown in Fig. 5.

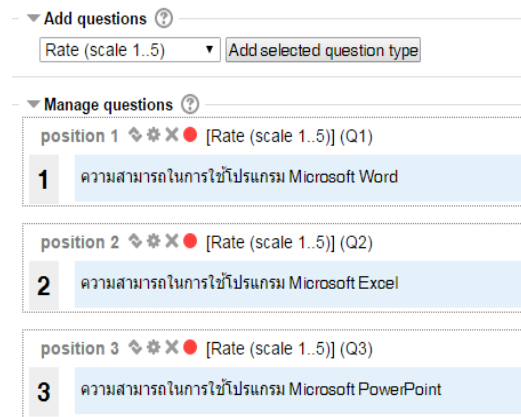


Fig. 5 Screenshot of Add Questions

In Fig. 5, when the training provider click manage questions, the system will display a screen of add questions.

IV. RESULTS

The results of testing system show that training providers are most satisfying to design a training course, easy-to-learn, the gap analysis data, evaluation of training programs at each step, and display information to evaluate the training. Overall, it was concluded that training providers are satisfied with the system. Table I, reports the evaluation of satisfactory in using the system's training providers, and Table II, show the results of satisfactory from end-users respectively.

**TABLE I
TRAINING PROVIDERS SATISFACTION**

Items	Mean	Meaning
Design		
The appropriateness of the size and color of the font on the system.	4.33	Agree
Modern and attractive system.	4.42	Agree
The appropriateness of the interaction with the system.	4.17	Agree
Design learning environments.	4.25	Agree
Design Training	4.50	Strongly agree
The system is useful for self-regulated and collaborative learning.	4.25	Agree
Efficiency		
The system is easy to learn	4.50	Strongly agree
Creating training courses	4.50	Strongly agree

Planning for learning	4.25	Agree
Display data to evaluate the training.	4.33	Agree
The composition screen is easy to use.	4.42	Agree
The language used is appropriate, clear, accurate, easily understood.	4.25	Agree
The reliability of use.		
The menu layout is easy to use.	4.50	Agree
Evaluation system	4.33	Agree
The gap analysis is consistent with training needs.	4.50	Strongly agree
Data, evaluation of training programs within the system.	4.33	Agree
Data, evaluation of training programs at each step.	4.58	Strongly agree
Effectiveness		
The composition screen is easy to use.	4.33	Agree
The language used is appropriate, clear, accurate, easily understood.	4.42	Agree
The menu layout is easy to use.	4.25	Agree
Display data to evaluate the training.	4.50	Strongly agree
Average score	4.35	Agree

From Table I, the training provider’s satisfaction in the use of training support tool. The average score is 4.35 of overall satisfaction to a training support tool.

**TABLE II
END-USERS SATISFACTION**

Items	Mean	Meaning
The system design.		
The system is suitable for training and learning	4.10	Agree
The system complies with the learning needs.	4.00	Agree
Modern and attractive system.	3.90	Agree
The proper course of interaction with the training.	4.00	Agree
The overall system is useful for end-user training.	4.20	Agree
Learning efficiency.		
Understanding the use of application	4.10	Agree
Design learning content useful to learning to use applications.	4.10	Agree

Learning content easy to learn	4.00	Agree
E-Learning system assists to learn more quickly.	3.90	Agree
E-Learning system can optimize learning.	3.90	Agree
Behavioral intention to use technology.		
Enjoy using the system.	4.10	Agree
The system is easy to learn.	4.20	Agree
The system is useful for learning support.	3.90	Agree
Behavioral intention to use the system to learn in the future.	3.90	Agree
Average score	4.03	Agree

From Table II, the results found that end-user’s satisfaction / intention to use training support in the future. Since, the system is easy to learn, they enjoyment in using the system, the system is useful for learning support and they intention to use the system to learn in the future.

V. CONCLUSION

This research developed a prototype system for support end-user training. The system was developed based on the open source. It is assists training providers to identify training need, planning for design and develop training courses. In addition, a prototype system that helps improve end-users to learn software / applications by self-managed learning and collaborative knowledge sharing. The development of training support tool via a learning management system resulting interaction between learner and instructor availability improved. In addition, end-users able know the assessment levels and the results of their tests. That helps to create a learning environment suitable for training and learning process.

Future research will lead a training support tool to evaluate a framework of hybrid self-regulated and collaborative learning for end-user training using case study research.

VI. ACKNOWLEDGMENT

The authors would like to thank the Higher Education Research Promotion (HERP) of the Higher Education Commission of Thailand for supporting this work in the form of a scholarship.

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