

**Title:** Canvas System as a Learning Management System: a Study of User Interaction to Determine its Qualitative Aspect for the School of Global Studies, Thammasat University

### **Statement of Problem**

Virtual Learning Environments (VLE), a designed structured-information space, have been introduced to several academic institutions for several years. Learning Management Systems (LMS), a software application for electronic learning technology, are one example of how most institutions incorporated technology with class lessons provided on campus. However, several functionalities in the process of learning activities can provoke confinement for users, since limitations of the system sometimes decrease the effectiveness of learning (Yazar and Adiguzel, 2010). This scenario creates an understanding gap or semantic gap between educators and the system, which in turn demotivates end-users to precede any further with the institution's LMS (Draganidis et. al., 2006).

Different institutions and instructors capitalize existing platforms in integrating into their learning management systems. Some institutions and instructors use social media platform, such as, Facebook as an intermediation between instructor and students because it's functionalities are quite familiar to the wide audiences. Although this solution reduces the amount of semantic gap in most users and increases collaboration in class peers, there are still anomalies associated with privacy and security (Wang et. al., 2012). Other educators including the faculty members at the School of Global Studies, Thammasat University invest their time into open source platforms such as Google site, Moodle, and Google classroom to generate automation for progress tracking, assignments, and content updates. This approach is subjective to both end-users background and experiences. Additionally, users of these platforms face challenges in the complexity and applicability of some of these systems resulting in failure to adopt the platform in their learning management system. Consequently, most users revert back to the tradition platform that consumes time and create inefficiency and ineffectiveness in the teaching-learning process.

The School of Global Studies pride ourselves to be the leader in developing new teaching-learning methods and pedagogy among the Faculties within Thammasat University. The major contributor to this phenomenon stems from the nature and effort of SGS faculty members in continually seeking opportunity to explore new approaches to virtual leaning environment and learning management system. In exploring different options in learning management system, Canvas, a Learning Management System (LMS) by instructor group, is found to have potential utilities in assisting instructors in both the BA and MPH curriculum in enhancing the efficiency in managing the implementation of their courses. In order to institute Canvas for SGS wide application, further study is need to provide supportive evidence for its usage at SGS.

### **Research Objectives**

The overall objective of this study is to determine if the deployment of *Canvas* system increases values, provides better time management, and aid students in terms of self-studying class materials.

Specific Objectives:

1. *Time management efficiency.* Determine how interaction with *Canvas* can help faculty members save time with redundant tasks. This involves the deployment of canvas system and testing user experience satisfactory on faculty members.
2. *Course interaction analysis.* Determine how students' interaction with *Canvas* can aid their studies and affect class participation. This involves documenting and collecting feedbacks from students at School of Global Studies (SGS).
3. *Peer-to-peer interaction analysis.* Compare whether *Canvas* provides positive influences on faculty members and students. This involves documenting responsive engagement between both end-users.
4. *Feature Evaluation.* Identify features within *Canvas* that are the most useful for both faculty members and students.
5. *Deployment extension.* Provide scientific evidence to determine whether SGS should continue deploying *Canvas* system and replace other decentralized platform.

### **Literature Review**

Design qualities in terms of user experience have shaped our community in several oblivious ways that gradually transforms into a desensitized interaction with digital devices. Education and technology, when combined, can enhance both instructors' and learners' experience in qualitative and quantitative measures, which with appropriate empirical method we can assess learning outcomes (Dillon & Gabbard, 1998). For most people, the first approach to design might be the aesthetic approach to the product. However, several studies have defined that the most vital aspect to gain consumer insight from user experience design is from the user feedback themselves. Recent studies indicate the growing number of media-user typology (Brandtzæg 2010), by which designing the kind of user experience based on the target user propriety is key to understanding human-computer interaction or the study of psychological aspect of human use in computing (Zimmerman, 2007). The growing number of media-user typology is an initial paradigm that digitized media will soon proliferate user engagement in both academia and industries.

The rationale behind user experience (UX) can be described as something dynamic, context-dependent, and subjective (Law et. al., 2009). The research hypothesized that UX designs should be considered from individual perspective instead of communal shifts in argument. From his survey, participants agree that while some properties of UX design can be at its verge at the current stage, over time human perspective changes and is sometimes devoured by the existing context. Likewise, the dynamic nature of social engagement with computer is subjective over time.

To define the kind of media interaction that represents universal group of people can be rather a predicament. Response to interaction with computer might be ambiguous, depending on the orientation of user backgrounds as human cognitive process can respond subjectively with different appearance of the user interface (Law et.al, 2009). User experience itself can also determine the product quality (Hassenzahl, 2008), thus virtual simulation or real interaction is one of the best ways to understand user insight regarding the product. In Hassenzahl's research, he associated good UX designs with the state that the consequences fulfill human needs for autonomy, competency, simulation, relatedness, and popularity. Pragmatic qualities facilitate potential fulfillment of user satisfaction.



user satisfaction evaluation form to rate their satisfaction for conventional methods of virtual learning environment approaches each faculty member is using. Ideal scenario will adapt the *Canvas poll* feature to collect such data; otherwise, survey should be created online. I will also distribute such online survey to evaluate the students' technical abilities and allow them to rate their satisfaction with online approaches for their classes.

*Post-deployment satisfaction.* In order to articulate insights from stratified user groups and provide proof based on real users' feedback, it is mandatory to collect post-deployment evaluation from all groups of users. The rare insight from extreme users in our subgroups will be most beneficial to the experiment to whether its features are literally essential to both ends of our users or not.

*Time management.* We want to make sure that deploying this system will assist our users in certain ways and one of the most highlighted problems is that most LMS fail to satisfy our users in terms of time management. In order to really indicate time management usability, tasks associated with course loads will be specified prior to *Canvas* system training. These tasks will also be approximately timed in advance in order to compare with our post-deployment results.

*Usability and control.* To provoke user engagement with the system and decrease semantic gap in the system, we want to focus on the functionalities of *Canvas* system and how the user interface provides common intuition to users regardless of their backgrounds. I planned to include simple rating system in this survey to eliminate complications and alternate with follow up feedback with open-ended questions to gain insight on future customizations.

*Unstructured and semi-structured interviewing.*

The initial phase and final phase of interviewing will focus on unstructured and semi-structured interviews. The initial goals of these in-depth, open-ended interviews will be to gain a broad understanding of relevant topics and problems associated with conventional LMS that both end-users are facing. I will encourage informants to express their own terms and determine the pace of the interview. I planned to conduct approximately 5 in-depth interviews with instructors and 10 in-depth interviews with students from purposeful sample informants to maximize heterogeneity. Given that the number of faculty member at approximately 15 members and the number of students in SGS at approximately 120 students.

#### Observations:

*Participant observation.* I plan to observe different class interactions on a bi-weekly basis. This is because as the curriculum in class progresses, instructors and students are bound to be more familiarizing with the system. Hence, it is one way to gather unbiased feedback from both end-users. As an observer, part of my iterative process includes writing a field note in a bi-weekly basis. This will allow my to empathize and rare insights to problems that are not presented in the survey. Questions that will guide my early work will be open-ended questions, which will help me generate the internal and external validity of the study and help me understand the *meaning* of observations.

## Data Analysis:

### Survey

Data analysis will begin with careful inspection of data using descriptive statistics and graphical displays. The initial phase of analysis is designed to check for overall user interaction with technology in the School of Global Studies. This includes eliminating confirmation bias and, extracting constant variance and linearity. All analyses will be conducted exclusively with user satisfaction factors.

*Usability test analysis.* Usability recording software such as TechSmith's Morae(PC) or Silverback(Mac) will be used to record the computer screen, the participants voice, and facial expression. These two software or similar software can facilitate tracking of user behavior such as mouse click, facial expression, or keystroke. Data will be compiled to determine the severity of each usability issues that is encountered and will provide prioritized recommendation to *Canvas* system engineer as our user feedback analysis.

## Data Analysis:

### Observation:

The aim of this project requires preliminary analysis of observational data to compare with post-deployment satisfactory aspects. Each step of exploratory from interviewing and observation will shape the scope of our semi-progress survey questions. Preliminary analysis must be completed before full deployment begins. Consequently, I plan to perform preliminary studies in parallel with the training of *Canvas* system and complete the analysis before we conduct our studies on post-deployment satisfactory.

## Significance of Proposed Research

This research is important for three main reasons. First, it reveals the competency of *Canvas* system and its interaction with heterogeneous peers. This finding will provide us an initial state of user experience. One of the most important aspect of the board decision to continue deploying this system or not relies on the user satisfaction associated with their pilot experience. If the functional and presentational design is compatible with SGS users, it is likely that the system adds value to our virtual learning experience.

Second, if our hypotheses are proven true, the study can eliminate unnecessary tasks associated with class collaboration such as taking attendance, filtering emails, and skill analytics, since everything is automated after their administration. The likelihood of human-error can also reduce since analytical functions and most existing features allow peers to exploit their course resources to its highest potential.

Finally and most importantly, this study can provide SGS with substantial evidence to whether its value is worth the investment or not. Deploying a new system to the school can be costly, by adding new knowledge and providing veritable evidence of its value we can revolutionize our learning processes with technology in effective ways.

## Research Schedule

|  |                        |
|--|------------------------|
| Phase 1: <i>Exploratory phase</i>  |                        |
| Review pre-deployment user satisfaction using surveys,<br>Train faculty members to use <i>Canvas</i> system,<br>Explore insights of technical backgrounds of faculty members | November –<br>December |
| Preliminary research and testing – user experience design, human interaction, key features   | December - January     |
| Conduct semi-deployment and post-deployment interviews<br>Collect semi-deployment and post-deployment user satisfaction surveys  | January – February     |
| Phase 2: <i>Explanatory phase</i>  |                        |
| Analyze collected data in terms of User Experience (UX) satisfaction.<br>Convert collected data into matrices and statistical models as proof of hypotheses.                 | February– March        |

## References

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## Expenses

|                          | Budget Item  | Amount  | Sub-Total   | Justification  |
|--------------------------|--|---|-------------|--|
| a.                       | Personnel  |   |             | This comprehensive study requires significant effort in survey administration (e.g., distribution and collection), data management (e.g., data input and analysis), and feedback report writing. Significant time has already been invested in conducting the extensive literature review and experimental design. |
|                          | Principal Investigator (monthly salary)                | 20,000 THB  |             |  |
| Total personnel expenses |  |   | 120,000 THB |  |
| b.                       | Canvas System  |   |             | This part of the funding will be used to subscribe and deploy a pilot version of Canvas application, which covers maximum user at 200 people. Canvas is the LMS that will be deployed during the second semester of GSSE program and is the main application for our experimental research.                        |
|                          | Pilot system deployment for Semester 2 (max.200 users) | \$5000 USD rate as of Aug, 2015 (\$1USD = 35.5 THB) |             |  |
| Total System Expense     |  |   | 177,695 THB |  |
| c.                       | Other Direct Expenses                                  |   |             | This part of funding will be used to cover direct out-of-pocket expenses, including questionnaire production, distribution, and collection. Survey Monkey annual subscription fees for 2015 and 2016. This is an on-line survey tool. We administer our surveys through Survey Monkey.                             |
|                          | Survey Monkey subscription for (2015-2016)             | 6,699 THB   |             |  |
| Total indirect expenses  |  |   | 6,699 THB   |  |
|                          | Indirect Overhead 10%                                  |   | 30,439 THB  |  |
| Total Project Expenses   |  |   | 334,833 THB |  |