Measuring User Experience: Case Study Student Centered E-Learning Environment

Harry B. Santoso, PhD
Fakultas Ilmu Komputer Universitas Indonesia
Indonesia ACM SIGCHI Chapter Regional Depok
Email: harrybs@cs.ui.ac.id

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Agenda

- Introduction: Towards a Better Environment
- Think Global, Act Local
  - World Usability Day 2015
  - World Information Architecture Day 2016
- Usability and User Experience
- Measuring User Experience: Student Centered e-Learning Environment
- Conclusions
An Australian insurance company had annual savings of A$536,023 from redesigning its application forms to make customer errors less likely [Fisher and Sless 1990]. The cost of the usability project was less than A$100,000. The old forms were so difficult to fill in that they contained an average of 7.8 errors per form, making it necessary for company staff to spend more than one hour per form repairing the errors.

(Usability Engineering, Nielsen)
Think Global, Act Local

- World Usability Day 2015 Depok
- World Information Architecture Day 2016 Depok
Indonesia ACM SIGCHI Chapter
The 2\textsuperscript{nd} International Conference on Human-Computer Interaction & User Experience
Usability and User Experience

UX starts by being **useful**.

Functionality, people **must** be able to use it.

The way it **looks and feels** must be **pleasing**.

This helps create an overall **brand experience**.

**Utility**
- It is useful to me.
- It meets my needs.

**Usability**
- I am able to use the product easily.

**Desirability**
- I like the way the product looks and feels.

**Brand Experience**
- My overall feeling about the brand/product (in the abstract) is good.

Source: User Experience 2008, nnGroup Conference Amsterdam
Usability and User Experience

**Usability** answers the question, “Can the user accomplish their goal?” In the case of our camera shopper, from the perspective of the site’s design, she did accomplish the goal, being very satisfied with the result.

**User Experience** answers the question, “Did the user have as delightful an experience as possible?” The store portion of the experience canceled out the online portion.
User-Centered Design vs. “Designer-Centered Design”

How to minimize the gap?
“Emotion and Cognition are tightly intertwined ... a person's cognitive and emotional state.” (Donald Norman)
Schneiderman and Requirements

1. Functional Requirements
2. Non-Functional Requirements
Schneiderman and Requirements

1. Functional Requirements

2. Non-Functional Requirements

INTERACTION Requirements
Measuring User Experience

- Offline Methods (Self-Reports)
  - Interview
  - Survey

- Online Methods (Actual Behaviors)
  - Activity Logs
  - Observation

“There are two approaches to study UX, qualitative and quantitative, both measurements have distinct benefits.” (Law, Schaik, & Roto, 2014)
Welcome to the User Experience Questionnaire (UEQ)
A Questionnaire to Measure the UX

Attractiveness
Overall impression of the product. Do users like or dislike is?

Perspicuity
Is it easy to get familiar with the product?

Efficiency
Can users solve their tasks with the product without unnecessary effort?

Dependability
Does the user feel in control of the interaction?

Stimulation
Is it exciting and motivating to use the product?

Novelty
Is the product innovative and creative?
User Experience Questionnaire
(translated into Indonesian)
Collaboration


Measuring User Experience of the Student-Centered e-Learning Environment

Harry B. Santoso, Universitas Indonesia, Jawa Barat, INDONESIA
Martin Schrepp, SAP AG, Walldorf, GERMANY
R. Yugo Kartono Isal, Universitas Indonesia, Jawa Barat, INDONESIA
Andika Yudha Utomo, Universitas Indonesia, Jawa Barat, INDONESIA
Bilih Priyogi, Universitas Indonesia, Jawa Barat, INDONESIA

Abstract
The aim of the current study is to develop an adapted version of User Experience Questionnaire (UEQ) and evaluate a learning management system. Although there is a growing interest on User Experience, there are still limited resources (i.e. measurement tools or questionnaires) available to measure user experience of any products, especially learning management systems. Two hundreds and thirteen computer science students participated and completed the adapted version
Introduction to the Study

Although user experience measurements have been used to evaluate any products, there is still limited effort to evaluate learning management systems.

Any evaluation effort to measure their usability are usually taken from students’ perspectives.

- This issue is critical because the quality of learning management systems usage will affect students’ learning performance while learning online.

The purposes for this current study were:

- to understand students’ user experience while using a learning management system in Computer Science education;
- to apply multi-methods approach in evaluating students’ user experience; and
- to provide recommendations for improving a learning management system.
Participants & Context of the Study

- Two hundred thirteen Computer Science students at a university in Indonesia participated and completed the Indonesian UEQ. They were informed about the purposes and methods of the study.
  - Participants have been using SCELE for years.
- Instructors use SCELE to facilitate teaching and learning activities outside the classroom.
  - They can upload learning materials, post questions on discussion forums, and set up quizzes and assignments.
- The current study uses the UEQ and open-ended questions to evaluate user experience of the students while using SCELE.
Student Centered e-Learning Environment
Instrumentation

The questionnaire proposed two quality categories of user experience including **pragmatic** (i.e., task-oriented aspects) and **hedonic** quality aspects (i.e., non-task-oriented aspects).

In the current study, the researchers use the adapted version of UEQ using Indonesian language.

The questionnaire consists of 26 items categorized into six scales: Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty.

- Perspicuity (clearness), Efficiency and Dependability are goal-oriented, pragmatic quality aspects.
- Stimulation and Novelty are non-goal oriented, hedonic quality aspects.
Instrumentation

Attractiveness

Pragmatic Quality
- Perspicuity
- Efficiency
- Dependability

Hedonic Quality
- Stimulation
- Novelty
## Instrumentation: An Example

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Data Collection Procedures and Analysis

- Data collection included quantitative and qualitative data.
- The researcher gathered quantitative data from the online UEQ and open-ended questions related to students’ perception about SCELE.
- The students were asked to reflect on SCELE before completing the UEQ. They could complete the questionnaire within 10-15 minutes.
- From data collection process, the UEQ was completed by 213 students and open-ended questions were completed by 99 students.
Data Collection Procedures and Analysis

- Analysis of the UEQ was conducted by calculating the means of the six scales. The UEQ does not produce an overall score for the user experience.

- In the standard interpretation values between -0.8 and 0.8 represent a neutral evaluation of the corresponding dimension, values more than 0.8 represent a positive evaluation and values less than -0.8 represent a negative evaluation.

- The range of the scales is between +3 (positive extreme) and -3 (negative extreme). Due to typical answer tendencies in such questionnaires (people usually avoid the extreme answer categories) values between 1.5 and 2 indicate already a very good quality.
The findings of the evaluation of UEQ Indonesian Version:

Findings from the UEQ showed that the scores for all scales describing a pragmatic quality aspect (Efficiency, Perspicuity, Dependability) are good, i.e., above 0.800.

The scales describing hedonic quality (Stimulation and Originality), i.e., fun of use, show neutral evaluations.
Findings

The findings from open-ended questions:

First, regarding the benefits of using SCELE for learning, among 290 responses gathered, most respondents stated that SCELE helps them to assess learning materials (26%).

Second, regarding the challenges while using SCELE, it was revealed that among 189 responses, user willingness to access was the most challenging one (15%).

Third, regarding the most important features of SCELE, 25% of 308 responses stated that discussion forum is the most important feature.

Fourth, regarding the least important features of SCELE, 23% of 209 responses revealed that message (inbox) is the least important feature on SCELE.

Please read:
http://thejeo.com/Archives/Volume13Number1/SantosoSchreppKartonolsalUtomoPriyogi.pdf
Further works

- Pedagogical Agents
- Learning Dashboard
- Flipped Classroom feature
- Self-Monitoring feature
Pedagogical Agent on SCELE
Providing a new learning experience

Development of gamification-enriched pedagogical agent for e-Learning system based on community of inquiry

Full Text:  PDF  Get this Article

Authors:  Andika Y. Utomo  Universitas Indonesia, Depok, Indonesia
          Harry B. Santoso  Universitas Indonesia, Depok, Indonesia

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Bibliometrics
- Downloads (6 Weeks): 10
- Downloads (12 Months): 151
- Downloads (cumulative): 151
- Citation Count: 0
Pedagogical Agent on SCELE
Providing a new learning experience

Selamat Siang, Andika Yudha Utomo
Selamat datang di Student-Centered Learning

Overall kamu sudah berusaha untuk aktif di course page ini. Tingkatkan terus partisipasimu ya, diskusikan apa yang kamu dapat dengan temanmu.

Penting tugas/kuis 0
baca >>

Masukan:

Aktivitas Online 50% Download Materi 100%
Aktivitas Forum 15% Tugas & Kuis 100%

Lencana:
Pedagogical Agent on SCELE
Providing a new learning experience
Pedagogical Agent on SCELE
Providing a new learning experience

Halo, Andika Yudha Utomo
Selamat datang di Student-Centered Learning

Halo Andika Yudha, overall kamu sudah berusaha untuk aktif di course page ini. Tingkatkan terus partisipasimu ya, sampai kan apa yang kamu pelajari di forum, jawab pertanyaan teman-temanmu di forum, dan kerjakan tugas dan kuis sebaik-baiknya.

**Masukan:**

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<th>Aktivitas Online:</th>
<th>Download materi:</th>
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<td>Setelah cukup banyak mempelajari materi, kamu bisa menemukan pengayaan materi di berbagai media lain untuk menambah wawasannya : Jangan lupa untuk sharing apa yang kamu telah pelajari di forum diskusi ya...</td>
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<th>Aktivitas Forum:</th>
<th>Pengerjaan tugas dan kuis:</th>
</tr>
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</table>
Pedagogical Agent on SCELE
Providing a new learning experience

Setelah cukup banyak mempelajari materi, kamu bisa menemukan pengayaan materi di berbagai media lain untuk menambah wawasanku. Selamat belajar! :)

Pengingat tugas/kuis 2

- Assignment yang belum dikumpulkan:
  Tugas 1  deadline: 20/06/2014 17:00

- Quiz yang belum dikerjakan:
  Kuis bab 2  deadline: 21/06/2014 05:04
Report (logs) on SCELE: Current Feature

**[REG] Sistem Interaksi (Kelas A dan B) - Gasal 2014/2015**

**Faculty Homepage ▶ Academic Links ▶ Panduan Mahasiswa ▶ Informasi Internal ▶ Sunday 15 November 2015**

SCELE ▶ REG_Sister_1415_AB ▶ Reports ▶ Logs ▶ All participants, All days

You are logged in as Harry B. Santoso (Logout)

[REG] Sistem Interaksi (Kelas A dan B) - Gasal 2014/2015: All participants, All days (Asia/Jakarta)

Displaying 48091 records

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Learning Dashboard: Learning Activity
Conclusions

The UEQ can be used to measure user experience of interactive products, including web-based applications. It captures the pragmatic as well as the hedonic quality aspects of the interactive products.

Although the translated version must also be proven in further studies with other types of products to get a more complete picture, the use of this version for practical product evaluations appears viable.

The results of validation revealed that, while the scores for all scales describing a pragmatic quality aspect were good, the scales describing hedonic quality showed neutral evaluations.

The findings were also supported by students’ answers to open-ended questions.

Moreover, the measurement results provide additional insights into future development of the SCELE learning management system.
Recommended Books ("Homework")

Usability Engineering
Jakob Nielsen

The Design of Everyday Things
Donald A. Norman
Thank you

Thank you for your attention!
~ Questions and Answers ~