Building Competency for Usability Evaluation of E-learning courses

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Abstract
The evaluation of E-learning courses is a multi-disciplinary skill-set that includes usability experience, instructional design, learning theory, and a basic understanding of the subject-matter. Although there are several types of instruments to implement e-learning evaluation, evaluators have difficulty using these tools because of ambiguity, specificity for a particular application, or length. We present a case study of the implementation of one instrument and its impact on identifying usability issues.

Introduction
In distinguishing how a product should be used, an evaluators' duty is to assure that an investigative report concisely provides the necessary feedback to improve the product. This activity not only points to the ability of the evaluator, but it also demonstrates the importance of the tools used in the evaluative process. The key tool is the usability instrument and this coupled with the evaluators' experience creates the necessary expectation that a report would reveal the faults, if any with the e-learning product.

In evaluating the usability of e-learning courses, current instruments have categories that are either ambiguous or too specific for any learning environment (Moore, Dickson-Deane, Galyen, Vo & Charoentham, 2008). Evaluators not only count on the tool (i.e. the instrument), to be of some quality, but also that the evaluator has the necessary skills and knowledge to adequately use the tool. Usability instruments for e-learning products have several categories which span a multi-disciplinary skill-set, for example instructional design, general usability, content-related to a specific subject matter. This suggests that e-learning evaluators need to be unrealistically multi-disciplinarians with an understanding of learning theory and instructional design (Zaharias & Poylymenakou, 2009). This challenge is further hampered by the variety of e-courses being produced where each course design is dependent on the content-related instructional strategies as well as the capabilities or constraints of the learning management system. These issues not only highlight some of the myriad challenges of evaluating the usability of e-learning courses, but also suggest that many components that make e-learning a success will need to be appraised.

Team focus
The investigative team is a mixture of faculty and doctoral students who are in the field of learning technologies. The group's general interest lie in the usability of e-learning and initially was focused on the development of a quality instrument for evaluating e-learning. In an effort to develop a quality instrument, specifically for the usability of e-learning, elements influencing the validation of usability evaluation were identified. These elements included the instrument, the evaluator, the evaluation process and the evaluation context. Questions raised were as follows

- How do these four elements interact with each other?

- How do the identified interactions influence the quality of the evaluation report?
- What factors underlining each element contribute to these interactions?

This paper focuses solely on the evaluator and what contribution the evaluator will provide via the report. This information will then be used to further investigate the above-stated questions.

Description of Instrument

The instrument used in this research was designed by Dringus and Cohen (2005), which identifies a list of usability problems for WebCT, a learning management system. The instrument is in the form of an heuristic evaluation, accommodating both the learner and the instructor perspective. The list was combined with other lists created by researchers and then categorized to form the instrument used for this investigation. The instrument was described as a checklist and solely, by its title, encouraged its potential users to modify the instrument to suit investigative needs. The proposed modification also allowed for additional research which could be used by instructors or a combination of instructors and learners.

Description of course

The team selected an e-Course offered within the confinements of a learning management system that combined several communication technologies (Moore et al., 2008). This specific course was supported by the use of instructor-led learning activities and aimed to provide students with knowledge necessary to create basic timeline-based animations using Flash. The course used the open source software Sakai to implement navigational media, webpages and word documents to provide information on topics like vector images, animation, sound, ActionScript, and much more. Dringus and Cohen (2005) used an online course with similar characteristics but a different content. Hence, using a similar course that assisted in the creation of the instrument, presented the best opportunity for evaluators to perform at their best.

Participants

Four evaluators completed a demographic survey to illustrate the different skills used to review the course. The following describes the evaluator characteristics (see Appendix) for the investigation.

Method

The evaluation process was conducted during a twenty day period. Each participant received a user name and password for the course and evaluated the course using the instrument between day 1 and day 9. The evaluative process was not confined to any length of time and the use of the instrument was guided or restricted as per its guidelines. The evaluators each submitted a report and a reflective description of their actions in conducting the evaluation. On day 20, a group interview was conducted with an independent interviewer. The interviewer noted not only the environment in which the interview was conducted, but also ensured that each evaluator responded to all questions. The interviewer used the appropriate probes where necessary.

Key findings

The instrument had a number of issues that were identified by all of the evaluators:

- There was a consensus that the instrument was too lengthy in its description. Thus, the categories at the end of the instrument may have been answered quickly in order to finish the evaluation
- The instrument, by description suggested that it was adaptable for each application yet no directions/protocol on how the instrument was to be modified was supplied with the instrument
- The instrument did not provide a rating description, which made it unclear how each question should be valued
- Some [question] items proved to be challenging to answer. The answer could either present a positive answer that was good, or a positive answer that was bad.
- Questions were posed from both an instructor and a learner point of view
- Some questions were ambiguous and/or repetitive.

These flaws with the instrument created more of a focus on the validity of the instrument as opposed to the quality of the e-course being evaluated, thus being extremely detrimental to the evaluators' performance. Each evaluator complained about their inability to be confident with the resulting evaluation reports and when interviewed stated that, on average they had a 60% confidence that they had completed the evaluation to the best of their ability, with an average of 38% that the resulting report had a probable meaningful impact on the quality of the e-course.The group interview also allowed for some collaboration on the entire evaluative activity, some what of a Delphi technique which also assisted each evaluator to again reflect on their own actions in an effort to build a level of competency.

Conclusions

It was apparent that there were implementation issues with the instrument that impacted the evaluation performance. The length and ambiguity of the instrument along with the experience of the usability evaluators can lead to inconsistencies in identifying usability issues. Although the evaluators were comfortable assessing the basic interface design of courses, the categories relating to instructional design were more difficult. To determine what is an appropriate instructional design requires a basic understanding of the subject-matter in conjunction with implementing instructional strategies within the limitations of a learning management system. Finally, a combination of individual and collaborative evaluations, along with an opportunity to reflect on the evaluation process and issues in a group setting seem to be effective strategies for building competencies.

References

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Appendix

Evaluator A

- Current education status: Masters
- Number of online courses (instructor-led) you have taken:10
- English as second language: Yes
- Experience with Sakai:Yes [Intermediate - Expert experience]
- Experience with other content/learning management systems: Yes
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- Were you a previous student of the Flash course: Yes
- Have you taught/designed a course in Sakai? No
- Experience with Instructional Design: Yes [Novice experience]
- Experience with Usability Evaluation: Yes [Intermediate experience]

Evaluator B

- Current education status: Doctoral
- Number of online courses (instructor-led) you have taken: 2
- English as second language: Yes
- Experience with Sakai:Yes [Novice experience]

- Experience with other content/learning management systems: Yes
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- Were you a previous student of the Flash course: No
- Have you taught/designed a course in Sakai? No
- Experience with Instructional Design: Yes [Intermediate - Expert experience]
- Experience with Usability Evaluation: Yes [Intermediate experience]

Evaluator C

- Current education status: Doctoral
- Number of online courses (instructor-led) you have taken: 18
- English as second language:No
- Experience with Sakai:Yes [Expert experience]
- Experience with other content/learning management systems: Yes
- Were you a previous student of the Flash course: Yes
- Have you taught/designed a course in Sakai? Yes
- Experience with Instructional Design: Yes [Expert experience]
- Experience with Usability Evaluation: Yes [Intermediate experience]

Evaluator D

- Current education status: Doctoral
- Number of online courses (instructor-led) you have taken: 22
- English as second language: No
- Experience with Sakai:Yes [Intermediate experience]
- Experience with other content/learning management systems: Yes
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- Were you a previous student of the Flash course: No
- Have you taught/designed a course in Sakai? No
- Experience with Instructional Design: Yes [Expert experience]
- Experience with Usability Evaluation: Yes [Intermediate experience]