

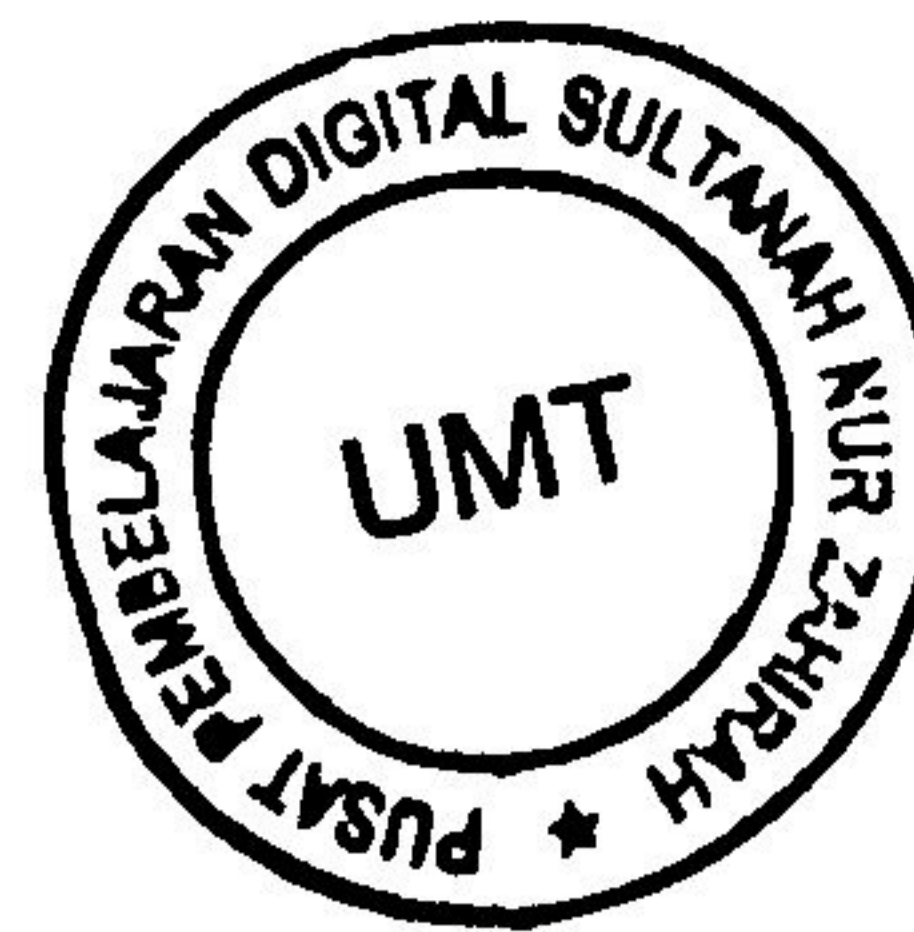
A STUDY TO INVESTIGATE THE IMPACT OF VISUAL
INTERFACE DESIGN ON USER EXPERIENCE IN
WEB-BASED LEARNING APPLICATION

ZURIANI ABU BAKAR

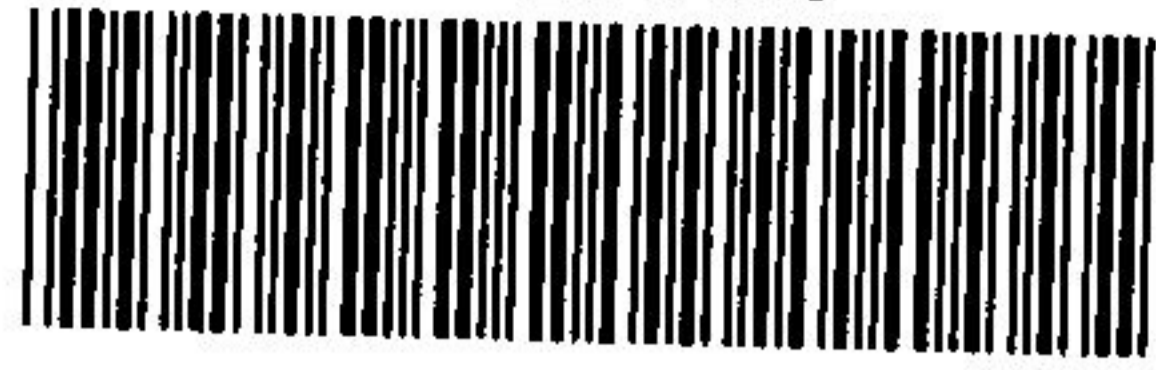
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***A study to investigate the impact of visual interface design on user
experience in web-based learning application***

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B.Sc. Computer Science

M.sc. (Computer Science)

PUSAT PEMBELAJARAN DIGITAL SULTANAH NUR ZAHIRAH

A thesis submitted for the degree of Doctor of Philosophy at

The University of Queensland in 2013

School of Information Technology and Electrical Engineering

Abstract

The thesis describes a study of visual design experiences in a Web-based learning environment among students in higher education. This study consists of two consecutive empirical studies. The first study is a descriptive study which functioned as the refinement process to choose a number of appealing interfaces based on the users' selections of preferences. The outcomes of the first study are employed as stimuli interfaces in the second study. The second study is an experimental investigation to investigate the effect of the visual design of interfaces on students' emotions, learning performance, engagement, and readability of learning materials while interacting with the Web-based learning application. Both studies employed the same methods which were experiment, questionnaire and unstructured interview methods, generating both quantitative and qualitative data. The study is considered to be quasi-experimental and adopts the within-subject design condition. Two application prototypes are developed to be used in both studies as experimental and data collection tools. The study involves university students as the test subjects. The results of the first study suggest preferred appealing interfaces are strongly associated with simple and clean colour combinations and follow Web browser default values for font size and line height spacing. The second study findings demonstrate that the manipulation of five visual design elements (font type, font size, line height spacing, font colour and background colour) could stimulate and change students' affective states during the learning activities including reading text passages and answering the quiz questions. A dynamic interface, one that changes its appearance when rendered, significantly engages students affectively in Web-based learning interactions. A static interface, one that presents a simple and consistent interface each time it is rendered, significantly improves students' performance (accuracy in answering quiz questions). However, there is no significant effect of visual design of interface (static or dynamic interfaces) on the readability of the learning materials. With the findings and future research directions highlighted in this study, a more effective Web-based learning interaction can be achieved. This learning interaction could balance and include all the important Web-based learning experience components; namely, affect, engagement, performance and readability of learning materials.