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網路學習科技研究所

碩士論文

**The Synchronous Online Argumentation System
User Interface with an Integrated Design
Framework: Redesign and Evaluation**

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The Synchronous Online Argumentation System User Interface with an Integrated Design Framework: Redesign and Evaluation

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Advisor

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中文摘要

一個設計良好的「線上同步合作論證系統」可以有效滿足學習者在資訊時代的學習需求，本研究聚焦於「線上同步合作論證系統」的使用者介面設計。過去的研究並未針對「線上同步論證系統」之使用者介面設計提出一個完整的架構，因此本研究基於認知負荷、使用者介面、使用者經驗，提出9項「線上同步合作論證系統」的使用者介面設計原則。研究者使用研究團隊開發之兩個原型系統，並邀請啟英高級中學48名學生針對兩個原型系統進行測試，其中第二原型系統使用基於9項原則的框架進行設計。本研究透過「網頁學習環境」(Web-Based Learning Environment, WEBLEI) 和「系統可用性測試」(System Usability Test, SUS) 兩份問卷來進行介面評估。受測者在WEBLEI評估問卷的結果顯示，在第一原型系統中的「解放感」(Emancipatory) 比第二原型系統更好(0.60)。而第二原型系統在系統參與度(0.10)、介面體驗(0.25)和資訊結構與設計(0.20)的三個項目中，則比第一原型系統更好；SUS問卷的結果表明，第二原型系統的可用性優於第一原型系統，在SUS問卷評估中具有4.43的差距。最後，本研究進一步提出對「線上同步合作論證系統」的改良建議。

關鍵詞：同步系統、線上、論證、使用者界面、設計框架、教育

ABSTRACT

The Synchronous online argumentation system is highly needed to facilitate learning activity in this internet era. User Interface is an important aspect to design the system, but not many researchers developed an integrated framework. To gain deeper insights about this important issue, a framework was developed in this study. This study developed nine principles based on Cognitive Load, User Interface, and User Experience to redesign a system. With this framework, 48 (forty-eight) students of Chi-Ying High School had tested with two prototypes, and the second prototype used the nine principles. The systems were measured with Web-Based Learning Environment (WEBLEI) and System Usability Test (SUS). The result with WEBLEI measurement that used four dimensions shows that the Emancipatory was better on the first prototype than on the second prototype with (0.6) mean difference, the other was better on the second prototype than on the first prototype with Co-Participatory (0.10), Qualia (0.25), and Information Structure & Design (0.20) mean differences. The result from SUS measurement shows that the usability of the second prototype was better than on the first prototype with (4.43) SUS score difference. The result shows that the use of nine principles that applied to the second prototype does increase the usability and satisfaction of the students. This study also proposed some suggestions to design a better synchronous online argumentation system.

Keywords: Synchronous system, Online, Argumentation, User Interface, Design Framework, Education.

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I dedicated this thesis to myself in the future, my children in the future and to my parents; my father Suhono, who always told me to be strong, independent, and always proud of myself. My father seldom praised me and always motivates me to keep moving forward and reach my goals. Also, my mother Purwanti Handayani who always worrying about me, who always prays for me, they are the most important people in my life, and also thanks to my whole family who always supports me and prays for me in Indonesia. I also present this to my beloved cat Jackson, that I miss so much.

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