

協同式創造力學習之線上腦力激盪系統

摘 要

本論文之研究目的為開發一線上合作式創造力學習系統。本文將描述一以遊戲為基礎之創造力思考輔助工具” Idea Stroming Cube”。它的目標在於讓學生養成創意思考與典範轉移能力的習慣。此系統會汲取學科專家的知識，使用者歷史記錄，和腦力激盪中的個人創意，提供使用者、目標及情境感知的學習支援。比較相關的教學系統，它更注重於刺激發散性思考之能力。此系統可分為兩種學習模式 Base Mode 和 Agent-Assist Mode：一為提供學科知識學習之輔助，另一為提供學習發散性思考能力之輔助。

本文提出合作式創造力思考輔助之 Human-Computer Interaction(HCI)的系統已初步實作完畢，本文並報告了兩個相關的實驗以測試系統效能。本研究的主要結果符合實驗假設，以遊戲情境為基礎之創造力支援系統相較於其他類似系統，更有助於學生學習創造力，另外，藉由適當且適時的智慧型思考輔助 Agent，亦能提供學生不同面向的思考觀點，有助於學生用更多觀點學習知識。

Idea Storming Cube: An Online Brainstorming System to Support Collaborative Creative Thinking

Abstract

The objective of this research is to develop a Web-based collaborative tool for learning creativity. This research describes a game-based system, Idea Storming Cube, in support of creative thinking. It aims to make people form a creative and Perspective-Modifying thinking habit. Based on theories of this kind support system and prior studies, we propose to integrate exciting game environment and intelligent support mechanism into the creativity thinking support system. The system acquires knowledge from domain expert, user inputs history, and individuals of a brainstorming group, and then provides user-, goal- and context-sensitive supports. Compared to classic tutoring systems, it focuses more on stimulating divergent thinking. The system can be utilized with two distinct support strategies, Basic Mode and Agent-Assist Mode, in order to support different learning objectives. One focus on knowledge learning, the other highlights the divergent thinking ability.

The proposed Human-Computer Interaction (HCI) tool for collaborative idea generation has been implemented, and two experiments for preliminary evaluation of the system are also reported in this thesis. The major results of this study show that the game-based brainstorming system with appropriate intelligent support outperforms the other types of systems because the game

competition environment can make them concentrate on the brainstorming tasks and let them think more from different view points for learning the knowledge with the support of the peer-like agent.