Providing easy access to Cognitive Load Theory for a teaching community

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This paper describes how the successful application of Cognitive Load Theory (CLT) to a range of short and long computing courses in various contexts led to the development of an online evaluative toolkit called “CAFÉ”.

The authors began by designing a series of short CLT-informed workshops to teach introductory computer programming to primary and high-school aged children. The workshops were extremely successful and led to the application of CLT to the design of training interventions for older Australians living in public housing which resulted in a significant increase in digital literacy. The design process was also applied in the university context, where the redesign of three university-level computer science courses showed such substantial improvement in performance and participation that it gained attention from other academics within and external to the university. The success of the interventions in the university context triggered many requests for assistance from academics in computing and other disciplines who were hopeful of finding ways of improving their own problematic courses but were not experts in Instructional Design. While the successfully redeveloped university courses had shared some common issues, each had individual differences and challenges, resulting in different CLT principles being applied to each course. The academics requiring assistance also needed evaluation that was customised to their courses, and the impossibility of scaling this assistance to the required numbers led to the idea of an interactive evaluative toolkit that could assist with this process.

The CAFÉ toolkit is designed to help academics and other teaching communities improve their courses using CLT without the intervention of a CLT or Instructional Design expert. The CAFÉ toolkit provides a way to not only disseminate knowledge about CLT to the wider teaching and learning community, but also provides practical, customised advice.

The CAFÉ Toolkit allows users to interact with online tools that adapt dynamically in response to their input regarding student profile, course structure, resource type and features present within such materials. Customised feedback is given, providing an evaluation of the effectiveness of the current structure and/or materials assessed against a set of cognitively based Critical Success Factors. Recommendations on how to enhance the current structure and/or materials with links to supporting information and examples are provided within the toolkit.

This paper describes the redesign of the courses using CLT, and the design and functionality of the CAFE toolkit, as well as reporting results from usage of the resource. Enhancements to the toolkit - currently in progress - are also identified.