

Call for Papers

Special Issue on

“Managing Cognitive Load in Technology-Based Learning Environments”

Guest Editors

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Technology-based learning environments offer a wide range of educational opportunities that traditional face-to-face interaction cannot achieve, such as enabling time and place independence of information delivery. However, as with all technology applications, the use of technology in itself may pose additional processing demands on learners' cognitive resources, which may either positively or negatively affect the construction of new knowledge. Mixed findings of empirical research into technology-based learning support this concern and make clear that analyses of associated cognitive processes and structures are important. The cognitive load imposed on learners in technology-based environments is the main focus of this special issue.

Cognitive Load Theory (CLT) is a psychological learning theory established to coordinate instructional design and learning procedures with human cognitive architecture (Sweller, Van Merriënboer, & Paas, 1998; Sweller, Ayres, & Kalyuga, 2011). This cognitive architecture consists of a working memory with a very limited capacity when dealing with novel, unorganized information, as well as an effectively unlimited long-term memory storing cognitive schemas that vary in their degree of complexity and automation. Over the past decades, CLT has progressed and advanced rapidly in various areas, such as science and technology (Chandler & Sweller, 1991, 1996; Mayer, Heiser, & Lonn, 2001; Sweller, Chandler, Tierney, & Cooper, 1990), mathematics (Mousavi, Low, & Sweller, 1995; Paas & Van Merriënboer, 1994) and language (Diao & Sweller, 2007; Gao, Low, Jin, & Sweller, 2013). Several special issues have been edited to guide the new directions for CLT development and also document the contributions of CLT to instructional design optimization across different disciplines, for example, the special issue for “Educational Technology Research and Development (ETR&D)” in 2005, the special issue for “Learning and Instruction” in 2009, and the special issues for “Educational Psychology Review” in 2007 and 2010. Although a number of studies have considered the cognitive load

factors during learning in technology-based environments (Liu, Lin, Tsai, & Paas, 2012; Kalyuga, 2012), there is no special issue edited especially for discussing the innovative technology-supported learning from the perspective of CLT.

The proposed special issue will offer insights into the current and future trends and research directions in managing cognitive load in technology based learning. As a starting point, submitted contributions may reflect one of the following research tracks, yet work that may introduce other relevant research topics is also invited:

- **Cognitive load aspects of technology used in the educational contexts:** This track relates to the exploration and evaluation of cognitive load resulted from learning in technology-based environments. It not only refers to the effective cognitive load induced by, but also to the unnecessary cognitive load imposed when using inappropriate technology, or using technology in an inappropriate way. Special interest is posed in ongoing projects investigating the appropriateness of using technologies in education from the perspective of Cognitive Load Theory.

- **Management of cognitive load for effective use of technology in the educational contexts:** This track may include projects regarding the strategies for managing cognitive load in using technology with the aim of promoting effective cognitive load and reducing extraneous cognitive load. Submitted contributions may provide the basis for new theoretical approaches to technology-based learning environment design in specific area of e-learning, such as computer-based learning environments, simulation-based learning environments, mobile device assisted learning environments, virtual classroom learning environments, etc.

- **New trends and research directions on technology based learning environment associated with Cognitive Load Theory:** Although cognitive factors have usually been neglected during the rapid development of technology designed for education, cognitive load researchers have identified these factors as significant aspects influencing the instructional effectiveness of technology. Research studies about cognitive load approaches in technology-based environments are expected to be collected in this special issue for directing the researchers and educators to justify the effectiveness of new technological developments and applications in education from a cognitive perspective. The special issue will focus especially on the following themes: mobile learning, multimedia based learning, simulation based learning, game based learning, virtual reality based learning, technology enhanced language learning, and the other areas relevant to technology enhanced learning.

Important dates

Submissions of initial papers due: **15 September 2014**

Decisions based on the double blind review process: **1 December 2014**

Revised manuscripts due: **1 March 2015**
Feedback on revised manuscripts: **1 April 2015**
Final manuscripts due by the authors: **15 May 2015**
Final manuscripts sent to the publishers: **15 June 2015**
Special Issue Publication: **October 2015**

Special Issue Guest Editors

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Submission guidelines

Interested authors are invited to submit full manuscripts by 15 September 2014 using the EasyChair system at:
<https://www.easychair.org/conferences/?conf=etssimcl2015>

Manuscripts should contain no more than 7000 words, and should follow the author guidelines available at the ETS website:
<http://www.ifets.info/rev.php?pub=true>

Manuscripts should be original, unpublished, and not being considered for publication elsewhere at the time of submission to Journal of Educational Technology & Society or during the review process.