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Interactions Between Cognitive Psychology, Educational Technology, and Computing in the Digital Age

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The Internet has been a revolution for the modern information society and many areas of everyday life. Digital learning is emerging and being adopted at an increasing rate. New Internet applications are introduced on an hourly basis and their use for learning and instruction quickly follows the general introduction to the Web community. Advantages for learning and instruction via the Internet include the freedom of learning anywhere and anytime, the flexibility of creating individualized learning environments for self-paced learning as well as individual learning preferences. Other advantages include the possibility for fostering interaction between students and facilitators, and the availability of help and feedback from peer learners and facilitators as well as the accessibility of nearly endless open educational resources (Ifenthaler et al. 2011, 2015; Isaias et al. 2012, 2015; Sampson et al. 2013, 2014; Spector et al. 2010).

Hence, information and communication technologies (ICTs) are playing a prominent role in the planning, design and implementation of digital learning systems and environments. Moreover, ICTs, along with changing pedagogical approaches, create new challenges for teachers, instructional designers, and educational leaders. Therefore, theoretical foundations, empirical research and technological advances at the intersection of cognitive science, instructional design, and educational technology are the underpinnings of the Cognition and Exploratory Learning in the Digital Age (CELDA); see http://www.celda-conf.org conference series. Articles in this special section of *Technology, Knowledge and Learning* stem from this interdisciplinary group of researchers, who are envisioning to

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facilitate empirical research and theory focused on contemporary issues related to both technological as well as pedagogical issues and its implications for learning and instruction.

1 Paper Selection Process

This special section is assembled from the extended versions of best papers from the 2014 International Conference on (CELDA; see http://www.celda-conf.org) that was held in Porto, Portugal in October 2014. Each contribution represents a unique research approach that addresses the interactions between human cognition and digital learning environments.

During the CELDA 2014 conference, the program chairs (also the co-editors of this special issue) and session chairs evaluated the paper presentations. Based on this evaluation and the previous results of the reviews, the best five papers for CELDA 2014 were selected. Authors of the best papers were invited to extend their manuscripts for a full journal article for *Technology, Knowledge and Learning*. Each of the authors submitted their full manuscript by the end of December 2014. Each manuscript was assigned to at least 2 reviewers of the special issue review board. Based on the comments of the reviewers and on the individual feedback of the guest editors, authors were asked to submit their revised manuscript by the end of February 2015 addressing the comments from the reviewers and from the guest editors. The final acceptance of manuscripts was completed by the end of April 2015.

2 Contributors to this Special Section

This special section begins with a work-in-progress article, *Learning Online: A Comparison of Different Media Types*. The authors, Franziska J. Kößler (Leopold Franzens University) and Marco M. Nitzschner (German Air Force Center for Aerospace Medicine), examined whether successful learning is related to using different types of media in online learning, using three experimental conditions. Findings suggest that videos including funny elements facilitate learning within foreign learning contexts.

Joan Ann Swanson (Skidmore College) and Erica Walker (Skidmore College) examine in an original research article, *Academic Versus Non-Academic Emerging Adult College Student Technology Use*, the academic and non-academic technology use by emerging adult college students. Findings indicate that emerging adult college students have distinct technology preferences and practices relating to both academic and non-academic use, and prefer contextualization of technology accordingly.

The work-in-progress article, *A Cross Cultural Perspective on Information Communication*, by Hale Ilgaz (Ankara University), Sacide Güzin Mazman (Ankara University) and Arif Altun (Ankara University), presents findings of an adapted instrument focussing on encountering and seeking of information as well as the competence of interpreting the of meaning of available information.

Matthew Bailey (Macquarie University), Dirk Ifenthaler (Curtin University), Maree Gosper (Macquarie University), Mandy Kretzschmar (Macquarie University), and Cheryl Ware (Macquarie University) examine in their original research article, *The Changing Importance of Factors Influencing Students' Choice of Study Mode*, why students choose different modes of study. The findings identified significant differences in the importance

of factors between initial and subsequent choices of enrolment mode, suggesting that the *lived experience* of students at a university influences their perception of which factors are important.

The special section concludes with an original research article, *Towards Competence-Based Learning Design Driven Remote and Virtual Labs Recommendations for Science Teachers*, by Panagiotis Zervas (University of Piraeus and CERTH), Stylianos Sergis (University of Piraeus and CERTH), Demetrios G. Sampson (University of Piraeus and CERTH), and Stefanos Fyskilis (University of Piraeus). The authors propose a recommender system for supporting learning design driven Remote and Virtual Labs recommendations taking into consideration teachers' profiling elements related to the ICT-supported teaching competences for using Remote and Virtual Labs.

The five papers of this special section demonstrate the many complex interactions between cognitive psychology, educational technology, and computing in the digital age. The theoretical foundations, insightful findings, and innovative technologies shall inspire future research and participation in the on-going conversation facilitated by the IADIS conference on *Cognition and Exploratory Learning in the Digital Age* (CELDA).

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