Editorial

An emerging – Social and emerging computing enabled philosophical paradigm for collaborative learning systems: Toward high effective next generation learning systems for the knowledge society

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ABSTRACT

The vast evolution of Social Computing in the last years and the tremendous improvement of novel technologies including cloud computing, open source technologies, recommender systems, personalized knowledge management systems, Big Data Systems, and Open Educational Resources approaches set a challenging context for the establishment of novel high effective approaches to Collaborative learning in both Business and Academia.

This editorial provides an overview of a magnificent top quality research collection of articles related to the New Generation Collaborative Learning Systems. It is an opportunity for a scientific debate for the enabling technologies and the required adjustments in Academic Programs and Executives Training programs worldwide. It is a bold contribution to a new philosophical paradigm for the need to promote flexible, open, collaborative learning beyond time, personality, and place constraints. It seems that the old fashioned classroom based learning has to be enriched or in some cases replaced by technological learning innovations fostering collaboration between learners.

Another important contribution of this special issue is the in depth discussion of a variety of requirements for next generation learning systems. This can be extremely useful for researchers interested on future research on the domain. Two more special issues on prestigious journals have been confirmed on similar topics for the next year in order to provide a continuity on this fascinating research domain that is directly linked to the vision of the Knowledge Society.

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1. The key pillars of a new philosophical paradigm for the next Generation Collaborative Learning systems

The modern approaches to the Knowledge Society Research, set a common understanding for the flow of knowledge and the implementation of the instruction toward high effective learning systems (Damiani, Lytras, & Cudré-Mauroux, 2010; Dascalu et al., 2015; García Barriocanal, Sicilia, Sánchez Alonso, & Lytras, 2011; Lytras, 2010; Lytras & Kurilovas, 2014; Lytras, Mathkour, Abdalla, Yáñez-Márquez, & Ordóñez de Pablos, 2014a; Lytras, Zhuhadar, Zhang, & Kurilovas, 2014b; Ordóñez de Pablos & Lytras, 2008; Vargas-Vera & Lytras, 2008; Zhuhadar, Yang, & Lytras, 2013). Several psychological factors as well as the role of technologies in the past have been studied in various academic forums. The last five years an intensive evolution of Social Media and Social Networks as well as various differentiations to the traditional static approaches to learning content has been realized. Thus a key shift from monolithic learning to dynamic flexible learning has also taken place, with many open issues still unsolved. It seems that a gap between technological pace and adoption in everyday practices still exists. The following are only a few considerations for the key open issues related to a transformation that is happening slowly in academia and businesses worldwide related to collaborative learning.

The first key understanding is that a critical unused capacity of knowledge and learning resources linked to problem solving skills exists in modern institutions. In our era where knowledge is everywhere there is currently an evolving process where everything delivered in courses or training sessions should be linked to well-defined learning objectives. According to our study this should stop as soon as possible. Creativity, Innovation and Technological Advancement linked to Sustainable development are terribly forced from this trend. Collaborative Learning should force institutions start thinking out of the box and most important collaborative learning should be a first good step for promoting students' ability to learn and to apply their knowledge toward innovations.

The second important finding is that technological innovations without an analysis of the psychological factors that release the potential of learners cannot be beneficial. The clustering of learners and the analysis of technological tools or applications on the context of collaborative learning require a detailed technology enabled understanding of learners needs.

Table 1
Linking collaborative learning infrastructure to evolving scenarios for collaboration.

| Evolving collaboration dimension | Pillars for next collaborative learning | | | | |
Evolving scenarios	Enabling technologies	Psychological factors	Learning dimension	Knowledge management	Social networking infrastructure
A. Static					
B. Dynamic Diffusion					
C. Context awareness/personalization					
D. Competencies management					
E. Problem solving					
F. Innovation					
G. Big data – international collaboration					

One more interesting finding is that evaluation of collaborative learning should be multidimensional. Unfortunately the current grading systems worldwide provide a static monolithic approach to the measurement of performance. Institutions should move forward to new grading systems where courses grouped in Levels should not stick on a rigid way to counting of points based on memorization or definitions of concepts without testing critical thinking and other abilities.

Additionally there should be a fast movement toward Open Educational Resources and Open Knowledge Management Systems. Collaborative learning implies access to huge databases of open access educational materials. Currently the Industry of Academic Research is setting a number of biased approaches to the diffusion of knowledge. We do believe that in the next years several initiatives with the bold contribution of technology will be launched offering new opportunities for the exploitation of knowledge.

One more pillar for a new philosophical shift in Collaborative Learning in the Context of the Knowledge society is the International Dimension. It should be a key priority of Academic Institutions in the future to build strong relationships with an emphasis on common programs and shared portfolios. Centers of Excellence should go beyond local boundaries and they have to establish collaborative learning infrastructures for high impact Research. Without this we do believe that local constraints will always limit the implications of research and the potential benefits toward a humanitarian vision for the next generation society. We should invest on this as a Mankind and as a Humanity.

In the next section we provide an overview of the open research issues related to the special issue theme.

2. The collaborative learning as a phenomenon under research

The multidisciplinary nature of learning sets many different variables for the study of the phenomenon. Collaboration adds incremental complexity since humans are complex mental and learning entities.

To our study a number of Integrative Dimensions were investigated. The following overview sets many research questions and provides an integrative context for the study of collaborative learning as a Phenomenon. For each of these dimensions a detailed list of design guidelines for next generation learning systems can be attached. Without any doubt each of the bullets in the following list provides a starting point for further research. To our opinion in the next five years a number of PhD awards will be nominated to individuals that will set in the focus of their analysis various aspects of the Phenomenon. Additionally several R&D projects will be initiated from the combination of these perspectives. In the next year we are going to publish an edited book on the analysis of these Design Guidelines for Next Generation Collaborative Learning systems.

A. Enabling Technologies for Next Generation Collaborative Learning systems
- Semantic Models
- Augmented Reality
- Virtual Labs
- Collaborative Cloud
- Classroom 2.0
- Open Linked Data
- Text mining
- Human Computer Interfaces for Collaborative Learning
- Annotation systems
- Social Recommendation systems
- Intelligent Agents
- Model Driven Design and Context Awareness
- Interoperability
- Assistive technologies
- Patterns Classification
- Clustering Technologies
- Crowdsourcing
- Aspect Oriented Design

B. Psychological Factors for Next Generation Collaborative Learning systems
- Critical Thinking Competence
- Exploratory Study
- Technostress
- Acceptance Models
- Sentiment Detection
- Human Decision Accuracy
- Victimization
- Exclusion
- Peer-supported badge attribution
- Modeling Mobility and Psychological Stress
- Behavioral Modeling
- Memory Difficulties
- User's Personality
- Collective Attention
- Collective Memory

C. Learning Dimension for Next Generation Collaborative Learning systems
- E-Feedback
- Informal Learning
- Simulation
- Context awareness
- Learning Standards
- Learning Annotations
- Learning Outside the Classroom
- Learning in Massive Open Online Courses
- Learning Interventions
- Microblogging Management