



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 Evolving scenarios	Pillars for next collaborative learning				
	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

- Online Communities
- Barrier Framework
- Requirements-Driven Collaboration
- Collaborative Competencies
- Teaching Skills development

D. Knowledge Management Infrastructure for Next Generation Collaborative Learning systems

- Competencies Management
- Massive Open Educational Resources
- Semantic Enrichment
- Quality Assurance
- Innovation management
- Knowledge Mobilization
- Data Management Maturity Model
- Knowledge-based public service
- Organizational Learning
- Knowledge Acquisition
- Talent Management
- Human Organizational Patterns
- Intellectual Capital management
- Media Supported Knowledge Management
- Ontology Based Interaction Process Design
- Business-IT alignment models
- Thesaurus-based and corpus-based approaches

E. Social Networking/Collaborative Infrastructure for Next Generation Collaborative Learning systems

- ICTS enabled networking
- Socioeconomic Profiles
- Wireless Body Area Networks
- Mining Social Network Users Opinions
- Social Media Mining/Usage
- Visual Network analysis
- Social Bookmarking Services
- Service quality
- Connectivity Experience

3. The emerging philosophical paradigm for next Generation Collaborative Learning

The previous overview of factors that contribute to the understanding of the next Generation Collaborative Learning in the era of Social Networks and Mobile Technologies is a good input for further insights. Our main finding from a desktop research based on the contributing articles of this special issue is that collaborative learning can be analyzed in 7 different contexts presented as Evolving Dimensions for Collaborative Learning in the next table (See Table 1).

These 7 Evolving scenarios require a multidimensional study of all the factors in each of the pillars. Additionally each cell in the provided table is a key variable for any future research. For example combining some of the factors already presented in previous section we can have some quite interesting titles for future research projects or Thesis on the domain:

- Semantic Models for Behavioral Modeling in Microblogging Learning Communities
- Text mining for Social Profiles Management and Recommender systems in Business Executives Collaborative Training
- Problem solving based Collaborative learning using social media annotations in semantically enriched business meeting
- ...

4. Overview of the special issue

More than 85 full research articles are presented in this special issues. They all provide significant insights for the special theme and set an interesting context for further scientific debate.

- Well-Formed Semantic Model for Co-Learning
- Using New Learning Methodologies and Resources in the Development of Critical Thinking Competency: An Exploratory Study in a Virtual Learning Environment
- Usability of a cloud-based collaborative learning framework to improve learners' experience
- The Role of e-Feedback: Enhancing Teaching Performance and Student Learning Behavior in eLearning Environment
- The efficiency of different ways of informal learning on firm performance: a comparison between, classroom, web 2 and workplace training
- THE EFFECT OF COMPETENCES ON LEARNING RESULTS IN AN EDUCATIONAL EXPERIENCE WITH A BUSINESS SIMULATOR
- The Co-learning process in Healthcare Professionals: Assessing User Satisfaction in Virtual Communities of Practice
- The co-learning in the design, simulation and optimization of a solar concentrating system
- Technostress in ICT Enabled Collaborative Learning Environment: An Empirical Study among Indian Academician
- Status of Human Computer Interface: To Develop New ICT based Healthcare Technology for Community Health Workers in Rural India
- Special issues: Factors Influencing Acceptance of E-learning by Teachers in the Czech Republic
- Sentiment Detection in Social Networks and collaborative learning environment
- Semantically Enriched Massive Open Online Courses (MOOCs) Platform
- Selection Criteria for Text Mining Approaches
- Secure Transfer of Environmental Data to Enhance Human Decision Accuracy
- Searching for experts in a context-aware recommendation network
- SCHOM. A Tool for Communication and Collaborative E-Learning
- Recommending Suitable Learning Paths According to Learners' Preferences: Experimental Research Results
- Quality tools to improve the communication level in the surgery department at a local hospital
- Purpose of Social Networking Use and Victimization: Are there any differences between University Students and those not in HE?
- Public Policies based on social networks for the Introduction of technology at home: Demographic and Socioeconomic Profiles of Households
- Peer-supported badge attribution in a collaborative learning platform: the SAPO Campus case
- OPEN LINKED DATA AND MOBILE DEVICES AS E-TOURISM TOOLS. A PRACTICAL APPROACH TO COLLABORATIVE E-LEARNING
- OPEN EDUCATIONAL RESOURCES REPOSITORIES - TOWARD A COMPREHENSIVE QUALITY APPROACHES FRAMEWORK
- Note-Taking as a Main Feature in a Social Networking Platform for Small and Medium Sized Enterprises
- Notes and Annotations as Information Resources in a Social Networking Platform
- New Service Innovation Success: Analyzing the influence of performance indicator nature

- Moving from research on preservice teachers to co-learning with preservice teachers: Employing website design for knowledge mobilization
- Modeling Mobility and Psychological Stress based Human Postural Changes in Wireless Body Area Networks
- Mining Social Network Users Opinions to Aid Buyers' Shopping Decisions
- MD3M: The Master Data Management Maturity Model
- Mapping Development of Social Media Research through Different Disciplines: Collaborative Learning in Management and Computer Science
- Management of Social Networks in the Educational Process
- Learning Outside the Classroom through MOOCs
- Learning in Massive Open Online Courses: Evidence from Social Media Mining
- Learning from Customer Interaction: How Merchants Create Price-Level Propositions for Experience Goods in Hybrid Market Environments
- Knowledge-based public service transactions: An intelligent model-driven approach in co-learning contexts
- Knowledge workers' collaborative learning behavior modeling in an organizational social network
- Knowledge Map-Based Web Platform to Facilitate Organizational Learning: Return of Experiences
- Knowledge Acquisition from Social Platforms Based on Network Distributions Fitting
- Interoperability between platforms without a defined referential model: A semi-automatic learning system for structural pairing
- Intercultural Talent Management Model: Virtual communities to promote collaborative learning in indigenous contexts. Teachers' and students' perceptions
- INTANGIBLE CULTURAL HERITAGE: TOWARD COLLABORATIVE PLANNING OF EDUCATIONAL INTERVENTIONS
- Incorporating Microblogging ("Tweeting") in Higher Education: Lessons Learnt in a Knowledge Management Course
- iM-SIMPLE: iMproved Stable Increased-throughput Multi-hop Link Efficient Routing Protocol for Wireless Body Area Networks
- Implementing assistive technologies: A study on co-learning in the Canadian elementary school context
- Impact of Social Media Usage on Students Academic Performance in Saudi Arabia
- ICT and collaborative co-learning in preschool children who face memory difficulties
- Human-Oriented Design of Secure Machine-to-Machine Communication System for e-Healthcare Society
- Human Organizational Patterns Applied to Collaborative Learning Software Systems
- How to Find People Who Can Help to Answer a Question? - Analyses of Metrics and Machine Learning in Online Communities
- How intellectual capital influences individual performance: A multi-level perspective
- Green Information Technology Influence on Car Owners' Behavior: Considerations for their Operative Support in Collaborative eLearning and Social Networks
- From E-Learning to Social-Learning: Mapping Development of Studies on Social Media-Supported Knowledge Management
- Feature Selection for Event Discovery in Social Media: a Comparative Study
- Exploring Co-Learning Behavior of Conference Participants with Visual Network Analysis of Twitter Data
- Enhancing Students' Learning Process through Interactive Digital Media: New Opportunities for Collaborative Learning
- Enhanced Engineering Education using Smart Class Environment
- Emotion Ontology for Collaborative Modeling and Learning of Emotional Responses
- Electronic service quality of Facebook social commerce and collaborative learning
- Does content categorization lead to knowledge building? An experiment in a social bookmarking service
- Do Facebook profile pictures reflect user's personality?
- Designing e-Coordinator for Improved Teams Collaboration in Graduation Projects
- Creation of Web 2.0 Tools Ontology to Improve Learning
- Creating Recommendations on Electronic Books: A Collaborative Learning Implicit Approach
- Collective attention in the age of (mis)information
- Collaborative learning in postgraduate level courses
- Collaborative learning in environments with restricted access to the Internet: policies to bridge the digital divide and exclusion in prisons through the development of the skills of inmates
- Collaborative learning based on associative models: application to pattern classification in medical datasets
- Collaborative Competencies in Professional Social Networking: Are students short changed by curriculum in Business Education?
- Co-LAEEBA: Cooperative Link Aware and Energy Efficient Protocol for Wireless Body Area Networks
- Cloud computing service for knowledge assessment and studies recommendation in crowdsourcing and collaborative learning environments based on social network analysis
- Characterization of Web Browser Usage on Smartphones
- Barriers in Achieving Business/IT Alignment in a Swedish Large Company: What We have Learned?
- Augmented Reality to Promote Collaborative and Autonomous Learning in Higher Education
- Aspect Oriented Design for Team Learning Management System
- Applying Recommender Systems in Collaboration Environments
- Analyzing Ant Colony Optimization Based Routing Protocol against Hole Problem for Enhancing User's Connectivity Experience
- Analysis of the effects of ICTs in knowledge management and innovation: the case of Zara Group
- An ontology-based approach for representing the interaction process between user profile and its context for collaborative learning environments
- An Evaluation Framework for Comparing Business-IT Alignment Models: A Tool for Supporting Collaborative Learning in Organizations
- An Approach of Multidisciplinary Criteria for Modeling Alternatives of Flexible Working
- Agile Requirements Engineering Practices and Challenges: Findings from a Systematic Literature Review
- Adopting the metadata approach to improve the search and analysis of educational resources for collaborative learning
- A User-centered and Group-based Approach for Social Data Filtering and Sharing
- A synergistic approach between a thesaurus-based approach and a corpus-based approach to build an ontology for multilingual search engine

- A Social Network-Based Teacher Model to Support Course Construction
- A Pedagogical Model to Develop Teaching Skills. The Collaborative Learning Experience in the Immersive Virtual World TYMMI
- A GAMIFIED COLLABORATIVE COURSE IN ENTREPRENEURSHIP: FOCUS ON OBJECTIVES AND TOOLS
- A Framework to Study Requirements-Driven Collaboration among Agile Teams: Findings from Two Case Studies
- A Collaborative-based approach for Avoiding Traffic Analysis and Assuring Data Integrity in Anonymous Systems
- A collaborative user-centered framework for recommending items in Online Social Networks
- A Collaborative testbed Web Tool for Learning Model Transformation in Software Engineering Education
- A Collaborative Learning Lesson from using Effective Information Technology Combinations
- A collaborative learning approach for geographic information retrieval based on social networks
- A Barrier Framework for open E-Learning in Public Administrations

5. Conclusions – Looking into the near future

The topic of this special issue is significant. The collaborative learning will gain increasing importance in the next ten years. Our prediction is that in less than 15 years most academic institution will have to change their learning strategy. The vast majority of learning in the next 20 years will be offered through flexible open out of the classroom approaches mainly supported by applications and mobile devices as well as wearable technologies. We also predict that in less than 20 years informal learning will gain the same importance to formal learning thanks to technologies powered by collaborative learning infrastructures. Last but not least entrepreneurship based on this approach will be must in less than 10 years and next bold innovations in technology will be due to the exploitations of the international dimension of collaboration that we presented in this editorial.

It is a big Challenge for our Humanity to see the benefits of Collaborative Learning and to pursue humanistic visions for the well being of our world. It is the only way to deal with local tensions based on religious, economic, cultural or political differences. A New Deal for our World is needed. We do believe that this special issue is a small contribution to for common vision for a better world for all.

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