

Editors:

Prof. Roberto Revetria, Univ. Degli Studi di Genova, Italy
Prof. Valeri Mladenov, Technical University of Sofia, Bulgaria
Prof. Nikos Mastorakis, Technical University of Sofia, Bulgaria

**RECENT ADVANCES IN
EDUCATION AND
EDUCATIONAL
TECHNOLOGY**

Proceedings of the 8th WSEAS International Conference on
Education and Educational Technology (EDU '09)

Host and Sponsor:

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University of Genova, Genova, Italy, October 17-19, 2009

Recent Advances in Computer Engineering
A Series of Reference Books and Textbooks

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Preface

This year the 8th WSEAS International Conference on EDUCATION and EDUCATIONAL TECHNOLOGY (EDU '09) was held in the University of Genova, Genova, Italy, October 17-19, 2009. The conference remains faithful to its original idea of providing a platform to discuss educational software and development, computers for education, distance learning and distance teaching, intelligent robots as teachers, web-based education, virtual school, virtual classroom, studies in engineering and the needs of the production and market, supervision and re-organization of laboratories with new technologies, promotion of the cultural heritage through educational technologies, web voting, web banking, e-democracy, e-commerce, e-health services etc. with participants from all over the world, both from academia and from industry.

Its success is reflected in the papers received, with participants coming from several countries, allowing a real multinational multicultural exchange of experiences and ideas.

The accepted papers of these conferences are published in this Book that will be indexed by ISI. Please, check it: www.worldses.org/indexes as well as in the CD-ROM Proceedings. They will be also available in the E-Library of the WSEAS. The best papers will be also promoted in many Journals for further evaluation.

A Conference such as this can only succeed as a team effort, so the Editors want to thank the International Scientific Committee and the Reviewers for their excellent work in reviewing the papers as well as their invaluable input and advice.

The Editors

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Plenary Lecture 1

Media Education in Contemporary Learning Environments: Thinking Sustainable Development



Professor Andreja Istenic Starcic
University of Ljubljana
Faculty of Civil and Geodetic Engineering
Jamova 2
Ljubljana 1000
SLOVENIA

University of Primorska
Faculty of Education
Cankarjeva 5
Koper 6000
SLOVENIA

E-mail: andreja.starcic@siol.net

Abstract: The questions of media education and design of new learning environments which integrate virtual learning environments will be explored from different angles. Media education integration in curricula from early education to university and lifelong learning assisting implementation of new educational technologies is focal point of educational systems in EU. However there is little comparative analysis in the field, so the theoretical framework will be outlining comparative multidisciplinary approaches connecting didactic theories with communication theories and practices focusing on knowledge building impacts of visual and spatial thinking in contextual media culture and education. The basic assumption for comparative analysis of media education and virtual environments influencing teaching, learning process and outcomes quality, efficiency, and decision-making models is that meanings are shared/distributed and interpreted through many representational and communicative means. Further will be investigated how they affect teaching and learning and which are basic tensions among variety of factors shaping arena for research. The paper focuses on learning in formal institutions and the curricular knowledge, and how the formal educational environments integrate virtual learning environments in the teaching and learning practices.

Brief Biography of the Speaker:

Andreja Istenic Starcic holds a B. Sc. in Sociology of Culture (1998) and Ph.D. in Education (2002) University of Ljubljana, Slovenia. She received habilitation for assistant professor in didactics and educational technology and habilitation for research in management. Her research interests include social impacts of information and communication technology, information communication systems for professional development, knowledge management, educational technology, media education, computer supported collaborative learning, web-based communities, simulation and game-based learning, sustainable development.

She has been acting as a member of research groups:

- Research in education (2000-2002), University of Ljubljana, Faculty of Arts and Humanities;
- Management and informatisation of education and employability (2004-2004), University of Primorska, Faculty of Management;
- E-construction engineering (2006-), University of Ljubljana, Faculty of Civil and Geodetic engineering, Institute of Construction, Earthquake Engineering and Computing.

She has been developing ICT assisted learning environments for all levels of education and adult education since 1993. She is devoted to teacher education and professional development and had developed the first e-learning courses for university teachers and adult educators in Slovenia. Present research projects are: Intensive e-learning introduction for rising educational level and suppress regional discordance in Slovenia, I3CON – Industrialised Integrated Intelligent Construction, Virtual International Business Management Learning Environment for Hospitality and Destination Management, Education for Sustainable Development in the Built Environment in Slovenia.

Dr. Istenic Starcic has published several referred journal and conference papers, workbooks and monographs. Her publication also includes invited state-of-the-art chapters in international scientific monographs. She is in editorial board of international journal IJET <http://online-journals.org/i-jet/about>.

Dr. Starcic is a convenor in The European Educational Research Association EERA Didactic section <http://www.eera-ecer.eu/networks/didactics/>

She was giving courses at Belfast Queens University Northern Ireland, Lulea University of technology Sweden, and University of Turku Finland.

Plenary Lecture 2

The Strategic Role of New Education Technologies with Relation to Usage of ICT Supported Knowledge Management Models for Competitiveness and Performance Management Improvement



Professor H. C. Vladimir Simovic
Dean of the Faculty of Teacher Education
Savska cesta 77, Zagreb HR-10000
University of Zagreb, Croatia
E-mail: vladimir.simovic@zg.t-com.hr

Abstract: We live in a time of fast and big changes, accelerated communication and information exchange, which is inevitably reflected in the educational system and so often called “the era of informatics and communication”. Accelerated changes demand quick response. Lifelong education has become an imperative for further survival on the market. This paper describes research done due to implementation of few different e-learning platforms, with the intention to have bigger productivity of knowledge exchange and the right to the access to information. During the process of developing this project, besides numerous advantages that an e-learning system offers, we (used in paper instead “my team”) have encountered some disadvantages. The greatest problem, it has turned out to be, is the protection against breach of copyright that occurs on a daily basis due to the speed and the simplicity of information exchange. Here one can see clearly the strategic role of these relatively new education technologies in one company or concrete educational system with relation to usage of ICT supported knowledge management models for competitiveness and performance management improvement.

Knowledge management can bring many benefits, like: the preservation of intellectual capital and better utilization of knowledge available within the company, improved effectiveness of employees due to development a unified knowledge database, stronger linkages and collaboration among experts in specific areas, better knowledge transfer following acquisitions of other companies, etc. Setting up a system that supports and enables knowledge management is a crucial prerequisite for enabling further KM (Knowledge Management) development, but this is not the end. Further stages should focus on embedding the associated practices and the corresponding values of cooperation and knowledge sharing with a loose network of distant collaborators throughout the organization. However, benefits achieved from the KM initiative, tend to outweigh costs and risks, therefore making these challenges worth facing. Every organization has its own identity and language. Therefore, the KM barriers and methods described in this paper should not be taken by organizations as the only, or the best way to do KM, but merely as a well-founded basis for discussion to help them with further definition of their own specific KM framework.

Keywords: strategy, communication, education, e-learning, copyright, knowledge management, performance management

This research was part of main Scientific research named “Analytical Model for Monitoring of New Education Technologies for Long life Learning“, and conducted by Ministry of Science, Education and Sports of the Republic of Croatia (Registered Number 227-2271694-1699).

Brief Biography of the Speaker:

Vladimir Simovic is a professor of Information Systems at the University of Zagreb, Croatia, where he is a dean at the Faculty of Teacher Education, and has also the scientific and professional responsibility for the development of various Information Systems. His main teaching and research interests concern various areas of information systems, project management and analysis. In these fields, he authored or co-authored over 5 books and 100 scientific papers published in reviewed journals or presented at international conferences. As the Fellow of the IIAS (The International Institute for Advanced Studies in Systems Research and Cybernetics - University of Windsor - Canada, Ontario) he also received Dr. Honoris Causa in Economics and Informatics aspects of Financial Modelling. He was main project leader of professional information science project of an international character (based on the competition of World Bank and Ministry of Finance of the Republic of Croatia) and also scientific researcher & lecturer at international EU TEMPUS program. He was editor, publisher and member of the organisational and editorial board of more than 7 editions of the international scientific journal in the area of the Communication, Information and Economic Sciences in the Knowledge Society (which was organised as a part of the International Conference on Systems Research, Informatics and Cybernetics - in Baden-Baden, Germany). He published articles for 12th WSEAS International

Conference on SYSTEMS in Crete (Greece) and for 7th WSEAS transactions on computers, and article for IEEE Region 8, Eurocon 2007 Conference in Warsaw (Poland). He received mentions in international books, and he was honoured with Best Lecturer Medal Award, and with more than 6 Best Paper Awards from IIAS, etc. Above all he is member of HDOI (Croatian Society for Operational Research) based in Zagreb; HSUSES (Croatian professional association of experts and court appointed experts) based in Zagreb; MH (Central Croatian Cultural and Publishing Society) based in Zagreb, and he is the director of ECNSI (European Center for Advanced and Systematic Research) with headquarters in Zagreb.

Plenary Lecture 3

Introducing Sustainable Development Concept and "Human Being Teaching" in a Scientific Engineer School: A Difficult Challenge but a Collective Responsibility



Professor Philippe Dondon
ENSEIRB Rue A Schweitzer 33400 Talence
France
E-mail: Philippe.Dondon@enseirb.fr

Abstract: Since a few years, politics and scientific specialists speak about sustainable development. They describe the future trend for the world. The question is how University teachers can contribute to this new deal with their students. First, a state of art in France will be done. Then, we will present the main difficulties and resistances in introducing this new way minding in scientific engineer school. We will speak about some human development tools usable to improve the human being and behaviour. Finally, we will give some concrete examples we are doing in our electronic department for sensitizing students to human behaviour impact and concrete electronic project in the way of sustainable development. At least, we will discuss about a possible extension of the concept and a redefinition of electronic teaching totally based on sustainable development.

Brief Biography of the Speaker:

Dr. Ph. Dondon was born in 1960. After his electronic engineer diploma in 1983, he worked first 5 years as product manager in T.R.T, a french radiocommunication systems company. Then, he received the Ph.D. in Bordeaux from IXL laboratory in microelectronic design in 1992.

He has a great experience in electronic teaching and is also involved in pedagogy method process.

He is also working on motivation and psychological process of teaching with Yoga masters and psychotherapist.

He has published more than 40 papers in Journals and international Conferences. He took five patents in micro electronic circuits design.

Plenary Lecture 4

Understanding Electric Railway Systems as Industrial Ecosystems, an Example of Education for Industrial Ecology



Associate Professor Cornelia Aida Bulucea

Electrical Machines and Environmental Engineering Department
Faculty of Electromechanical and Environmental Engineering
University of Craiova
ROMANIA

E-mail: abulucea@gmail.com

Abstract: The credibility as a science of Industrial Ecology and the novelty value of the socio-technical-ecological world trying to find analogies between industrial systems and natural ecosystems represent the main attempt of this educational study. Industrial Ecology considers the technical systems created by humans and the ecological systems of Nature as parts of the same system, the industrial ecosystem, that can exist on a multitude of temporal and spatial scales. Within the framework of sustainability, Industrial Ecology implies a new picture of energy and matter conversion systems, and aims in designing the technical systems more like ecosystems. The laws of the Universe should be used in assessing the viability of the human technical applications according to the ecosystems models. This study presents an electric railway transportation system surrounded by two physical environments: a technical one and an ecological one. The two environments are interconnected via sustainability and exergy, due to its multidisciplinary traits, is the unique metric. Drawing up a description of the electric railway system as an industrial ecosystem, with its limits and components, defining the systems operation regimes and assessing the equilibrium points of the system within the two reference frames represent the compulsory steps of the industrial ecosystem metabolism analysis. If we really want the humans world as a vital part of the living nature, then we must accept and understand the credibility of Industrial Ecology in science, education and development of the society.

Brief Biography of the Speaker:

Cornelia Aida Bulucea is currently an Associate Professor in Electrotechnics, Electrical Machines and Environment Electrical Equipments in the Faculty of Electromechanical and Environmental Engineering, University of Craiova, Romania. She is graduate from the Faculty of Electrical Engineering Craiova and she received the Ph.D degree from Bucharest Polytechnic Institute. In Publishing House she is author of four books in electrical engineering area. Research work is focused on improved solutions for electrical networks on basis of new electric equipments and environmental impact of energy and electric transportation systems. She has extensive experience in both experimental and theoretical research work, certified by over 50 journal and conference research papers and 13 research projects from industry. She has held in the Association for Environment Protection OLTENIA and she is a regular invited keynote lecture for environmental engineering symposia organized by Chamber of Commerce and Industry OLTENIA. Due to WSEAS recognition as huge scientific Forum she participated in five WSEAS International Conferences, presenting papers and chairing sessions. She was Plenary Lecturer in the WSEAS International Conference on POWER SYSTEMS, held by the University of Cantabria, Santander, Spain, September 23-25, 2008. She is very proud of her 10 papers published in the WSEAS Conferences Books and 3 papers published in WSEAS TRANSACTIONS ON ENVIRONMENT AND DEVELOPMENT, and in WSEAS TRANSACTIONS ON ADVANCES IN ENGINEERING EDUCATION.

Plenary Lecture 5

Employability Skills Framework for Engineering Graduate in Malaysia



Associate Professor Azami Zaharim

Head Centre for Engineering Education Research, Faculty of
Engineering and Built Environment

And

Head for Renewable Energy Resources and Social Impact Research Group,
Solar Energy Research Institute (SERI)

Universiti Kebangsaan Malaysia

43600 UKM, Bangi, Selangor

MALAYSIA

Email: azami@vlsi.eng.ukm.my

Abstract: The purpose of this paper is to propose a engineering employability skill framework that will allow the concept to be explained easily and that can be used as a framework for working with engineering graduates to develop their employability before entering workforce. The framework was developed from existing researches on engineering employability skill issues and the requirement of the accreditation of engineering programme. The various criteria of employability skills related to engineering included in the framework are discussed and their criteria justified bases on literature review of existing studies. The framework sets out exactly what is meant by engineering employability, in clear and simple terms, and the framework suggests directions for interaction between the various criteria that being identified. The framework can be used to explain the concept of employability to those new to the subject, and particularly to engineering students and their future employer. It will be a useful tool for lecturers, careers advisors, employers and any other practitioners involved in employability skills. It will also be used to develop a model and a measurement tool for engineering employability skill. This paper contributes insights into the linking of graduate attributes, using national accreditation criteria and the framework of engineering employability skills from locally and globally expectation.

Brief Biography of the Speaker:

Azami Zaharim worked first 13 years as a lecturer in the Universiti Teknologi MARA (University of MARA Technology - UiTM) before joining the Universiti Kebangsaan Malaysia (National University of Malaysia - UKM) in the year 2003. He is Associate Professor at the Faculty of Engineering and Built Environment UKM, and is currently Coordinator for the Unit Fundamental Engineering Studies. He obtained his BSc(Statistics and Computing) with Honours from North London University, UK in 1988 and PhD (Statistics) in 1996 from University of Newcastle Upon Tyne, UK. He specialize in statistics, public opinion, engineering education and renewable energy resources.

He has until now published over 80 research papers in Journals and conferences, conducted more than 15 public opinion consultancies and delivered 3 keynotes/invited speeches at national and international meetings. He is currently the head of Renewable Energy Resources and Social Impact Research Group under the Solar Energy Research Institute (SERI). In the year 2007, he headed the Engineering Mathematics Research Group. At the same time, he is currently active involve in outcome based education (OBE) approach at the national level and the chairman of the Engineering Education Research Group since 2005. He is also involved actively in the research for the future of engineering education in Malaysia 2006 under the Ministry of Higher Education of Malaysia.

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