

Editors

Nikos Mastorakis
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Latest Advances in Educational Technologies



**Proceedings of the 11th WSEAS International Conference
on Education and Educational Technology (EDU '12)**



Singapore City, Singapore, May 11-13, 2012





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Preface

This year the 11th WSEAS International Conference on Education and Educational Technology (EDU '12) was held in Singapore City, Singapore, May 11-13, 2012. The conference provided a platform to discuss computers for education, distance learning, classroom monitoring, education reforms, web-based education, educational software and development, privacy issues for education, web-management of education, environment and educational technologies, management of educational institutes, quality assurance in educational technologies 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 this conference are published in this Book that will be sent to international indexes. They will be also available in the E-Library of the WSEAS. Extended versions of the best papers will be promoted to many Journals for further evaluation.

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

Research of Efficiency of Use of Multimedia in the Technical Education – For the Purpose of Long Lasting Knowledge



Professor Jozica Bezjak

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Abstract: In modern school different levels of teaching, besides gaining knowledge, are becoming more and more important, especially didactics and use of modern teaching technologies. The purpose of our research was to establish the use of multimedia at science classes in spite of only 5 days a year of additional permanent technical education for teachers, granted by law. We were interested in multi-level use of computers at science classes and teachers methodical approaches. The research included all science teachers in technical and vocational schools all over Slovenia. We can conclude that teachers have given the multimedia method more than big advantage over classical methods. Rationalization and efficiency improvement points of view were especially emphasized as the results have improved for more than half according to standard methods. Insufficient knowledge about multimedia and its advantages over classical methods was noticed among science teachers. But teachers gave multimedia big support in science classes and they exposed how necessary is to start using multimedia in future.

Brief Biography of the Speaker: Jozica Bezjak is a professor of education at the University of Primorska. In the field of education she graduated, made her master and her PhD she made out of contemporary materials and technologies at the University of Ljubljana, Faculty of natural sciences and engineering. She takes the science research of new materials and technologies out of medicine and technique – shape memory alloys, contact materials in microelectronics and technik. Her second degree she achieved in a special field of engineering pedagogic: »ING – PEAD IGIP«. Afterwards he made her second PhD out of engineering pedagogic at the Alpen Adria University of Klagenfurt in Austria. Since 1986 she take her research, science and pedagogic work on the different science and pedagogic institutions: University of Ljubljana, Faculty of natural sciences and engineering, University of Ljubljana, Faculty of pedagogic, University of Primorska, Alpen Adria University Klagenfurt, University Usti nad Labin (Czech Republic). At the University Usti nad Labin she taught courses at the graduated and post-graduated program mathematic-technic, physic-technic and pedagogic.

More than 692 works of her is to find in COBISS, of which more than 20 monographs. She received numerous of honors and awards – Sokrates excellence SOVA for the highest achievements in the field academic didactic ("special engaged and excellent teaching in higher education"), she was awarded with the highest national award of Slovenia for the highest achievements in scientific research and teaching (2005). She is the president of the Association of Teachers of technical creativity of Slovenia. Over the last ten years (2003 - 2011) was also president of the Organizing and Scientific Committee and editor of the International Scientific Symposium "Technical creativity in school's curricula with the form of projectlearning "From idea to the product" - from the kindergarten to the technical faculty", Portoroz, Slovenia.

Plenary Lecture 2

Evaluating the Quality of Teaching within an ICT-Rich Environment



Professor Hung-Jen Yang

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Abstract: This longitudinal, empirical research was set out to identify the quality evaluation of information and communication technology with ICT-rich environment. The research was carried out for one semester in order to obtain a holistic view of the way teachers implement ICT and of the quality they intend to maintain. The main data collection techniques employed were participant observation, reflecting thinking documented by teachers after implementing ICT teaching and system log of ICT teaching activities. The data analysis, derived from these 22 teachers' response in ICT applying, suggests five quality categories: adaptability, integration, sustainability, professional development and technology support.

Brief Biography of the Speaker: Hung-Jen Yang got master of industrial technology from University of North Dakota USA in 1989 and Ph.D. of Industrial education and technology from the Iowa State University, USA in 1991. From 1991 to 1994, he worked as an associate professor in Ping-Tong University of Education and was in charge of computer center to promote computer assist instruction and internet-working service. After 1994, he is working for the department of industrial technology education in the National Kaohsiung Normal University. National Science Council in Taiwan had contracted with Dr. Yang for more than twenty research projects in last twenty years. He also supports Ministry of Education by creating information system of teacher in-service education. Technology education and teacher education are two major educational research areas focused by Dr. Yang. Other than educational research, he is also involved deeply with topics of knowledge engineering, communication technology, electronic engineering, and automation technology.

Plenary Lecture 3

Radical Change in Education caused by Technology



Professor C. Sidney Burrus

Professor and former Dean

Rice University, Houston, Texas

USA

Adjunct Professor at Beijing JT University

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Abstract: Dramatic changes in education are happening just now because of the convergence of information technology, social networking, advances in cognitive science, changes in copyright laws, and the advent of "Open". Open Educational Resources (OER) such as Connexions (cnx.org), OpenCourseWare (OCW), and Wikipedia are just the beginning in lowering the cost, increasing the quality, and extending the access of educational content. Now we have the on-line educational projects at Stanford and MIT providing free courses anywhere there is Internet connectivity. This paper will report on advances in OER and on-line course delivery together with research on "personalized learning" systems using machine learning.

Brief Biography of the Speaker: C. Sidney Burrus is the former Dean of Engineering, the Maxfield-Oshman Professor Emeritus of Electrical and Computer Engineering, and Senior Strategist of the Connexions Project at Rice University in Houston, Texas. Over the last 40 years, he has been Dean of Engineering, Chair of the Electrical Engineering Department, and Director of a Research Institute at Rice. He has authored 5 books and over 250 articles on Digital Signal Processing, received teaching awards from Rice, and received research awards from the IEEE (Institute of Electrical and Electronic Engineers) and others. He received a senior Humboldt Award in 1975 and was a senior Fulbright Fellow in 1979. His research has been supported by the NSF, DARPA, AFOSR, NASA, and industrial grants. He is a Fellow of the IEEE, Fellow of the AAAS, received the IEEE Kilby Medal, and received the Association of Rice Alumni Gold Medal.

The Connexions Project started in 1999 at Rice University to apply modern technology and theory to education. It has grown to be one of the most used Open Educational Resources (OER) in the world. Burrus has been closely involved with it since its founding and has lectured and published widely on it.

Prof. Burrus received his PhD from Stanford, has held visiting positions at MIT and the University of Erlangen in Germany, and is an Adjunct Professor at the Beijing Jiaotong University. He was on the founding committee for International University Bremen (Now named Jacobs University); is a consultant on the founding of Tan Tao University in Vietnam; and is on the School of Science and Engineering advisory board of the Lahore University of Management Sciences in Lahore, Pakistan. He was one of the founding teachers in the Indo-US Collaboration in Engineering Education (IUCEE).