

The 8<sup>th</sup> International Conference on Virtual Learning  
VIRTUAL LEARNING – VIRTUAL REALITY

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Phase II - Period 2010-2020: e-Skills for the 21st Century  
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ICVL 2013 dedicated romanian mathematicians  
Dimitrie Pompeiu and Gheorghe Țițeica: 140 years of the birth



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ICVL and CNIV Coordinator: Dr. Marin Vlada

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**Proceedings of the 8<sup>th</sup>  
International Conference  
On Virtual Learning**

**OCTOBER 25-26, 2013**

**MODELS & METHODOLOGIES, TECHNOLOGIES, SOFTWARE SOLUTIONS  
Phase II - Period 2010-2020: e-Skills for the 21st Century**



*editura universității din bucurești, 2013*

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## MOTTOS

*„The informatics/computer science re-establishes not only the unity between the pure and the applied mathematical sciences, the concrete technique and the concrete mathematics, but also that between the natural sciences, the human being and the society. It restores the concepts of the abstract and the formal and makes peace between arts and science not only in the scientist' conscience, but in their philosophy as well.”*

### **Gr. C. Moisil (1906-1973)**

Professor at the Faculty of Mathematics, University of Bucharest,  
Member of the Romanian Academy,  
Computer Pioneer Award of IEEE, 1996  
<http://www.icvl.eu/2006/grcmoisil>

*”Learning is evolution of knowledge over time”*

### **Roger E. Bohn**

Professor of Management and expert on technology management,  
University of California, San Diego, USA,  
Graduate School of International Relations and Pacific Studies  
<http://irps.ucsd.edu/faculty/faculty-directory/roger-e-bohn.htm>



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# About ICVL 2013

ICVL Project – [www.icvl.eu](http://www.icvl.eu)

2010 – TOWARDS A LEARNING AND KNOWLEDGE SOCIETY – 2030  
VIRTUAL ENVIRONMENTS FOR EDUCATION AND RESEARCH

C<sup>3</sup>VIP: "Consistency-Competence-Clarity-Vision-Innovation-Performance"



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Institutions: The Romanian Ministry of Education, University of Bucharest, Intel  
Company, SIVECO Romania

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**October 25 – 26, 2013 – BUCHAREST, ROMANIA**

**Location:** University of Bucharest, Faculty of Psychology and Educational Sciences, ROMANIA

**Organizers:** University of Bucharest, Faculty of Psychology and Educational Sciences, Siveco Romania

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## Participate

---

The Conference is structured such that it will:

- provide a vision of European e-Learning and e-Training policies;
- take stock of the situation existing today;
- work towards developing a forward looking approach.

The Conference will consider the perspectives and vision of the i-2010 programme and how this will stimulate the promotion, and development of e-Learning content, products and services and the contribution of these to lifelong learning.

Participation is invited from researches, teachers, trainers, educational authorities, learners, practitioners, employers, trade unions, and private sector actors and IT industry.

## **Research papers – Major Topics**

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The papers describing advances in the theory and practice of Virtual Environments for Education and Training (VEL&T), Virtual Reality (VR), Information and Knowledge Processing (I&KP), as well as practical results and original applications. The education category includes both the use of Web Technologies, Computer Graphics and Virtual Reality Applications, New tools, methods, pedagogy and psychology, Case studies of Web Technologies and Streaming Multimedia Applications in Education, experience in preparation of courseware.

## **Thematic Areas / Sections**

---

- **MODELS & METHODOLOGIES (M&M)**
- **TECHNOLOGIES (TECH)**
- **SOFTWARE SOLUTIONS (SOFT)**
- **"Intel® Education" – Innovation in Education and Research (IntelEdu)**

### **Objectives**

#### **2010 – Towards a Learning and Knowledge Society – 2030**

Relevant topics include but are not restricted to:

- National Policies and Strategies on Virtual Learning
- National Projects on Virtual Universities
- International Projects and International Collaboration on Web-based Education
- Dot-com Educational Institutions and their Impact on Traditional Universities
- Educational Portals for education and training
- Reusable Learning Objects for e-Learning and e-Training
- Testing and Assessment Issues of Web-based Education
- Academia/Industry Collaboration on Web-based Training
- Faculty Development on Web-based Education
- Funding Opportunities for Projects in Web-based Education

**Learning and the use of Information and Communication Technologies (I&CT) will be examined from a number of complementary perspectives:**

- **Education** – supporting the development of key life skills and competences
- **Research** – emerging technologies and new paradigms for learning
- **Social** – improving social inclusion and addressing special learning needs
- **Enterprise** – for growth, employment and meeting the needs of industry
- **Employment** – lifelong learning and improving the quality of jobs
- **Policy** – the link between e-Learning and European / National policy imperatives
- **Institutional** – the reform of Europe's education and training systems and how I&CT can act as catalyst for change
- **Industry** – the changing nature of the market for learning services and the new forms of partnership that are emerging

### **General Objectives**

#### **The implementation of the Information Society Technologies (IST) according to the European Union Framework-Programme (FP7)**

- The development of a Romanian Framework supporting the professional and management initiatives of the educational community.
- The organization of the activities concerning the cooperation between the educational system and the economical companies to find out an adequate distribution of the human resources over the job market.
- To promote and implement the modern ideas for both the initial and continuing education, to promote the team based working, to attract and integrate the young graduates in the Research and Development projects, to promote and implement IT&C for initial and adult education activities.

### **Particular objectives**

#### **The development of Research, projects, and software for E-Learning, Software and Educational Management fields**

- To promote and develop scientific research for e-Learning, Educational Software and Virtual Reality
- To create a framework for a large scale introduction of the e-Learning approaches in teaching activity.
- To assist the teaching staff and IT&C professionals in the usage of the modern technologies for teaching both in the initial and adult education.
- To improve the cooperation among students, teachers, pedagogues, psychologists and IT professionals in specification, design, coding, and testing of the educational software.
- To increase the teachers' role and responsibility to design, develop and use of the traditional technologies and IT&C approaches in a complementary fashion, both for initial and adult education.
- To promote and develop information technologies for the teaching, management and training activities.
- To promote and use Educational Software Packages for the initial and adult education.

### **Thematic Areas/Sections**

#### **Models & Methodologies (M&M):**

- Innovative Teaching and Learning Technologies
- Web-based Methods and Tools in Traditional, Online Education and Training
- Collaborative E-Learning, E-Pedagogy,

- Design and Development of Online Courseware
- Information and Knowledge Processing
- Knowledge Representation and Ontologism
- Cognitive Modelling and Intelligent systems
- Algorithms and Programming for Modelling

**Technologies (TECH):**

- Innovative Web-based Teaching and Learning Technologies
- Advanced Distributed Learning (ADL) technologies
- Web, Virtual Reality/AR and mixed technologies
- Web-based Education (WBE), Web-based Training (WBT)
- New technologies for e-Learning, e-Training and e-Skills
- Educational Technology, Web-Lecturing Technology
- Mobile E-Learning, Communication Technology Applications
- Computer Graphics and Computational Geometry
- Intelligent Virtual Environment

**Software Solutions (SOFT):**

- New software environments for education & training
- Software and management for education
- Virtual Reality Applications in Web-based Education
- Computer Graphics, Web, VR/AR and mixed-based applications for education & training, business, medicine, industry and other sciences
- Multi-agent Technology Applications in WBE and WBT
- Streaming Multimedia Applications in Learning
- Scientific Web-based Laboratories and Virtual Labs
- Software Computing in Virtual Reality and Artificial Intelligence
- Avatars and Intelligent Agents

Topics of interest include but are not limited to:

**Virtual Environments for Learning (VEL):**

- New technologies for e-Learning, e-Training and e-Skills
- New software environments for education & training
- Web & Virtual Reality technologies
- Educational Technology and Web-Lecturing Technology
- Advanced Distributed Learning (ADL) technologies
- Innovative Web-based Teaching and Learning Technologies
- Software and Management for Education
- Intelligent Virtual Environment

**Virtual Reality (VR):**

- Computer Graphics and Computational Geometry
- Algorithms and Programming for Modeling
- Web & Virtual Reality-based applications
- Graphics applications for education & training, business, medicine, industry and other sciences

- Scientific Web-based Laboratories and Virtual Labs
- Software Computing in Virtual Reality

**Knowledge Processing (KP):**

- Information and Knowledge Processing
- Knowledge Representation and Ontologism
- Multi-agent Technology Applications in WBE and WBT
- Streaming Multimedia Applications in Learning
- Mobile E-Learning, Communication Technology Applications
- Cognitive Modelling, Intelligent systems
- New Software Technologies, Avatars and Intelligent Agents
- Software Computing in Artificial Intelligence

**Education solution towards 21st Century challenges (IntelEDU):**

- Digital Curriculum, collaborative rich-media applications, student software, teacher software
- Improved Learning Methods, interactive and collaborative methods to help teachers incorporate technology into their lesson plans and enable students to learn anytime, anywhere
- Professional Development, readily available training to help teachers acquire the necessary ICT skills
- Connectivity and Technology, group projects and improve communication among teachers, students, parents and administrators



# **S e c t i o n**

## **MODELS & METHODOLOGIES**

### **Models and Methodologies (M&M):**

- **Innovative Teaching and Learning Technologies**
- **Web-based Methods and Tools in Traditional, Online Education and Training**
- **Collaborative E-Learning, E-Pedagogy,**
- **Design and Development of Online Courseware**
- **Information and Knowledge Processing**
- **Knowledge Representation and Ontologism**
- **Cognitive Modelling and Intelligent systems**
- **Algorithms and Programming for Modelling**





# "Didactica Nova" – a Challenge for the Academic Curriculum

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## Abstract

*The concept of "totally alienated students" has evolved, in the last 40 years, focusing our attention towards what we can call "alienated education practices". Lately, higher education institutions are getting visible results in their efforts to raise the quality of the education process by implementing various measures to determine students to be active participants in their own learning. Celebrating 150 years since its establishment, the University of Bucharest launched a challenge for the academia, calling for innovation in the curriculum design and delivery. It aims to foster an update in the curricula, in order to improve the teaching methods and the learning process in Romanian universities. The declared objectives of the project are oriented towards promoting a continuous improvement of the teaching methods to match younger generations' changing profile. Specific arguments are presented in the article, in an attempt to build the basis for a theoretical construction with meaningful applications to be used in the next academic year.*

**Keywords:** Higher education, education practices, academics, new methods of teaching and learning

## Introduction

The (higher) education environment comprises four main elements: the student, the teacher, the content of learning, and the didactic strategies. In order to fulfil its functions, these components "must serve, complement and derive meaning from each other" [1], in other words, the requirement of "curriculum alignment" to be correctly calibrated. ICTs are coming to assist and bring into attention the shift towards the critical role universities are envisaging: quality education. Mainly brought into institutional policy documents as an imperative, but left at the abstract level due to the ICTs' scatter on various usage benefits and to their relative novelty, the task of ICTs integration into education activities resides in the pool of educators' roles and competencies.

In the context of integration of higher education graduates in the labour market and in the dynamic professional activities of present times [4], the professor should improve teaching, to adapt the teaching methods in order to avoid learning by memorization, bearing in mind the continuous assessment of learning outcomes, and developing higher-order thinking skills and competencies such as student autonomy, critical thinking, problem solving, teamwork. In turn, students must have an active participation in all educational and collaborative activities that are required, to show solidarity within those work teams that require complex efforts. [2]

## Better educators, better students. Towards bettering higher education practices

In defining a new framework for an adequate academic curriculum, the main assumption is that students today are different from students 20 years ago. Some authors even talk about a "different mind" of young people today and a different attitude towards knowledge acquisition and skills development. More and more, the concept of "totally alienated students", used for the first time 40

years ago [1], would gain in significance without university coordinated efforts to improve the education environment and to adequate it to the cultural, technological and social realities nowadays. In addition, “a professional approach to teaching and educational management will end the mythic orientation and the unavoidable improvisations. Vicinity with artistry and giftedness doesn’t seem to offer nowadays the desire perspective on the teaching profession.” [3]

Controlling the conditions in which learning occurs is not the only condition – it is also about creating an appropriate cultural climate for preparing authentic professionals of the (near) future. Some key elements are described as it follows, regarding the professors’ activity and the students’ (expected) behaviour [2] [5] [6].

### **Professors’ behaviour**

#### *Teaching Style. Theory and applications*

The teaching style and the approach of theory and practical applications must motivate students to participate actively and with pleasure in learning activities. Professors should replace monotonous lectures, possibly with a dialogue that he/she launches for students during a course or class. Course content must include both theory (concepts, terms, methods, techniques etc.) and, most important, applications and practical examples for the acquisition of knowledge and skills. The share between theory and practice will be reflected in the final assessment.

#### *Competency-oriented content*

The course content and the teaching activities will target students’ ability to act in solving various problems through encouragement of: critical thinking, logical thinking, experimentation and creativity, project work and teamwork. The university professor must adapt the methods to determine students to eliminate “learning by heart”, inefficient and tedious activities. For deep learning, specialists in pedagogy are recommending that the educator describes, for each concept, evolution, history and its role in the context of the theory studied; in this way, students can understand more clearly the concepts they need to apply.

#### *Interactivity in presentation and dialogue*

Presenting a course must be done through active means – using, where appropriate, PowerPoint-type slides or Prezi, simulations of processes, the use of specialized software, representations, etc. – in order to favour an interactive approach of the content and to determine students to participate in a dialogue in which they can help with ideas on topics. Contrary to the habits of teaching through lectures, it is much more an effective method by which students are invited by the teacher to ask questions on topics discussed and explained in class.

#### *Teaching and deep learning*

University teachers must act as co-learners, to determine appropriate methods on-the-way, and to be able to continuously assess learning effectiveness. It is recommended that students which have difficulties in solving learning tasks to be assisted to overcome moments of misunderstandings regarding theory and practical applications.

### **Student’ behaviour**

#### *Motivation and learning*

Students must have an ongoing concern in finding the motivation to attend classes and all learning activities arising from the curriculum. Family and faculty staff should help them be receptive to learning tasks and to actively participate in solving practical applications.

#### *Active participation and solidarity*

Consulting and regularly using educational resources recommended by a professor for both theory and practical applications would increase students’ capacity to cover the curriculum and the development of skills required for active professionals. Students must have an active participation

in all collaborative activities that are required, showing solidarity within team members in tasks requiring complex efforts. They must actively contribute in eliminating misconceptions through efforts in correctly formulating problems, tasks, (investigative) questions when they are in dialogue with educators or peers.

*Systematic training and professional ethics*

Creating a learning behaviour to determine a constant concern for competencies development and knowledge acquisition could be acquired by weekly participation in all the duties of the academic curriculum and by continuously preparing for regular systematic assessments. Intolerance for fraud of any kind, combined with a special respect for faculty staff and colleagues are means towards development of authentic professionals of tomorrow.

These recommendations are only the top of the iceberg, being empowered through a meaningful institutional concern for quality assurance. "Schizophrenic educational environments" [3] and alienated education practices cannot be avoided without mechanisms assumed by both institutions and each institutional actor, without trust, confidence and day-by-day commitment towards education.

**A mean to boost innovation: a contest for education improvement**

During the 2013-2014 academic year, the Faculty of Psychology and Education Sciences is organising the competition "Didactica Nova", celebrating 150 years since the establishment of the University of Bucharest in 1914. The contest theme refers to an innovative academic curriculum: conception, design, development and promotion of digital academic resources. Digital university courses are required to have a new design and to embed teaching methods appropriate for younger generations.

The initiative for this action is aiming to motivate, stimulate and mobilize academics towards the use of new technologies and computer in higher education, towards employing appropriate and innovative teaching methods when working with nowadays' younger generations. Stated objectives requires individual and collective responsibility, improved educational actions and approaches, as an invitation for students to be active participants in their own learning, as a call for using technology as mediator of quality education, in the light of the new role of forming new perspectives on education, research and innovation.

The contest is a way to challenge the academic staff of Romanian universities towards changes regarding not only the curriculum process, but as well concerning the networking and participation abilities, their capacity to collaborate with private sector and to learn from relevant practices how to improve their presence and influence in the labour market and in the life of their direct beneficiaries, to "encourage and establish practices for transversal and horizontal learning" [3].

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