CNIV AND ICVL PROJECTS─NEWS TECHNOLOGIES IN EDUCATION AND RESEARCH

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Abstract: CNIV and ICVL Projects intends to explore and propose innovations in education in the perspective of the Knowledge Society. The International Conference on Virtual Learning has the following objectives: creating a framework for a large scale introduction of the eLearning approaches in teaching and training activities; assisting the teachers, professors and trainers in the use of innovative teaching technologies both in formal education and life-long learning; stimulating the development of eLearning projects and software for education process and systems; promoting and developing scientific research for eLearning, educational software and virtual reality.

Keywords: *eLearning projects, virtual learning, education, technologies, knowledge.*

I. INTRODUCTION AND MOTIVATION

MOTTO: "*Learning from our successes not our failures*" (Miller, Histen and Pasupath 2009)

Today, starting from primary school children find out about the impact of computer in their lives. Because of these reasons, the educational systems of many countries are conceived to implement developing strategies oriented to computer utilization for both initialisation and continuous *learning process*. "*Human society development is accomplished by knowledge and learning*" [13] (Vlada and Ţugui 2006). Daniel Pink's book contains a description of new age - the Conceptual Age [9]:

- Agricultural age (farmers) – 18th Century
- Industrial age (factory workers) – 19th Century
- Information age (knowledge workers) – 20th Century
- Conceptual age (concept workers) – 21st Century.

The responsibility for education is nowadays shared: collaborative demarches and adequate commitment from all stakeholders is very much increasing the effects of education as a whole, oriented towards preparing competitive human resources equipped with competences for the 21st Century: *cooperation, communication, critical thinking, creativity, innovation*. In the United States and also in UNESCO strategies these are referred to as the 21st Century Skills. The European Union in

the Lisbon framework outlines eight domains of Key Competences for Lifelong Learning. These 21st Century Skills are critically important to support the challenges of the modern work-place and the dynamic and rapidly changing knowledge society. Highly structured and disciplined schooling systems do not necessarily prepare students well for the dynamics and challenges of the 21st century workplace and society. More self-motivated, individualized, group and collaborative learning processes, supported by ICT will contribute significantly to the preparation of a more agile modern workforce.

There is a growing and widely accepted understanding that a different set of skills need to be developed by our students in our school systems. In the United States and also in UNESCO strategies these are referred to as the 21st Century Skills. The European Union in the Lisbon framework outlines eight domains of Key Competences for Lifelong Learning. These 21st Century Skills are critically important to support the challenges of the modern work-place and the dynamic and rapidly changing knowledge society. Highly structured and disciplined schooling systems do not necessarily prepare students well for the dynamics and challenges of the 21st century workplace and society. More self-motivated, individualized, group and collaborative learning processes, supported by ICT will contribute significantly to the preparation of a more agile modern workforce [4](Hamilton and O'Duffy 2009). 21st Century Skills and Key Competencies for the Knowledge Economy (Table 1):

TABLE 1. Skills and Key Competencies for the Knowledge Economy

21st Century Skills identify:	The EU eight domain of key competence are:
1 Creativity and innovation	1 Communication in the mother tongue
2 Critical thinking	2 Communication in a foreign language
3 Problem solving	3 Mathematical literacy
4 Communication	4 Basic competences in science and technology
5 Collaboration	5 Digital competence
6 Information fluency	6 Learning-to-learn
7 Technological literacy	7 Interpersonal and civic competences
	8 Entrepreneurship and Cultural expression

For Dr. Howard Gardner (American Psychologist and Educator), intelligence is (Building the 21st-Century Mind: www.howardgardner.com) (Gardner 2009) [4]:

- the ability to create an effective product or offer a service that is valued in a culture;
- a set of skills that make it possible for a person to solve problems in life;
- the potential for finding or creating solutions for problems, which involves gathering new knowledge.

In Romania, the emergence of a knowledge-based economy and the need to assure conditions of social inclusion to all for the 21st Century have brought into light the necessity to enhance the continuous development of the human capital according to a lifelong learning perspective. In these regards, innovative education strategies aiming to integrate ICT are effective and viable when supported by several stakeholders: companies, European institutions, NGOs, schools, teachers, education managers, parents and students themselves. One of the most effective governmental actions is the SEI Programme (*Sistem Educational Informatizat* (in Romanian) – IT-Based Education System), started in 2001, aiming to equip schools with computer labs, to train teachers in the use of ICT, and to provide educational software to support the teaching and learning [7, 16].

The IT Based Educational System (SEI) is a complex program initiated by the Ministry of Education, Research and Innovation, aiming to offer ICT support for the Romanian education system (Vlada, Jugureanu and Istrate 2009). The SEI program promotes ICT in education through specific projects designed both for administrative and educational purposes. The SEI Program offers new tools for use in schools, thus increasing the quality of the education process. It offers a substitute for expensive or dangerous instruments and experiments by means of virtual counterparts. Within SEI Program (www.portal.edu.ro), the local, regional and country administration is provided with managerial and administrative support. The main components of the solution are: Hardware (IT laboratories); Learning, Content Management Solution (the AEL software system); Educational software and electronic educational content; Teacher training; Internet connectivity. AeL is an

integrated Learning and Content Management System developed by SIVECO aimed to support professors/tutors, students, content editors, administrative staff and other stakeholders in the learning process [10, 14].

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II.   LEARNING AND DEVELOPMENT: IMAGINE, CREATE, INNOVATE

MOTTOS: *"Sciences are virtual representations of knowledge"* (Vlada 2008).
„Human development is accomplished by knowledge and learning." (Vlada and Ţugui 2006).

Learning is a cognitive process of acquiring knowledge and skill. It's a journey that continues throughout one's life till death. Learning results in change in behaviour and attitude. These changes may be easily observable or elusive. It's not necessary that a person is actually aware that he is learning something right at that time. Learning may occur even without the conscience of the person. *Learning solutions* focus on developing or enhancing the competencies and behaviours needed by individuals and teams in order to accomplish meaningful goals and create a positive work climate that encourages and values clarity, interaction, openness, diversity, community and results.
"The innovation gap between the EU and its key competitors, the US and Japan, has narrowed. However, the Communication also recognizes policy gaps and indicates areas where further improvements both at European and at Member States level are necessary. This analysis will feed into the preparation of the new European reform agenda beyond 2010". (Brussels, 2nd September 2009, European innovation policy – successes but also new challenges, Press Releases, http://europa.eu).

The EU has designated 2009 as the *European Year of Creativity and Innovation* (http://create2009.europa.eu). The Year aims to raise awareness of importance of creativity and innovation as a key competence of personal, social and economic development. Hundreds of activities and projects, which represent good practice in innovation and creativity, will be highlighted, promoted and disseminated during the EYCI 2009. Under the motto "*Imagine. Create. Innovate* ", aim for is to promote creative and innovative approaches in different sectors of human activity. It seeks to promote education in mathematical, scientific and technological basic and advanced skills conducive to technological innovation, and promote closer links between arts, between organizations, schools and universities [15, 17].

The European Year of Creativity and Innovation aims to raise awareness of the importance of creativity and innovation for personal, social and economic development; to disseminate good practices; to stimulate education and research, and to promote policy debate on relevant issues. The activities of the European Year of Creativity and Innovation 2009 are aimed at a range of different groups including young people, educators, firms and policy makers, as well as the general public. Civil society organizations are encouraged to mobilise and get involved at European, national and local levels.

In Romania, this year, scientific events ICVL (*The 4th International Conference on Virtual Learning*) and CNIV (*The 7th National Conference on Virtual Learning*) place under the European Year of Research and Innovation (EYCI 2009). The ICVL (http://www.icvl.eu) and CNIV (http://www.cniv.ro) projects promoting innovative technologies and methodologies in education, research and continuous improvement, both in media education, i.e. university and in business. Structured and organized by European principles and standards, the two projects encourage and promote work on projects, collaborative activities, methods and scientific experimentation, creative thinking and intuition, argument and demonstration. Conference theme refers to the use of modern technologies in education and research with the objective of building the knowledge society.

The Conference is organized in four sections (*News Technologies in Education and Research*: Virtual Environments for Education and Training, Software and Management for Education):
1. Models & Methodologies (M&M)
2. Technologies (TECH)
3. Software Solutions (SOFT)
4. "Intel® Education" - Innovation in Education and Research (IntelEdu)

The ICVL was structured to provide a vision of European e-Learning and e-Training policies, to take notice of the situation existing today in the international community and to work towards developing a forward looking approach in Virtual Learning from the viewpoint of modelling methods and methodological aspects, information technologies and software solutions. Participation is invited from researches, teachers, trainers, educational authorities, learners, practitioners, employers, trade unions, and private sector actors and IT industry.

Specialists and companies must have vision and initiative in addressing the challenges of the future. For example, Gartner Company (http://www.gartner.com/it/page.jsp?id=777212) Identifies the Top 10 Strategic Technologies for 2009: Virtualization; Cloud Computing; Servers — Beyond Blades; Web-Oriented Architectures; Enterprise Mashups; Specialized Systems; Social Software and Social Networking; Unified Communications; Business Intelligence; Green IT. "*Strategic technologies affect, run, grow and transform the business initiatives of an organization,*" said David Cearley, vice president and analyst at Gartner. Figure 1 represents the relationship between Learning, Knowledge and Development.

The general trend of Romanian society towards intensive use of new technologies, generated by the need to keep up with the evolving European economy, is encouraged, supported and pushed ahead by governmental programmes and complemented by several European initiatives or by projects developed by private companies. For example, represents resources [11, 12]:

- Initiatives

  ICVL Project (2006 www.icvl.eu), CNIV Project (2003 www.cniv.ro), Intel ® Teach Program (2007, www.siveco.ro) ELSE Project (2005 www.adl.unap.ro), Elearning.Romania Project (2006 www.elearning.ro), AEL Project (2003 www.advancedelearning.com) Siveco Cup (2003, www.portal.edu.ro) Didactic.ro (2003, www. didactic.ro) TimSoft (2001 www.timsoft.ro), SEI Project (2001, www.portal.edu.ro); 2009-2010 Program "Training in the Knowledge Society" ; 2007-2013 National Plan for Research, Development and Innovation

- Coordinators

  Marin Vlada, Grigore Albeanu, Radu Jugureanu, Florin Ilia, Delia Oprea, Dorin Mircea Popovici, Adrian Adascalitei, Ion Roceanu, Olympius Istrate, Dana Vladoiu, Emil Onea, Carmen Holotescu.
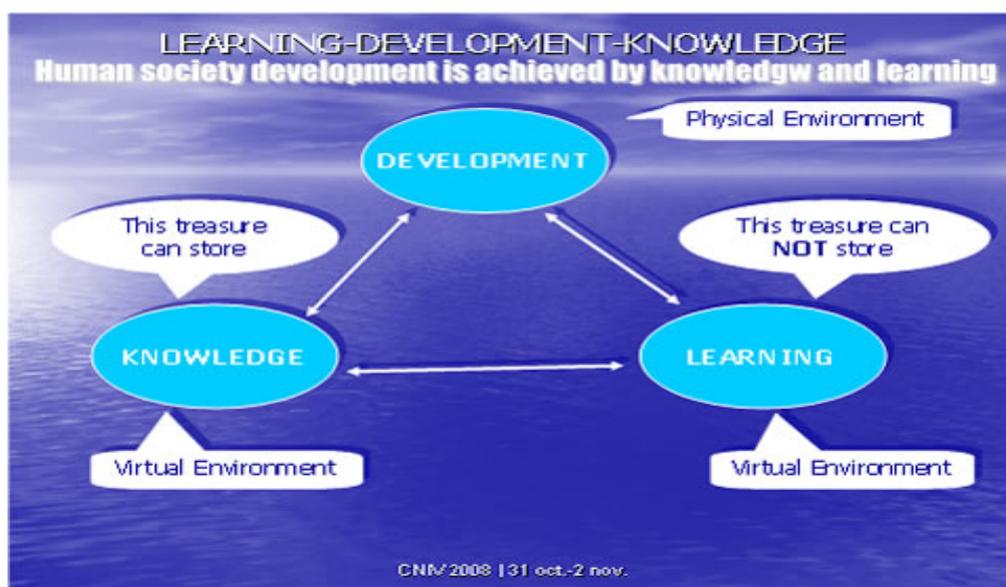

Figure 1. The relationship between Learning, Knowledge and Development (Vlada 2008)

This conclusion leads to examine in detail the triad "*Learning-Knowledge-Development*" (Fig. 1):

- DEVELOPMENT - a process in which something passes by degrees to a different stage (especially a more advanced or mature stage); "the development of his ideas took many years"; "the evolution of Greek civilization"; "the slow development of her skill as a specialist or a person "; Sustainable development is maintaining a delicate balance between the human need to improve lifestyles and feeling of well-being on one hand, and preserving natural resources and ecosystems, on which we and future generations depend; This component is a physical environment; **this treasure can store**;

- KNOWLEDGE – Knowledge is defined by the Oxford English Dictionary as (i) expertise, and skills acquired by a person through experience or education; the theoretical or practical understanding of a subject, (ii) what is known in a particular field or in total; facts and information or (iii) awareness or familiarity gained by experience of a fact or situation; the theoretical or; Knowledge acquisition involves complex cognitive processes: perception, learning, communication, association and reasoning. This component is a physical environment, but also a virtual environment; **this treasure can store**;

- LEARNING - Learning is acquiring new knowledge, behaviours, skills, values, preferences or understanding, and may involve synthesizing different types of information. The ability to learn is possessed by humans, animals and some machines. Progress over time tends to follow learning curves. Human learning may occur as part of education or personal development. It may be goal-oriented and may be aided by motivation. The study of how learning occurs is part of neuropsychological, educational psychology, learning theory, and pedagogy; One way we use the cognitive processes in our daily lives is with learning. Learning is not just something we do in school or in formal settings. We learn every day. Sometimes our very survival depends on how well we can learn. That may mean unlearning our learned limitations and regaining confidence in our ability to direct our own learning. In today's world, someone who doesn't know how to learn is left behind (http://www.cognitiveprocesses.com, 8 functions). By exploring your own learning process and determining your natural learning style, you can find the best ways for you to learn. Then you, not the instructor or the situation, are in charge of your learning. Learning is broadly defined as change. The focus can be on what we learn (the product of learning) or on how we learn (the process). It is about how we change and how we adapt, grow, and develop. This adaptation, growth, and development occur from the inside out. This component is only a virtual environment*;* **this treasure cannot store**.

2.1 Promotion of modern technologies in Education and Research

Teacher training to use of ICT for education, research and innovation. Implementation and use of modern technologies in education and research requires the mobilization and support of various initiatives, programs and projects of public institutions, professional organizations or individual of eLearning professionals, researchers and university teachers in education, inspectors, advisers, teachers, psychologist's pupils and students. Thus, after 2000, when they expanded and developed Web 2.0 and Learning 2.0 were discussed programs and projects related to:
• strategy development and training;
• project management;
• working in teams;
• implementation methodology.

Also, the initiators had to promoting and integrating new technologies in education and training, the Romanian educational system adapt to new requirements and challenges of building the knowledge society according with the European Strategy "*training in the knowledge society*".

Initiatives, programs and operational projects in România [12]:

1. **Program "Training in the Knowledge Society"** (2009-2010) - Ministry of Education, Research and Innovation, in partnership with SIVECO Romania (www.edu.ro, www.siveco.ro); training of 3,000 teachers trainers;

2. **Intel® Teach Program** (2007, www.siveco.ro, www.intel.com) - international training course organized in the County Teachers House National Network, coordinated by Siveco Romania and Intel Corporation;

3. **Project ICVL** (2006, www.icvl.eu) - International Conference on Virtual Learning "News Technologies in Education and Research, supported by the University of Bucharest and NASR (National Authority for Scientific Research), Siveco Romania and Intel Corporation;

4. **Portal Elearning.Romania** (2006, www.elearning.ro) - educational resources platform, Initiative of Centre for Development and Innovation in Education;

5. **Project eLSE** (2005, http://adl.unap.ro) - International Scientific Conference "eLearning and Software for Education" supported by the "Carol I" National Defence University Bucharest;

6. **Project CNIV** (2003, www.cniv.ro) - Virtual Learning National Conference "Promotion of modern technologies in education and research, supported by the University of Bucharest and NASR (National Authority for Scientific Research), Siveco Romania and Intel Corporation;

7. **Portal AeL** and Siveco "Educational Software" Cup (2003, www.advancedelearning.com) - development interactive lessons of educational software, business initiative Siveco;

8. **Portal Didactic.ro** (2003, http://www.didactic.ro) – National Platform for Teachers, the Softwin company's initiative (http://www.softwin.ro)

9. **Portal TimSoft** (2001, www.timsoft.ro) - e-learning platform, the TimSoft company's initiative;

10. **Program / Portal SEI** (2001, www.portal.edu.ro) – Computerized Educational System coordinated by Ministry of Education and Siveco Romania.

III.   CNIV PROJECT – http://c3.cniv.ro

CNIV (National Conference on Virtual Learning) project is devoted to news technologies in education and research and its main goals are:

- between 2010 and 2030 to act Towards a Learning and Knowledge Society
- encourage Virtual Environments for Education and Training
- sustain Software for Education and Management of Learning process

Implementation of the Information Society Technologies (IST / FP7) according with the requirements of the EU

• Implementation of directives of the Bologna Conference (1999) in the Romanian education system
• Develop the framework for the expression of professional and management initiatives of the university and undergraduate teacher's community
• Development of concrete activities on cooperation with specialized companies to properly trained human resources for labour market

• Promoting and implementing of modern ideas in the initial and continuing education, the promotion of team work / team research, attracting and involving young people in research and development programmes, promotion and implementation of technologies like ICT in education and continuing training.

Development of research, projects and applications in the areas of E-Learning Educational Management and Software

• Promoting and development of scientific research in e-Learning, Educational Software and Virtual Reality
• Launching programs for introduction in the educational process of eLearning Technology
• Support teachers and specialists in introducing and use of modern teaching technology to enhance transfer of knowledge in initial and further training
• Enhancing collaboration between students, teachers, educators, psychologists and IT professionals for design activities, development and testing of educational software applications
• Increasing the role and responsibility of teachers in the design, development and use of ICT modern methods in addition with traditional methods in the process of initial and continuing education
• Promotion and development of information technology in education, learning process management and training
• Promotion and use of educational software in undergraduate and higher education.

IV. ICVL PROJECT – http://c3.icvl.eu

OBJECTIVES.

C^{3}VIP: "Consistency-Competence-Clarity-Vision-Innovation-Performance"

ICVL Project intends to explore and propose innovations in education in the perspective of the Knowledge Society. The International Conference on Virtual Learning has the following objectives: creating a framework for a large scale introduction of the **eLearning** approaches in teaching and training activities; assisting the teachers, professors and trainers in the use of **innovative teaching technologies** both in formal education and **life-long learning**; stimulating the development of eLearning projects and **software for education** process and systems; promoting and developing scientific research for eLearning, educational software and **virtual reality**.

Phase I - Period 2000-2010: Research, Education and Training

- At the Lisbon European Council in March 2000, Heads of State and Government set an ambitious target for Europe to become "the most competitive and dynamic knowledge-based economy in the world" by 2010. They also placed education firmly at the top of the political agenda, calling for education and training systems to be adapted to meet this challenge [Lisbon Strategy | The Lisbon Strategy was adopted in March 2000 and aims to make the EU the most dynamic and competitive economy by 2010].
- The Conference will consider the perspectives and vision of the **i2010** (i2010-European Information society in 2010) programme and how this will stimulate the promotion,

development, and development of **e-Learning content**, products and services and the contribution of these to lifelong learning. **i2010** is the European Commission's strategic policy framework laying out broad policy guidelines for the information society and the media up to 2010.

Phase II - Period 2010-2020: e-Skills for the 21st Century - http://ec.europa.eu

- The European Commission adopted in September 2007 a Communication on "**e-Skills for the 21st Century**" presenting a long term e-skills agenda and including five major action lines at the European level. The Competitiveness Council of Ministers welcomed this Communication and adopted Conclusions on a long term e-skills strategy at its meeting on 22-23 November 2007.
- A successful implementation of an e-skills strategy in Europe is considered of great importance within the Lisbon strategy and as a part of lifelong learning strategies. (http://www.eskills-pro.eu/)

    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 (ICT) 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 ICT 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.

    The Conference is structured such that it will:
1. provide a vision of European e-Learning and e-Training policies;
2. take stock of the situation existing today;
3. work towards developing a forward looking approach.

The Conference contributes to the development of both theory and practice in the field of **e-Learning**. The Conference accepts academically robust papers, topical articles and case studies that contribute to the area of **research in e-Learning**. The **ICVL** provides perspectives on topics relevant to the study, implementation and management of e-Learning initiatives. Participation is invited from researches, teachers, trainers, educational authorities, learners, practitioners, employers, trade unions, and private sector actors and IT industry.

Proceedings of ICVL (Print ISSN 1844 - 8933) - Cite papers in Conference Proceedings Citation Index (ISI Proceedings, accessed via Web of Science). Cite papers from and search for "The International Conference on Virtual Learning" in Conference Proceedings Citation Index (known as ISI Proceedings): List of Conferences 2004-2008, List of Conferences 2009. The Organization Committee will elaborate until the ICVL opening**,** the volume with the conference's papers (Proceedings of the International Conference on Virtual Learning with ISSN, Bucharest University Press) and the CD **(**ISSN 1844 - 8933**).**

The ICVL Award is offered in recognition of ICVL papers published within in "Proceedings of the International Conference on Virtual Learning". ICVL Awards does not create a hierarchy value of papers / applications / products, but distinguish some attributes which conforms to ICVL objectives .

ICVL Award is decided by: ICVL Scientific Committee. Criteria:
1. distinguishing and promoting the results obtained by authors (researchers, teachers/professors, specialists, students) in research, innovation and development in ICT
2. promoting and implementing the information technologies and their application into education
3. inducing and promoting the creativity in scientific research for e-Learning, Educational Software and Virtual Reality.

V.   CNIV AND ICVL PAPERS SUBJECTS

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.

CNIV research papers are in the following subjects:
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-Skill
- Educational Technology, Web-Lecturing Technology
- Mobile E-Learning, Communication Technology Applications
- Computer Graphics and Computational Geometry
- Intelligent Virtual Environment.

SOFTWARE SOLUTIONS:
- New software environments for education & training
- Software and management for education
- Virtual Reality Applications in Web-based Education
- CG, 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.

"INTEL® EDUCATION" - Innovation Education and Research [www.intel.com/education]:
- 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.

VI. Conclusions

Results and performance obtained through the use of computers have boosted the development of all sciences. Man and the world interact continuously, reality is seen from multiple perspectives, the information we received through various channels so as to have an adequate response, the knowledge we have produced, not reproduced. Learning is individualized and cognitive and emotional development plan can not ignore the cultural, social, and technological. Computer inciting the ongoing reconfiguration of the image that we have about areas of knowledge by accessing different sources of information and provides another way to know and to produce knowledge. Learning is broadly defined as change. The focus can be on what we learn (the product of learning) or on how we learn (the process). It is about how we change and how we adapt, grow, and develop. This adaptation, growth, and development occur from the inside out. The 21st Century Skills is critically important to support the challenges of the modern work-place and the dynamic and rapidly changing knowledge society. Learning solutions focus on developing or enhancing the competencies and behaviours needed by individuals and teams in order to accomplish meaningful goals and create a positive work climate that encourages and values clarity, interaction, openness, diversity, community and results.

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