

Education as the Global Competitive Advantage. An E-learning Project in the University *Politehnica* of Bucharest

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Abstract: The paper discusses media education and the (re)production of culture, critically analysing the social production of knowledge through mass media and proclaiming the need for a pedagogy that criticizes its limitations, distortions, and biases. Presenting an important project of the University *Politehnica* of Bucharest the importance is stressed of building bridges across disciplines, using theory to connect media education with the empowerment of students and the promotion of democracy. The paper calls for contextualizing education within the framework of its functions in society. The author addresses the issue of promoting multiculturalism and media literacy on a University level. It is emphasized the fact that we live in a world of media and new technologies, and our social world is increasingly multicultural, providing new opportunities to enjoy richness and diversity, but also producing new social conflicts and problems.

Key-Words: globalization, communication, education, information, qualification, values, proficiency, competency, standards, curriculum

1 Introduction

Our universities are changing their views; they are experimenting in many areas of academic activity. They are moving more and more towards objectives and practices that we advocate. Almost each segment of the society we live in is more or less involved in the process of globalization, process that has been also accelerated due to the use of the Internet at a large scale. On the other hand, the reverse is also valid: Information & Communications Technology (ICT), in general, and the Internet, in particular, has been boosted up by the process of globalization. It is not our concern about the globalization if it is a positive process or a negative one, but in what way and at what extent this affects our realm of activity and how we can adapt to the new realities. The ICT revolution has been giving great impacts on all kinds of human activities [5]. Educational and training activities are no exception. Rather, it could be said that the impact on them is larger than those on others. Also, the constantly changing knowledge requires constant learning, that is, life-long learning (LLL) and anytime & anywhere learning. Globalization creates a market of education services, with identical rules as in any other service market [7]. Educational organizations and institutions move from a fragmented information culture populated with disparate legacy systems to

what is known as a "contextual collaborative" culture, a real-time, knowledge-sharing system. Because of this, many academic institutions, even those with high prestige, are found in a situation where they might loose some of their students in favour of other institutions, which although they are located at greater distances are better anchored in the education market. More than that, in this "education market" some new players have successfully entered, as companies from the economical sector, which started to develop their own training centers.

The precise form of on-line pedagogy varies from one case to another, but is generally consistent with an educational philosophy of personal instruction and strong faculty support for students. Some courses can be taken entirely online, but most require some attendance on-campus. Almost all courses are written by full-time faculty (selected on the basis of internal competition); the teaching of a course generally becomes part of normal faculty workload. Most participating institutions use proprietary platforms to deliver courses to students on-campus, and the Internet for external students. Library and bibliographic services are generally made available through the institution providing the programme.

A central unit provides support for a Web-based catalogue of online programmes in member insti-

tutions, and additionally facilitates the training of faculty and the collaborative development of online courses. The central infrastructure to support the network (the search engine for an online catalogue, for example, and the user-interface) was developed with the support of specialists in member institutions. Similarly, media-production units in participating institutions are commissioned to produce the required course materials (to be made available through the network). A key objective in developing the online programme was to facilitate the adoption of an innovative pedagogy, attuned to the pedagogical and curricular challenge of the particular subject matter and student group. Part of the cost of developing the programme was met through support from external companies that required their mid-career managers, located in some twenty countries around the world, to have access to post-graduate education in business economics. Faculty worked with industry representatives in developing a programme that was academically demanding, and responsive to the challenges confronting managers in those companies competing in a global market.

The pedagogical approach is based on a marked (even radical) departure from traditional practice, requiring considerable and ongoing participation and peer collaboration by students. Part of this activity requires students to address a continuing series of problem-focussed tasks related to emerging 'real-life' corporate challenges. Students are required to identify the parameters of the challenge; and to apply statistical and other analytical techniques, and to source appropriate data sets, to support their analysis and response. To facilitate this activity, students have continuing access to central servers furnished with extensive 'real' data sets and an archive of related literature (compiled by faculty).

Teaching on the programme is a core-activity for this group of academics. The faculty-led initiative involved substantive commitment by staff in initiating and developing the programme and in teaching students. The difficulty of sustaining high input by research-active faculty in the longer-term is a potential weakness of such faculty-led initiatives. Not surprisingly, universities with longer established faculty-led programmes tend to develop strategies to minimise the demands on faculty time, often by automating or delegating routine or repetitive tasks, or less commonly by adopting pedagogic and technical strategies to minimize the input required of academic staff. Faculty-led initiatives are more common at the post-graduate level and in subjects with a strong disciplinary or sectoral orientation (e.g., engineering). They are often provided by universities with a strong research orientation, through departments of high

standing among peers in the relevant discipline or profession. Courses may be developed around the expertise and reputation of particular faculty members, in effect building on (and potentially contributing to) the peer-status of individual faculty, and of the department as a whole. The proximate reasons for advancing a proposal differ from one case to another, but are usually closely tied to the interests of the relevant department or school. A desire to secure additional funding for research or additional teaching posts, or to reach a wider and more diverse student population, perhaps embracing high-calibre post-graduate research students, may also be important. Other reasons may include the links to industry the initiative can provide, and the concomitant opportunity to secure external funding for related research (including sponsorship of doctoral-research students).

Founded in 1818, University "Politehnica" of Bucharest (UPB) is the oldest and most prestigious technical university in Romania [9]. The foremost mission of UPB is to educate students in science and technology at all levels (B.SC, M.SC, Ph.D.) by imparting knowledge and practical skills, developing their creative thinking, and preparing them to address the demands of today economy. The University houses 37 Research Centres, among which 4 were recognized as Centres of Excellence at national level and 8 grew into Multi-User Research Infrastructures with the support of the Romania - World Bank Program. UPB has a comprehensive infrastructure with modern research and teaching laboratories and an Intranet/Internet communication network. A Scientific & Technological Park is currently under development at UPB, to bring real-world technology and management issues into its research laboratories and teaching. UPB is firmly integrated in the international academic community and shares the same moral, educational, scientific, and cultural values. Due to its prestige, UPB has bilateral co-operation agreements with 74 universities from Europe, America, Asia and Africa. One of the current priorities of UPB is to valorise its human potential and logistic possibilities towards the full integration into the European Research Area. In the e-learning process developed here, there are specific advantages for learners, instructors and administrators. Looming above these specific advantages, there are three mega-factors:

- There is a trend in education administration and management, namely to reduce training and education program costs. e-Learning cost more to develop initially, but saves a lot of money amounts on delivery.

- The number of adult learners in schools and business, who are motivated, independent, and focused, is expanding. They know they must keep learn-

ing or they will fall behind. Many are computer literate and ready for the independent study mode of e-learning. Mature students with busy schedules and family responsibilities appreciate the opportunity to study at home or at office.

- Industry entrepreneurs look at the forecasts indicating that there will be substantial growth in e-learning. e-Learning is touted as a gold mine for the industrial sector.

2 Changes in Human Lifestyle

In developing and promoting the e-learning system in the University *Politehnica* of Bucharest we have discovered a social phenomenon that has proved to be an opportunity for our activity. We have found out that ICT revolution induce deep changes in human lifestyle. There does seem to be a distinct difference in how the under-40 year old generation learns compared with older adults. The experience of younger learners with television, video games and computers, with a corresponding reduction in the amount of time spent reading, means that they actually think differently. The technology of e-learning, because it resembles the media familiar to younger learners, demands that they get actively involved in the learning experience [10]. The resulting shift is a change from receptive learning to active learning. The pressure of networked digital communications technology to move learning from passive or receptive modes of learning to active inquiring modes of learning is in opposition to the tendency of formal schooling to convert "dynamic knowledge into static information" [12].

When it comes to e-learning many institutions have focused on self paced, CBT (computer based training) courses. The reason for this switch was to reduce the reliance on instructor led courses. Results have not always been spectacular as students take a half-hearted approach to courses, not starting, dropping out or generally not learning much. We have chosen a model of leader led e-learning system, in which instructors play a central role in either delivering presentations or moderating discussions. Without an instructor to provide motivation, prodding or guidance, the learner often feels isolated or lost.

Designing and implementing an e-learning integrated system have two major stages. The first one is about developing the "matrix" of the system or "Learning Management System (LMS)", as e-learning insiders call it. In the second stage this "matrix" must be filled with the educational content.

Some LMS provide authoring tools [15]. Some contain competency instruments that help students select courses to match gaps in their skills and knowl-

edge. LMS can also vary in their look. Some are 3D representations of learning environments, with fancy graphical metaphors for rooms and learning activities, while others are plain, text-based interfaces. Some are strong on video and other bandwidth consuming media. Some link competencies to courses and allow students to select courses to bridge gaps in their personal competencies. Others simply list courses. But a LMS must have a few basic features:

- High availability: The LMS must be robust enough to serve the diverse needs of thousands of learners, administrators, content builders and instructors simultaneously.

- Scalability: The infrastructure should be able to expand (or "scale") to meet future growth, both in terms of the volume of instruction and the size of the student body.

- Usability: To support a lot of automated and personalized services, such as self-paced and role-specific learning, the access, delivery and presentation of material must be easy-to-use and highly intuitive-like surfing on the Web.

- Interoperability: To support content from different sources and multiple hardware/software solutions, the LMS should be based on open industry standards for Web deployments and support the major learning standards (AICC, SCORM, IMS and IEEE).

- Stability: The LMS infrastructure must reliably and effectively manage a large enterprise implementation running 24x7.

- Security: As any outward-facing collaborative solution, the LMS must selectively limit and control access to online content, resources and back-end functions, both internally and externally, for its diverse user community.

In a LMS an assessment engine with built-in testing and evaluation capabilities is critical to monitoring, tracking and rating e-learning initiatives. The system should support time limits for self-administered tests, limit the number of attempts allowed and impose a time delay between attempts. By tracking the learning process, instructors can evaluate the effectiveness of the courses and accurately gauge the knowledge and skill levels. The word "accurately" refers to the fact that e-learning methods have, besides all very well known advantages, one that is less obvious, namely these methods are more unbiased in respect to learners [8].

The assessment engine of the LMS has a high degree of complexity. In evaluating an LMS, it should also be taken a hard look at its developer. One way to test the system is to work with the system's developer on a pilot program. You should be able to start at a size that is comfortable to you, with minimal commitment

of finances or staff. You might consider leasing space on a developer's e-learning system. This way, you can test a fully operational and market-proven system on a low-cost trial basis.

Reducing the cost of higher education is sometimes advanced as an objective of university e-learning strategies. Considerations of cost effectiveness were often secondary to the challenge of developing and delivering innovative programmes. The extent of this change in perception is difficult to assess, but it is clear at least that interest in measuring the cost, and assessing the cost-effectiveness, of e-learning is growing. An expectation that technology-based teaching would reduce the cost of education is not new. Many of the earlier modes of technology-based teaching were the subject of substantive empirical research; early studies of broadcast media, in particular, contributed greatly to the development of an effective methodology for their cost analysis. Later, attention focused on methodological issues, on the institutional return on investment, and on the development of related guides and handbooks to assist universities in analysing costs. As in earlier studies, much depends on perspective; where account is taken of the cost of students' time, online learning is more likely to provide a cost-effective alternative to more traditional learning modalities. (It is hardly surprising, then, that so many e-learning programmes are aimed at the professional and business sectors and at students for whom time has a high opportunity cost, in occupations where employers are more likely to meet the cost of tuition.) Overall, observation of early programmes suggests that those that respond to the ascertained needs of potential students, that have due regard to students' preferences with respect to timing and mode of access, and that use technology in an appropriate (often low-tech) way, are more likely to prove cost-effective - and to survive; and that programmes that ignore considerations of this kind, are less likely to do survive, even if exceptionally well endowed.

The use of e-technologies in teaching large classes, especially freshman classes in Science and Mathematics, has been of particular interest. A few universities have radically changed their traditional teaching practice (by replacing lectures to large classes with web-based resources, for example), with the aim of improving learning outcomes, raising learning-success rates, or increasing student-retention of material for later use - again with some early indications of success. More generally, concern relates to a perceived change in the methods of instruction, with teaching activities being restructured through technology in a way that reduces the autonomy and independence of faculty and their control over their work. Concerns

are compounded by a more general unease, implicit in faculty fears of loss of tenure, replacement, or simply that the use of technology will mean more work for faculty members, or more time on teaching and less on research. In practice many e-learning programmes are initiated by faculty; and, from an institutional perspective, the practical advantages of faculty involvement in course development and teaching are too obvious to need stating. Such involvement accords well with institutional mores, especially in research universities, giving due recognition to the role of the department as the basic organisational unit. The extent of faculty strategic control of e-learning can vary greatly between institutions, sometimes in subtle, but significant, ways; other things being equal, faculty-led (and faculty influenced) initiatives seem more likely to prevail in research-intensive universities.

As investment has grown and the deployment of e-learning become more routine, more institutions are addressing the question of cost. Many now have established procedures for assessing the financial viability of proposals to initiate e-learning programmes, prior to their development and delivery.

Programmes generally respond to identified educational needs, and are often career-related and targeted at familiar market sectors. Courses are generally based on those taught on-campus (so issues of curriculum-design, academic content, and accreditation are easily resolved). In the main, adjunct faculty are contracted to develop courses (under the general supervision of a department chair - usually a full-time faculty member, responsible for the programme), or fulltime faculty teaching the course on-campus are paid a stipend to develop the course. In addition, adjunct staff who develop courses are usually contracted to teach the programme. Courses generally follow a strict syllabus, with weekly lecture modules and regular assignments. Teaching strategies vary somewhat from one tutor to another, but the approach to teaching generally includes designated texts, provision of additional course materials online, the completion of personal assignments (often related to the student's work experience), and on-line peer discussion.

Instruction tends to be predominantly text-based, with communication by email, and an instructional focus on group and individual project-work. A final proctored examination is an additional part of the assessment for most courses.

Courses generally are developed using a (proprietary) on-line platform, with assistance, as required, from a special support unit, incorporating instructional designers and web developers. Students additionally have online access to library services and bibliographic databases. An administrative unit is responsible for the operational management of the e-learning

programme as a whole, with technical support services out-sourced to external providers. Online technologies tend to be used in a relatively simple mode, with the primary emphasis on easy access for students.

3 An Effective Educational Design

Academics from most departments of the Faculty of Industrial Chemistry in the University *Politehnica* of Bucharest are involved such a project [9], in order to catch all important aspects of the training process, starting with assistant professors and finishing with full professors. The development team includes several students and graduates with experience in working with educational information systems. The system will lead to a stepwise adapting of the traditional teaching methods to the new technologies. The system has an open, flexible architecture, allowing new functions to be added; it is based on a stable and secure platform, has a user-friendly interface, all functions being easily accessible. These will support the typical activities in a higher education institution, offering simultaneous answers in reasonable time frame for atypical operations. The system will operate in multi-user regime, allowing usage monitoring, periodical system back-ups and restoring in case of data loss. The synergy between the two teams involved in the project (Centre of Technology Transfer for Process Industries - CTTPI from the University *Politehnica* of Bucharest and SIVCO Romania S.A.) ensures the potential required for a successful implementing a high complexity project.

A communication network based on optical fibre at a speed of 100 MBit/sec, developed on three hierarchical levels, is used as IT support as shown in the scheme. Since virtual area networks will be developed, the topology will no longer represent a limit in maintaining the system hierarchy. The open architecture will allow subsequent developments, as IT progresses. The starting software platform for the e-learning system is AEL (Educational Assistant for High schools- Asistent Educational pentru Licee), undergoing a heavy structural and functional change to fit the necessities of a technical faculty.

The e-learning term means any learning approach using an informatics network to provide knowledge, interaction or facilitated access to sources of professional knowledge. The network may be the Internet, a local or an extended network. The e-learning activities will employ a wide range of information technologies and media.

The project is in line with the reform initiative in the Romanian educational system and intends to make the best use of the opportunities offered by the informa-

tion and communication technology in the educational area. The educational system may fully benefit from the advantages of the e-learning system through:

- asynchrony learning, leaving the students the freedom to decide the learning rhythm;
- student-oriented learning, allowing a better control of the latter upon the learning curricula;
- multimedia integration, using the opportunities offered by the information technology;
- on-line exams, thus maximising the learning efficiency and resource usage;
- on-line libraries, concentrating the knowledge in a relevant way by connecting the locale and global resources (Internet).

The project is viable and stands real chances to be transposed in opera because the teams involved have experience and lots of achievements in this field. The project main objective is to develop an e-learning informational system for a higher education unit. It will be fulfilled by:

- designing a hardware and a software structure;
- developing a three levels communication system (faculty, departments, laboratories) using virtual local area networks;
- implementing and adapting the AEL software to create conditions to run the following activities: lectures, seminars, laboratories, projects, individual study/ student research projects;
- developing three-sites communication procedures (2 in University "POLITEHNICA" of Bucharest and 1 at SIVCO Romania S.A.);
- developing pilot courses for 10 departments and 10 specializations;
- testing the pilot e-learning laboratories equipped with 4 to 10 computers mainly to develop and run teaching activities;
- creating the system technical documentation;
- setting-up testing procedures for all three levels;
- system homologation and public presentation.

The project intends to implement locally the European and national strategies for developing the higher education system. The pilot e-learning system will be designed for a technical faculty of remarkable size and complexity, and then distributed to other units by technological transfer. Topologically the faculty is distributed between several sites, each one consisting of several buildings. Administratively, the faculty consists of several departments, organizing specializations for the students enrolled. The information media involved will support the e-learning components development, representing the base for setting-up a future continuous education tool and a distance learning system. The first partner in this project is a large technical university, University *Politehnica* of Bucharest,

namely Centre of Technology Transfer for Process Industries - CTTPI. An important part of the faculty academics are linked with the activity of this centre. This team experience as regards developing information systems and courses for higher education, running connected activities and using the e-learning tools properly is really good. It has been involved in several national and international projects in the field. The beneficiary, and at the same time the other active partner is SIVCO Romania S.A., a research-development company specialized in manufacturing and distributing complex ERP (Enterprise Resource Planning) and e-learning high school software. The IT experience of this team is highly recognized nationally and internationally.

The Centre for Technology Transfer in the Process Industries (CTTPI) was created in 1998 in University *Politehnica* of Bucharest, funded by the British Council link Project and by the TEMPUS program. Main activities of CTTPI are academic scientific research, postgraduate training, specialized training, consultancy and service, international cooperation. All these activities are carried out in the process industries field. CTTPI is a CNCSIS accredited centre, being member of several international networks: UMIST Department of Process of Integration Research Consortium, European Federation of Chemical Engineers (EFCE) Working Party on Computer Aided Process Engineering, and UNESCO International Centre for Engineering Education. SIVCO Romania S.A. is one of the most important providers of ERP solutions in Romania: eLearning, eHealth, eBusiness, and eGovernment. The company has gained a solid reputation on the Western-European and American markets as well. Due to the geographical position and multilinguistically facilities, SIVCO Romania S.A. is able to offer technical and commercial support for Central and Eastern-European countries and Russia as well. This leading position SIVCO Romania S.A. is maintained because of its team, consisting of people able to design, implement, lead, and finalize successful projects. SIVCO Romania S.A. offers service for the whole lifetime of an informatics project, including: needs assessment, need engineering, writing source codes, testing, quality insurance and control, consultancy, implementation, training, technical assistance, maintenance and technical support, project management.

Solutions proposed by SIVCO Romania S.A. address to medium and large enterprises from all industrial and commercial domains, as well as to public administration system and the services companies.

Here are some very successful projects of this company: implementing eLearning AEL platform in every high school in Romania, setting-up complete informa-

tional systems for national companies such as SNP PETROM and The Sea Ports Administration Constanta, various companies producing electrical and thermal energy in Romania. Setting-up and implementing integrated solutions are based on enormous efforts in developing, collaborating and training thousands of customers. As regards projects developed for international companies, there are HP Germany, Amano Belgium, Nepenthes in France and many others

4 Principles of Communication

As we have shown above, the basis of an interactive pedagogy is to recognize the multilateral dialogue. The growing radius of action of the individual, global mutual interdependence and connectivity on all planes is urging the learning system to organize itself in an ever better and more sensible way. The debates over multicultural education in the academic world suggests that we must seek common ground, to articulate what unites as well as divides us, and come to appreciate our commonalities as well as our differences [12]. Indeed, the rancor in some of the education wars over curricula, pedagogy, and education in general are part and parcel of broader cultural wars between competing groups and ideologies fighting over the future of society and culture [5]. Evolution does not stop with the human being, it rather goes on towards ever greater personalization and socialization. To the same extent as humans come closer to each other in a psychological sense and thereby unite, reservoirs of personalization and socialization will be opened. So one of the principles of communication is

- The Principle of Growing Personalization and Socialization The growing personalization and socialization manifest themselves in an insuppressible urge of individuals as well as of whole nations towards more self-reliance, self-determination, and self-competence [1]. We cannot overlook the urge any more to set free and develop all the powers and talents inherent in individuals and people.

Growing personalization can also be seen in the transition from the age of information to the age of consciousness. In a few years the people who are dealing with the growth of consciousness will have outnumbered those who are working in the sector of information.

At present, growing socialization is actually happening more as a result of the fear of global death, than out of mutual responsibility, solidarity and sympathy. My assumption is that, in academic education, video technology provides access to a large number of

voices excluded from cultural production and expression, materializing the multicultural dream of democratic culture as a dialogue of a rainbow of voices, visions, ideas, and experiences.

- The Principle of Non-Symbiotic Unification

The proper understanding and handling of the Principle of Non-Symbiotic Unification will be of crucial importance in the decades to come. Fear of being symbiotically engulfed and losing one's identity are central themes in any psychological-therapeutic process [3]. This fact is a hint that overcoming symbiotic relationships and instead developing a more healthy kind of psychological closeness, is one of the most important steps for humankind to be learned. When subjects are ready to work through their fears of losing their self, a capacity to live in closer relationships will emerge. This is a closeness which will not lead to a dissolution of a person and his or her individuality but rather the opposite [5]; an identity which has become stronger, more developed and more aware through these processes of unification.

- The Principle of Plurality Unification (in plurality, without symbiotic loss of identity) demands that people continually overcome *ontological inertia* which also belongs to humankind as does the urge to unify. As Teilhard de Chardin wrote "*The more unification, the more suffering required. This equation is on the top of every transformation of mind-matter*" [4]. In this light, the principle that can be established is

- The Principle of Differentiation Multicultural education can be used to enrich the subject matter of many traditional disciplines, ranging from mathematics to anthropology. In addition, traditional disciplines can themselves be taken as the topic of critical scrutiny and inquiry, and can thus be used to promote the pedagogical goals of developing sensitivity to cultural difference [14]. The emphasis in the reader is on using a medley of media material to present aspects and effects of the politics of representation from a variety of perspectives.

- The Principle of Emergence By emergence, we mean the creative process in evolution which is effective when a new synthesis and a new shape is brought about by integrative unification; that is to say when something new appears, i.e. emerges. The new property which emerges cannot be understood or predicted from the former structures and states, and it can not be forced to arise either. As far as education is concerned, what is important is to promote both tra-

ditional pedagogic goals (the transmission of knowledge, the cultivation of reading and writing skills, the mastering of fields and disciplines), as well as to contribute to the production of a more diverse democratic polity that appreciates and affirms differences.

On the other hand, many of the teachers who are using multicultural media as a tool to promote their own disciplines downplay the importance of cultivating media literacy as an important tool in developing students' critical and analytical skills. One needs to be aware that each media technology (film, video, photography, multimedia, and so on) have their own biases, their own formal codes and rules, and that the ways in which the media themselves construct and communicate meaning needs to be an explicit focus of awareness and analysis. In our phase of transition, one needs teachers who realize that what is emerging out of and through the unification processes in Europe and around the world is not amenable to manipulation. One needs teachers who are able, out of their own spiritual experience, to rise those powers of faith and confidence in students, and generally in people, powers which are needed if the birth of humankind towards a unitary organism is to happen. In this point the next principle is very important.

- The principle of Free Choice As a member of a new humankind, the individual will not have the right any more to sit idle. The development of everybody else depends on his or her individual development [11]. In a new Charta of Humanity still to be written, the following points should be taken care of: the absolute obligation of an individual to work at his or her personality; the relative right of an individual, to develop his or her potential to the fullest (but not at the cost of others); the absolute right and absolute obligation of an individual not to be introduced into a larger whole by outward pressure, but by inner conviction, i.e. in accordance with his or her conscience. The principle of free choice, thus means: Self-realization is serving humankind; serving humankind is self-realization.

- The Principle of Synergy Synergy means working together. An organism is said to have high synergy if the elements follow their own aims, but these aims are coordinated towards the good of the whole organism. An organism is said to have low synergy if the elements follow aims which are not in accordance with the common aim [14]. Therefore it is important for professors to use many media of communication and forms of cultural pedagogy, ranging from print media such as books, newspapers, and magazines to film, radio, television, popular music,

photography, advertising, and many other multimedia cultural forms, including video games, computer culture, CD-Roms, and the like. Media literacy thus requires traditional print literacy skills as well as visual literacy, aural literacy, and the ability to analyze narratives, spectacles, and a wide range of cultural forms. Media literacy involves reading images critically, interpreting sounds, and seeing how media texts produce meaning in a multiplicity of ways.

5 Conclusion

E-learning has grown significantly over the last decade to become a significant mode of instruction in higher education. E-learning means a wide access to educational opportunity. We are still at an early and developmental stage in the application of e-learning, and it may be some time yet before the longer-term consequences for universities become clear. The differences in the strategic approaches to e-learning adopted by universities - sometimes superficially slight, but consequential in terms of deeper differences in academic culture between institutions - point to a high degree of adaptability on the part of e-learning in application. If so, e-learning, by virtue of its capacity to adapt to different contexts, may be more adaptable - and ultimately less threatening - to academic mores than some observers fear. Overall, the speed and scale of institutional response to online technology suggests that e-learning is relevant to the challenges and opportunities now confronting universities; more significant still, it suggests that investment in e-learning is compatible with the institutional aims, and internal decision-making processes of the universities in which it is deployed. It is, perhaps, in that relevance and compatibility - and in its characteristic adaptability in use - that the ultimate significance of e-learning essentially resides, and on which its longer-term impact on universities ultimately depends.

Starting with a concrete example - that of a project carried out at the University *Politehnica* of Bucharest I have analysed how the concept and practice of globalization impacts teacher education and our roles as university in preparing students for globalization. My concern was to locate the nature of globalization within modernity, and modernity's characteristic as that of constant change. I have considered the sources, the results, and the implications of change within the international scene. What is important is to problematize globalization by critiquing the link between progress and development. Because common nomenclature associates globalization with Westernization and the use of technologies to transform the world, we explored the role of technologies that make world-

wide communication possible, and whether technologies can be used to better the human condition as the Western and non-Western worlds converge and sometimes collide. My perspective is that of educators who view the current world as one that is highly internationalized and intensely global, rendering nationalistic orientations obsolete. I also view education and educators as involved agents in the construction of a just social world, and contend that this implies infusing the curriculum and teacher education with cosmopolitan sensibilities, frequently, through critical theory and critical pedagogy. I think that in the apprehension of complex, multiple, proliferating and immanent realities there is no unitary 'reality' of globalization.

Discussions of the impact of globalization on curriculum and pedagogy are concerned increasingly with two areas. One is those matters that need to be covered in learning (en)counters in which the aim is to enable learners to engage as global citizens or consumers - covering, for example, issues such as global values, sustainable development and environmental education [7]. The second is an examination of the impact of information and communication technologies (ICTs), of space-time compression and of emerging forms of global education enabled by these developments. Significant though these issues are in themselves, there is a danger that they can be constructed as encompassing all that there is to be said about the implications of globalization. We would argue that it is just as, if not more, important to be able to locate the full range of contemporary and emerging curricular and pedagogical practices in relation to the play of globalization. The more general point furthermore is that no single development can be made transparent within a single overarching and transcendent explanation or narrative, but rather rests more readily within the differences and diversity that are both a feature and an outcome of globalizing processes.

Education in the Information Age brings together the experience of academics, school officials, and representatives from business and government. Their experiences are not about new ideas or theoretical formulations, but rather about the more pedestrian but often more arduous task of finding out what works in putting information technology to use in education. Clearly, applying knowledge to everyday technical educational activity means that the people working in this area must understand and master the requisite technologies. This requires creating a labor force that is capable of dealing with information technology.

Some general ideas emerge from this educational activity:

- It is imperative to transform the nature of education toward building higher-order cognitive

skills, more inquiry and project-focused modes of operation, and more collaborative working styles, and toward creating "smart learners."

- Information technology can play an important role in the process of educational change: by opening access to a wealth of information, by facilitating the process and by engaging the interest and attention of the learner.
- "Technological fluency" may stand alongside reading and mathematics as one of the essential skills for a successful life. Word processors become the paper and pencil of the information age. Spreadsheets replace the slide rule of engineers and the calculating machines of office workers. Data bases replace cabinets full of papers. Those unable to operate these new tools are handicapped in the modern world.
- Yet, technology provides no "magic bullet." Indeed, the introduction of technology on a large scale often creates new problems to be addressed. There is a price to be paid. The ticket for admission to information technology is expensive. In addition to resources, it requires concerted effort on the part of many actors in society. This is no minor challenge.
- The goal should be the "mindful introduction" of technology into education, not flooding the mind and the school system with everything that technology can offer.

Therefore selectivity is essential. Understanding what the new media can offer in each case is vital. Successful experiments start with a well-identified need, for which new technologies may be the appropriate answer. Most experiments to introduce information technology have taken place in mature and rich economies, where the resources are ample and the teachers well qualified. But the path for developing countries, which lack those resources, remains largely uncharted.

We can safely predict an ongoing market for residential higher education and the unique socialization and networking roles it serves. Such institutions will primarily invest in technologies that enhance their regular course offerings; perhaps secondarily (if at all) getting into the online distance learning business. Others may see the online market as an important new source of students and funds, and will thus capitalize heavily in new ventures to be at the forefront of the predicted boom in global online education. Successful models will provide a flexible mixed or hybrid mode (varying proportions of online and face-to-face methods)

for teaching and learning. Whatever model emerges for a particular institution should be the result of careful planning and reflect a synthetic approach that includes wise use of the existing and cutting-edge technologies and is customized to the subject matter, to student needs and schedules, and to the institution's mission, goals, and budgets.

A new, global education is the purpose and the result of an action which includes teachers, students and inspired executives. The aim of this paper is to discuss the impact of globalization on curriculum and pedagogy that are concerned increasingly with two areas. One is represented by the matters that need to be covered in learning to permit learners to engage as global citizens or consumers, covering, for example, issues such as global values, sustainable development and environmental education. The second is an examination of the impact of information and communication technologies (ICTs), of space-time compression and of emerging forms of global education enabled by these developments. Using the University *Politehnica* of Bucharest's activity in this domain as an example, I have shown that it is important to be able to locate the full range of contemporary and emerging curricular and pedagogical practices in relation to the play of globalization. Taking everything into account, I would conclude that attempts to tighten control of the curriculum at state level do not, as it is often suggested [2], undermine the globalization thesis but they can be understood as a dimension of the contemporary inter-relationship between the global and the local. In a similar way, the emergence therefore of national curricula is as significant in a context of globalization as the development of ICTs in pedagogic practices and the role of media and cultural changes more generally. This illustrates that globalization is no single unidirectional and monovalent trend. As we have pointed out previously, the global and the local cannot be separated.

References:

- [1] L. Bartlett, T. Evans, and L. Rowan, *Shifting Borders: Globalization, Localization and Open and Distance Learning*, Geelong: Deakin University Press, 1997.
- [2] Benko and Strohmayer (eds), *Space and Social Theory: Interpreting Modernity and Postmodernity*, Oxford: Blackwell Publishers, 1997.
- [3] B. Bernstein, *Pedagogy, Symbolic Control and Identity: Theory, Research, Critique*, London: Taylor and Francis, 1996.
- [4] T. de Chardin, *La vision du passé*, Paris: Julliard, 1957, p. 14.

- [5] R. Edwards, R. Usher, *Globalization and Pedagogy: Space, Place, and Identity*, London: Routledge, 2000.
- [6] S. Encheva, T. Sharil, Multimedia Factors Facilitating Learning, *WSEAS Transactions on Advances in Engineering Education*, Issue 10, 4, 2007, pp. 203-209.
- [7] Gough, Anne, *Researching Environmental Education in Teacher Education: Initiating and Sustaining Student Interest*, Deakin University, Australia, *International Research in Geographical and Environmental Education*, vol. 7, nr. 3, 1998.
- [8] E.M. Grierson, *Politics of Globalization, Research and Pedagogy: Preface and Acknowledgements* [on line]. Access: Critical Perspectives on Communication, Cultural and Policy Studies; Volume 25, issue 2; 2006; <http://search.informit.com.au/documentSummary;dn=322741102376447>.
- [9] <http://search.informit.com.au/documentSummary;dn=322741102376447>.
- [10] <http://upb.ro>
- [11] D. Laurillard, *Rethinking University Teaching: A new Conversational Framework for the Effective Use of Learning Technologies*, London: Routledge Falmer, 2002.
- [12] S. Livingstone and M. Bovill, *Young People and New Media*, An LSE Report, 1999.
- [13] P.G. Marambeas, P. Stergiopoulos, S. Papathanasiou, P. Bauer, S.N. Manias, Interactive Multimedia Material for an Electrical Power Quality Course, *WSEAS Transactions on Advances in Engineering Education*, Issue 7, 4, 2007, pp. 141-146.
- [14] A.D. Marwick, *Knowledge Management Technology*, Trademark or registered trademark of Lotus Development Corporation, Microsoft Corporation, or Tacit Knowledge Systems, June 2001.
- [15] R. Onofrei, A.M. Josceanu, R. Isopescu, V. Plesu, Implementing an e-Learning Integrated System: Motivation, Problems, and Solutions, *Internationally Attended Scientific Conference of the Military Technical Academy*, Bucharest November 2003.
- [16] Yong Kim, Jeong-Hee Seo, Ja-Mee Kim, Won-Gyu Lee, Suggestions for Effective Teaching Methods through Analysis of the Learning and Thinking Styles of Gifted IT Students, *WSEAS Transactions on Advances in Engineering Education*, Issue 11, 4, November 2007, pp. 228-237.