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Open University and Modern Distance Learning for Sustainable Development in India and Poland

Historically speaking Distance Education, also identified with “Open Learning” originated in the 19th century in European countries, in the form of postal education, where the tutor or mentor imparted learning by means of the letter or by “correspondence”.

Gradually correspondence came to be one of the mainstays of Distance Education. It is one of the methodologies used for Distance Learning even today [21, 23].

The use of technology and multimedia: the radio, the television, audio video conferencing, the computer and the mobile phone have transformed and exacerbated the very processes of Distance Education, so much so that the “real” and the “virtual” have merged and have become composite entities. Indeed today the identity of Distance Education is “endangered” and is in some sort of a crisis, as it now impinges upon traditional and conventional education with internet learning substituting the classroom. Earlier parameters were fixed so to say, and Distance Education typified features which were set apart and “distinct” from the stereotypes of conventional classroom teaching and learning the structured four walls of the classroom.

However Distance Education graduated from the print medium, to other forms of technology, as mentioned above making it intrinsically innovative and adapting to technology with alacrity, to instill creativity to pedagogy. Technology and Distance Education thus became handmaids for a common cause – Education. Traditional education still remained bound by stereotypes – the “chalk and talk” concept. Thus Distance and Open Education is technology, change and innovation.

If we are to talk about preserving architectural and historical heritage technology, can and must play a pivotal role. The computer can help us to “see” visuals,

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the LCD Projector can preserve them, and video CDs can encapsulate such heritage with the help of narratives. Audio-Video visuals can be made to complement lectures on architectural history, and tourism. The study of history, and that of any form of architecture Romanesque, Gothic, Renaissance or ancient can be supplemented by visuals.

This will be preservation and sustainability of heritage, by making visuals “speak” and transforming the real into a sensuous reality. Sustainability is no doubt preservation of the historical monuments, but sustainability will be carried further, if we document records of architectural sights to unravel historical truths to students and researchers alike. The city of Venice will be an illustrious example of using Distance Education methods to unravel the very poetry of this historical city, a city where Shakespeare based one of his most striking plays – *The Merchant of Venice*. This kind of education about cultural values could be supplemented by education about protection of old architecture and monuments by protection of the air against traffic output and industrial pollutants.

Distance education and mission of Open Universities is especially important during UNESCO Decade of Education for Sustainable Development both for wide scale dissemination of top quality professional tele-training (eg. postgraduate courses) and in connection with life-long education for common action of experts in different fields and inhibitors of different regions for better quality of the human environment and life [5–7, 10].

Important for the future education about linkage between solving global problems eg. prevention against deterioration of Biosphere, warming effects in linkage with local action for sustainable development seems be impact of e-learning of community (where people learn both from experts and from one another) in open and distance education through e.g. Internet, intranet, extranet, as supplementation to satellite radio and TV broadcasts. For wide scale education is important concept of prof. W. Leal Filho of application of IT for higher ecological efficiency of business activity based on sustainability [17].

There are complementary experiences of Open Universities from different regions of the world eg. the Indira Gandhi National Open University in New Delhi, India and the national scale Open University at AGH University of Science and Technology. The AGH Open University (UO AGH) is in progress since 20 years in Krakow, Poland [10, 11]. Other Open Universities in different Polish cities are open only for elder people (so called the Third Generation) and their curricula is as a rule limited to selected subjects eg. problem of health of this group of society, including nutrition, physical activity, or social sciences, etc. There are many other Open Universities involved in education about different aspects of sustainable development eg. in Tokyo University, Brussels and the oldest one in UK. AGH Open University is focused on interactive education toward common action of experts

and knowledge-based society for sustainable development (starting from discussion on the Bruntland's team report *Our Common Future*). There were over 1000 experts as invited lectures (from technical, natural, medical, social, economical and other fields) from majority of university cities in Poland and well known Polish experts from other countries (as lectures followed by discussion are in Polish). The basic series of lecture are on application of progress of science and technology for more effective primary prevention against environmental risk factors for human health, nature and culture heritage, overexploitation of natural resources, introduction of innovative, clean and renewable sources of energy, environmentally-friendly biotechnology, new achievements of computer science (eg. data management, e-science, e-learning, telemedicine, new applications of neuronal network and artificial intelligence) for better quality of the human environment and life for all [21, 22]. So called humanization of technology is also connected with introduction new achievements of interdisciplinary studies e.g. focused on early detection of environmental health hazard and more efficient biotechnologies for prevention against pollution of the out- and in-door environment (bioremediation and biodegradation of pollutants in the air, waste water, soil, waste management), as well as cooperation of experts from technical sciences and archeologists, historians, experts in conservation of old architecture and fine arts, etc.

In relation to global cooperation for prevention climate change there since several years are many lectures related eg. to climatology, environmental engineering and protection, modern low energy technologies and systems of heating, and lighting recommended to society and also introduction of clean coal combustion within European Network, perspectives of application hydrogen energy in linkage with biotechnology and material engineering, geo-engineering and deposition of large volume of carbon dioxide in artificial caves, as well as reclamation and application of laser biotechnology for assimilation large amount of this green house gas by energy plantations, as well increase in biomass production as active contribution to prevention against warming on international scale etc. AGH Open University used to introduce every year special series of lectures related to progress in international cooperation (especially in Europe) focused on sustainable development (including regional activity) and prevention against global change of climate [8, 9, 12]. There are also special presentations of creative contribution to protection of the natural environment and prevention against climate change of the best scientific teams (NGOs) of university students and pupils from secondary schools and teachers as tutor of this voluntary education. The participants of our lectures are supported with background materials like proceedings of 12th International Conference and some Polish conferences on sustainable development (in different aspects eg. education, sustainable tourism, primary prevention of environmental health hazard, practical implication of the UN's Earth Summits on

the Human Environment and Sustainable Development, UN' s Climate Conference in Poznan, Poland at 2008, etc.). There are opportunity for presentation and discussion with representatives of different professional and age groups of participants useful good practice in common action of experts, decision-makers and local society for sustainable regional management in different parts of the country as well as in different countries [5–7].

Education at this field at university level is a crucial problem. Therefore very important is promotion of the International Journal of Sustainability in Higher Education [17]. High appreciate up to day source of related information is headed by prof. W. Leal the Center of Information about Environment and Sustainable Development for the Baltic Countries and National Point for Consultancy about the European Projects (including Frame Project 7.6 on Environment and Climate Change. There were invited scientists from leading university centers in Poland, Polish Academy of Sciences, research institutions, regional and central administration (including deputy ministers, governor of the province or mayor of the city), regional and Polish parliament, environmental NGOs (including university students scientific clubs), university scholars and teachers, engineers of high repute as well as experts from some other countries (including up to day review of European Programs and especially interesting, interdisciplinary pilot projects). Lectures are followed by discussions at the University and some of them are in radiocasts or Internet including interactive relation between scholars and students. AGH Open University since 20 years contribute by lectures of many eminent experts from different fields in formation the Informative Society focused on human-oriented activity. Different aspects of the impact of Internet on contemporary students were subjects of interdisciplinary case study initiated by prof. R. Tadeusiewicz, author of book about Internet and Society [20]. He and his staff contributed also in very creative way to application of informatics in effective searching for needed scientific information and automatic understanding the texts based on artificial intelligence. One of application of IT tools may be nutritional prevention of environmental health hazard for consumers connected with deficiency of necessary elements or excess to toxic trace elements in the natural environment, human food and body [21]. Such achievements may be very useful in e-learning [22].

Communication technologies popularly known as ICTs are being increasingly linked to education. Integrating technologies with the educational system is a major challenge of pedagogy today. In fact the two are inseparable. In my opinion this “technologising” of education, all began with the phenomenon of distance education, and its growing popularity, It is adult education, continuing education, training, digital education and professional education- all interconnected, where distance education is a mechanism to facilitate learning for the above mentioned components. Technology is the interface and the catalytic medium to take educa-

tion to various working groups of people, drop outs from the conventional system of education, and adult learners in general. The popularity of technology was because of its cost effectiveness, where there is little or no recurring expenditure, it breaks barriers of time, place and space, creating a cosmic space in the globalised community of today. Technology and education are concomitants and inseparable entities, where technology is a means to a larger end. To view technology only as an end in itself is positing a dangerous and inimical view, because in a technology driven society there is danger of its misuse and abuse. Up to day knowledge in human ecology should be recognized as quite necessary criteria for primary prevention of potential negative effects (e.g. anthropogenic electro-magnetic fields) connected to technology applied on still wider and wider scale for ecosystems as well as for human health (especially mobile phone as common new risk factors for pregnant women and small children).

Distance Education uses efficaciously components of technology holistically, where classroom teaching is also a significant methodology. But, technology aided instruction complements the study texts, and weaves a complex fabric into the intricacies of learning and teaching. The furious clamour for e-learning in the form of internet and mobile learning characterizes our demand for learning and training. The world of work and the world of education are intimately connected, as the Delors Commission Report of UNESCO, posits so aptly. But more than technological vision, it is the technological appositeness or appropriateness that is important. E-learning is a composite compendium of technologies including the print material as print is the most primal form of technological intervention in education [14]. Synchronous and asynchronous learning is a technology created potential, unleashing borderless education. Such kind of education seems to be adequate for dissemination of knowledge about recommended technologies for global cooperation necessary for successful prevention of global change of climate. The necessary elements of international network are modern centers of information about environmental problems and sustainable development like the Center founded and coordinating by prof. Leal for the countries around the Baltic Sea. One of subjects of education open for whole society is dissemination of knowledge about new sources of clean and renewable energy (e.g. convertors of solar, wind energy, as well as methods of production of biomass and bioenergy from organic wastes) and also low energy technologies and system of illumination. Another field of education toward reduction of emission rate of greenhouse gasses is recommendation of biofuels and alternative sources of energy for vehicles, as well as promotion of promotion of food, bikes and water tourism connected with education versus tourism by cars. People from different groups of knowledge-based society could contribute in creative way to cooperation with experts for sustainable development both in urban and rural regions.

Application of different forms of distance education is especially important for teaching at university future engineers and teachers as well as for postgraduate national and international courses (including interactive education via Internet).

Prof. Guha and colleagues experience as an academic administrator in the Indira Gandhi National Open University for the last sixteen years or so, has enabled me to understand not only the perspicacious utility of technology, but its subjective appropriateness [14].

What is advantageous in one local condition is not so in another, in a heterogeneous society with an intermix of variable levels of social and economic development. This is the Indian context. Thus contrary to common belief that the radio has now become an outmoded form of technology, there has been a resurgence of the radio in the form of FM Channels, and the community radio. In Poland there are also good practice of long-term cooperation of AGH Open University with radio and local newspaper for dissemination of information about lectures and their outcome for inhabitants of the region. Two way audio and one way video tele-interactivity is cost-efficient and effective, but we have to perhaps intensively reach rural areas, which are handicapped by limitations such as paucity of electricity, and lack of TV signals.

In the cities and towns the internet is very popular due to the mushroom growth of cyber cafes. Education must be construed in terms of learning and entertainment – in common parlance – “edutainment”, and technology is the driving force and moving spirit here. Computer broadcasting or podcasting can be very potent devices for teaching and learning, the skype and the yahoo messenger are repositories for educational texts in a contexts where education drives technology. Blogs should be used by teachers and this will create classrooms within classrooms, both in traditional and distance education contexts.

Dr. Guha is trying to contextualize things in a country with disparities of scale. The wide disparities of economy, and diversities in geographical conditions automatically bring in the oft talked about and touted “digital divide”. It is in India that e-learning communities and groups can play a vital role in dissemination of knowledge and good practices about the successful use of technology for development and education. The broader platform of e-learning is the rapid growth of online activism, writing, creative writing in various sites all over the world, including India. Learning in its broadest sense is “continuing” and e-learning is part of such lifelong learning. The use of mood for multi tasking is another endeavour in replicating the classroom situation, online, with the help of the Internet.

The challenge of education today is, radicalizing it, with technology exacerbating knowledge driven forces, autodidactically.

Recommendations for the Future International Co-operation

The future of open and distance learning toward common action of knowledge-based society for sustainable development seems to be related to linkage among forecasting study, system approach to primary prevention of environmental hazard on regional and global scale, based on operational research for optimal decision-making process on local scale and integrated game for survival of community and experts from different fields.

The best motivation for participation whole society in common action with experts for promotion sustainable development is dissemination of knowledge about the impact of the pollutants of the air, water and food on ethiology of incurable diseases of civilization together with practical recommendations for all about innovative methods of primary prevention of environmental health hazard [1–4, 8, 15].

For effective education in this field are requested both reflections and open for public (eg. as interactive e-learning) discussion about impact of contemporary model of consumption on quality of the Biosphere (protection of the biodiversity), model of human life; supplemented by good for health behavioral stereotype and nutritional prevention of common diseases and congenital malformations. **The experts participating at series of the International Conferences on Sustainable Development recommended foundation of International Network for Permanent Cooperation on Innovative Research and Education in this field, based on interdisciplinary, Interuniversity Centers of Sustainable Development and Innovative Environmental Biotechnology (eco-engineering).**

One of the authors (J.W.D.) has long-term experiences about **linkage between interdisciplinary case studies and problem-solving training of experts and education open for all focused on more effective prevention of environmental health hazard as top priority of sustainable development.** This is important in different industrial regions and areas for recreation, sanatorium therapy and national parks in Poland, as well as other countries, including regions of ecological disasters and high risk for health of many thousands of people e.g. in Minamata, Japan and Bhopal, India helping by education oriented toward application of new preventive methods related to traditional phyto- and api-therapy and modern scientific support in everyday practice [2, 8, 13].

Very promising for the better human environment and quality of life for all in the future would be dissemination of open for whole society education about linkage of local action for elimination pollutants dangerous for health of the present and future generations with global cooperation for primary prevention against emission of greenhouse gases and change of climate. Education about linkage between introduction of clean technologies and elimination at

the sources emission of both mutagenic and carcinogenic pollutants together with carbon dioxide and other green houses gases would be much better accepted by society in majority of countries than paying a lot of their money to companies in technically more advanced countries and buying not limits for extra emission of green houses gases. Such kind of international trade will be very expensive for less-developed countries without any kind of positive impact on reduction rate of emission of harmful gasses and dusts (including nanoparticles) from local emitters. Dissemination of up to day knowledge and abilities in this field should be one of top priorities at Open Universities and whole system of distance education as problem important in many regions as well as on global scale.

Supporting education focused on global thinking about common problems to be solved on regional scale is qualified tourism and education about protection of the environment and common treasure of old architecture, monuments, museums [7], as well as eco-tourism and education about sustainable use of the natural resources [1, 9, 10, 19].

This activity is connected with environmental health, better protection of nature and culture heritage and may contribute to motivation in open distance learning system [15].

One of the most important goals is more effective primary prevention of climate change by better reduction of concentration of the green house gases in the air. AGH is leading institution in this field in international cooperation in Poland.

Referring to research-developing studies on new applications of laser biotechnology and complementary vcase studies on monitoring of the exposition to traffic output of top quality culture heritage in Krakow, Florence, Bologne, Istambul etc. and exchange other good practice for solving similar problems and long-term experiences of AGH Open University in education of knowledge-based society-this is promising for the future area of european cooperation (Dobrowolski's report at 2010 [11]).

One field of interactive e-learning may be qualified tourism in historical cities in linkage with modern education about their old architecture, fine arts in museums (as e-guide like "Magic Cracow" in Poland), or eco-tourism in linkage with education about nature and culture heritage in protected regions (eg. recommended in European Project "Smart History" wireless network of mobile automatic guides for visitors on example of Cinque Terre National Park in Italy). 11th and 12th International Conferences on Sustainable Development of Historical Cities and Protected Regions in Krakow, Poland and Florence, Italy were focused on Qualified tourism and education of local society and tourists from different countries [8, 10].

For teachers, scholars and experts in distance education and university students may be useful papers related to these **interdisciplinary meetings of experts**

as well as 4th International Workshop on Sustainable Development in Florence from 7th to 14th February 2010 in cooperation with the Del Bianco Foundation (see: www.fondazione-delbinaco.org/seminari/ The Program of International Students Workshops 2010–2012 and e-mail of the organizers: info@fondazione-delbianco.org). This is real perspective of development both interdisciplinary innovative research followed by education focused on common action of experts and society for application modern technologies for sustainable development in connection with UNs summit at 2012.

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