A Systems Approach to an Interactive
Global Ph. D. Program

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This symposium/workshop was again designed to provide a forum for discussions directed towards a worldwide educational network, its scholarly and scientific possibilities and its potential political pitfalls. Specifically, we will explore first hand how to integrate classroom learning and student conference participation with long-distance teaching technologies using the virtual classroom. To this end, we established synchronized Internet connection “live” with students and faculty at home and at other universities around the world.

This symposium/workshop was intended to focus on the development of a Global Ph. D. program where faculty members of the Institute are matched with students from around the world. As the International Institute for Advanced Studies in Systems Research and Cybernetics (IIAS) is gradually embarking on an educational program that brings together educators and students from all over the world, we recognize that most institutions of higher education are generally restricted to local or provincial requirements. However, as we envisioned more than 15 years ago (W. Rudloff, 1992(A), (B), (C)), the Institute’s members from around the Globe represent a potential teaching force that can cooperate in our efforts to bring higher education to remote and deprived areas through the technologies of the electronic university.

The hyperlinks above indicate general topics for this symposium/workshop.

**Note:** Hyperlinks that are internal to this document are in red. External links are in blue.
The Interactive Classroom in a Global Environment: Global Cooperation or Global Competition?

We define Interactive Classroom as having manifold configurations. In its original meaning it is certainly interactive when the teacher and the students cooperate in a normal classroom setting. On the other hand, high technology has provided us with the tools to reach beyond the confines of a classroom.

On a regional basis, the electronic interactive classroom allows us to connect to other universities, colleges and organizations, thus expanding our audience through the capacity of video conferencing (W. Rudloff, 2000(A), (B), 1999) (see also Videoclip).

Yet, it is the Internet that has opened up the potential of a Global Classroom through the technologies of hypertext, hypermedia, and multimedia, whereby hypertext and hyperlinks are the tools that connect the content of our ideas and make it palatable to all of our senses through hyper- and multimedia. A picture is worth a thousand words and moving pictures and sound excites our senses in a powerful way. But it is interaction that forces us to learn more aggressively and acquire knowledge more permanently.

The question then arises, will knowledge be commercialized or will it be a free for all? Will it lead to global cooperation or global competition? MERLOT: The Multimedia Educational Resource for Learning and Online Teaching seems to answer to both: It is cooperative and free for all in that knowledge is freely accessible. It is competitive by way of peer review that checks on the quality of our contributions. However, it is still a passive way of learning in most cases, and active interaction with the authors and their teaching materials could make it more effective. Thus, the ideal configuration for an Interactive Electronic Classroom in a Global Environment would be as we describe for our course on Artificial Intelligence (Fig. 1).

**Philosophy and Mission Statement**

Globalization of commerce is a fact. This includes globalization of manpower and resource distribution. Indeed, as we try to get home-grown technical help with Microsoft software, we are connected to India or somewhere else in the world where labor is cheap and Bill Gates can add another few billions to his pocket book. In the meantime, the unions are pricing the Western labor force out of the global market.

Besides confronting strong competition on the labor front, we have to compete with the rising powers of China and India for the world’s resources such as oil and other commodities. In addition, our tax money is spent on “preventive” wars and the truly global wars of the terrorists. We are fighting symptoms instead of searching for the causes of the world’s misery.

Exploring the causes, we find lopsided distribution of wealth, of resources, of manpower, and of knowledge. Specifically the latter is in question. Without the knowledge of modern technologies, people stay poor and are starving. Instead of exporting our expertise in, say, advanced agriculture, we are sending billions of dollars to the impoverished countries that mostly wind up in the coffers of the big and little dictators, and outdated land management contributes to desertification of once green pastures.
The poor of the Southern hemisphere migrate north; Africans wander through the desert and hope to find a living in Europe; Mexicans flood to the cotton fields of the USA to work for cheap monetary compensation. The borders are but porous membranes through which the poor diffuse from one side of the divide to the other. The ancient Great Wall of China seems to be the model for walls between Israelis and Palestinians, between Mexicans and North Americans with the idea to keep “them” out, and “us” in. The Germans got smart and tore their Berlin Wall down.

Although long-distance learning and teaching via the Internet has been around for a while, it has stayed mostly local or, at best, provincial or national. However, globalization of education is still lagging behind that of commerce and, to be sure, that of the spreading terrorism.

We envision the mission of the Institute’s global Ph. D. program to proliferate the ideal of a culture of peace through knowledge; the knowledge of democracy by consent and not by decree; the transfer of knowledge to the countries of want from those of plenty. Instead of attempting to alleviate famine by sending billions of dollars to the underdeveloped nations that ends up in the Swiss bank accounts of corrupt leaders, we should educate the poor in new agricultural technology to develop efficient means for survival. Instead of sending them weapons to kill each other, we should export our concepts of an intelligent, peaceful world where different cultures can coexist without strife and disharmony.

To this end, our program could, perhaps, evolve into a Virtual Global Peace Corps that spreads knowledge via our high-tech media to underprivileged regions of the globe. IIAS has the talents that can make such vision come true. We pride ourselves to have experts in many areas of scientific and technological endeavors. They can be matched with students even in remote parts of the world.

**Organizational Issues of a Global Educational System**

Traditional higher education with in-class teaching and learning is essentially local whereby professors and students are in direct contact with each other. In the past, teaching was intimately connected to scientific research and other scholarly endeavors. Universities were often created on private initiatives with faculty being involved in both, academic as well as administrative functions. Eventually, administrative functions were separated from those of scientific research and teaching. As the size of teaching institutions grew, so did the bureaucracy of their administrations. In the United States, many universities are state-run and as such, dependent on the whims of politicians who more often than not know nothing about the educational process. Organizational and educational decisions are generally made by decree of management rather than by consent with faculty and students.

In contrast, our vision of a Virtual Global University as part of IIAS should be organized along the lines of a one-to-one faculty-student relationship. Curricula should be designed that are flexible and that should be able to accommodate students from around the world. Selection criteria should not necessarily be based on paper credentials but mostly on common interest between faculty and student. Minimal bureaucracy should be a major goal where much of the scientific correspondence is directly between faculty and student.

By its very virtual nature, the global university should be a distributed organization since our potential faculty and students can be continents apart but connected through the instant facility of the Internet. Minimal centralization may, however, be required to coordinate the process of matching faculty with students depending on common research interest. Also, the finance structure may have to be centralized.

**Defining potential Areas of Study and Matching Faculty**

Solutions to global problems through worldwide education

Since the name of our institute implies systems research, a systems approach to the Virtual Global University would be appropriate. Thus, general areas of study could be directed towards many global problems such as Resource Management, Health Systems, Environmental Studies, Problems of Urbanization, Overpopulation, Information Systems, Systems of Technology Transfer, and last but not least, a Systems Ap-
In the world of today, Problems abound for which we need to find solutions. Living in a culture of war, we are faced with the global threat of terrorism, state as well as individualized terrorism. We should investigate the underlying causes instead of reacting irrationally to the symptoms of terrorism.

Overpopulation as furthered by many organized religions has led and still leads to overgrazing of grasslands and global starvation. Rather than optimizing population growth through sensible global regulations, it remains unchecked. Urbanization in many countries has led to mega cities with all their problems of diseases, murder, and environmental decay.

Our resources are being depleted at an alarming rate. In view of the rising economic powers of China and India with populations in the billions, a global competition about our energy resources has already begun. How can we educate the global populous to manage all our resources through recycling of raw materials and exploration of new sources such as underwater deposits of metals and other elements?

The most pressing question remains to be solved, how do we get from a culture of war to a culture of peace? This, for sure, is a question of sociology, psychology, and the integration of hard sciences with a global legal system of rational cooperation.

Comparison of long-distance delivery systems of educational content

In ancient times, communication was by runners (Marathon) and horses. During the Middle Ages, Thurn and Taxis developed a postal delivery system in Europe that was eventually emulated in the horse-drawn stagecoach of the Wild West.

With the invention of the telephone in the 19th century, communication was no longer bound by bodily transfer of news and mail and is essentially instantaneous. Radio and television have come a long way towards “live” communication across the globe. It is, however, the Internet that now permits instant contact between people on Earth. Although Al Gore did not invent the Internet, under the Clinton Administration, he opened up the “Electronic Superhighway” to global commerce as well as to worldwide exchange of ideas.

GSU has a long history of TV-Based long-distance learning ever since our former president, Dr. Gutman-Malamuth, promoted a movie studio and satellite-based communication facilities where movies were produced for public television and students can check out pertinent videotapes for home viewing. When linked to other TV stations, these facilities are also used for video conferencing and panel discussion via satellite.

Although this mode of long-distance learning is very powerful and can reach a large audience, it is costly and needs a relatively large staff of trained technicians. On the other hand, it is also used for our communication students to learn the tricks of the trade of movie and video production. Several years ago, when Internet teaching and learning was barely coming up over the horizon, our communication faculty was able to demonstrate a computer-based lecture that utilized small two-way cameras to teach Japanese language from an affiliated university in the South. Some of our faculty have produced award-winning movies for public television.

Over the past years, we experimented with different long-distance delivery systems. During InterSymp’2000 we demon-
strated the potential of the VTel system that permitted intercontinental transmission of video signals and allowed conference connection between GSU and our symposium in Baden-Baden. *(Videoclip)*. The vehicle for our Interactive Classroom was a computer-based VTel system that allowed us to connect to off-campus students in a video conference environment thus expanding our teaching-learning experience beyond the boundaries of our university. Two-way interaction was established via broad band telephone lines. Governors State University was part of a regional consortium where classrooms were connected electronically not only intra campus but also between several Illinois universities, colleges, and other organizations. During several of our computer science courses we gained experience by combining our hypertext- hypermedia lectures with such long-distance mode of educational delivery.

As textual communication via books or journals is essentially one-dimensional, hypertext allows multidimensional browsing through learning material. In combination with multimedia technology, the Internet has evolved into a powerful environment for educational delivery in long-distance teaching and learning. For many years, we have developed our lecture material in such environment employing the hypertext/hypermedia capabilities of Guide Author™, Guide Reader™, and Guide Viewer™. While Guide Viewer™ allows the students to browse through the lectures in a multidimensional mode, Guide Reader™ has the additional capability to have the students interact with the instructor through annotations. The major vehicle for such interaction is my website at:

http://faculty.govst.edu/science/faculty/rudloff/wkr.htm

As the students log into the website, they are allowed to download a compressed file that is constructed so that they can access via Guide Viewer™ or Guide Reader™ the current lectures as they are made available. Alternatively, the students can also correspond through e-mail.

There are several possibilities for Internet Conferencing. *WebEx* has been used for many years in the business world (See [http://www.communiqueconferencing.com/webex.asp](http://www.communiqueconferencing.com/webex.asp)). It permits to

- Give a presentation.
- Demonstrate software.
- View, annotate, or edit documents.
- Share applications or your entire desktop.
- Use remote control on an application or a computer.
- Conduct a group Web tour.
- Host a Webinar

At GSU, several long-distance courses are offered using WebCT. The website, [http://www3.govst.edu/webct/webct6/student/webct6_tutorials.htm](http://www3.govst.edu/webct/webct6/student/webct6_tutorials.htm)
demonstrates by way of a multimedia tutorial, the interactive use of such environment that allows textual as well as audio/video interaction with no direct classroom contact to the instructor. WebCT needs permission for the students to log on to the lecture material. Similar to Elluminate, it has interaction features where students can communicate with the professor via text, voice and video links.

Another most powerful tool is also the Virtual Classroom, *vclass*, by Elluminate, Inc., a Canada-based corporation. The most recent Version 6.5 provides access to the students in a number of different modules. One module lists all the students who have logged onto the lecture. The following link connects to the website:

http://www.elluminate.com
The psychological effects of new technologies on global education.

The question arises if face-to-face education in a class room is as effective as virtual education via electronic media? Also, how would global education change cultures and attitudes of people around the world? Could global education lead to democratic thinking and could it advance from a culture of war to a culture of peace? What impact would global education have on political systems?

Education in a certain way can be indoctrination, indoctrination to the good or the bad. We observe negative indoctrination in political systems of dictatorship. In Nazi Germany young people underwent a total ideological orientation that eventually led to war and destruction. Madrasahs, the Islamic schools, when under control of fanatic teachers, often teach that killing the “non-believers” is the will of Allah and will lead into heaven where virgins are awaiting the murderers. As a consequence, the world is under a continuous threat of fanatic terrorist attacks.

On the other hand, is Western democracy really democratic? In USA we elect “Electors”, a bunch of political hacks in the Electoral College who vote for our presidents. The popular vote does not count. Money in the coffers of the parties certainly does. This form of government is called Plutocracy. By definition, “a plutocracy is a form of government where all the state's decisions are centralized in an affluent wealthy class of citizenry, and the degree of economic inequality is high while the level of social mobility is low. This can apply to a multitude of government systems, as the key elements of plutocracy transcend and often occur concomitantly with the features of those systems. The word plutocracy itself is derived from the ancient Greek root ploutos, meaning wealth.” (Wikipedia). Although Freedom of Speech is embedded in our constitution, recent attempts of electronic intrusion may indicate that it is eroding away.

Absolutism is still a fact. Around the world there are still many monarchies; some of them are absolute in the sense that their countries are ruled monopolistically by one person; others are constitutional such as in England and Scandinavian countries where the power lies with parliaments; there are also pseudo constitutional monarchies such as Saudi Arabia where the power is in the hands of princes who advise the king in the Majlis, the royal council.

Dictators abound in Africa and Asia who rule with an iron fist and threaten the world with nuclear destruction and starve their own people. In China we have dictatorship of the ruling class.

Global education can modify the diversity of cultures. Will global education via the World Wide Web create a more democratic and peaceful world? This has recently come into question as we observe that Yahoo and other high-tech companies have bowed to the demands of the Chinese Government and installed blocking devices on their software that cuts off links to the free world if the content appears to threaten the infallibility of the state. Will global communication lead to assimilation or will it preserve the diversity of cultures? In general, science and education should be global, but globalization of knowledge is often prevented through protective nationalization of science and technology.

Exploring possible Cooperation with the United Nations and/or Other Organizations for Potential Funding.

Education, in general, and higher education, in particular, has become rather expensive. This is certainly true in Western countries, where it is funded by governments through taxation and/or through individual tuition payments. Few countries such as Saudi Arabia and Norway can afford to provide free education as they profit from the oil boom. However, there are still millions if not billions of people starving who have to work hard for survival and are left out of the educational loop.
The problem boils down to the question, how can the venture of a virtual educational peace corps be funded? As to the scholarly background, IIAS has a potential global faculty that is diversified and can respond to multiple areas of scientific and technological demand. Most of us have the technologies already at hand. Yet, on the receiving side (i.e. students), equipment and initial training may not be available. In essence, a budget is necessary that provides for equipment and man power at remote sites.

A pertinent source for funding would be UNESCO. Alternatively, the Institute could create a special foundation that solicits funding for the purpose of the Global Ph. D. Program.

**Legal Aspects of a Global Educational Network.**

The form of organization depends on the country in which it is incorporated. It should be Not-For-Profit. Also, liability aspects have to be discussed.

**Issues of Accreditation**

Accreditation by states or private organizations is assumed to insure Standard of Excellence. In Europe, accreditation is generally a function of state bureaucracies. In the USA, accreditation is mainly performed by private organizations. Thus, the questions may arise is accreditation a business or can accreditation be substituted by internal oversight?

Following are excerpts on accreditation as downloaded from the US Government website:

**OVERVIEW OF ACCREDITATION**

The goal of accreditation is to ensure that education provided by institutions of higher education meets acceptable levels of quality. Accreditation in the United States involves non-governmental entities as well as governmental agencies.

Accrediting agencies, which are private educational associations of regional or national scope, develop evaluation criteria and conduct peer evaluations to assess whether or not those criteria are met. Institutions and/or programs that request an agency's evaluation and that meet an agency's criteria are then "accredited" by that agency.

The U.S. Department of Education does not accredit educational institutions and/or programs. However, the Secretary of Education is required by law to publish a list of nationally recognized accrediting agencies that the Secretary determines to be reliable authorities as to the quality of education or training provided by the institutions of higher education and the higher education programs they accredit. An agency seeking national recognition by the Secretary must meet the Secretary's procedures and criteria for the recognition of accrediting agencies, as published in the Federal Register. Some of the criteria for recognition, such as the criterion requiring a link to Federal programs, have no bearing on the quality of an accrediting agency; however, they do have the effect of making some agencies ineligible for recognition for reasons other than quality. The recognition process involves not only filing an application with the U. S. Department of Education but also review by the National Advisory Committee on Institutional Quality and Integrity, which makes a recommendation to the Secretary regarding recognition. The Secretary, after considering the Committee's recommendation, makes the final determination regarding recognition.

The U.S. Secretary of Education also recognizes State agencies for the approval of public postsecondary vocational education and State agencies for the approval of nurse education. These agencies must
meet the Secretary's criteria and procedures for such recognition and must undergo review by the National Advisory Committee.

The U. S. Department of Education does not accredit institutions in foreign countries. However, the Secretary of Education does appoint members to the National Committee on Foreign Medical Education and Accreditation. The law gives that Committee the responsibility for reviewing the standards that foreign countries use to accredit medical schools to determine whether those standards are comparable to the standards used to accredit medical schools in the United States. The comparability decisions made by the Committee affect whether U.S. students attending foreign medical schools can receive loans under the Federal Family Education Loan Program.

ACCREDITATION IN THE U.S.

The United States has no Federal Ministry of Education or other centralized authority exercising single national control over postsecondary educational institutions in this country. The States assume varying degrees of control over education, but, in general, institutions of higher education are permitted to operate with considerable independence and autonomy. As a consequence, American educational institutions can vary widely in the character and quality of their programs.

In order to insure a basic level of quality, the practice of accreditation arose in the United States as a means of conducting non-governmental, peer evaluation of educational institutions and programs. Private educational associations of regional or national scope have adopted criteria reflecting the qualities of a sound educational program and have developed procedures for evaluating institutions or programs to determine whether or not they are operating at basic levels of quality.

Some Functions of Accreditation

1. Verifying that an institution or program meets established standards;
2. Assisting prospective students in identifying acceptable institutions;
3. Assisting institutions in determining the acceptability of transfer credits;
4. Helping to identify institutions and programs for the investment of public and private funds;
5. Protecting an institution against harmful internal and external pressure;
6. Creating goals for self-improvement of weaker programs and stimulating a general raising of standards among educational institutions;
7. Involving the faculty and staff comprehensively in institutional evaluation and planning;
8. Establishing criteria for professional certification and licensure and for upgrading courses offering such preparation; and
9. Providing one of several considerations used as a basis for determining eligibility for Federal assistance.
References


