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The Global Virtual University
e-Learning for a **sustainable** future

"The World Summit for Sustainable Development (WSSD) in Johannesburg in 2002 saw many difficult political discussions and compromises sometimes weaker than what we would like. Simultaneously many good partnerships were established and the Global Virtual University (GVU) was one of them. The GVU is a major pilot project that shows how we can reach out across the world in practice, and how we can bring the best knowledge in the best form of audio-visual support together with face-to-face contact. Broadcast globally and supported by human interaction the GVU is the university for the sustainable future."

Dr. Hans J. A. van Ginkel
Rector United Nation's University
Tokyo, Japan

The Global Virtual University

The Global Virtual University (GVU) is an online network university whose mission is to provide education for sustainable development. It is particularly designed to meet the educational needs of the developing world. This new United Nations University (UNU) unit was officially launched in September 2002 at the World Summit on Sustainable Development in Johannesburg, where the Norwegian Government, the UNU and the United Nations Environment Programme (UNEP) pledged their support and partnership. The GVU is hosted by UNEP/GRID-Arendal in Norway with financial backing of NOK 15 million (US$2 million) over a four-year period from the Government of Norway.

UNEP/GRID-Arendal and the Agder University College (AUC) in Norway are working together as core partners in developing the GVU. Master level courses specifically intended to raise students' sensitivity to, and involvement in, finding solutions for environment and development problems, are being designed. These courses aim to enhance capacities of students to understand the potential and the limits of the environment, and foster ethical awareness, values and attitudes, skills and behaviour needed for a sustainable utilisation of human and natural resources. Focussed on supporting students and teachers in developing countries, these courses are developed in cooperation with an international network of co-operating universities and will be accessible online.

The Global Virtual University in a changing world

As an internationally based e-Learning program the GVU

- Provides access to a range of professional academic milieus in the world.
- Is distributed to all corners of the world with the installation of an effective technology package at each study centre.
- Promotes the involvement of universities and research institutions in the developing world.
- Is cost effective compared to standard fellowship programs
- Is continuously and quickly updated regarding both academic content and technological solutions.
- Makes it is easy to adapt and adjust the study programs to the local situation in the countries involved.
- Stimulates scientific co-operation both on a personal and an institutional level.

In an e-Learning program like the GVU communication between students, and between students and teachers/supervisors cannot be as close as the communication at regular on-campus programs. In the GVU, the partners will foster close communication through

- Physical meetings between students and teachers/supervisors, for instance two to three weeks per term.
- Working groups involving students and tutors at each partner institution.

GVU is committed to establishing quality assured study sites with an adequate level of technical and scholarly infrastructure.
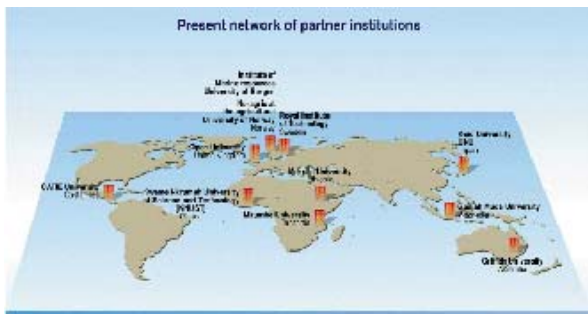
The Global Virtual University network

The core partners of the GVU are UNEP/GRID-Arendal, AUC and the UNU. Several other institutions have expressed interest in participating in the GVU network (see Figure 1).

During the early phases of the GVU, a group of ten universities will be invited to become partners in the GVU network.
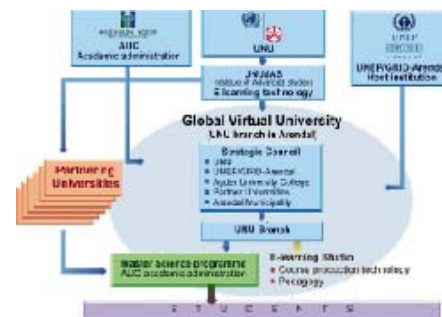
The participation of international institutions in the GVU network is considered vital. GVU is focussing on inviting recognised institutions working with development and environmental affairs on a global level, such as the Third World Academy of Sciences, the United Nations Development Programme (UNDP), The Food and Agriculture Organization of the United Nations (FAO), The Consultative Group on International Agricultural Research (CGIAR), Overseas Development Institute (ODI) and The World Bank.

"The Global Virtual University meets the need for a more sustained environmental education programme in order to produce a critical number of informed citizens who are capable of impacting, providing and producing the positive change required in the developing world."

Prof. Emmanuel Frempong
Kwame Nkrumah University of Science and Technology, KNUST
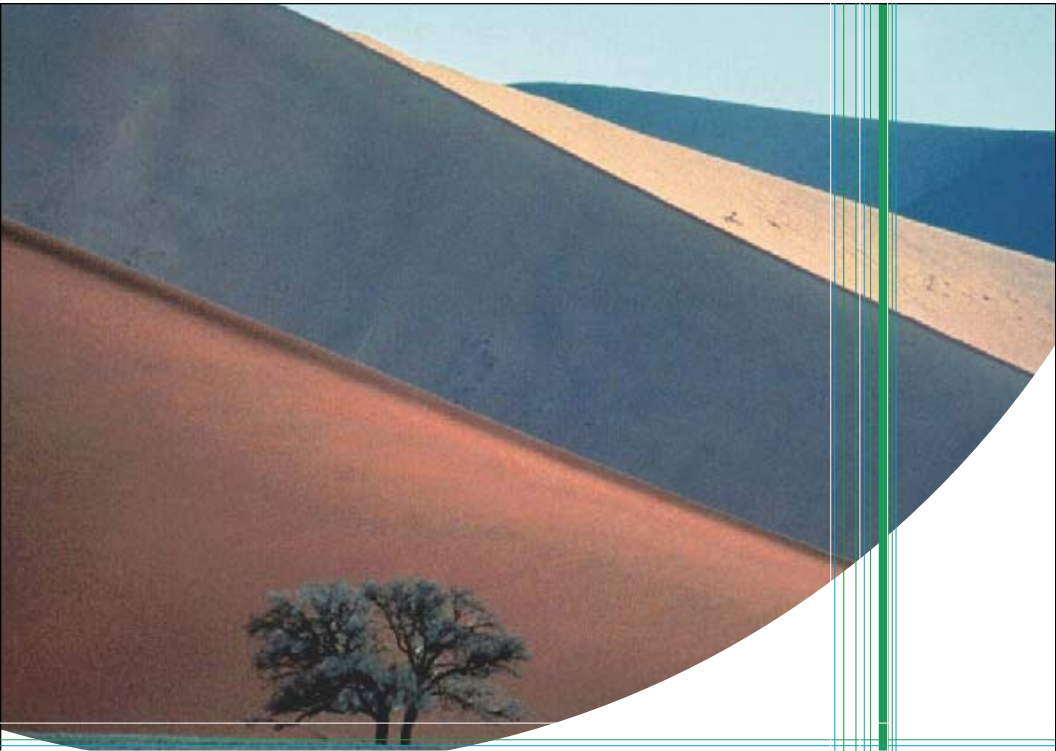Ghana

Roles and tasks of partners

In the present development stage of the e-Learning program, UNU, UNEP, and the operating GVU unit at UNEP/GRID-Arendal, are responsible for the development of the initial GEO prototype courseware into a full course. UNEP/GRID-Arendal and AUC are cooperating closely with partner universities to identify lecturers, to develop appropriate content, and to evaluate performance of the courseware and supporting software infrastructure.

UNEP/GRID-Arendal is responsible for the technical implementation of GVU. Through the experience gained from the international satellite communication network, UNEPnet, UNEP/GRID-Arendal will establish network connections to developing countriesto facilitate cooperation with local academic institutions. Through its own staff, and its international connections, UNEP/GRID-Arendal is also actively involved in developing courses and programs.

The basic organisational structure for the GVU is presented in Figure 2.

AUC is responsible for registering the students admitted to the courses and programs, for issuing degrees and course diplomas, for lecturing particular courses, and coordinating the Global Environment and Development Study (GEDS) programs. GEDS is designed as an interdisciplinary study focussed on three scientific areas: technical/engineering sciences, natural sciences, and social sciences. In addition, there will be small components from law and philosophy (ethics). The main focus of GEDS will be on the synergies between environment and development. AUC is also establishing a study center that will be responsible for coordinating academic and student affairs.

UNU is co-ordinating and supervising the international network of recognised scientific institutions that will comprise the partners. UNU is also coordinating the development of the GVU e-Learning platform. The various UNU institutes worldwide will give important academic inputs to the e-Learning program.

UNEP is one of the leading authorities on environmental issues, plays a crucial role both as the supplier and processor of environmental information, research and education. UNEP also plays an important role of global governance of international, environmental policy issues, which will be of vital importance for the GVU function as a decision-making support instrument.

Figure 3:
**GVU teaching
and learning
framework**
(2003)

The special pedagogy and philosophy at the Global Virtual University

The aim of the GVU is to develop online teaching and learning strategies with an emphasis on the innovative and cutting edge educational strategies related to education for sustainability.

It is essential that all academics are willing to acknowledge that they too are learners and will need to reflect on their teaching and learning practices as the GVU project develops.

The GVU e-Learning strategy is based on promoting socially critical thinking. In order to deliver education for sustainability in a manner that is socially critical, GVU will place emphasis on curriculum development that is more pedagogically driven than technology driven.

There is a wide range of e-Learning technologies that are available for the more traditional teaching and learning strategies. The challenge faced by the GVU initiative is the development of e-Learning technologies to support constructivist pedagogy and social constructivism in teaching and learning approaches. In order to achieve this objective the core partners have developed the following framework that places emphasis on combining learning from the traditional instructional form of learning to individual learning with support from e-Learning technologies to collaborative learning styles supporting asynchronous as well as synchronous communication, which is problem based group oriented computer learning.
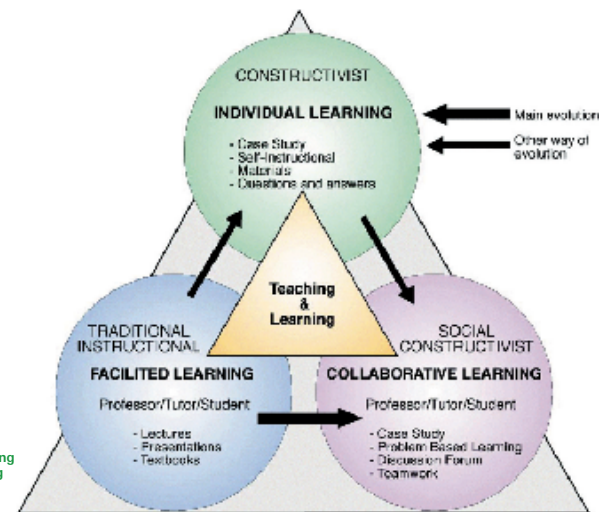
The Global Virtual University uses modern e-Learning technology

The GVU is based on an e-Learning approach that uses the Internet. A very good Internet and videoconference connection is already established at UNEP/GRID-Arendal.

The technological options used in the GVU are a combination of commercial and research tools that include available courseware packages. Adoption of a commercial Learning Management System (LMS) is being tested. This will provide compatibility with emerging e-Learning standards as well as the potential for the smooth transfer of course materials between partner universities. Typical tools in a LMS include a customisable whiteboard platform, co-ordinated chat systems, Web co-navigation frameworks, and an Internet studio for synchronising audio and video with presentation slides. This package offers the benefits of state of the art course administration systems/student performance management and considerable opportunities for customisation as well as experimentation with different online learning modes.

Student recruitment to the Global Virtual University

E-Learning is of particular importance in an era characterised by rapid changes. We may therefore expect that e-Learning's most important area of operation will be within continuous education, as life-long learning will be the motto for more and more people. Young professionals and scholars are expected to initially dominate student recruitment to the GVU. For the partners there will be a particular challenge to develop courses and programs in the field of environment and development directed towards these kinds of students. Students will be further identified by international advertisement and through the network of partner universities in the developing world.

In many developing countries, the educational situation is characterized by lack of staff and training. Quite often the libraries are not functioning according to common scientific requirements. We believe that e-Learning will contribute to a strong boost in academic training. The courses offered by GVU will primarily be directed at students from developing countries although opportunities will be created to ensure interaction with students from the rest of the world.

"It is the poor of the world who suffer most from mismanagement of our natural resources and the resulting environmental problems. Sixty percent of the world's poor live in ecologically vulnerable areas. Millions of people live in slums, which in reality are ecological crisis areas. Poverty and environmental problems are two sides of the same coin. Education is fundamental to address both problems efficiently. The initiative to create the GVU based on innovative technology and pedagogy is an attempt to build capacity to find good solutions and develop the decision makers of tomorrow. We therefore must inspire other donors and development institutions to join this initiative to show their support and understanding."

Hilde Frafjord Johnsen
Minister of International Development,
The Government of Norway

Financial considerations for working and studying with the Global Virtual University

For the regular students admitted to this programme, the main advantage will be a high degree of flexibility, and the seamless possibility for conducting the actual coursework. The e-Learning programs will, in full operation, be substantially cheaper to run than standard on-campus fellowship programs. Early calculations seem to indicate that the cost per student can be less than half the cost of regular international fellowship programs. An additional advantage of a virtual model of education is that a limitless number of people may have free access to the information from course modules without being registered as students.

The cost of e-Learning is mainly related to the development of the courses. To establish an e-Learning program as a part of a UNU operating unit in Norway, a substantial amount of financial resources are needed to plan, implement, co-ordinate and run it. Initially, financial support has been forthcoming from governmental institutions and agencies in Norway. However, the GVU partners are also anticipating donations from international institutions and private businesses that, for instance, may find the goals of the GVU, its academic content and/or the application of net-based technology of great interest and complementary to their own objectives.

"Education is one of the main pillars in the work for the protection of our planet. Knowledge about how to best manage our seas, forests, all ecosystems improves our understanding of the environment. The GVU is set up to foster the development of critically thinking environmental professionals across the globe who support environmentally sound solutions. The virtual university makes use of new information and communication technologies. This will expand partnerships among universities and other institutions in order to advance education and research for sustainability in all corners of our earth."

Svein Tveitdal
Managing Director, GRID-Arendal,
GVU implementing Centre

The road ahead

The GVU is being implemented over an initial four-year period commencing in 2003. In the first phase UNU has developed a limited prototype e-course based on UNEP's Global Environment Outlook (GEO) 2000 report.

The next phase involves the development of a full GEO course based on the complete version of GEO-3 by mid-2003. The course will be developed by UNU and UNEP/GRID-Arendal with support from UNEP. Experts will contribute with video lectures and slide presentations, and where possible respond to student queries via online forums and chat systems. Other key functionalities include: help and technical support, full-text search engine, per page annotations, quizzes, chat systems, computer aided assessment, scoring database and session management. The GEO course will be continuously upgraded as new GEO -reports are published.

In parallel, the development of a M.Sc. degree program in GEDS will be conducted. GEDS will be developed in cooperation with an international network of partner universities. From the arsenal of courses offered by these partner institutions, the individual students will, together with their supervisor, have the opportunity to compose a package consisting of theoretical, methodological and practical courses. Although this package will be fitted individually to each student in order to cover his or her main field of interest, the student will have to select a particular direction or specialisation (major). We are aiming at launching a pilot of the masters course in 2003/04.