

language and liberal arts skills, combining academic work with hands-on training for real jobs. Besides, virtual communication environment added by the opportunities of joint intercultural language research projects enable educators and learners to work cooperatively in real-life intercultural communication.

LLES can also support communication inside the faculty research and learning (local forums and boards, discussions, lists, e-journals, etc).

CONCLUSION

Modern top-professional network-oriented world already sees computer-communication skills as basic among the rest of a person's qualities. Communication proficiency nowadays necessarily includes a number of skills - good writing style, effective electronic information processing, critical evaluation of information resources, joint activities coordination, presentation and self-presentation.

These skills can be effectively trained within the frame of a distributed learning system, build on educational portal technology.

Our experience in developing portal technology helps outline the relevant parameters of a good learning shell for a sub-portal as follows:

- adjustability
- structure transparency

- authorization and authentication opportunities
- thoroughly planned but upgradeable navigation
- easy navigable upload and information search

The process of Implementing system-forming elements of distributed learning system at VoISU has shown that students, using the Educational Portal, develop not only positive motivation towards learning and new interests and skills, but also elaborate active and creative life positions which form the basis for their conscious self-controlled personality development.

In conclusion we would like to say that the technology of Educational Portal can enable the transition to a system of open education and gives a start to gradual personalization of education process participants, especially students, in this system.

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The "next generation" GLOBE Program

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Abstract

The Global Learning and Observations to Benefit the Environment Program (GLOBE), which began on Earth Day 1994 and is funded by NASA, is a remarkable and unprecedented collaboration of thousands of individuals worldwide primary, secondary, and tertiary students, teachers and teacher educators, scientists, government officials, and others to improve education, increase environmental awareness, and reach a more complete understanding of the Earth System. The heart of the GLOBE vision is an integration of education and scientific research where everyone contributes and everyone benefits. This paper will discuss the Program's first 10 years, and what is being planned for the "Next Generation" GLOBE.

INTRODUCTION

The GLOBE Program (www.globe.gov) is a remarkable and unprecedented collaboration of thousands of individuals worldwide primary, secondary, and tertiary students, teachers and teacher educators, scientists, government officials, and others to improve education, increase environmental awareness, and reach a more complete understanding of the Earth System.

The heart of the GLOBE vision is an integration of education and scientific research where everyone contributes and everyone benefits. Students, teachers, and scientists work together in the community to understand and appreciate the world around them. GLOBE supports scientific research, promoting our understanding of the Earth as a system and building our knowledge to address and solve important societal problems. GLOBE students from different countries and cultural backgrounds learn to work together in the field and classroom.

HISTORY

The initiative for the GLOBE Program was first announced on Earth Day, April 22, 1994, in the United States (U.S.) by then-Vice President Al Gore. The National Oceanic and Atmospheric Administration (NOAA) was designated as GLOBE's lead agency. Along with NOAA, the National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), and the Environmental Protection Agency (EPA) provided funding, and the Department of State, although not a funding agency, was involved in the development and implementation of the international aspects of the program. The U.S. Agency for International Development (USAID) and the Peace Corps have also provided support to GLOBE in other countries.

GLOBE started up with just a few hundred schools and teachers but quickly grew over the years largely through the efforts of the growing number of International Partners and U.S. Partners such as universities, school districts and others. To date, over 28,000 teachers from 107

countries, including Greece which joined in 1995, have participated in GLOBE workshops. More than a million primary and secondary students in 15,000 schools have taken part in GLOBE and students using GLOBE's scientific protocols have reported over 12 million environmental measurements from around the world.

Russia became GLOBE's first international partner in December 1994. The U.S. Government has in place bilateral agreements with 106 countries that specify that the GLOBE Program will provide certain services to its foreign partners. In addition, the GLOBE Program has existing "partnership" agreements with approximately 100 organizations in the United States. In both the international and U.S. agreements, the organizations involved commit partners to recruiting, training, and supporting teachers who then implement the GLOBE program with students. The GLOBE Program is obligated to provide specified services and resources to partner organizations and teachers in return.

The United Nations (UN) General Assembly passed a resolution in December 1994 endorsing GLOBE, encouraging nations to participate and requesting UN agencies to support its implementation. GLOBE subsequently signed agreements covering collaborative activities with the United Nations Educational, Scientific and Cultural Organization (UNESCO) in April 1996; the United Nations High Commissioner for Refugees (UNHCR) in May 1996; and the United Nations Environmental Programme (UNEP) in June 1999.

In September 2002, NASA assumed lead U.S. federal agency responsibility for GLOBE and shortly thereafter issued a Cooperative Agreement Notice to solicit proposals to assume responsibility in assisting NASA in the management of the GLOBE Program, including both worldwide implementation and coordination in the U.S. A Cooperative Agreement between NASA and the University Corporation for Atmospheric Research (UCAR) was signed June 16, 2003.

SELF-STUDY AND IMPROVEMENT EFFORTS

When management of the GLOBE Program was turned over to UCAR in October, 2003, the Program Office began a self-study - known internally as the "baseline study" - to better understand the status of the program as it was inherited from NASA. While many impressive successes were identified in GLOBE, the baseline identified important areas of the Program that could be improved such as teacher retention rates, data reporting participation, research into the educational effectiveness of program materials and activities, Web site usability, communication between schools and scientists, and so forth.

The GLOBE Program Office solicited input starting at a GLOBE Community Meeting held in January 26-28, 2004, and ending with a

meeting of outside experts hosted in December 8-10, 2004. During this period, input was also solicited from members of the GLOBE Program Office staff, members of the GLOBE Advisory Board, the worldwide community of GLOBE participants, UCAR administrators, NASA and NSF Program Officers, and experts from education, science, government agencies, and business and industry.

RECOMMENDATIONS

The following are discussions of the major themes that emerged in the baseline study and the series of meetings during which input was gathered.

Put education first

Programmatic priorities and activities have been mostly driven by scientists and scientific values and needs. Educational values and needs have had less emphasis. GLOBE should recognize this and adopt educational priorities to guide the development of its services, products and activities with science playing a supporting, albeit a necessary and important, role including maintaining rigor and scientific accuracy. It was recommended that GLOBE materials needed to become more "education-friendly". This was specifically mentioned about the GLOBE Web site and Teacher's Guide. U.S. Partners stressed that GLOBE's educational materials and activities need to align with U.S. national science education standards, and help students perform well on standardized achievement tests.

Focus resources

The Program is trying to do too much with too few resources and, because it lacks focus, is having less educational and scientific impact than it would were it to focus its efforts more narrowly. If the Program is to become more effective, it needs to focus its resources on more reasonably obtainable objectives, cover less subject matter, address a more limited audience, and develop and support fewer services and products.

Integrate evaluation

It was also suggested that GLOBE needed to do a better job of evaluation, developing metrics, or "measures of success", for educational objectives instead of counting the numbers of teachers trained, measurements reported to the database, partner organizations recruited, and so on. Among the recommendations was that GLOBE work with schools instead of individual teachers as the unit of engagement because educational research indicates that this is a more effective way to integrate an innovation into the curriculum.

Become more international

GLOBE was seen as being too U.S.-centric by some of its international partners; too driven by U.S. scientific and educational priorities. With the Program's recent move towards regionalizing GLOBE activities and support worldwide, and with the emergence of the first GLOBE Regional Consortium (GLOBE-Europe), participants recommended that a new shared governance model be implemented in which decision-making was shared among International Partners with the Program Office, as well as responsibility for initiating activities, creating curriculum, providing support and soliciting funding.

Emphasize local and regional relevance

GLOBE Central Office activities are centered on long-term, planet-wide environmental research programs which, although indisputably important, have less immediate local impact or relevance which is limiting participation in the Program. The Program should increase its efforts to promote and support community-initiated local or regional GLOBE projects and field campaigns that can build communities of practice among local or regional schools and scientists tied to scientific or environmental questions with clear local or regional impact and relevance. Such initiatives could take the form of community-based, project-focused, inquiry-driven, limited-duration Earth Systems Science investigations by GLOBE students working with teachers, local scientists, and others, rather than broad, long-term data collection across numerous disciplines for distant scientists.

Become a leader

GLOBE has high visibility, a solid reputation, a worldwide community, and should play more of a leadership role in the ESS and Environmental Education communities. GLOBE should organize meetings and conferences to bring the ESS and Environmental Education communities together provide a "one-stop-shop" portal online for access to all of the program Web sites and resources, develop an international program of recognition for outstanding participants, broker the exchange of resources and activities between groups, and facilitate collaborations.

Diversify funding and leverage partnerships

The Program is under-resourced and dependent upon too few funding sources, and should do a better job of leveraging its existing resources by

closer collaboration with similar groups. The Program needs to focus and scale back its activities so that it can operate more efficiently and effectively, and free up resources to be applied to development efforts. High priority should be given to development efforts, even if it results in the current level of GLOBE activities and services being reduced. In addition, the Program Office should seek partnerships with other organizations that would allow it to leverage its limited resources. Input included that the GLOBE Program Office should work collaboratively with its partners to become self-sustaining worldwide, including provide assistance to both U.S. and International Partners in their efforts to secure funding for the regional and local implementation of the Program.

Create more opportunities for collaboration

For many participating schools, there has been little or no communication or collaboration among schools and with GLOBE PIs. Build collaboration into more GLOBE activities, create "mini-communities" of schools for specific projects, develop activities that engage local scientists with local schools so that there can be more interaction between the scientific and educational participants make better use of collaborative technologies like computer-mediated-conferencing systems, expand school interactions to incorporate cultural content.

Reduce level and increase effectiveness of technology spending

GLOBE should reduce the amount of resources allocated to technology development and support, and should redirect efforts towards supporting educational objectives with educationally friendly and relevant applications. GLOBE should create a more distributed technology infrastructure.

THREE NEW APPROACHES

As part of the NGG, GLOBE will experiment with, and assess, three new approaches to Program implementation.

Regional consortia

GLOBE will facilitate and support the formation of consortia of countries to collaborate on regional GLOBE implementation. These new "GLOBE Regional Consortia" will play a more significant role in the decision-making process by membership on a GLOBE International Advisory Board (GIAB). The GIAB will replace the existing GAB. Regional Consortia will also assume some of the responsibilities of the GLOBE Program Office in creating and supporting the Program's activities in each region.

Projects-based management

The GLOBE Program Office will implement a "project-based" approach to managing staff work. Each project team will have a project manager and will include members from outside the GLOBE Program Office staff, e.g., a scientist, a local teacher, a local partner if appropriate. The team will be responsible for the planning, implementation, and evaluation of a single project, for instance working with a NASA satellite mission such as CloudSat and CALIPSO, or with a community-generated field campaign such as the GLOBE Thailand Tsunami Project.

GLOBE Schools Network (GSN)

Although it is common to refer to "GLOBE Schools" and to the "GLOBE network of schools," these conventions do not reflect the actual situation. GLOBE does not now, either directly or through its partners, have agreements with schools. Currently, any school in which a GLOBE trained teacher works is considered a GLOBE School. If the GLOBE-trained teacher leaves a school, it is no longer a GLOBE School.

As a central part of the transformation to the NGG, the GLOBE Program Office will undertake, with our partners, the development of a true "GLOBE Schools Network (GSN)". GLOBE will strive to establish a worthy, showcase program with these schools that will have measurable educational results and demonstrable impact on Earth Science education. The development of the GSN could become a model for future development of limited school networks focused on specific campaigns or projects with LSSPs or other groups.

CONCLUSION

During its first decade, the GLOBE Program grew rapidly to create a worldwide community of thousands of primary, secondary, and tertiary students, teachers and teacher educators, scientists, government officials, and others working together to improve education, increase environmental awareness, and reach a more complete understanding of the Earth System.

Now that the program has ten year's experience, new approaches will be experimented with to seek improvements in relevance, retention, and results. These approaches will include regionalization of partner countries into consortia, a focus on projects and campaigns with more local relevance, and the creation of a worldwide network of qualified GLOBE Schools.