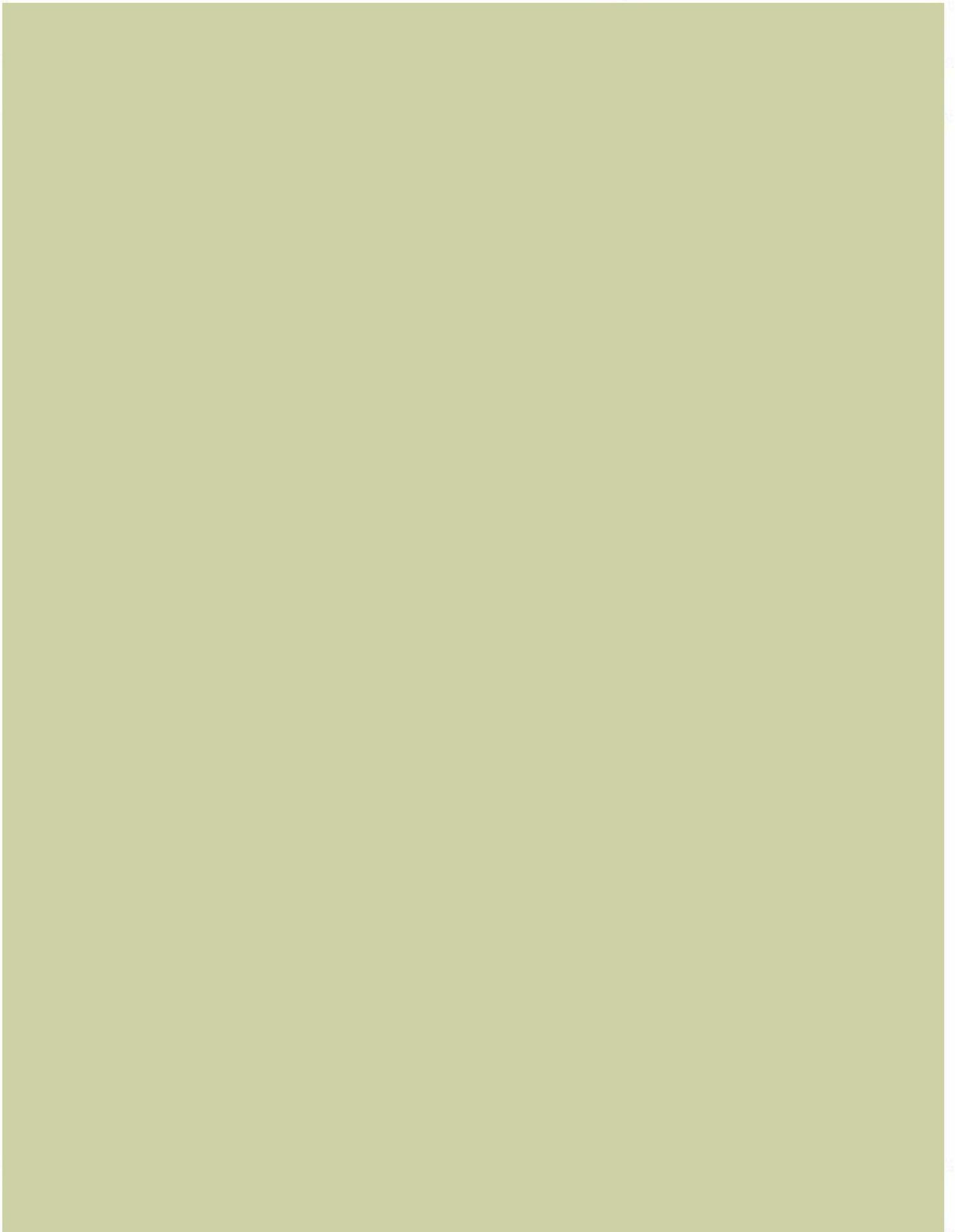




The GLOBE Program in Sub-Saharan Africa

An international hands-on, school-based education and environmental science program uniting students, teachers, and scientists in study and research about the dynamics of Earth's environment. Over 31,000 teachers in more than 17,000 schools in over 100 countries have been trained to implement GLOBE.







GLOBE Program Summary

The GLOBE Program brings together students, teachers and scientists to:

- Increase scientific understanding of the Earth;
- Support improved student achievement in science and math; and
- Enhance environmental awareness of individuals worldwide.

GLOBE supports education by providing hands-on experience in authentic science. GLOBE students are doing science, not just learning about the work of others. Students begin with measurements of individual environmental parameters and build toward an understanding of how the Earth functions as a system.

GLOBE students measure and report physical, chemical and biological properties of Atmosphere and Climate, Hydrology, Soil, Land Cover/Biology and Phenology. The resulting global data sets are made freely available via the Internet at www.globe.gov to users including the worldwide environmental science community. GLOBE students also access these data for classroom studies, research, student-scientist partnerships, and worldwide school-to-school collaborations. GLOBE students have collected and entered more than 14 million data for their use as well as by scientists studying the Earth system.

The next step in the evolution of the GLOBE Program is called the “Next Generation GLOBE (NGG).” The features of NGG are based on an intensive self-study of the past 10 years of GLOBE conducted by GLOBE Program Office staff, with extensive input and recommendations from the worldwide community of GLOBE participants, and guidance from GLOBE’s U.S. Government funding agencies.

The vision of NGG is of a Program supporting students, teachers, and scientists to collaborate on inquiry-based investigations of the environment and the Earth system, working in close partnership with two U.S. agencies, the National Aeronautic and Space Administration (NASA) and the National Science Foundation (NSF), and their Integrated Earth System Science Programs (IESSPs) to give the entire GLOBE community access to top scientists around the world and expose students to programs that are on the cutting edge of Earth system science research. To achieve this vision, GLOBE will promote focused activities around the NSF IESSPs, develop GLOBE Project School Networks (PSNs) and strengthen GLOBE Learning Communities through the development of Regional Consortia of GLOBE countries around the world.

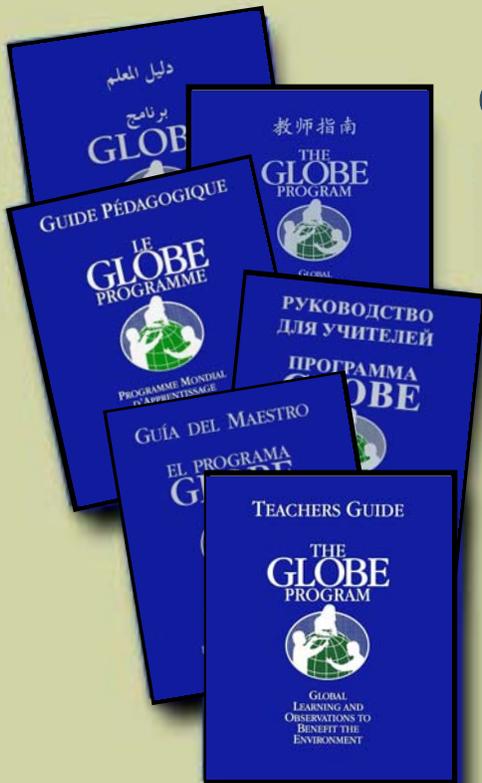
This transformation will be accomplished while retaining the Program’s essential elements of being both education and Earth system science, a bridge between these two international communities, a worldwide collaborative community of practice, and a program that employs inquiry-based educational activities that involve students in “authentic” hands-on science, the analysis of data and the use of scientifically-tested protocols.





Educational Materials

GLOBE provides a variety of K-12 educational materials, from hands-on inquiry activities for classroom use to online interactive learning experiences and investigations using student-collected data.



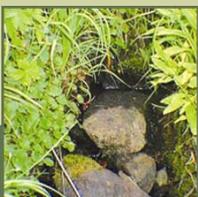
GLOBE Teacher's Guide

The GLOBE Teacher's Guide provides the scientific and educational foundation for the first generation of GLOBE investigations: Atmosphere, Hydrology, Land Cover, Phenology, and Soil. It includes information necessary for accurate data collection such as measurement procedures, student lab and field guides, instrument specifications, and scientific background information. The Teacher's Guide also includes a variety of Learning Activities that complement data collection and extend student understanding of the Earth as a system through a hands-on and inquiry-based approach.



Elementary GLOBE

GLOBE has developed a suite of storybooks and learning activities specifically designed for grades K-2 that form the Elementary GLOBE Unit. This unit engages the youngest GLOBE students in an age-appropriate fashion. These standards-based and classroom-tested resources include five modules that each address parts of the Earth system while also building literacy skills.





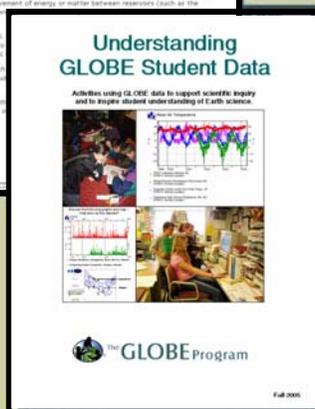
Online Teaching Modules

The GLOBE Program has developed Interactive online resources to promote understanding of GLOBE Program content and scientific protocols. Resources combine graphics and interactivity to promote understanding through a hands-on approach that has been established as a successful model for online learning. The Cloud Protocols module (shown here) promotes scientific understanding of cloud formation, content on identification of cloud types, and interactive features to help online learners to accurately collect data related to the GLOBE Cloud protocols.



Data Use Activities

Educational materials have been designed to encourage student analysis and interpretation of data. The data use activities foster student investigation of environmental data using the GLOBE Web site and its online graphing tools. GLOBE educational technologists are exploring additional learning models to encourage student interpretation of data in an online and inquiry-based format.





GLOBE Learning Expeditions

GLOBE Learning Expeditions (GLEs) are organized every 2 to 3 years in order to provide students from around the world the opportunity to meet one another, establish friendships and develop collaborative partnerships that will enhance their future GLOBE experience. These conferences also provide teachers an opportunity to share ideas and challenges from their GLOBE experiences, to attend protocol and activity enrichment sessions, and to build connections for research efforts between schools. GLEs have occurred in 1998 (Helsinki, Finland), 2000 (Arkansas, U.S.A.), and Šibenik, Croatia (2003). The next GLE is tentatively scheduled for 2008 in a location still yet to be determined.

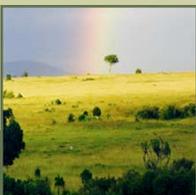


GLOBE Annual Conference

The 9th Annual GLOBE Conference, "GLOBE 2005: Global - Regional - Local," was held on 31 - July - 5 August, 2005, in Prague, Czech Republic. The Annual Conference brought together GLOBE Country Coordinators and U.S. Partnership Coordinators, Education and Science Principal Investigators, GLOBE Program Staff, and others to address key education and science elements of GLOBE. This event was the first GLOBE Annual Conference to be held outside of the U.S. The meeting was organized by GLOBE Europe, in collaboration with the GLOBE Program Office, and was graciously hosted by Tereza Association, the organization responsible for GLOBE in the Czech Republic. More than 150 individuals from 34 countries participated actively in presentation, discussions, workshops and social events.



The 10th Annual GLOBE Conference, "The New Decade for Global Sustainable Development", will be hosted by GLOBE Thailand in 2006. Look for updates on the GLOBE Web site about this event!





GLOBE Country Coordinators in Sub-Saharan Africa (23 Countries)



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Godfrey Felix
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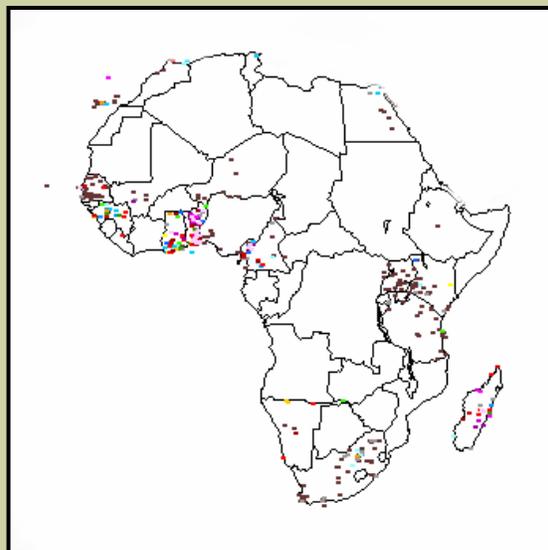
Tanzania
38 Schools

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Sub-Saharan Africa
Teachers: 849 Schools: 524
Data Reported: 860,555

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Africa

GLOBE PARTNER Newsletter Africa Newsletter (30 Sep 2005)
GLOBE PARTNER Newsletter Africa Regional Spring Newsletter (31 Mar 2005)

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GLOBE Online Newsletters





Highlights of GLOBE Activities in Sub-Saharan Africa

Regional Events/Collaboration:

- Discussions for regionalization held at the Cameroon Train-the-Trainer (TTT) Workshop in 2003, the Annual Conferences in 2004 and 2005, regional meetings in Niger, November 26, 2005 and Uganda, January 14, 2006;
- Cameroon participated in 2003 GLE in Šibenik, Croatia;
- Atmosphere Symposium held in Benin, April 2001;
- Student exchanges in preparation between Cameroon and Europe.

Trainings of Regional Significance:

- Train-the-Trainer (TTT) workshops: Uganda 2006, Niger 2005, Cameroon 2003, Ghana 2002, Madagascar 2001, Gambia 2000, South Africa 2000, Mali 1998, Kenya 1997, Senegal 1995;
- Regional Teacher Trainings: Trainers from neighboring countries have assisted in other countries' teacher training workshops. For example, a trainer from Senegal has assisted the Country Coordinator in Guinea in holding teacher trainings.

These trainings have resulted in certifying 26 Master Trainers and Assistant Master Trainers. One objective is to create teams of French and English speaking Master Trainers.

Regional Conferences with GLOBE Representation:

- MaliWatch, Bamako, Mali, July 2002;
- World Meteorological Organization (WMO): Brazzaville, Congo, November, 2004;
- African Monsoon Multidisciplinary Analysis (AMMA): Dakar, Senegal, November, 2005;
- Multilateral Initiative for Malaria (MIM): Yaoundé, Cameroon, November, 2005.

GLOBE Africa Regional Consortium:

Consortium Planning Committee has been established with Mrs. Margaret Besong from Cameroon as the Regional Contact. A draft constitution is under review by GLOBE Africa Partners. GLOBE South Africa is developing a regional Web site and is exploring the possibility of using an existing not-for-profit to house the Consortium.

Objectives of the Consortium include:

- Promoting and strengthening regional and international functions and relations among students and teachers in GLOBE countries.
- Developing strategies that encourage scientific communities to collaborate and increase environmental education awareness for sustainable development
- Promoting and applying quality science that will improve on the quality of life for local communities.
- Encouraging the integration into national curricula of the GLOBE Program approach to learning.
- Promote learning by doing.





Highlights of GLOBE Stars and News and Events in Sub-Saharan Africa

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Benin, Committed GLOBE Partner, Hosts First GLOBE International Atmosphere Symposium

May 25, 2001

In April this year, the West African nation of Benin celebrated six years of strong growth in the GLOBE program as host of the First GLOBE International Atmosphere Symposium.

In April 1995, eight Beninese schools joined GLOBE. This year, Benin supports more than 75 schools that implement GLOBE data and conduct GLOBE activities.



Ghana's Lively Program Expands

January 08, 2002

More than 90 teachers from across Ghana convened for the country's first GLOBE Teachers Conference, which included a launch of the recently added ozone and aerosol protocols. Trainers and trainees also tested the deep red clay and sandy soils, which contrasted mightily with the equally deep greens of the area's vegetation. Clothing of lovely patterned fabrics, added to the striking of the surroundings. The colors were matched by strong feelings of energy and enthusiasm



Nigerians Participate at Texas Workshop



Strong connections are being made between the Ministry of Education in Nigeria, the University of North Texas and North Lake College, Texas. Twelve mathematics, physics, biology, and chemistry teachers from throughout Nigeria participated at a workshop held at the University of North Texas between January 12 and 31, 2006.



Vibrant Trainings in West Africa

June 26, 2000

Highly successful GLOBE Train-the-Trainer workshops recently were held in Ghana and The Gambia, with local public officials and educators, GLOBE Country Coordinators, Peace Corps Volunteers and representatives of GLOBE-US. Working under a steady West African sun, and serenaded by the screeches of multi-colored birds, more than 70 men and women laid out pixels, soils, tested waters, studied data graphs, and discussed the Program's added emphasis on inquiry.



Cameroon GLOBE Students Increase Environmental Awareness of Municipal Lake

December 20, 2005

Between 2000 and 2003, twenty secondary-school students at Lycée Bilingue d'Application (LBA) Yaoundé used GLOBE protocols to study the water quality of Yaoundé Municipal Lake in Yaoundé, Cameroon. Under the guidance of their teacher, Mr. George Nditfon, who is also a GLOBE Assistant Master Trainer in Hydrology, these students found the lake to be highly stressful for aquatic life. Over the three year period, these dedicated students devised a research plan, collected weekly data and analyzed their results. They found that the pH averaged 10 ± 0.5 and that the dissolved oxygen averaged $2.5 \pm 0.8 \text{mg/l}$ (ppm). Their research supported other work being done by a university researcher, Dr. Charles Bonje. Their research provided supports for efforts to clean up the lake considerably. However, longer term sewage treatment is needed to improve and sustain water quality. As George Nditfon says, "This study shows the relevance of GLOBE protocols to society."



The students presented their work to officials at the American Cultural Centre in Yaoundé on World Environment Day 2003. GLOBE students Yangwet, Nnupoko, Ngufor Mercy, Ntokowo Habib, Ghogomu Constance, Ebotane Shelly, CHI Magdala, and Tumajong George, were also short listed for the Caretakers Conference in Turin, Italy.



Ten Countries Participate in GLOBE International Training Workshop Regional Meeting

January 10, 2006

An International Training Workshop took place in Niamey, Niger, during the week of 21 November 2005. The Niger Ministry of Education and the United Nations Development Programme (UNDP) graciously hosted the workshop at the Ecole des Mines, de l'Industrie et de la Géologie (EMIG). The training team came from Benin, Cameroon, Cape Verde, Congo (Brazzaville), Gabon, Mali, Mauritania, Niger, Senegal, and the United States. Nearly 70 participants attended, including primary and secondary school teachers, school inspectors, school administrators, and Ministries of Education officials. In addition, there were participants from Peace Corps, World Meteorological Organization (WMO), and two regional science centers, the Institute International de Recherche sur les Cultures des Zones Tropicales Semi-arides (ICRISAT) and the African Center of Meteorological Applications for Development (ACMAD).



Madame Djibrillou Safia Moustapha, GLOBE Country Coordinator for Niger, organized an outstanding workshop for French-speaking Africa. Many thanks are extended to Madame Djibrillou, her staff and Monsieur Hamani Harouna, Ministre de l'Education de Base et de l'Alphabétisation.

The workshop provided the forum to bring together many teachers, administrators and

Highlight your special GLOBE events as well as any GLOBE activities that your teachers and students would like to share with others. These stories often provide ideas and inspiration to other schools, teachers and Country Coordinators. Acknowledge these events by creating a draft article and submitting it with a few photographs. Please remember that all pictures must have a completed release form in order to be posted on the GLOBE Web site.





The GLOBE Program
www.globe.gov

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Network Coordinator:

Mr. Mark Brettenny (South Africa) <mark@caw.dorea.co.za>



Winner of the 2004 Media and Technology Category

“The awardees reflect new ways of teaching world languages and focus on the international dimension of every major subject, including math, science, language arts, history, geography and economics. They also feature creative and innovative uses of technology.”

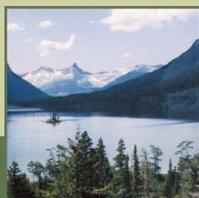
PDK  PHI DELTA KAPPA *International*

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2004 • Volume 86 • Number 3 www.pdkintl.org/kappan/k_v86/k0411ka3.htm

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January 2006