

## 2006 GLP Global Learning Expedition Kenya, Africa



Project Costs Sponsored by Fountain Baptist Church, Summit, New Jersey

Report Prepared by the Global Literacy Project, Inc. (<http://glpinc.org/>) - © 2006 Global Literacy Project

## Student Volunteers Help Build Water Harvesting System in Arid Eastern Kenya

Four undergraduate students (Kevin Tevis, Jennagloria Pacheco, Diane Manibo, Reema Shah) from the Rutgers University's chapter of Engineers Without Borders (EWB-Rutgers) spent three weeks of the summer in arid eastern Kenya (Aug. 6-26) to use their engineering skills in working with Kenyan undergraduate students and local engineers to build a water harvesting system for Isungulin Village in the Makueni district of Kenya. The project that will provide a reliable, healthy water supply for a village of some 200 families that survive as subsistence farmers.

EWB-Rutgers is an organization of engineering students whose mission is to use their engineering skills in solving problems and improving lives worldwide, without regard to country, i.e. without borders.

"It's tremendous to think that our efforts will directly help provide clean drinking water to a village in Kenya, a country currently experiencing its worst drought in 20 years," said junior chemical/biochemical engineering student Reema Shah. "I am twenty years old, and my sole ambition is to spread the wealth we Americans take for granted."

This EWB Rutgers Project in Kenya was assigned to the Rutgers Chapter of EWB by the national EWB office which was responding to a request for such a project from Mr. Denniston Bonadie, VP-Program Development of the Global Literacy Project ([www.glpinc.org/](http://www.glpinc.org/)). Mr. Bonadie was seeking a means of capturing the rain water that appears in the district for only two out 12 months a year. For two months it rains heavily, but for the rest of the year there is no rain and no water except at distant springs and rivers to which school children walk for miles with buckets on their heads to fetch water.

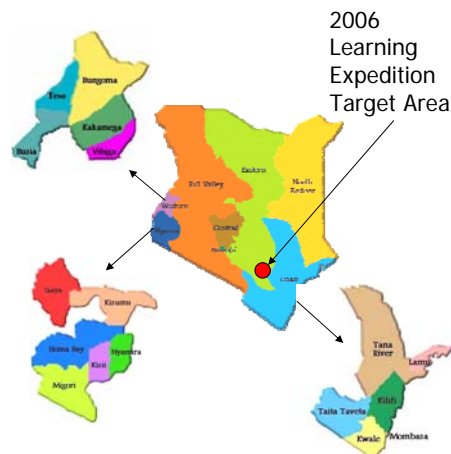
Valuable study time and energy is spent fetching water from miles away and yet it rains heavily for two months a year. Could this rain water be captured in huge tanks and used for the rest of the year? The Engineers Without Borders (EWB) said yes, and traveled to Kenya to help design rain water harvesting systems.

While in Kenya the Rutgers EWB students also run workshops to introduce Kenyan elementary and secondary school students to engineering, and they also introduced solar-power ovens to the rural village in which they built the rain water harvesting system. And they explored the possibility of installing a drip irrigation system in the village during their next trip to this particular village in 2007. The aim is to provide water for drinking, domestic use, and gardening.

The Rutgers EWB students also visited a second Global Literacy Project supported village in Teso district of Western Kenya where they collected data necessary for designing and building a small bridge in 2007 to connect two rural villages, and to enable transport of rural agricultural products to the market across the small river that is often impassable during the long rain season. The Rutgers EWB students plan to return to Kenya next summer to collaborate with Kenyan engineering student volunteers from Jomo Kenyatta University Of Agriculture And Technology (JKUAT) in building the small bridge in Teso.

## Kenya—Geographically

- Located in eastern Africa, bordering the Indian Ocean, between Somalia and Tanzania
- The climate varies from tropical along coast to arid in interior.
- The terrain varies from low plains in the east that rise to central highlands bisected by Great Rift Valley; fertile plateau in west



## Kenya—Population Distribution

- Kenya's population is now some 35 million\* with 83% occupying 19.2% of the (arable) land while the remaining 17% are to be found in the arid and semi-arid lands.
- There is a big gap in income distribution with the majority of people living in poverty.
- It has diverse ethnic mix with 98% of the total population being of African origin. There are 42 ethnic communities in Kenya.

\* <http://www.cia.gov/cia/publications/factbook/geos/ke.html>

## Kenya—Politically

- Jomo KENYATTA led Kenya from independence until his death in 1978, when President Daniel Arap MOI took power in a constitutional succession.
- 1969—1982: Country was a de facto one-party state with Kenya African National Union (KANU) as the sole legal party.
- MOI gave in and allowed political liberalization in 1991.
  - However, the ethnically fractured opposition failed to dislodge KANU from power in elections in 1992 and 1997.
- President MOI stepped down in December of 2002 after Mwai KIBAKI, running as the candidate of the multiethnic, united opposition group, the National Rainbow Coalition, won the presidency following a hotly contested campaign.

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## Engineers Without Borders



Rutgers University Chapter

- Engineers Without Borders - USA (EWB-USA) is a non-profit humanitarian organization established to partner with developing communities worldwide in order to improve their quality of life.
- This partnership involves the implementation of sustainable engineering projects, while involving and training internationally responsible engineers and engineering students.

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## EWB-Rutgers University Chapter, 2005-2006 Executive Board



Engineers Without Borders—Rutgers University Chapter  
21267 BPO Way  
Piscataway, NJ 08854

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## Global Literacy Project, Inc.

- Global Literacy Project, Inc. (GLP), is a New Jersey based nonprofit and tax-exempt [501 (C) 3] organization, conceptualized by Dr. Olubayi Olubayi and Mr. Denniston Bonadie for the purpose of fostering and supporting community-based literacy initiatives throughout the world.



**Denniston Bonadie & Olubayi Olubayi**  
Recognized in 2003 by New Jersey State Assembly  
Inducted into Rutgers University's African American  
Alumni Association Hall of Fame

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## GLP & EWB Team Up to Help Kenyan Village



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## EWB Team Arrives in Kenya



Japheth Oduor, Kevin, Diane, Reema, Jenna and Evelyn Osilli

Japheth Oduor and Evelyn Osilli are two students at Jomo Kenyatta University of Agriculture and Technology via scholarships created by a GLP donation of a science library.

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## Kenyan Project Coordinators...



Inyaa Olubayi



Peter

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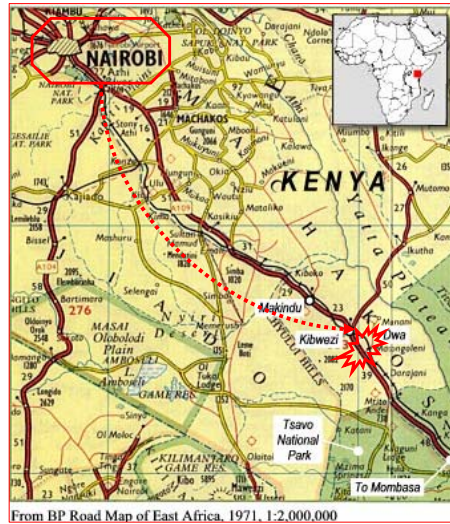
## Isungulini, Makueni District

- Most of the benefiting children are from low-income families with the majority below the poverty index.
- The school is the only primary school serving a community with a population of about 10,000 persons.
- Most residents around Isungulini share common languages of at least Kiswahili and English.
- The Global Literacy Project, is familiar with the community due to its work in conjunction with the Fountain Baptist Church of New Jersey.

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## Location of Isungulini Primary School

- Isungulini Primary School is located in Makueni District some 200km from Nairobi along the Nairobi—Mombasa highway, about 10km from Kibwezi town.
- The road after the Nairobi—Mombasa highway is a 200m stretch of an all weather gravel road.
- The nearest market center is Machinery, about 2km away.



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## Isungulini Primary School



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## GLP Library Created in 2003—Working with Fountain Baptist Church of New Jersey, USA



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## EWB at Isungulini



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## Observations Made During Global Literacy Project Site Visit Conducted in June 2003

- It is apparent that the school is in a semi-arid area, and the water condition has been aggravated by the prevailing drought which has so far lasted 2-3 years.
- Dry riverbeds are now a common phenomenon in the area.
- Agricultural activities have been greatly subdued by the weather conditions, and for many are currently limited to rearing goats and some small-scale kitchen gardening.
- This has exacerbated the degree of poverty in the region.

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## Other Concerns Noted During the Global Literacy Project Site Visit

- There is no power supply to the school or the nearby market centers.
- The school doesn't have an on-tap water supply system, and as such non water-borne on-site sanitation facilities have been adopted.
- Of the latrines present, there are only 3 Ventilated Improved Pit (VIP) latrines which are not enough to accommodate the present enrolment.
  - Normally there should be provision of 1 latrine for every 30 girls and 1 for every 40 boys.

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## Water is From A Spring Some 3km Away



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## Water is From A Spring Some 3km Away



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## Scoping Out Site & Starting Construction



Foundation dug to 4ft deep

Foundation Filled with Hardcore

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## Working on Tank Base



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## Working on Tank



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## Other Projects For Follow Up in 2007...



Currently the school uses a very rudimentary method for cooking lunch for the children...

EWB Demonstrate Solar Oven option



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## Other Projects For Follow Up in 2007...

Copy Drip Irrigation Pilot From Nearby Government Site



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## Proposed 2007 Project in Western Kenya Build Bridge Over Small Stream...



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