

TechBridgeWorld

We are a research organization at Carnegie Mellon University, spanning education, research, development, deployment, and outreach. We are dedicated to defining the role of technology in sustainable global development...

Carnegie Mellon



TechBridgeWorld

We are shaping the future of technology for the globe. We cast the vision of technology accessible and relevant to all while defining technology to be broad; including, but not limited to, information and communication technologies...



TechBridgeWorld

To this end, we work to increase the diversity of both creators and consumers of technology.



Mission Statement

TechBridgeWorld innovates and implements technology solutions to meet sustainable development needs around the world. Through strong collaborations with partners in developing communities, we explore and enhance the role of technology globally, focusing on two main principles: sharing expertise to create innovative and locally suitable solutions, and empowerment of indigenous populations to create sustainable solutions. Through these efforts TechBridgeWorld creates technology accessible and relevant to all.



Our Bridges



- ❖ We are building technology bridges all over the world!
- ❖ The dots represent locations where we had or currently have projects and programs



Our Vision

We are dedicated to improving people's lives by enhancing and sharing advances in technology to promote sustainable development throughout the globe...



TECHBRIDGEWORLD

Our Vision

Our vision is to create and foster an environment where Carnegie Mellon faculty, students, and staff, together with partners from around the world, share expertise to cooperatively realize a community's vision of development...



Our Vision

We encourage locally suitable and sustainable technology by adhering to each community's vision of progress, thus preserving *their* ownership of the benefits and consequences of the realized vision.



We envision a world where:

- ❖ Global sharing of technological innovation and related knowledge is a common practice
- ❖ Students and professionals enable culturally sensitive technology development
- ❖ Creative technology solutions address problems affecting developing communities
- ❖ Technology no longer exacerbates divides, but instead diminishes social divides
- ❖ Advanced technology is accessible and relevant to all
- ❖ The frontiers of technological innovation are advanced by the diversity of the creators of this technology
- ❖ Cultural awareness, respect, and tolerance across borders is enhanced by shared technology
- ❖ The lives of future generations around the world are enriched through the appropriate use of technology



Programs



V-Unit:
Learning to Build a Vision



Project Kané



Adaptive Braille Writing Tutor



Education E-Village





V-Unit

Learning to build a Vision

- ❖ A TechBridgeWorld opportunity for our **graduate** students
- ❖ A chance to investigate *non-traditional* interested related to technology and society
- ❖ A foundation to become a more informed technology leader in society
- ❖ Core implementation feature: graduate students get credit for V-Unit work





V-Unit

Colombia/Honduras

Soil Mapping

Ghana

Automated English Reading
Tutor

Technical Creativity Robotics
Course

Haiti

Hospital Scheduling

India

Bar-code-based computer use

Braille Writing Tutor

Peru

Language Translation

USA

Building navigation for the blind

American Sign Language

Computer Game





www.cs.cmu.edu/~vunit



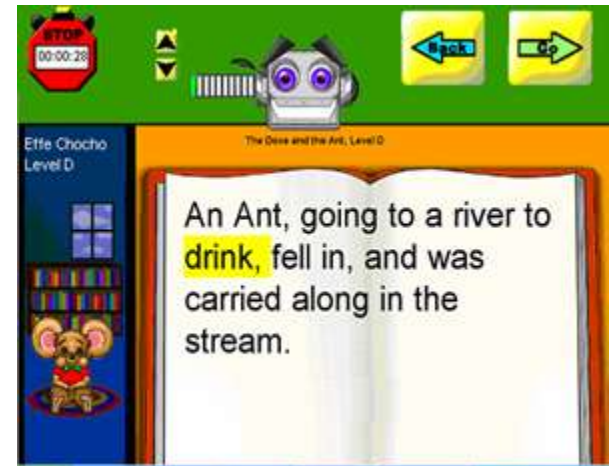
Who We Are | Mission Statement | Bridges | Vision | **Programs** | Get Involved!



Project Kané

Impact of an Automated English Reading Tutor in Ghana

- ❖ Provide guided reading practice using Project LISTEN's Reading Tutor
- ❖ Pilot Study
 - To *determine the feasibility* of using the automated reading tutor with children in Ghana
- ❖ Phase I
 - To *measure the efficacy* of using the automated reading tutor with children in Ghana
- ❖ Phase II
 - To *compare the efficacy* of using the automated reading tutor versus a non-technological approach to guided reading practice





Status



❖ Pilot study was successful!

- Children who had never used a computer before could use the tutor with minimal instruction
- Children were engaged and excited
- Voice recognition worked fine with Ghanaian accents

❖ Phase II study

- Research collaboration with the Kofi-Annan Centre of Excellence in ICT
- Phase II aims to measure the effectiveness of the automated reading tutor with children from different backgrounds in Accra





www.techbridgeworld.org/kane



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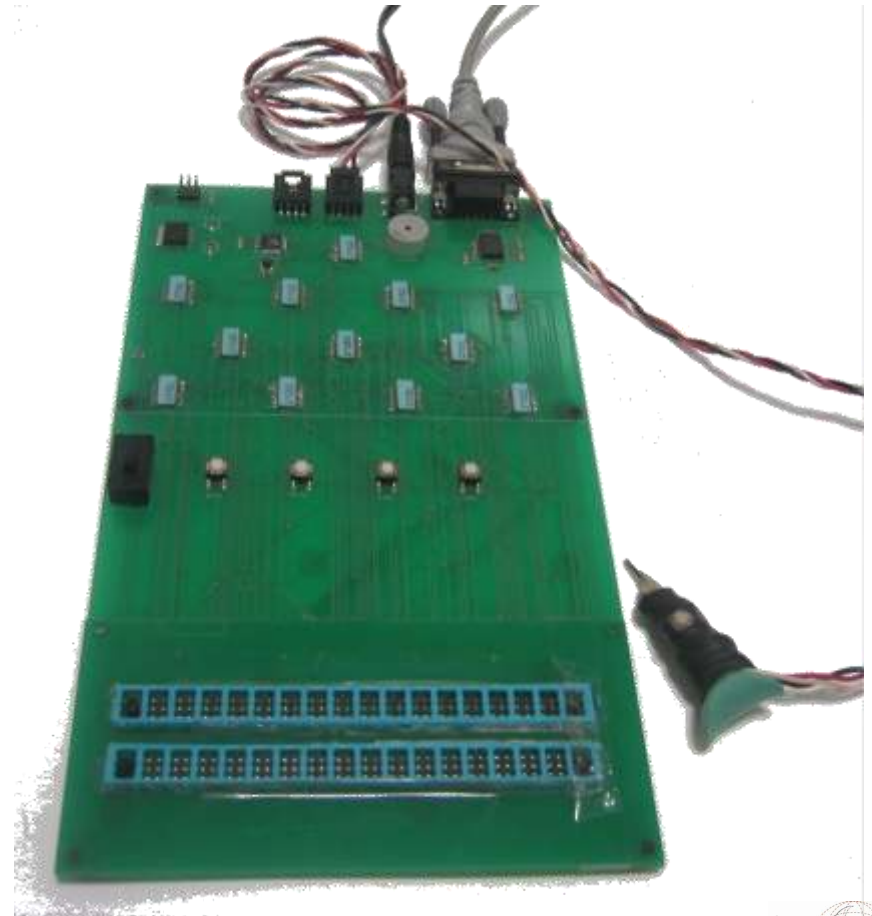
Adaptive Braille Writing Tutor

- ❖ More than 90% of the world's 161 million blind and visually impaired people live in developing communities
- ❖ Literacy rate of this population is under 3%
- ❖ Braille Tutor consists of a digital stylus that interfaces to a computer, PDA, or SimPuter
 - Uses text-to-speech software to speak sentences to the student
 - Catered specifically to needs of students and teachers in under-resourced communities
 - Designed to be low-cost and robust
- ❖ Collaboration with Mathru School for the Blind
- ❖ Successful 6-week long field test in Summer 2006 and now new version of software and hardware
- ❖ Future directions: battery-powered, independent of computer hook-up, adaptive to skill level of user, and make open source



Tutor Design

- ❖ Hardware design:
 - Low cost, low power
 - Durable, locally maintainable
 - Transferable
- ❖ Software design:
 - English Braille
 - 3 levels of tutoring
 - 2nd grade: positions and letters
 - 3rd grade: +words, basic punctuation
 - 4th grade: +sentences, math
- ❖ Audio feedback:
 - Text-to-speech engine
 - Digitalized teacher's voice



www.techbridgeworld.org/brailletutor



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Education E-Village

- ❖ TechBridgeWorld courseware, such as syllabi, reading lists, and presentation materials will soon be available to other academic institutions to assist them in developing their own courses related to technology and development.
- ❖ The **Introduction to Robotics and Artificial Intelligence** course at Ashesi will be among the first to be included in the new online course repository, along with curriculum materials from other TechBridgeWorld courses taught at Carnegie Mellon.



Beyond Education E-Village

- ❖ Two former students who participated in last summer's pilot course at Ashesi University, in collaboration with other colleagues from their graduating class, have launched their own software start-up in Accra.
- ❖ The students are putting their problem solving and creative thinking abilities to work, and we wish them well in this endeavor!



www.techbridgeworld.org/programs/evillage



Get Involved!

- ❖ Become a TechBridgeWorld *Sponsor*
- ❖ Become a TechBridgeWorld *Partner*
- ❖ Become a TechBridgeWorld *Faculty Advisor*
- ❖ Become a TechBridgeWorld *Student*

www.TechBridgeWorld.org

