EXECUTIVE SUMMARY

Children have a natural interest in one another. They are curious and inquisitive. Children across the world need the opportunity to become comfortable with the technological concepts and devices that are driving industrial development and global communication, yet not all children have this access. This problem cannot be solved by simply providing resources or equipment out of context. Access to the most basic infrastructure is an obstacle facing many communities; insertion of technology without appropriate training or cultural orientation may leave only the legacy of an isolated skill. To make a lasting impact, a successful technology empowerment initiative must be adaptable, to match the resources available in the community; engaging, to draw the lasting interest of the participants; and self-sustaining, for the project to continue to grow within the local community.

Leveraging information and communication technologies creates unparalleled opportunities for active learning and global dialogue within education and curriculum development communities. The importance and potential impact of technology cannot be overstated. The digital divide and deficient access to technology present challenges, yet technology is the foundation of our global village. It allows us to explore and teach about our world in entirely new ways. In developing the pilot framework, researchers looked to UNESCO’s four pillars of knowledge or fundamental types of learning for the 21st century: learning to know, to do, to be and to live together. The intended result was a holistic approach that accentuated the interconnection of these dimensions of learning with primary focus on learning to live together.

The GigaPan School Dialogues project is a joint venture of Carnegie Mellon University and the International Bureau of Education, UNESCO in partnership with UNESCO’s Associated Project network. It seeks to promote empathy and understanding between cultures and create a greater sense of community through an exchange of explorable, high-resolution digital imagery useful in diverse school contexts. Using a robotic camera provided by the project, children in participating schools take explorable, high-resolution panoramic images of the world around them, and share them through the project’s website with their contemporaries around the globe. The sharing of their community’s sites, landmarks, events, and places of importance to them encourages self-reflection and a deeper understanding of community and self-identity. Within curricular subjects and school projects, students are challenged to think deeply about inclusion and diversity in their communities. Within parameters easily defined by local infrastructure, they embark on a 21st-century community networking journey to explore, document, and discuss the images and community identity.

Tangible outcomes of the project include a gallery or presentation for the outside community showcasing the images and what the children have learned. The project targets equally the intangibles, however. Children come out of an exchange with skills in digital photography and social media, deeper understanding and awareness of their partner community, and an enhanced sense of identity that comes from documenting one’s life with pride and dignity.

As they use the GigaPan in educational settings that encourage collective and individual social and cultural inquiry, students’ critical thinking skills will be further developed. They will be able to appropriate and critically use knowledge, information and resources to understand their own society and that of others. Objectives of Learning to Live Together are also enhanced through an international dialogue in which students are connected across the globe. Such a dialogue aims to share perspectives and understandings about cultures and their historical developments based on an appreciation and reaffirmation of diversity and cultural identities. The project’s unique approach begins building knowledge at the local level and moves to the global. By including several layers of peer to peer exchange, students become more confident and engaged global citizens.

The exchange provides a technologically enhanced web-based platform for deepening understanding, consideration and respect for other people and their beliefs, values and cultures. The innately explorable nature of the GigaPan panoramas reinforces the principle that learning to live together must be an interactive process
of discovery and reflection. The International Bureau of Education underscores the importance of this subject: "Learning to Live Together is based on the principle of equality among all peoples. It should be seen not as passive acceptance or tolerance of others but rather as an active, dynamic, interactive experience of discovering others and working towards common objectives. It is about seeing our humanness within all others, while growing to understand and appreciate the rich and complex diversity of human cultures and lifestyles. The concepts of similarity, diversity, and interdependence which define the human experience form the basis of the ideal of Learning to Live Together." GigaPan School Dialogues couples technology empowerment with engaging content and an opportunity to develop skills needed to learn to live together.

About GigaPan

GigaPan is a simple device that enables a standard digital camera to create high-resolution panoramic images. The technology, based on NASA's Mars Rover robotic platform for creating explorable images, has been adapted by the Global Connection project at Carnegie Mellon University to make it easy for a novice to use. To build a panorama, a user simply defines the corners of the frame, and GigaPan snaps a collection of pictures that are stitched together to make one large and incredibly detailed image. Through the stitching process, students are introduced to the underlying mathematics and engineering.

While the panoramas themselves are rich and break new ground in image explorability, the real power of GigaPan is in community building. Users are able to dynamically explore, annotate, share, and discuss the panoramas. In a school exchange, a group at one site posts an image, a group at the partner site explores it and leaves virtual "notes" with questions, and the first group responds, with either a direct answer or with further research and documentation. GigaPan's spatial browsing software is currently used on five continents around the globe, and is featured by BBC/WGBH's The World radio program.

Like a conventional panoramic photograph, a GigaPan panorama can capture a very broad and rich vista:

The gigapixel resolution, however, permits very high levels of zoom. This image of the Golden Gate Bridge invites the viewer to question and explore, zooming in first on the bridge and bay...

...spot what seems to be a sign at the bottom right…

...wonder exactly how thick that cable is…

...and find out to the fraction of an inch!
About the Dialogues

The GigaPan School Dialogues will let children experience something of the life of a child in a very different community, with very different resources and cultures. In the exchange, children are given the power to work in teams to document their own lives and share them with their peers across the globe. A global community develops out of this growing network, a community of young people who are knowledgeable about their own environment and understand and care about the problems their contemporaries face.

Children in all communities of the world have a role in their community that is dependent on culture, local environment, and personal resources. Using the GigaPan camera, within curricular subjects and school projects, teams of students take explorable, high-resolution panoramic images of their communities and share them with their contemporaries around the globe for immediate consumption, analysis, comment, and reaction. This unique technological opportunity encourages youth to explore and document various local sites of interest (to them) as well as activities and/or popular events that define their community and their roles within the community. By sharing and reflecting upon their stories via images and text, students embark on a unique community networking journey of exploration, documentation, and discussion in which they alternate in the discussant roles of leader and listener. The students will explore the interplay of community and inclusion.

GigaPan technology is particularly well-suited to taking still images with enough detail for very effective exploration.

Three schools from the UNESCO Associated Schools Project Network and one school in Pittsburgh, USA have begun work in the pilot program, in Anglophone communities in the United States, South Africa, and Trinidad and Tobago. School groups use GigaPan cameras to capture significant aspects of their lives and of their community. The CMU/IBE team has led teacher and student training related to the educational and technological aspects of the project. GigaPan equipment is provided for each school group. The CMU/IBE team works closely with the school community educators to jointly define how the GigaPan camera and subsequent school exchange will be most useful in the school’s curriculum and classroom environment. A post-project assessment will follow up on the progressive/evolving outcomes of the project.

A new phase of the project will begin in 2009, joining 5 schools in the United States with 5 schools across the world. CMU/IBE staff will visit the schools in the spring and summer of 2009, with representatives from all 10 schools coming together in Pittsburgh for a workshop June 22-24, 2009. An exchange between these 10 schools will be carried out in the fall of 2009, with assessment and follow-up to be conducted in the spring of 2010. As in the pilot, GigaPan equipment will be provided without charge to all 10 schools.
About Carnegie Mellon University – Robotic Institute

Carnegie Mellon is a global research university of more than 10,000 students, 70,000 alumni, and 4,000 faculty and staff. Recognized for its world-class arts and technology programs, collaboration across disciplines and innovative leadership in education, Carnegie Mellon is consistently a top-ranked university. The Robotics Institute at Carnegie Mellon University was established in 1979 to conduct basic and applied research in robotics technologies relevant to industrial and societal tasks.

About Global Connection

Global Connection is a joint project of Carnegie Mellon University, NASA, Google, and National Geographic. The project's long-term goal is to help us learn about and meet our neighbors across this globe, and learn about our planet itself. The team is motivated by the desire to encourage global citizenship and understanding by connecting people, places and events through the utilization, exploration and sharing of dynamically viewable images. The Global Connection Project develops software tools and technologies to increase the power of images to connect, inform, and inspire people to become engaged and responsible global citizens.

About UNESCO

The main purpose of UNESCO, according to its Constitution, is to contribute to peace and security by promoting the collaboration of nations through education, science and culture, in order to further universal respect for justice, the rule of law, human rights and fundamental freedoms for the peoples of the world, regardless of race, sex, language or religion. One of the basic aims of the Organization has always been the promotion of peace and international co-operation through education. After its foundation in 1946, educators working with UNESCO produced an impressive number of new ideas and suggestions concerning the education of young people for international understanding.

About International Bureau of Education (IBE) / UNESCO

The IBE's main mission is to act as UNESCO's centre specialized in contents, methods and structure of education. It builds networks to share expertise on curriculum development in all regions of the world and aims to introduce modern approaches in curriculum design and implementation, improve practical skills and promote informed dialogue at regional and international levels.

About UNESCO’s Associated Schools

In order to translate UNESCO ideas into concrete action, UNESCO launched the Associated Schools Project Network (ASPnet) in 1953. As of September 2005, it includes over 8000 educational institutions, ranging from pre-school education to teacher training in 177 countries.

Associated Schools commit to promoting the ideals of UNESCO by conducting pilot projects in favor of better preparing children and young people to meet effectively the challenges of an increasingly complex and interdependent world. The new ASPnet Strategy and Plan of Action (2004-2009) places emphasis on reinforcing the four pillars of Learning for the 21st Century (learning to know, to do, to be and to live together) and promoting quality education as outlined in the Dakar Framework of Action. ASPnet teachers and students have many opportunities to work together beyond their classrooms to develop innovative educational approaches, methods and materials from local to global levels.