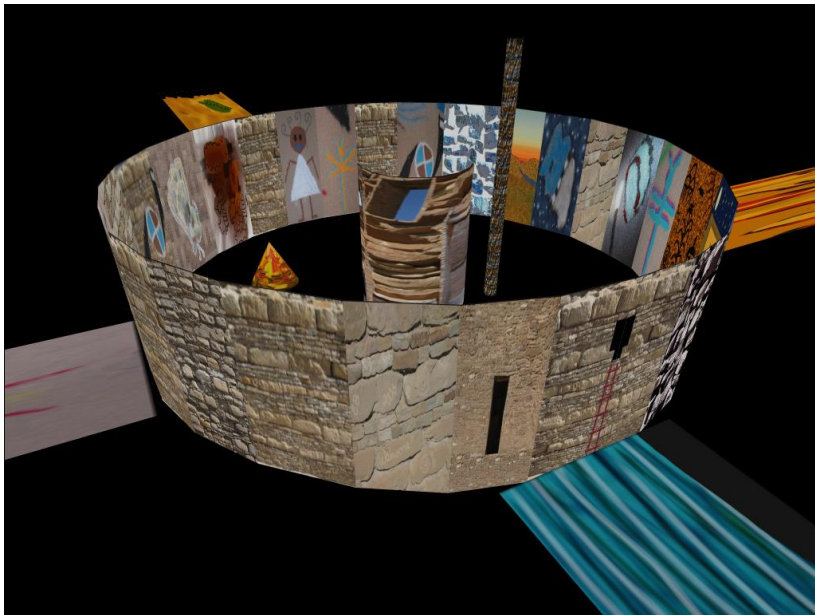


# New Voices and New Visions for Engaging Native Americans in Computer Science

## Boston University University of New Mexico



*New Voices and New Visions for Engaging Native Americans in Computer Science* is a collaborative project between Boston University (BU) and the University of New Mexico (UNM), funded through NSF's Broadening Participation in Computing program. This 36-month project combines Native American culture and art with a high-technology, computer-rich environment as a vehicle to engage Native American students in computer and computational science. The project employs the Access Grid (AG), virtual reality technologies and Boston University's stereoscopic Deep Vision Display Wall (DVD Wall) to create a culturally and technologically compelling educational experience. We are using a holistic and interdisciplinary approach that incorporates Native American pedagogy, culture and visual aesthetics, computational applications (digital media, VR, 3D animation, DVD Wall, AG), and computer science concepts.

In the first year eleven students participated in the course and developed a culturally relevant, virtual reality experience for display on the DVD Wall while learning about both computer science and indigenous culture in class lectures and assignments. This work was shown at outreach events and showings at BU, UNM and the Pueblo of Jemez as a means to influence the larger community, change the image of computing in culturally relevant ways and attract Native American students to computer science studies and careers.



The focal point of our research is a new project-oriented, interdisciplinary course which is cross-listed between Native American Studies and Computer Science at UNM. Using the AG as the communication infrastructure for a cyberclassroom between UNM and BU, instructors from both universities are using the context of virtual reality to introduce the students to a variety of computer science concepts and computer technologies.

In the second year of the project, a modified version of the course is being taught to seventeen 11<sup>th</sup> grade students in the Walatowa Charter High School at the Pueblo of Jemez. In preparation a DVD wall was installed and a teachers workshop was given at Jemez during the summer of 2007. Six of the UNM students who took the course during the first year are serving as teaching assistances for the high school course. Additionally, an advanced topics course with twelve students enrolled is being offered at UNM to those students wishing to continue their studies.

We anticipate that this pilot project will provide a model based on an interdisciplinary framework which can be emulated by other institutions and adapted for other groups underrepresented in computer and computational sciences.



Captions clockwise from top left: Collaborative final project from 1<sup>st</sup> semester; student work; student on the field trip to Chaco Canyon; the team at the June '06 kick-off meeting at Jemez; the Access Grid in use at Boston University and University of New Mexico; the classroom at Jemez.