Supporting Youth in Designing Sustainable Neighborhoods

Engaging high school students with community planning and technology.

Location: Boston, Massachussetts
Partners: Boston College: Lynch School of Education, Environmental Science program and the Urban Ecology Institute; National Science Foundation Grant Program

Context: Boston has one of the largest concentrations of colleges and universities in the nation and world. But even with such a rich environment of academia, Boston is not immune to the problems of inner city life, particular when it comes to education. Educational researchers have found that students in districts like Boston, where over 76% of the student population is a student of color, tend to not find science interesting and often find science irrelevant to their lives. To engage students, non-traditional approaches are now being tested to actively engage students in Science, Technology, Engineering and Mathematics (STEM) fields, applying classroom lessons to the students' local community.

Project Description:

Prof. Mike Barnett and graduate students in education at Boston College, utilizing grant money from the NSF Innovative Technology Experiences for Students and Teachers (ITEST) funds, have developed a program working with over 200 Boston area high schools students on projects related to urban planning and sustainability. The students are brought together on Saturdays throughout the school year and at three intensive 1-2 week long institutes in the Winter, Spring and Summer. Graduate students and local high school teachers have participated in the intensive teacher training program, learning GIS, CommunityViz and other necessary technologies to effectively guide the various projects.
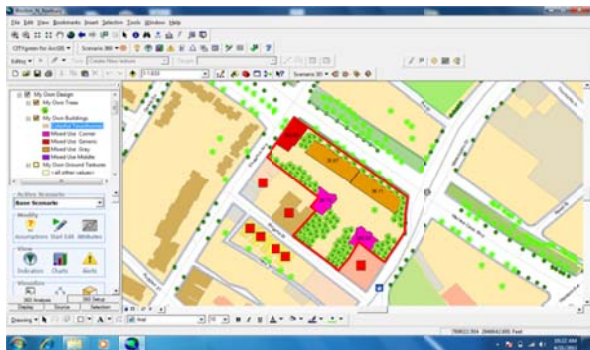
Students have been tasked with redevelopment site analysis in the form of on the ground resident surveys, noise and pollution measurements, existing tree surveys, and traffic and pedestrian flow counts. Following the field studies, students are then introduced to the redevelopment project site maps with some potential future development alternatives. Using CommunityViz, alternatives are analyzed against various impacts of construction costs, traffic generation, impervious surfaces, and other site and neighborhood values.
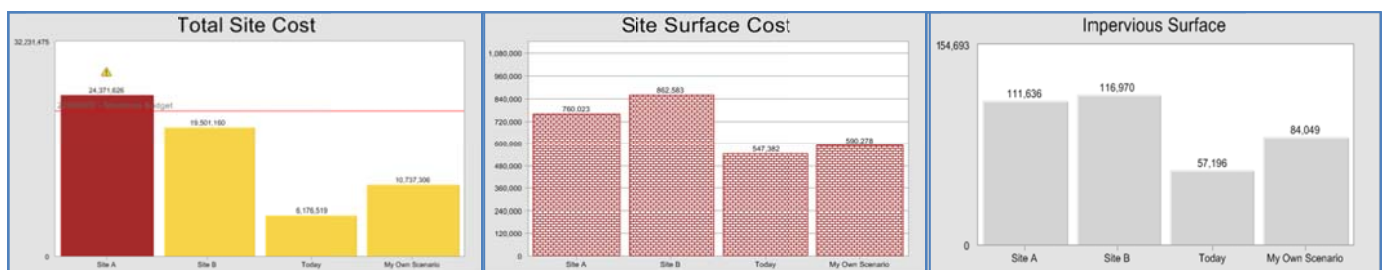
Using a custom CommunityViz sketch palette, students are provided a collection of potential building types, trees, surface materials and site amenities to experiment with possible futures of their own design. Items can be selected from the various palettes and added as features to the site. As the children create their own site design, indicator values are being updated so they can track and compare performance against the other alternatives.

In addition to the site analysis, the sketch palettes are linked directly to a Scenario 3D visualization of the site and surrounding neighborhood. At any point in the site creation, students are able to export their design to the Scenario 3D viewer and see rendered versions of their creation. Scenario 3D viewer allows them to fly through their site and explore the look and feel of their own design as well as alternatives.

> *"Students can explore many solutions to urban planning problems and construct arguments for and against different plans."*
>
> — Dr. Barnett, Boston College

Technology and Tools: CommunityViz Scenario 360™ including Scenario Sketch Tools, HP laptops, and ArcGIS Desktop 9.3.1.

Outcomes: The program has proven success with all students in the program matriculating to a post-secondary institution and over two-thirds majoring in STEM fields when starting their post-secondary education.

> *"By working with CommunityViz, our high school students are not only solving problems that have personal relevance but they are using the same tools as professional urban planners which increases the authenticity of their work."*
>
> — Dr. Barnett, Boston College

KEY LINKS
CommunityViz
   http://www.placeways.com/communityviz
Placeways LLC
   http:// placeways.com
Boston College: Urban Ecology Education program
   http://www.urbanecologyscience.org