

## River City Sustainability

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Project Title	Multi-user Virtual Environment: River City Sustainability
Project Team	Dr Alan Barnes, Associate Professor Jim Davies (SiMERR SA), Rob Costello (Weeroona College Whitehills, Bendigo), Peter Ciszewski (Swinburne University of Technology)
Period	November 07 – June 08
Funding Agency	SiMERR
Organisational Base	SiMERR SA

### Description

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The project aims to develop a high quality online learning product for use in teaching science. Utilising the basic architecture of material from Harvard University, this project will develop 12-15 hours of interactive materials that focus on sustainability. Set in an Australian context, students will be involved in key aspects of the 'science inquiry' cycle:

- Making and testing hypotheses;
- Researching to find relevant data;
- Analysing data and arguments; and
- Presenting results and conclusions.

Student work will be able to be logged to provide detailed feedback on their learning to teachers.

Project Scoping and modelling: "River City" was originally developed at Harvard and provided a model for the development of an Australian parallel project that positioned students as science investigators (as avatars) in a virtual world; underpinned with a structured curriculum, which supports inquiry learning and team interactions.

Development Partnership: SiMERR SA, Rob Costello, and Swinburne formed partnership to develop a product that would be consistent with the "Science by Doing" agenda being promoted through national science bodies.

Prototype development: A prototype product has been developed around the topic of sustainable housing as a means of moving towards the product for application in a school environment.

Product Development: Swinburne is building the online product, by leveraging from the sustainable housing platform (using the 'Unreal Engine' platform) and through assigning the task to an Industry Based Learning placement student, as well using their lecturers, and undergraduate and programming students. The product is being developed using a sustainability theme and with a parallel real world curriculum.

### Participants

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The project is focused on resource development. The online learning product will be trialled and evaluated in schools late in 2008 and into 2009 prior to widespread use.

### Findings

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This project was founded around the context of inquiry learning, particularly targeted at science concepts related to sustainability and systems thinking. The "teaching and learning model" of the simulation is leveraging the immersive context that students often find engaging, to offer a "situated learning" experience, that posits real world problems, where the relevant "variables" are not immediately obvious. This is similar to the "science by doing" agenda, which has identified a need to move beyond the traditional "fact and exemplar" approach, which tends to suggest science is about replicating "right answers". Science as practised, however, has much to do with gradually teasing apart complex issues through skilful inquiry, and the forming and reforming of hypotheses and experimental design. This project aims to offer students participation in this "real nature" of science. The virtual world allows it also be scaffolded and achievable for average students.

## Outcomes

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This project remains 'work in progress', with the expectation that the product will be available in early 2009.

## Impact

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Students will be:

- directly involved in testing and scoping the simulation – there is a need the for “target audience” to inform the simulation design.
- Project developers continue to be directly involved with school students, discussing and testing ideas and therefore providing school students with a genuine link with a university, and authentic involvement in an innovative ICT project.
- The end goal of the project is development of engaging simulations for science learning.
- In terms of career pathways for students, it is worth noting that the gaming industry is now larger than the movie industry in terms of economic return.

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