Geospatial Widgets:

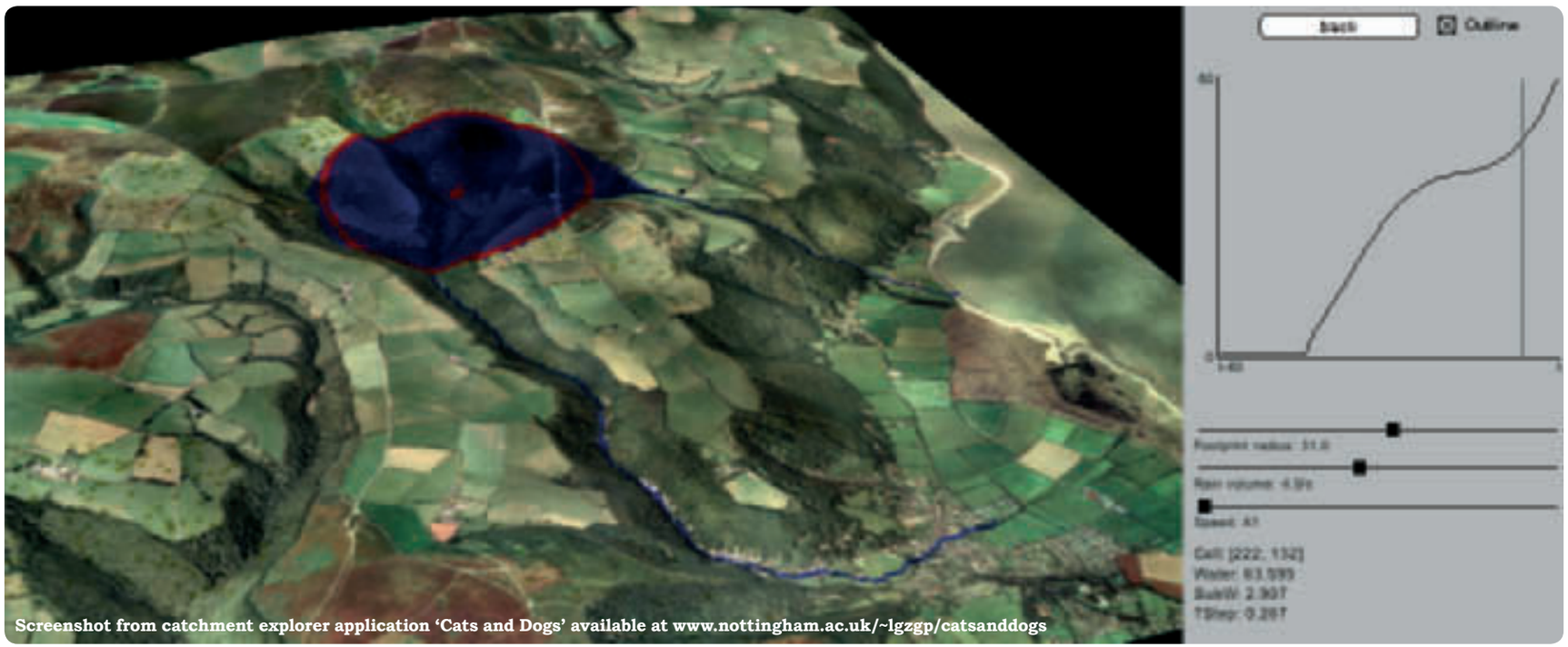
Using visual technology to describe multiple dimensions in the School of Geography

Description

The Geospatial Widgets project looked at various interactive learning objects designed to teach spatial and logic skills visually. The two discussed here are Catchment Explorer which allows the process of rainfall, river flow and flooding to be explored and visualised, and Learning to Read the Landscape, which explores the relationship between a 3D view and a corresponding plan view.

Dr Gary Priestnall

Gary is an Associate Professor within the Geographical Information Science research group of the School of Geography, at the University of Nottingham. Specific areas of interest are: Landscape Visualisation; Geographic Representation; Spatially Aware Computing; Feature extraction. His teaching interests lie mainly in the areas of geographic representation, visualisation and computer programming.



Screenshot from catchment explorer application 'Cats and Dogs' available at www.nottingham.ac.uk/~lgzgp/catsanddogs

What was the learning and teaching challenge that this initiative sought to address?

We identified several gaps in the way that we taught certain subjects. Where the subject being taught is very complex and difficult to convey, interactive visual frameworks can really help. There were complex spatial relationships, and multiple dimensions to describe, and I was ending up waving my arms about a lot to try and explain something. It was difficult to get the information across!

There were parts of various modules where I could clearly identify the need for something a bit more interactive, something that students could take their time over, where if the problem-solving was supported by something more visually appealing they could come back to it again and again and it would complement my arm-waving.

What have you done so far?

I worked with programmer Jack March to develop five Shockwave 3D web-based game-like applications that cover geographical examples in modules ranging from programming to general geographical science modules.

Do the students get out of it what you had hoped they would?

They seem to, although the evidence for that is still anecdotal at this stage. The students use them more than I thought they would in modules. We can see this not only by watching them, but by looking at the high score tables. After the lecture and practical they are still coming back and using it, so clearly it is fulfilling a need in some way.

What kind of skills do the students develop?

The widgets are not stand-alone: they are embedded into modules. This means that it is very hard to isolate their particular impact. They are wrapped up in a blend of different teaching techniques and become part of three or four ways we are trying to communicate: arm waving, lecturing, papers and these games. They all contribute something different to the learning experience.

Screenshot from spatial skills test 'Locata' available at www.nottingham.ac.uk/~lgzgp/locata

How could the outcomes be used by others?

These shockwave 3D interactive applications have been good at enabling different forms of spatial representation to be pulled together in quite a nice, engaging way. There is a lot of potential to explore spatial data in different disciplines. This project evolved form the lab-widgets project that Ed Lester started in School of Chemical, Environmental and Mechanical Engineering (see previous article). In a sense these two projects together are already demonstrating a good potential for transferability between disciplines. There is also potential there for computer science and the Centre for Geospatial Science to use the widgets as a teaching and learning and research tool.