

Fast-track students

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A car-racing game that helps pupils grasp the complex principles behind physics and engineering has proved a hit with Bristol students. Heather McLean reports

Racing Academy is a prototype car-racing game that teaches students how to use complex engineering and physics principles. The main aim is to create a multiplayer game on a nationwide basis to engage students mentally and be educationally sound enough for use in class.

The game is the brainchild of the ICT research institute, Nesta Futurelab, and is based on technology from its design partner on this project, Lateral Vision. Schools would use it internally, enter teams to compete with other schools, or form teams made up from different schools around the the UK, while home users would set up their own teams of individual players.

It's based on the most realistic physics model yet developed. Lateral Vision has created a program with over 1,000 parameters - meaning they can change many parts of the car's design. It's being tested on GCSE students but can be easily scaled up, thanks to its sophisticated mathematical basis, according to researcher Ben Williamson.

The game has so far been tested by a science class at Monks Park school, Bristol, and by an engineering class at Hartcliffe engineering community college, also in Bristol, during 2004. Feedback from the 14- to 15-year-old testers over double-period lessons was fed into each stage of the game's development.

The first rough version of Racing Academy was produced last September: it allowed students to change the engine in their team's car and then test it over a virtual quarter of a mile drag race against the computer.

"The students have to choose one of six engines, choosing which will be the fastest, how hard to press the throttle when they start so they don't wheel-spin, and when the best time to change gear is," says Williamson. "It's about how to control the car as you give it different set-ups, as well."

In October, the researchers returned with an updated version of the game, following student requests to be able to change tyres to allow for friction and weight changes. In November a third version allowed students to change gear ratios. Gear ratios are complex, A-level standard engineering and physics principles, but the GCSE students using this version were able to grasp the idea and use it in the game.

An online chatroom was added to let students collaborate with team-mates on what they had tried and tested, what worked and what didn't. The chatroom

will eventually form the basis for a national collaboration program for multiplayer events on Racing Academy, Williamson hopes.

Phil Buckley, who teaches at Hartcliffe, is using the latest version of the game with year 9 pupils to cover gaps at the end of lessons. He's keen to continue work on developing the game, encouraged by his students' response.

"Students absolutely love Racing Academy," he says.

"It's an educational game, but it's still a lot of fun. This is not a typical racing game. It uses engineering to work out the best way of getting that car to go faster. Students learn from the teacher and each other by asking questions, and they use the online chatroom to increase their vocabulary, as they have to use technical language to convey their thoughts as text."

Nesta Futurelab hopes the game will find its way into schools generally and become available commercially.

Weblinks

Nesta Futurelab: www.nestafuturelab.org