

# Game over for conventional maths classes

Computer gaming is transforming the way children learn. By Andrew Burnet

I'm sitting in on a second-year maths class at James Young High School, in Livingston, and the pupils are playing computer games. Far from attempting to divert them towards more studious activities, their teacher is egging them on, marking up high scores on a digital whiteboard (known as a Smart-Board). It feels more like an amusement arcade than a classroom.

The internet is now awash with educational gaming freeware, while numerous companies have launched quality paid-for software products. Successful British examples include Newcastle's Caspian Learning, Bristol's FutureLab, Leicester's EducationCity.com (an award winner at 3the British Educational Technology show in 2006), and London's 2Simple Software, another BETT-award winner).



But what if the game was actually part of the lesson? Can so-called "serious games" achieve the difficult trick of making learning fun? Increasingly, the answer is yes. Over the past few years, gaming software and educational software have been converging. A report produced last autumn for the Joint Information Systems Committee (JISC), which monitors the use of information and communications technology (ICT) in education and research, found that "the learning potential of proprietary games has allowed academics and practitioners to want to work with developers to ensure that products and tools meet the requirements of the learners".

But one Scottish product looks set to enjoy spectacular success. Launched last autumn by 3MRT, based in Penicuik, Midlothian, InQuizitor has already been bought and installed by 57 schools in 23 Scottish education authorities. The company has now established a base in Bangalore, centre of India's booming digital industry, and next month opens a US office near Boston. InQuizitor was developed as a revision tool for Standard-Grade classes to reinforce knowledge and skills gained during a study topic. The programme is based around multiple-choice "question banks", which can either be purchased ready-made - in subjects including English, biology and PE - or devised by teachers.



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"It was designed to encourage the non-engaged child to study," says Euan Mackenzie, chief executive officer of 3MRT. "But for the already diligent child it adds excitement and fun to revision."

Already the software has found a more sophisticated role - as a learning tool for the Higher syllabus. "One teacher split the group into two and got them to go away and write the questions," explains Mackenzie. "That way they have to research them in some detail, and also find enough deflectors to make it competitive for their peer group. So, you're turning it into a learning and research tool."

The key to InQuizitor's success has been making learning fun - stealth-based learning, to use the current jargon. Teenagers will quickly develop suspicions about anything that patronises them or feels too much like hard work. But the gaming element of InQuizitor has an impeccable pedigree. Several of its developers were members of the team that produced the global hit Grand Theft Auto.

It's all about the "effort-reward cycle" - using incentives to stimulate skill acquisition - which is essential to any addictive video game. InQuizitor includes elements of pure gameplay, which can only be accessed once the player has successfully completed a "level" by scoring enough correct answers. It is exactly the same principle that drives any video game. It also has a carefully calibrated rhythm, slowing down when a wrong answer is given, speeding up and offering "chain bonuses" for a sequence of correct answers. "We're trying first to use gaming techniques to achieve engagement, then provide an interesting and

exciting way for kids to study," says Mackenzie.

The roots of 3MRT can be traced to Ninewells Hospital in Dundee, where its designers produced software to encourage student doctors to use visual-memory techniques.



"It evolved organically," says Mackenzie. "We were using our other products in the field, and that's where we identified this need. Once we had started writing the theory we called in the experts and used their expertise to build the product."

Among those consulted during the programme's three-year development were teachers, educational publishers and, of course, school pupils.

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"They were a huge part of the feedback process," says Mackenzie. "As digital immigrants [people who grew up before the digital age] we were never going to interpret exactly what a digital native wanted. We tested it in a pedagogical framework, then theorised, then tested it, back and forward."

The testing process also aimed to remove any technical glitches, ensuring that InQuizitor would be easy to install and simple to use. The programme can be installed and understood within a couple of hours and the player can control it using single mouse-clicks.

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Maths teacher John Sexton, who acquired InQuizitor for James Young High, discovered it last September at the Scottish Learning Festival in Glasgow. "I'd been there a couple of hours and I thought I'd seen everything," he says, "but there was one stall I couldn't get into because it was so crowded with kids. I kept going back and peering over their shoulders but I

couldn't get close. Somebody's done a lot of good thinking about InQuizitor. They've actually looked at what kids like, and it's got them captured."

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really builds up their confidence. They go out feeling like they've had a good maths lesson. And that doesn't happen often.

From the enthusiastic activity in the classroom, it's clear that Sexton is right. One player, encountering InQuizitor for the first time this afternoon, initially dismisses it. By the end of the lesson, with a place in the top-five high scores, however, he admits to enjoying himself.

"It's great, really challenging," adds Michael Dulaney, 13.

"Better than working," agrees his classmate Alexander Mussett, also 13.

"They don't realise they are working," beams Sexton. "They've probably answered about 100 questions in that session. Some of them know maths isn't their best subject, but this sort of technology, that involves them at their level, really builds up their confidence. They go out feeling like they've had a good maths lesson. And that doesn't happen often."

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But one crucial question remains. Is this as effective as traditional teaching methods? More so, suggests Sexton.

"We have a great problem with kids learning their times tables in primary school," he says, by way of illustration. "If they were using this software, I guarantee every kid would come out of primary school knowing their times tables. It's just rote learning in a different form. And you can adapt it to whatever you're doing."

Sexton's enthusiasm is not limited to one software package: he began introducing computer technology soon after arriving at the school six years ago. He also says the arrival of the SmartBoards and the "lesson in a box" - 20-odd laptops in a portable case - have revolutionised teaching in the school.

"I really want to see kids being brought forward with this technology," he says. "Rather than teaching this stuff the way

it's always been taught, I'd rather say: 'Well we can use technology to take it a wee bit further.' For example, nobody needs to draw pie charts these days. The computer will do that for you. So, rather than spending two lessons learning how to draw them, we can use that technology and say: 'There's a pie chart. Now, what can we do with it?'"

If the Super Mario empire was built on collecting mushrooms, surely there's a world of digital possibilities in a pie?

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InQuizitor is games-based e-learning software available to UK schools on a site licence basis. The package includes:

- Player software that pupils use to run Quizzes
- Editor software that allows teachers to modify content from other sources – or to create their own from first principles.
- Content supporting a wide variety of curricula, subjects and topics – with more becoming available every week.

Flexibility is InQuizitor's middle name; it isn't tied to any curriculum, subject or level, and we don't dictate how it should be used. In practice, InQuizitor is being used from Primary schools to FE Colleges, in a wide variety of teaching and learning situations across the UK.

For more information, visit [www.InQuizitor.com](http://www.InQuizitor.com) or contact us:

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