

# Gadget that pushes all the right buttons

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Electronic handsets are helping to engage young mathematicians by making lessons more fun and competitive. But can they really improve learning?

Split into two teams, the year 10 class switch their attention between staring intently at the interactive whiteboard, and the gadgets that look like TV remotes in their hands. They have been told to fully factorise this quadratic:  $X^2 + 8x + 15$ , which is displayed on the whiteboard along with a choice of four answers.

Quiet concentration transforms into excitement and buzzing loud debate as decisions are made and Quizdom Q4 handsets, especially designed for maths, are pointed at the screen. When the whole class has voted on their numeric keypads, the Fast Track screen appears, showing race cars that compete on the basis of which person has voted the fastest; the student that voted with the most speed is cheered enthusiastically by his classmates.

After revising her quadratic knowledge using Quizdom Interact and the Q4 handsets throughout the lesson, 15-year-old Laura Bennett, student at the Minster school, Southwell, near Nottingham, says: "These handsets make lessons more fun; they give lessons a competitive edge as we can play in teams. It makes you learn things quicker as you have to learn to do quadratics in your head, instead of the norm which involves a lot of working out."

Nathan Verran, Laura's maths teacher, says Quizdom Q4 devices have really affected student participation in lessons. "Every kid has an input with these devices as even those that don't stick their hands up and get involved will always push buttons," he says. "I don't have the evidence yet, but I think potentially these devices increase kids' rate of learning in maths."

"This technology definitely makes maths less scary for some pupils. They don't feel bad when they give the wrong answer using these voting devices because there's no public evidence that they've made a mistake."

## Treading a fine line

Yet while students not seeing their answers can be a good thing, Verran says it can also complicate learning: "On the negative side if kids don't know they've got an answer wrong, they aren't going to try and get it right. There's a fine line. If you taught with Quizdom all the time for maths you'd probably be rubbish, so you have to know where it works."

Quickfire question and answer sessions can be really effective for voting technology in maths, Verran says, but this will not work across the whole

curriculum: "I've tried using the Q4s in trigonometry but trig requires quite a few steps to get to the answer, so students had to scribble in their books to work out the answers. That lost some of the excitement."

Numeric keypads are revolutionising maths lessons, says Gary Morrison, sales and marketing manager at Quizdom. He says Ofsted reports show there is a huge need for students to perform in maths, which is why Quizdom came up with its numeric keypad: "It's hard in maths to ask a multi-choice question, so now schools can input decimals, fractions, negative numbers, anything. A teacher can ask what the square route of 16 is, and it's not just about A, B or C now; students either know the answer or they don't. They're not just guessing."

Les Hall, assistant headteacher at Mounts Bay school in Penzance, Cornwall, has used the Q4 handsets since November last year. He says that they can be effective in trigonometry: "Maths is such a cerebral process, it's difficult to engage pupils in a textbook. Using games in maths, like Who Wants to be a Millionaire, is a much more effective way to engage pupils in their learning. We now use Q4s in virtually every maths lesson, from quadratics to trigonometry."

But a lack of a numeric keypad is not enough to stop Cameron Shaw, maths teacher at Speedwell technology college in Bristol, using a voting system in maths. He uses Promethean ActiVote devices in quizzes as lesson starters. To check a year 8 group's understanding of algebraic shorthand and conventions, he showed definitions and conventions with listings of possible answers to go with each on the interactive whiteboard.

### **Good discussion**

"Pupils voted for which response they thought was the best," he says. "I mixed this in with pages that had keywords or key conventions but no listing of definitions and got pupils to suggest answers. The class voted for these based on appropriateness, leading to some good discussion."

John Bedford, centre manager in Playing for Success Centres at the Leeds Rhino Rugby League Football Club and Yorkshire County Cricket Club, uses another voting system, Optivote. This solution does not include a numeric keypad, but that makes no difference to what Bedford is able to achieve in maths, getting disaffected students from Sats at key stages 2 and 3, to level 4 over a 10-week course.

Using voting systems in maths calls for what Bedford coins "guesstimation", whereby students have to learn to work things out quickly in their heads and make a guess at the rough correct answer. Bedford elaborates: "Students need to roughly know if an answer is right or wrong."

Sports events and people help focus pupils, Bedford says. "If you can put a picture of Zidane headbutting a fellow footballer on the interactive whiteboard, you can talk about degrees and 90-degree angles and get pupils to estimate

[and vote on the correct answer]. Or using cricketer Shorib Akhtar, all our Muslim children know that 100 miles per hour refers to the speed of his bowl and that he's the only cricketer that can achieve that speed, opening up more maths questions. If these things don't engage a child in learning, nothing will. They love it."

### **New portal aims to encourage collaboration**

The National Centre for Excellence in the Teaching of Mathematics launched its new portal this summer, designed to act as a starting point for maths resources on the internet. In its first two weeks, the portal gained 950 new members interested in its public forums - communities that can be set up on request to support projects - response areas on resources and blogs.

Collaboration is the key word behind the portal, says Kyle McGrath, learning technologist at the Tribal Group. McGrath worked on the development of the portal after the group won the bid to create it with partner the University of Plymouth.

She says the portal aims to develop local, regional and national communities. Ultimately it is designed to support the Professional Development Framework for Mathematics, and will eventually include an interactive version.

McGrath says that the portal is about resources, developing discussion on those resources, and feeding that back into professional development.

She explains: "There are loads of sites and online resources for maths teachers and students, so the idea behind the portal is for it to be a signpost to existing resources out there. It is also going to develop into a place where new resources can be posted. It's not trying to replace existing resources, but pulling it all together."