

Case study



Reactive Colours

Interactive whiteboards as therapy tools

A unique software project being developed at the University of Wales Institute in Cardiff aims to help autistic children feel more included. The software has found a natural home on a SMART Board™ interactive whiteboard.

Communication is a social skill most of us take for granted but for autistic children our world can seem an alien and frightening place. Reactive Colours is a unique software project being developed by Wendy Keay-Bright, together with colleagues Ben Norris and Alun Owen, to help autistic children feel more included. Using it with SMART Board interactive whiteboards is producing very positive results.

Wendy, a former designer on the popular children's series 'SuperTed', has a two-year funding deal with the National Endowment for Science Technology and the Arts (NESTA), to develop her ReActivities software at the Centre for Research in Art and Design at the University of Wales Institute in Cardiff. Wendy works mainly with small groups of foundation learners aged four to seven.

Drawing on the visual shapes and patterns children love best such as kaleidoscopes, spinning-tops and lava balls, simple routines are being developed to simulate elasticity, velocity, gravity and inertia. By moving their fingers on the interactive whiteboard or applying gentle pressure children can 'flick' colours, 'twang' elastic, 'enlarge' a sound or 'pop' a bubble.

Autistic children are upset by unpredictability and Wendy's software prototype produces simple pleasures that have instant results without the need for a complex sequence of steps where there is potential for failure. Children on the autistic spectrum enjoy repetition, pattern and similarity because they can predict and control their environment.

Challenge

To make autistic children feel more included in the classroom and to provide an outlet for self-expression by using the very latest educational technology.

SMART solution

A state-of-the-art software project that draws on the visual shapes and patterns children love designed to run most naturally on a SMART interactive whiteboard.

Result

A genuine breakthrough in autistic education – the software provides instant results on whiteboards that children want to investigate and play with.

In the first pilot studies, children played with Wendy's software designs on a laptop, guided by published research on autism which demonstrates that computers provide a safe environment for communication and expression, where the demands and distractions of the real world are distanced, if not completely removed.

However, on the advice of teachers, the laptops were quickly replaced. "Although I began my research through laptops," says Wendy, "I have been guided by teachers. When one suggested using an interactive whiteboard I was very excited. Although computers provide a simple interface that creates a calm and therapeutic environment, many of the barriers to bodily expression enforced through controlling a mouse or keyboard in a confined space are removed when using an interactive whiteboard. Children immediately went to the board to investigate and play."

Wendy is creating a rich physical and cognitive experience for young learners who enjoy instant results from tapping, smoothing, circling or dragging their fingers across a SMART Board to dribble colours or enlarge a sound.

For children who cannot speak and struggle to communicate at a simple level, the use of interactive whiteboards provides an outlet for self-expression. The simple act of controlling an image has a tension releasing quality that puts order back into an autistic child's routine.

"If you have one child at an interactive whiteboard, another will come up and touch the board and something else will happen, helping them to interact," explains Wendy. "There is evidence of turn-taking, concentrating, choosing, waiting and co-operating – key objectives in creating a rewarding educational experience."

While the software fits within national framework guidelines for ICT use in special schools, evaluating the emotional benefits to autistic children is difficult to quantify against national curriculum targets. A number of teachers are assessing the software using objectives such as feeling good about oneself, relaxation, exploration and discovery – emotional and social dimensions crucial to the development of a special needs child.

As interest in ReActivities has spread, Wendy and her colleagues have travelled extensively, giving talks and presentations. Using a laptop to demonstrate animated software has its limitations and Wendy is excited at the prospect of using a mobile SMART Board to illustrate on a larger scale the tactile and sensory benefits derived from simple hand and finger movements.

"Because of the people I work with, developing ReActivities is a fascinating experience," enthuses Wendy, who says inspiration for her work came originally from her son who brought lists of words home to learn when he started school. "Before then he had been an avid reader and he started to feel that unless he learned words he couldn't read. I started designing simple games for him where the words would pop up on screen and do silly things. Learning became fun and he started to say the words in a very natural way. I tried to develop the idea but couldn't get funding for it, however I did receive seed funding to investigate using this experimental technology for children with special needs."

Wendy adds: "It's very interesting for me as a designer to go into the world of behavioural psychology. An autistic person's natural way of being is very much repetitive behaviour, and by rewarding this with visual dynamics it actually plays to their strengths. On one of my videos there are three children at a whiteboard. One of them is saying 'pop the bubble'. They're laughing and interacting with each other and it seems to be happening in a very natural way."

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Wendy Keay-Bright, ReActivities Software, University of Wales, Cardiff.

About SMART

SMART Technologies Inc. is both the industry pioneer and global education market segment leader in easy-to-use interactive whiteboards and other group collaboration tools. The award-winning SMART Board interactive whiteboard is the most widely installed interactive whiteboard in the world.

Many school jurisdictions have standardised on the product, which is used to provide interactive learning opportunities and enhance student achievement in more than 450,000 classrooms spanning every U.S. state, every Canadian province, every Local Authority in the UK and in more than 100 countries worldwide. SMART products also include interactive pen displays, interactive digital signage, wireless slates and software. Using SMART products, groups can access and share the information they need to meet, teach, train and present. SMART's education customers include New York City Board of Education (U.S.), Oxford University (UK), Kobe City Board of Education (Japan), Barrier Public School (Australia), University of Ottawa (Canada), United World College (Singapore), Stephen-Hawking-Schule Neckargemuend (Germany), Florida School for the Deaf and the Blind (U.S.) and Harvard University (U.S.).

SMART is a private company founded in 1987. Employing more than 900 people, SMART is headquartered in Calgary, Alberta, Canada, with assembly facilities in Ottawa, and offices in Bonn, Tokyo, China, New York City and Washington, DC. SMART has been issued and maintains a broad portfolio of patents with numerous U.S., Canadian and other patents pending. In 1992 SMART formed a strategic alliance with Intel® Corporation that resulted in joint product development and marketing efforts, and Intel's equity ownership in the company. SMART products are sold through dealers across North America and distributors worldwide. For more information, visit www.smarttech.com.

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Steljes creates opportunity for partners, customers and end users by pioneering innovative technologies that enable people to interact and communicate more effectively while working and learning.

