

Reactive Colours

Interactive whiteboards as therapy to help autistic children

A unique software project, being developed at the University of Wales Institute, in Cardiff, by Wendy Keay-Bright aims to help autistic children feel more included. The software has found a natural home used with a SMART Board™ interactive whiteboard.

"I have been guided by teachers and when a teacher suggested using an interactive whiteboard I was very excited."

Wendy Keay-Bright,
Senior Lecturer,
University of Wales Institute.



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, and 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.

Flick, twang and pop

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, for example.

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.

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.

High levels of anxiety are commonly found in people with autism and an anxious state inhibits the learning process. 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 and when a teacher suggested using an interactive whiteboard I was very excited."

"Computers provide a simple interface that creates a calm and therapeutic environment, but 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 play," says Wendy. "Teachers work with very small groups of children – six or less, and on the whole they are happy to take turns at the board because they are very interested in tactile exploration and can see what is happening." 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 interactive whiteboard to dribble colours or enlarge a sound.

Play session expressions

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. "

Wendy adds: "Unlike other children, whose play integrates physical and social interaction, children on the autistic spectrum are often characterised as having monotropic attention tunnelling, tending only to engage in physical play."

"Usually this is evidenced in their preference for cause and effect activities which prioritise inherent logic rather than a necessity to interpret social intentions. ' The play sessions on the SMART Board interactive whiteboard are simple, tactile experiences that exploit these key features of autistic play: cause and effect, with immediate visual responses that require no necessity to understand context or to interpret intention."

As the project develops, Wendy relies on teacher feedback in addition to studying videos of classroom sessions.

How to assess the software

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 interactive whiteboard to illustrate on a larger scale the tactile and sensory benefits derived from simple hand and finger movements.

SMART Board interactive whiteboards, so beneficial as a learning tool in the classroom, are proving invaluable as a means of delivering Wendy's research to a wider audience.

'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,' says Wendy.

'I started designing simple games for him. 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.'