Computer game could improve sight of visually impaired children

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(Medical Xpress)—Visually impaired children could benefit from a revolutionary new computer game being developed by a team of neuroscientists and game designers.

Academics from the University of Lincoln, UK, are working with WESC, one of the UK's most respected specialist schools for visually impaired children, to create and evaluate a new 'visual search rehabilitation game'.

There are around 25,000 children in Britain - equating to two children per 1,000 - with a visual impairment of such severity they require specialist education support. The causes of blindness in children are extremely varied, but cerebral visual impairment (damage to areas of the

brain associated with vision, rather than damage to the eye itself) is among the most common.

Researchers from Lincoln's School of Psychology and School of Computer Science will work with staff and children from WESC - the specialist centre for visual impairment. The school and college, based in Exeter, has been providing education and care for young people with visual impairment since 1838 and is a designated High Performing Specialist School.

Together they have been awarded a grant worth around £130,000 for a Knowledge Transfer Partnership (KTP) which will apply the very latest research in visual neuroscience to the rehabilitation of childhood cerebral visual impairment and special education.

Timothy Hodgson, Professor of Cognitive Neuroscience in the School of Psychology at the University of Lincoln, will lead the project.

He said: "Previous research has shown that visual search training can lead to significant recovery of sight following damage to visual centres of the brain in adults. The problem is these training programmes are just too boring to use with children.
"Our game will be a fun computer based tool which will benefit children with visual field loss - holes in their vision due to damage to the brain's visual pathways.
"This is an exciting research project which brings together expertise from diverse disciplines and puts this knowledge into practice in a way that could make a real difference to the quality of life of visually impaired children.
"At the same time, we also expect the game will be suitable for rehabilitation of adults who have suffered sight loss due to stroke."

The game will use principles derived from existing programmes used in

adults with visual field loss, whereby patients have to search for hard-to-find objects on a computer screen (a 'visual search' task), but the game will be modified to make the task more stimulating and fun for children and structured to maximise the efficiency of learning.

Working alongside Professor Hodgson on the KTP will be Dr Conor Linehan, a specialist in computer game development based in Lincoln's School of Computer Science. They will oversee the work of KTP Associate Jonathan Waddington, an experienced computational neuroscientist, who will be based at WESC for the duration of the two-year project. Financial support for the project is provided by the Technology Strategy Board and the UK's Medical Research Council (MRC).

Tracy de Bernhardt Dunkin, Principal and CEO at the WESC Foundation, said: "This is a tremendously exciting development for WESC and the culmination of five years' work to introduce learning and research around neurological visual impairment. We are delighted to be employing our first visual neuroscientist, supervised by University of Lincoln. We plan to expand our research and development department further over the coming years to reflect our interest in this highly specialist area of work which is so relevant to many young people with visual impairment across the UK as a whole."

Provided by University of Lincoln

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