

# EMPOWERING CHILDREN WITH COMMUNICATION DIFFICULTIES

IMPACT!

Engineering and Physical Sciences Research Council | Case study 16



## ↗ About 1%

of five year olds entering school in England – more than 5,500 children in 2007 – have complex communication needs that require help or speech-generating devices.

## New technology is helping children with disabilities to take control of their conversations and share school experiences with family.

The software system gathers information about a child's experiences at school and a computer converts the data into a story the child can share at home. This enables children with disabilities to have conversations in a faster, more interactive way.

It was developed by researchers at the University of Dundee with EPSRC support.

### IMPACT ON QUALITY OF LIFE

- Children with disabilities or learning difficulties can talk more easily and more quickly to their carers, giving them increased control over conversations and reducing frustration.
- Parents and carers learn more about the child's experiences at school as children become more proactive in their conversation.
- The technology could be integrated into communication devices currently used by children with severe motor disabilities.

### Telling stories from simple data

The system works through a sensor attached to the child's wheelchair, which tracks and records their movements during the school day. Teachers and carers use swipe cards to tell the system who the child has met and what activity they have been involved in. A recording device allows people to record more detailed information.

A technology called Natural Language Generation (NLG) is used to convert all the sensor data into simple sentences. For example, if the data places the child in the hall at 1.30pm, the system would

generate a sentence such as "After lunch I went to the hall". NLG also allows the system to generate appropriate comments. For example, if somebody called Anne swiped her card on the system it would produce "Anne was there". If the child then chooses to add a positive comment by pressing a smiley face, the system would automatically generate "She is nice".

### Giving children control over conversation

Rolf Black from the University of Dundee explains: "For a child with severe motor disabilities and limited or no speech, holding a conversation is often very difficult and limited to short one to two word answers. To tell a longer story a communication device is often needed to form sentences, but this can be very time consuming, putting a lot of strain on holding and controlling the conversation."

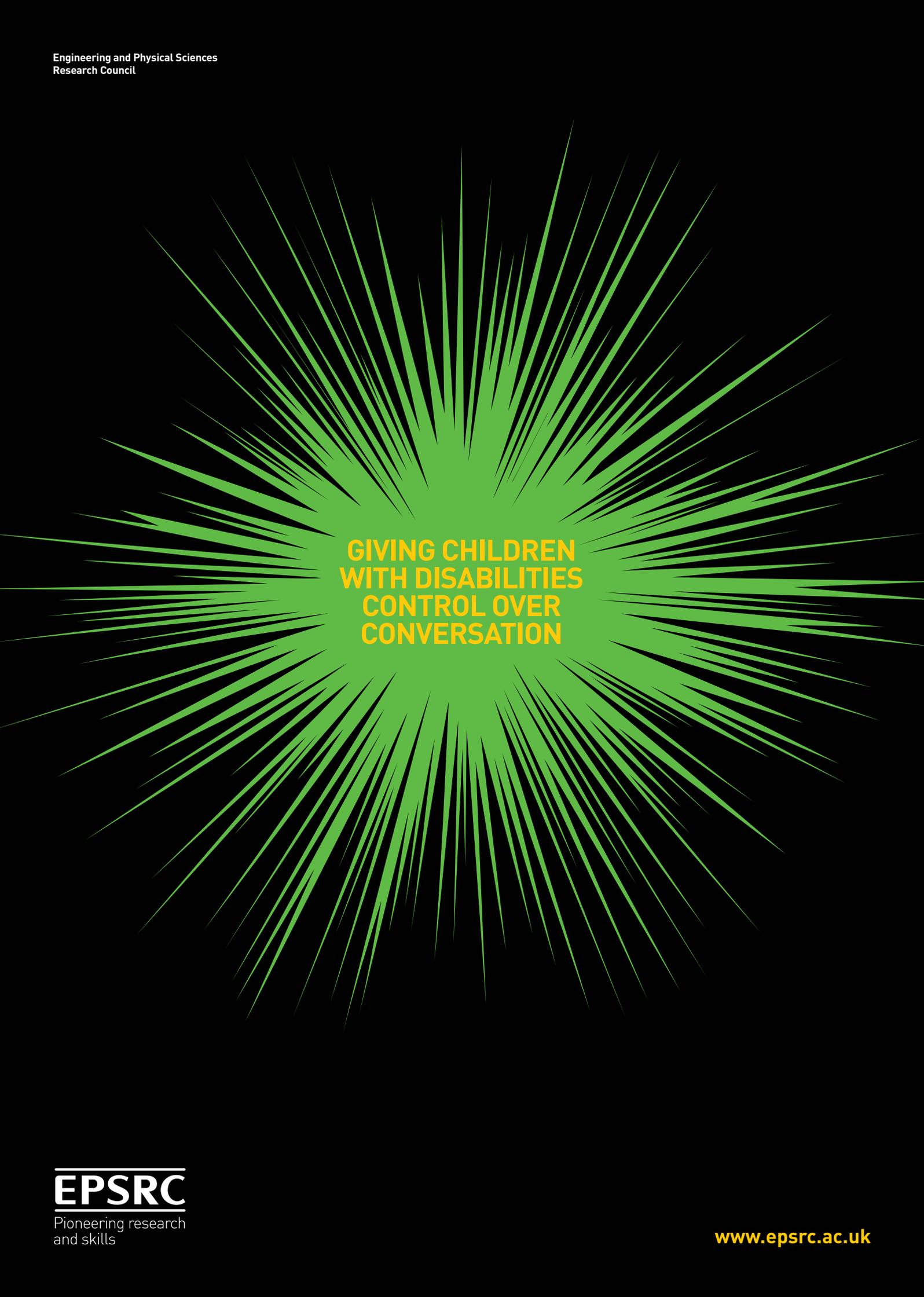
The researchers found on testing the system, called *How was school today?*, that it allowed children to talk easily about their school day and to quickly answer questions. The children became much more proactive; usually children with communication problems tend to respond to questions but rarely initiate, elaborate or relate past experience.

The system is the result of a year-long project involving the Universities of Dundee and Aberdeen and Capability Scotland. The team is working on integrating the technology into communication devices used by children with severe motor disabilities. It also plans to investigate expanding the system to incorporate conversations around other themes.

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