IMFAR Abstract

Interactive and Collaborative Classroom Visual Schedules

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Background:
Visual schedules have been in use as a best practice in schools for many years. These artifacts use words and images to represent activities that will take place (or have taken place) arranged in temporal order to augment understanding of time, events, and places. Research has shown that the use of visual schedules can improve communication with children with autism spectrum disorder (ASD). Often, however, these visual schedules are not interactive and interesting enough to draw and maintain attention; they can be out of date or inaccurate; and they do not support communication and collaboration surrounding activities. Handling these challenges necessitates an immense amount of manual effort by teachers and aides. To offset this burden, we have created innovative computing technologies that we are using to simplify schedule creation and generate useful data that teachers and other caregivers can analyze.

Objectives:
Design and implement a visual scheduling system for classrooms to support children with autism and expand or refine current teaching techniques to make use of this new system. Demonstrate these schedules in use sessions by teachers.

Methods:
We used paper and simple digital prototypes during sessions in autism classrooms and interviews with teachers and autism specialists. During the sessions, we iteratively developed a system that not only mimics the analog visual schedules currently in use but also provides new features. For example, the system provides students with personal devices that interact collectively with a large shared screen at the front of the room. We are collecting information about system usage and practices of teachers and students during demonstration visits and initial use in classrooms. In particular, we are interested in understanding the potential for social learning as students, teachers, and aides are able to see responses from students who may be struggling on particular activities as well as those who have mastered them.

Results:
By spending time in the field with teachers, specialists, and children with autism, we have been able to understand and compile information about the design of interactive visual schedules. These electronic visual schedules can assist teachers in managing their classrooms, in not only setting up exercises but also running them and keeping records that would otherwise be unfeasible. Finally, using both shared large displays for the whole class and smaller networked systems for individual children, we enable new interactions in classrooms, including social and peer learning as well as more efficient and rapid feedback for students and staff about individual progress and abilities.

Conclusions:
We have designed and developed an interactive visual scheduling system based on extensive in-school interviews and observations. This system replaces and enhances the features of analog visual schedules in digital form. Through this new system, we also enable new ways of keeping records by automatically logging all interactions with the system and new forms of teaching and learning by dynamically sending and receiving visual information to the students' networked personal devices.