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Investigating the use of a computer- based, interactive timetable designed for primary school pupils with Asperger's Syndrome (or unspecific high functioning autism)

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1. Introduction

An area of difficulty faced by children with autism is coping with change. During the school day many of the activities that take place often involve the children moving to different locations with different teachers. The anxiety this causes can result in loss of learning opportunities and in disruptive behaviour. Teachers report that advanced knowledge of the day's activities can considerably lessen anxiety, especially if this information is highly visual in its presentation.

This study is investigating the design and use of a computer-based, interactive timetable, being developed for children with Asperger's Syndrome (AS).

2. Computers are ideal for children with AS

- ☑ Predictable, safe and context free [1][2][3]
- ☑ Well suited to the single channelled interest system of those with AS [1][2][3]
- ☑ An ideal resource for both educational and recreational use [4][2][3]

5. Methodology

- ☑ Essentially qualitative
- ☑ Semi-ethnographic
- ☑ Case study approach.

Development follows a user-centred design:-

System analysis ➡ Prototype design ➡ Evaluation

System analysis

Examination of the current visual timetable system by:-

- ☑ Non-participative observations in the classroom
- ☑ Semi-structured interviews with key staff

Key findings

Timetable should be: -

- ☑ Flexible and easy to maintain
- ☑ Very visual, incorporating familiar images and text
- ☑ Easily accessible both in the classroom and at home

Key concerns

- ☑ Size and positioning of the timetable
- ☑ Fears regarding skills necessary to maintain the timetable
- ☑ Limited resources resulting in availability problems
- ☑ Supporting information could be overlooked

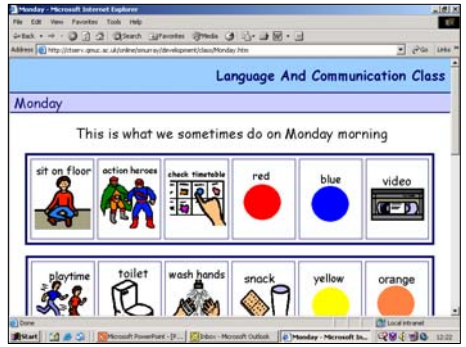


Fig. 3. Screen shot with example of class timetable page

Usability evaluations

Staff and children took part in the following usability evaluations:-

- ☑ Cooperative user observations [5]
- ☑ Group evaluation sessions and constructive interaction (staff) [5] [6]
- ☑ Questionnaires (staff & parents)

Key findings

- ☑ Layout and design appear appropriate for user group
- ☑ Meaning of navigation icons not easily recognisable
- ☑ Font should be consistent with that used in class
- ☑ Flexibility of symbol display needs reviewing

Fig. 1. Example of visual timetable used by class

3. Participants

Children

- ☑ Special class in mainstream primary
- ☑ 4 boys
- ☑ Aged 6 – 8

School staff

- ☑ Special needs teacher
- ☑ Nursery nurse
- ☑ Speech and language therapist (part of team)

4. Aims

- ☑ Develop a computer-based, interactive timetable
- ☑ Assess value in reducing anxiety
- ☑ Establish effectiveness as a management and communication tool
- ☑ Propose recommendations for a general system

Recommendations

- ☑ Web-based technology to enable wide access
- ☑ Familiar symbols be maintained
- ☑ A database be incorporated
- ☑ Training be provided for staff

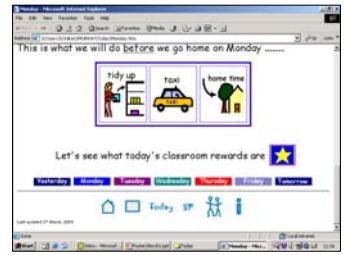
Prototype design

A collaborative and iterative process of interface design used following methods:-

- ☑ Brainstorming with staff
- ☑ Interviews with parents
- ☑ Demonstrations of layout sketches and structure
- ☑ Paper and pencil walkthrough
- ☑ Storyboarding techniques
- ☑ Screen shots

Fig. 2. Screen shot demonstrating breakdown of activity 'sit'

A



B

Fig. 4: Demonstrating how navigation icons changed from those used in **A** to those used in **B** as result of usability evaluations

6. Further work

The prototype timetable is to be implemented later this year and the final stage of evaluations will then commence.

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