

## **End of Year Report July 08**

This report has been written for the staff at Sunfield School, and is a continuation and update of the progress of the Learning Environments research project. It should be read as supplemental to the July 07 end of year report.

It has been an exciting year for the Learning Environments research team.

### **Engagement**

Studies have shown that children with disabilities are engaged for less time and at lower levels than children without disabilities (Bailey, McWilliam, Ware, & Burchinal, 1993; Burstein, 1986);. Furthermore, children with disabilities have been found to spend more time passively non-engaged than their nondisabled peers (McWilliam & Bailey, 1995). For students with disabilities, research suggests that engagement is the single best predictor of successful learning (Bulgren & Carta, 1993; Kamps, Leonard, & Greenwood, 1991; Sindelar, Smith, Harriman, Hale, & Wilson, 1986). As a result, many educators and researchers in the field of intellectual disability have in recent years come to focus upon engagement as the foundation for effective learning in children with disabilities (Guralnick, 2005).

For the purposes of this research, engagement is being used as a key indicator to determine whether an intervention has been successful. The term 'engagement' has received many interpretations, but is generally defined as developmentally appropriate interactions with the environment, including materials and people (Ridley, McWilliam, & Oates, 2000). Engagement is acknowledged as an important indicator of school effectiveness (Newmann, Wehlage, & Lamborn, 1992) and is critical for effective learning in all students ((McWilliam & Bailey, 1992; National Research Council, 1999);. Furthermore, engagement is crucial for the successful acquisition of skills and knowledge from developmentally appropriate learning opportunities (Bailey & Wolery, 1992; Howes & Smith, 1995; Kontos & Wilcox-Herzog, 1997; Kontos & Keyes, 1999; McWilliam & Bailey, 1995; Sandall, Schwartz, & Joseph, 2001).

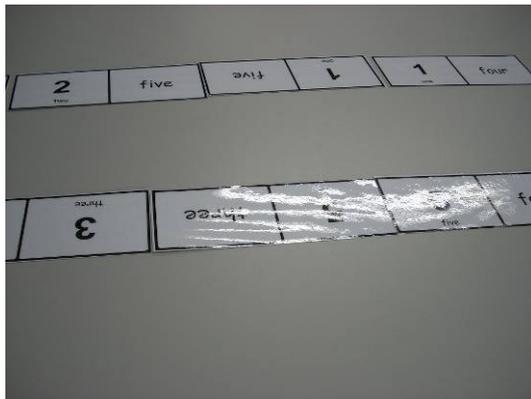
Engagement scales are being used to record levels of engagement during classroom activities. At present no engagement scale exists which has been specifically designed to measure the classroom engagement of children with profound ASDs. As such, engagement scales sensitive to the unique learning profiles of students with profound ASDs have been developed which build upon previous scales designed for assessing the engagement of students both with and without disabilities (Hills, Hills, & Tombs, 2007; Kishida & Kemp, 2006a; Kishida & Kemp, 2006b; Konaka, 2007; McWilliam & de Kruif, 1998; McWilliam, 1999). Both group engagement and individual engagement scales have been developed to ensure that the data accurately represents the classroom activity being assessed. Data is being collected for four classroom activities: 1:1 work, independent work, group work and choice time. To ensure inter-observer reliability, duplicate observations are also currently being collected. Many thanks to Hollie Rawson and the staff and students in Andrew Lloydlangston's class for their support in completing this phase of the project.

### **Interventions:**

## **The Physical Environment**

### Lighting and Laminate

The move from florescent strip lighting to daylight bulbs, combined with the switch from glossy to matt laminate continues to have a beneficial effect on the children's engagement during class activities.



### Chair Material

The material used to reupholster the soft classroom chairs in April 07 has proven not to be bite-proof, and thus an alternative material has been sourced. The new material, called ballistic nylon, is bullet proof, and thus will hopefully be bite-proof too. Unfortunately there have been some delays in having the chairs reupholstered since this material must be fire safety tested before it can be used. However, following discussions with the Sunfield CALM team who are also interested in using this material, hopefully it will not be long now.



### Bespoke Furniture

Bespoke furniture designed by Thorpe Kilworth to meet the needs of the students at Sunfield was installed into Edith Cottage on November 2<sup>nd</sup> 2007. Currently being trialled are a new group table and a new independent work station. The furniture is curvilinear, in line with the evidence from the new houses Rowen and Oak (Whitehurst, 2006a; Whitehurst, 2006b) and the LECA furniture (Brooks, 2007) which found that children with ASDs have a preference for curvilinear designs which are easier to process and put less stress on proprioceptive dysfunction. The new furniture is pale grey in colour, in contrast to the dark brown old furniture. This neutral colour was chosen to reduce distraction and support the students' engagement. The furniture also has a matt finish to eliminate the distraction and glare resulting from the glossy finish on the old furniture (Brooks, 2007). A guide by the RNIB outlining factors which enable accessibility for individuals with visual impairments highlights the fact that a matt surface is preferable to glossy (RNIB E&E, 1999). The new group table also has adjustable leg height to increase flexibility.

The students settled to work at the new group table and independent work station without hesitation. This contrasted greatly with the students' reactions to the original LECA furniture (Brooks, 2007), suggesting that we are now on the right track. The new furniture has also proven to be robust, aesthetically pleasing, and have a beneficial effect on the students' engagement. Engagement observations collected following the introduction of the Thorpe Kilworth furniture have shown overall improvements during group work, 1:1 work and independent work. Furthermore, staff have commented that both the colour and shape of the new furniture has contributed to a calmer atmosphere within the classroom. Many of the teachers and Sunfield TEACCH team have visited the classroom to give their views on the furniture, and have provided various suggestions to increase the flexibility and robustness of the independent work station. These ideas have been discussed with the designers, and modifications to the furniture are currently in the planning stage.



### Work Chairs

Classroom observations revealed that the students frequently lean back on their chairs, which is a distraction which needs to be limited to enable the students to concentrate and engage in learning. It also presents a health and safety risk since they sometimes lean back so far they fall. In the search for alternative class chairs, a new and up and coming company called Don't Lean Back Ltd were found. This company claim that their chairs "prevent children from rocking back and provide extraordinary lumbar support and comfort" (Wates, 2007). Forty chairs arrived for trialling in May 08, in a mixture of charcoal grey and white. The chairs are aesthetically pleasing, and the white colour compliments the calming effect of the pale grey furniture. The chairs have also been largely successful in reducing the extent to which the students lean back on their chairs.

Unfortunately, a variety of problems have also been encountered, including manufacturing errors, problems with the flexibility of the plastic which resulted in students rocking backwards without tipping the chair legs back and slipping off the seat, and issues with the structural design of the chairs which resulted in students rocking side-to-side rather than backwards. In response to our comments, the designer visited Sunfield to discuss modifications to the design of the chairs. Various modifications have been made, to increase the rigidity of the chairs and prevent rocking. New and improved chairs were recently delivered and have so far proven to be a vast improvement.



### 'Rocking' Chairs

Many individuals with ASDs experience difficulties with sensory processing and modulation (Baranek, 1998; Dunn, 2001; Greenspan & Wieder, 1997). Furthermore, these processing difficulties are often associated with difficulties in engaging and attending to activities (Greenspan & Wieder, 1997; Williamson & Anzalone, 1997). Many individuals with ASDs utilise repetitive movements such as rocking to self-regulate their sensory systems (Baranek, Foster, & Berkson, 1997; Quill, 2000), enabling improved attention, engagement and learning (Royeen & Lane, 1991; Williams & Shellenberger, 1996). In addition, research has also shown that movements that stimulate inner ear motion, such as playground games of swinging, rolling and jumping are important for attention and learning in all students (Hannaford, 1995).

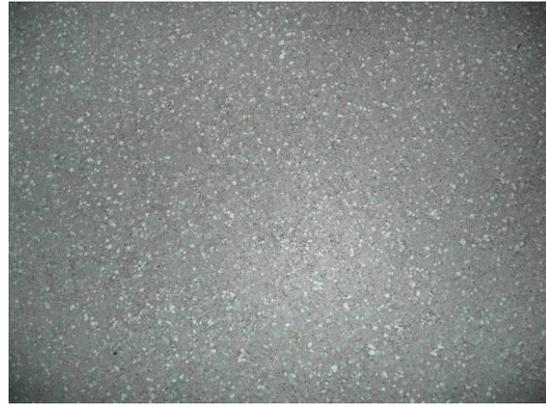
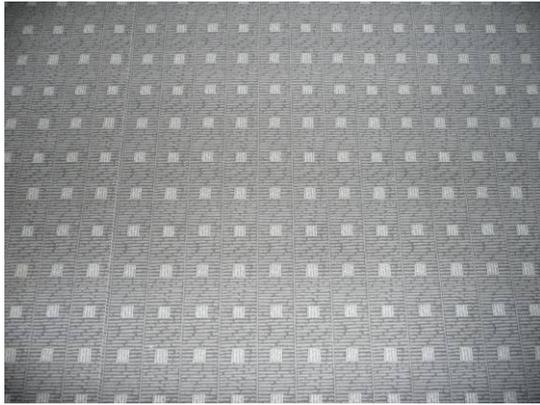
Consequently, whilst classroom observations have shown that for many students at Sunfield rocking back on their chair legs presents a distraction and health and safety risk, it is also recognised that it is important to provide the students with the opportunity to obtain this rocking sensation at other times of the day. To facilitate this, a rocking chair was introduced in to the classroom in January 08 for use during choice time. Whilst the students undoubtedly enjoyed using the chair, various issues arose including students arguing over the chair, and tipping it dangerously back. The chair material also quickly wore away, and the chair had to be removed from the classroom in April 08. To replace this, a balance ball chair was introduced to the classroom in June 08. Research has shown balance balls to be extremely effective in improving classroom behaviour of students with ASDs (Schilling & Schwartz, 2004). Hopefully this new chair will prove to be more successful!



## Flooring

Many individuals with ASDs experience sensory processing difficulties resulting in hyper/hypo sensitivity to the environment (Bogdashina, 2003). Auditory sensitivity can result in background noises such as echos and footsteps being both a distraction and an annoyance to those on the autistic spectrum, which can impede their ability to engage in learning. Classroom observations revealed that the classroom lino flooring resulted in high levels of background noise within the classroom, particularly when students moved around the room or banged on furniture. In an attempt to reduce this problem, in June 08 the lino flooring was replaced with Flotex, the robust and sound insulating material used in the new houses Rowan and Oak (Whitehurst, 2006a; Whitehurst, 2006b). Both the staff and students in Edith Cottage contributed to the decision of which carpet design to trial.

Initial classroom observations indicate that the flotex is has been successful at reducing background classroom noise from footsteps, however it has not resolved the echoing produced when furniture is banged. The carpet also supports the new chairs by making it difficult for the students to rock backwards. Unfortunately, the design of the flotex is somewhat busier than anticipated, and there are concerns surrounding cleaning and hygiene. An alternative flooring, cushioned vinyl, will be installed in the choice room in Edith Cottage to be trialled next term. It should then be possible to compare and contrast the two floorings to decide which would be most appropriate for the new school.



### The next step

The next modification to the physical environment in the Learning Environments research classroom will be the eagerly anticipated installation of an interactive whiteboard. Interviews with the teachers at Sunfield revealed that students in classrooms currently fitted with interactive whiteboards have responded extremely positively to the use of the whiteboards, and have shown improvements in engagement in class activities. Teachers in classrooms without interactive whiteboards also expressed a desire to see these in all classrooms in the new school. Research has shown that interactive whiteboards are beneficial for improving the engagement and learning of mainstream students (Cooper & Brna, 2002), as well as those with special educational needs (Clark & Nordness, 2007; Helms-Breazeale & Blanton, 2000; Salinitri, Smith, & Clovis, 2002), physical and mental disabilities (Speight & Slater, 2006), ADHD (Jamerson, 2002) and autism (Wilcox & Flaherty, 2007). It is hoped that an interactive whiteboard will be installed in the research classroom for September 08.

### **Teaching Pedagogy and Staff**

Classroom observations and engagement scale data revealed that the students were spending only a fraction of their choice time in interaction with either staff or peers. As anticipated in the 2007 Learning Environments end of year report, all the staff in Edith Cottage have now been trained in Intensive Interaction, to support the students' social interaction and communication development (Caldwell, 2005; Nind, 1999; Nind, 2003). In April 08 the choice room was also furnished to make it more 'intensive interaction-friendly', with cushions and mats on the floor.



### **Involving the Whole School:**

Interviews to obtain Sunfield teachers' perceptions on the learning environment at Sunfield are now nearing completion, and have yielded many interesting and useful suggestions for the design of classrooms in the new school. Questionnaires have also been sent out to all the teaching assistants at Sunfield, as well as staff from care, psychology and therapies, SAOS and the family centre in order to obtain their views on the learning environment. Many thanks to all those who have kindly participated in the research process. Further responses to the questionnaire would be gratefully received.

### **Looking Back and Moving Forwards:**

It has been a busy year for the Learning Environments research team, and observations to date indicate that the new furniture and chairs are proving highly effective at improving the students' engagement during lessons. Exciting times lie ahead, with the eagerly anticipated installation of an interactive whiteboard. Hopefully next term will also see the trialling of alternative robust upholstery for the soft classroom chairs, new flooring, and new distraction-free blinds without pulls. Many thanks to all those involved in the Learning Environments research for their support and hard work over the past year.

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