Specialist Schools and Academies Trust
THE SCHOOLS NETWORK™

COMPLEX LEARNING DIFFICULTIES AND DISABILITIES RESEARCH PROJECT (CLDD)

AUTISM

There has been a major rise in the incidence of autistic spectrum disorders over the past 20 years. Today, current research indicates that as many as 1 in every 86 children have a diagnosis on the autistic spectrum (Baird et al, 2006). It remains unclear whether the actual prevalence of autism is on the rise, or whether the increasing numbers of children with ASDs are the result of the broadening diagnostic concept (Rutter, 2005). However, what remains clear is that more students in UK schools have ASDs than ever before, and 1 in 3 children in special schools now have an educational need related to autism (Barnard et al, 2002), which highlights the need for an effective educational approach to meet the needs of this complex population of students.

Autism

Autism is referred to as the autistic spectrum or autistic spectrum disorder (ASD) to indicate that it covers a range of conditions including Asperger's syndrome. ASDs are a range of neurologically based developmental disorders, known as neurodevelopmental disorders. In other words, they stem from an irregularity in the development of the brain (Frith, 2008). (Frith, 2008). A "lack or impairment of the social instinct is the single feature that is the basis of all autistic spectrum conditions" (Gould, 2011). In 1979, Wing and Gould devised three categories of social impairments which they identified to be present in all children with ASDs. These three categories, labelled the 'triad of social impairments' (Wing and Gould, 1979) are:

Impairments of social interaction

Nind (2000, p 45) writes that for typically developing children, fundamental social assumptions such as:

> *I am good to be with, other people are good to be with, we can share meaning, I can elicit responses in others, I can communicate intentions, etc… [are] learnt almost without notice in normal development, through the processes of interaction between infants and their caregivers.*

However, students with autism often avoid the types of situations in which typically developing students gain a social education. 'The lack of attention to social stimuli limits the child's opportunity to engage in critical early social experiences which provide the foundation for social development' (Dawson et al, 1998, p 479). This prevents the acquisition of pivotal developmental behaviours (ie attention, persistence, interest, initiation, cooperation, joint attention and affect) fundamental to successful social interaction, engagement and learning.

Impairments of social language and communication

Individuals with autism frequently have receptive language difficulties: they struggle to comprehend spoken language, gesture, facial expression and other social nuances. They also have reciprocal problems with expressive language, and consequent difficulty communicating their needs to others. As many as 50% of people with ASDs have no verbal language. This can result in a tendency towards challenging behaviour as a means of getting their needs met. Consequently it is important for effective alternative communication methods to be instigated such as the Picture Exchange Communication System (PECS) and objects of reference (Powell, 2000).

Impairments of social imagination

AUTISM

People with ASD may have an impaired ability to use imagination to problem solve and predict outcomes on a day-to-day basis. This impacts upon their ability to engage in pretend play, role-play and take part in curriculum activities that involve abstract thinking and the use of personal imagination. This impairment in flexibility of thought and imagination results in individuals with ASDs having problems understanding and interpreting the behaviour of others and the world around them, which can lead to a preference for highly structured environments and routines.

Wing & Gould's triad of impairments has become the backbone of the ASD diagnosis: to receive a diagnosis of autism, an individual must show impairments in each of the three areas. Fundamentally, these social impairments affect the way in which people with autism understand and react to the world around them. Understanding the ways in which these affect learning is essential if one is to educate students with ASDs effectively (National Initiative for Autism: Screening and Assessment, 2003). It is therefore crucial that educators receive training in ASDs.

Alongside the triad of social impairments, many individuals with ASDs exhibit sensory dysfunction. The two most common categories of sensory dysfunction are hyper- and hyposensitivity. Hypersensitivity is indicated by extreme negative responses to sensory stimuli. The person will be sensation-avoiding; for example, they may avert their eyes from lights or cover their ears in noisy situations. Hyposensitivity is a reduced perception of sensory stimuli. This can result in the person seeking heightened sensory experiences; for example, mouthing things or self-harming. Hyper- and hyposensitivity can occur in the same individual and vary in different circumstances (Bogdashina, 2003).

There are seven sense types within the nervous system: visual, auditory (hearing), tactile (touch), proprioceptive (internal feedback on the body's position in space), vestibular (perception of the body's movement and balance), gustatory (taste) and olfactory (smell) – any or all of which may be dysfunctional in autism. Consequently, this sensory dysfunction also has a significant impact on the engagement and learning of students with ASDs. For example, students with autism are easily distracted by extraneous noises and sights and may benefit from visual structure to remove distractions. Additionally they often require regular opportunities to self-regulate their sensory systems through activities such as deep pressure, swinging, rocking and spinning (Biel and Peske, 2005).

It is also important to note that whilst autism exists at all levels of intelligence, research suggests that as many as 70–75% of individuals with autism also have a learning disability, with up to 40% showing severe to profound learning disability (Fombonne, 2003). The degree of learning disability tends to increase with the severity of ASDs – students with more severe learning disability typically exhibit more extreme social impairments, less verbal ability and increased repetitive, self-injurious and aggressive behaviours than students with no, or only mild, learning disability. In addition to learning disability, ASDs often occur alongside other difficulties or disabilities such as sensory impairment, gastrointestinal disorders, epilepsy, pathological demand avoidance (PDA), other conditions (eg t uberous sclerosis, ADHD, Down syndrome, Fragile X and other chromosomal disorders) and mental health problems. All of these may compromise the effectiveness of accepted educational approaches for students with autism, and increase the need for personalising teaching and learning strategies.

Autism and learning

Due to the social impairments characteristic of autism, facilitating a social education for students with

autism is crucially important. Socialising provides the platform required for interactive and communicative to be built and social interaction skills to be learnt – areas in which, as discussed, students with autism show significant impairments.

To promote social interaction in students with autism who are at very early stages of social development, Mesibov et al (2004, p 72) write that:

> *Developing the understanding that interactions with people are pleasurable, meaningful and effective is…important…[so that] the individual learns that caregivers are responsive, interested…and willing to respond to emerging attempts at both requesting and social communication.*

Approaches which have been shown to be effective at facilitating the emergence of a genuine and spontaneous interest in the social world include 'Responsive teaching', 'Intensive interaction' and 'Proximal Communication'. Such approaches employ a responsive style of interaction, are child-led and emphasise the importance of motivating students by using their individual interests, following the child's lead, responding quickly, directly and positively to any attempts the child makes to communicate, and being readily available for participation and interaction. In addition, providing functional communication through alternative and augmentative communication methods such as PECs can also facilitate social interaction, as can the use of social stories (Chatwin, 2007).

Another well-documented consequence of the triad of impairments and sensory dysfunction is, as Hume (2006) suggests, that 'students with ASD have strengths in processing visual information in comparison to processing language or auditory information', and consequently many have a strong preference for visual instruction over verbal. Research has suggested that individuals with autism can be described as being 90% visual learners and 10% auditory learners. This knowledge has formed the basis for autism-specific teaching approaches which rely heavily on visual instruction, such as the TEACCH structured teaching approach (Mesibov and Howley, 2003).

The TEACCH structured teaching approach capitalises on the visual learning strengths of many students with ASDs by employing visual schedules (using objects, pictures, symbols, words, etc, depending on the needs of the individual student), structured visual work systems where tasks are broken down and individually labelled, and clearly designated physical spaces for activities. It also emphasises the importance of individualising the supports provided for each student, and aims to facilitate independence and autonomy by providing consistent dependable structure and support in order to decrease dependence on adults. Functional communication is emphasised, with augmentative and alternative methods such as PECS made available to nonverbal students to facilitate meaningful communication skills (Tutt et al, 2006).

In addition to autistic students' preference for visual learning, it is increasingly becoming recognised that they often struggle to imitate or learn through observation, which may explain why students with ASDs often benefit from opportunities for kinaesthetic learning. Consequently, providing opportunities for 'learning through doing' is crucially important for students with ASDs (Carpenter, 2007). Such opportunities can be physical or virtual (for example, through the use of interactive whiteboards) (Egerton et al, 2009).

AUTISM

In order to accommodate the sensory dysfunction typical in autism, the external physical environment is also a key and primary factor to be considered when providing an educational environment which supports students with autism to engage in learning. Physical environments with large amounts of sensory stimulation such as bright visual displays and background noise will quickly overload the dysfunctional sensory systems of individuals with autism, making any new learning extremely challenging for them.

Important considerations in the design of autism-friendly learning environments relate to sensory aspects of the environment. These include: visual aspects such as colour, pattern, lighting and glare; auditory aspects such as sound insulation and dampening; vestibular aspects such as rock-ability or curvilinear design; and tactile aspects such as soft furnishings. To address these issues, research has shown that utilising modern daylight spectrum fluorescent lighting, pale, neutral solid colours, matt finishes, curvilinear design and soft furnishings such as cushions and carpeting can significantly improve the sensory environment for individuals with autism and consequently improve their engagement in learning. In addition, providing opportunities for activities which stimulate the vestibular system such as rocking, jumping and swinging can also be extremely beneficial (Brooks, 2010).

Finally, aside from those already mentioned, there are a number of other educational approaches which schools may adopt when educating students with autism which address aspects of their atypical learning styles and profiles. These include:

- Daily life therapy (Higashi) – this approach emphasises group learning in the context of a programme which includes vigorous physical activity to develop both strength and concentration.
- Applied behavioural analysis (Lovaas) – this approach focuses on two main areas of development – teaching specified skills and managing behaviours.
- The Option method (eg. Intensive Interaction) – this approach concentrates on letting the child or young person lead in a play situation, and the adult establishes a relationship and communication by responding to their lead
- SPELL (Structure, Positive, Empathy, Low arousal, Links) – an eclectic approach developed by the National Autistic Society which combines elements from a variety of programs.
- TEACCH structured teaching approach – in this approach, visual and physical structured environments are used to support students' focus and learning underpinned by a distinctive ethos.
- Social Stories -this is an approach that helps to develop social skills through the use of stories, which show (either in words or pictures) how to behave in various situations.

Useful websites

National Autistic Society: http://www.nas.org.uk/

Key references

Baird, G, Simonoff, E, Pickles, A, Chandler, S, Loucas, T, Meldrum, D et al (2006) Prevalence of disorders of the autism spectrum in a population cohort of children in South Thames: the Special Needs

AUTISM

Autism Project (SNAP), *The Lancet*, 368 (9531), 210–215.

Barnard, J, Broach, S, Potter, D and Prior, A (2002) *Autism in Schools: Crisis or challenge?* London: National Autistic Society.

Biel, L and Peske, N (2005) *Raising a Sensory Smart child: The definitive handbook for helping your child with sensory processing issues*. New York, NY: Penguin Books.

Bogdashina, O (2003) *Sensory Perceptual Issues in Autism and Asperger Syndrome: Different sensory experiences – different perceptual worlds*. London: Jessica Kingsley Publishers.

Brooks, T (2010) *Developing a Learning Environment which Supports Children with Profound Autistic Spectrum Disorders to Engage as Effective Learners* (PhD Thesis). University of Worcester, Worcester.

Carpenter, B (2007) *Moving forward. In E Marsden and J Egerton (eds) Moving with Research: Evidence-based practice in Sherborne Developmental Movement* (pp 157–164). Worcester: Sunfield Publications.

Chatwin, I (2007) Why do you do that?: stories to support social understanding for people with ASD. In B Carpenter and J Egerton (eds) *New Horizons in Special Education: Evidence-based practice in action* (pp 59–76). Worcester: Sunfield Publications.

Dawson, G, Meltzoff, A N, Osterling, J, Rinaldi, J and Brown, E (1998) Children with autism fail to orient to naturally occurring social stimuli, *Journal of Autism and Developmental Disorders*, 28 (6), 479–485.

Egerton, J, Whitehurst, T and Cook, J (2009) *Developing Guidance for the Use of Interactive Whiteboards for Teachers of Students with ASD and Severe and Complex Learning Disabilities*. Worcester: Sunfield Publications.

Fombonne, E (2003) Epidemiological surveys of autism and other pervasive developmental disorders: an update, *Journal of Autism and developmental disorders*, 33 (4), 365–382.

Frith, U (2008) *Autism: A very short introduction.* Oxford: Oxford University Press.

Gould, J. (2011) *Missed Diagnosis or Misdiagnosis? Women and girls with PDA*. Pathological Demand Avoidance Conference

Hume, K (2006) Get engaged!: designing instructional activities to help students stay on-task, *Reporter*, 11 (2), 6–9.

Mesibov, G B and Howley, M (2003) *Accessing the Curriculum for Pupils with Autistic Spectrum Disorders: Using the TEACCH programme to help inclusion*. London: David Fulton Publishers.

Mesibov, G B, Shea, V and Schopler, E (2004) *The TEACCH Approach to Autism Spectrum Disorders*. New York, NY: Plenum Publishing.

http://www.cafamily.org.uk/pdfs/NAPFront.pdf; accessed: 20.8.10]

Nind, M (2000) Intensive interaction and children with autism. In S Powell (ed) *Helping Children with Autism to Learn* (pp 39–49). London: David Fulton Publishers.

Powell, S (ed) (2000) *Helping Children with Autism to Learn*. London: David Fulton Publishers.

Rutter, M (2005) Autism research: Lessons from the past and prospects for the future, *Journal of Autism and Developmental Disorders*, 35 (2), 241–257.

Tutt, R, Powell, S and Thornton, M (2006). Educational approaches in autism: what we know about what we do, *Educational Psychology in Practice*, 22(1), 69–81.

Wing, L and Gould, J (1979) Severe impairments of social interaction and associated abnormalities in children: epidemiology and classification, *Journal of Autism and Developmental Disorders*, 9 (1), 11–29.