The sensory school: working with teachers, parents and pupils to create good sensory conditions

Nicola Martin, Damian Elgin Maclean Milton, Joanna Krupa, Sally Brett, Kim Bulman, Danielle Callow, Fiona Copeland, Laura Cunningham, Wendy Ellis, Tina Harvey, Monika Moranska, Rebecca Roach and Seanne Wilmot

**Abstract**

Purpose – An alliance of schools and researchers formed a collaborative community of practice in order to understand and improve the sensory school environment for pupils on the autistic spectrum, and incorporate the findings into school improvement planning. The paper aims to discuss this issue.

Design/methodology/approach – Representatives of special and mainstream schools in South London and a team of researchers formed the project team, including an autistic researcher. The researchers and a named staff member from each of the schools met regularly over the course of 18 months in order to work on an iterative process to improve the sensory experience pupils had of the school environment. Each school completed sensory audits and observations, and was visited by members of the research team. Parents were involved via meetings with the research team and two conferences were organised to share findings.

Findings – Useful outcomes included: developing and sharing of good practice between schools; opportunities for parents of autistic pupils to discuss their concerns, particularly with someone with insider perspective; and exploration of creative ways to achieve pupil involvement and the idea that good autism practice has the potential to benefit all pupils. A resource pack was produced for the schools to access. Plans are in place to revisit the initiative in 12 months’ time in order to ascertain whether there have been long-term benefits.

Originality/value – Projects building communities of practice involving autistic people as core team members are rare, yet feedback from those involved in the project showed this to be a key aspect of shared learning.

Keywords Communities of practice, Collaboration, Autism, Parents, School environment, Sensory sensitivities

Paper type Case study

Purpose

Challenges can be created for autistic pupils by the sensory environment of the school. (Ashburner et al., 2006; Howe and Stagg, 2016; Lane et al., 2012; Martin and Milton, 2017). It can feel too loud, too noisy, too fast paced, too smelly and too confusing. Pupils may therefore become overwhelmed and react accordingly either by becoming quite withdrawn (shut down) or rather more expressive about their feelings (Milton, 2017). The latter condition, often referred to as a meltdown, can attract the “challenging behaviour” label. Authors of this paper prefer the expression “indicators of distress” and recognise that the term “challenging behaviour” can be used pejoratively in relation to ways in which an autistic pupil may respond to situations which they find challenging such as a sensory environment which is overwhelming (Martin and Milton, 2017). Problematising the term “challenging behaviour” is also a feature of research by Orsati and Causton-Theoharis (2013).

Sensory processing differences in autism were incorporated into autism diagnostic criteria for the first time in the most recent edition of Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013). Sound, sight, smell, touch and taste are not the only sensory modalities. Perception of body position, coordination, motor-planning, balance and interpreting pain, hunger, thirst or temperature may be part of the autistic sensory world too (Bogdashina, 2016; Conson et al., 2016). Dyspraxia is common within the autistic population (Caçola et al., 2017). Sensory overload can initiate and exacerbate stress and anxiety (Neil et al., 2016; Milton, 2017). If an autistic person is in a state of “meltdown” or “shutdown”, it is likely that sensory overload may be a factor. It is necessary to understand that the triggering conditions could involve a complex interaction between a range of sensory modalities and environmental conditions.

Building awareness of the sensory experiences of autistic people in order to support autistic pupils in school effectively is essential in order to intervene with understanding. Labelling a behaviour as challenging without getting to the route of its cause can lead to unhelpful practices. Individuality is key as autistic people will not all experience the sensory world in the same way. Some talk about difficulty integrating sensory information and/or refer to feeling overloaded and panicky (Martin and Milton, 2017). “Synaesthesia” in which sensory information becomes hard to interpret has been described by autistic authors such as Tammet (2007). “Everyday experiences” can become highly stressful and anxiety-raising for some autistic people whose senses become overwhelmed in their struggle to deal with an excess of information (Milton, 2017).

In this project, an alliance of schools and researchers formed a collaborative community of practice (Wenger, 1998; Milton, 2017) in order to understand and improve the sensory school environment for pupils on the autistic spectrum. Learning from the project was to be incorporated into school improvement planning

Approach

Researchers from London South Bank University (LSBU) were approached by an alliance of schools to support a school-based research project. Funded by the alliance the focus was on gaining a better understanding of the sensory environment of the participating schools as experienced by autistic pupils. The findings were to be used to make evidence-based environmental improvements, specifically for autistic pupils. Representatives from each of five schools within the alliance formed a research group with the Critical Autism/Disability Studies (CADS) research group from LSBU. Project participants met on a termly basis for an academic year. After completing a sensory audit (Autism Education Trust, 2012) which was introduced in the initial meeting, each setting chose a particular area of interest on which to concentrate. Clearly the task of looking at every facet of the sensory experience of all of the autistic pupils in each of the settings would be impossible within the limitations of the project. The group felt that sharing knowledge with each other through the building of a collaborative community of practice (Holmes and Meyerhoff, 1999; Wallerstein and Duran, 2010; Wenger, 1998) would be the most practical way forward in making improvements to the pupil experience.

After the initial meeting the researchers negotiated with the schools and mutual agreement was reached about the approach to the task. Teachers and researchers observed in situ and discussed particular situations including playground activities, responses to noise and visual clutter and food sensitivities. Various initiatives were tried out and evaluated through discussion with the research group based on observations of how pupils responded. These included the use of Clever Classroom techniques (Barrett et al., 2015), visual timetables Humphrey and Parkinson (2006), ear defenders, sensory rooms, quiet play spaces and techniques such as Intensive Interaction (Caldwell, 2014) and a low-arousal approach (Martin and Milton, 2017). Experiences were shared and reflected upon at research group meetings and on researcher visits to the schools. In addition, two conferences were organised to develop an understanding of autism amongst the workforce and parents’ events were arranged which had the spin off benefit of giving mums and dads the opportunity to talk to each other and to ask an autistic researcher very direct questions. Advice was sought from a doctoral researcher at LSBU about pupil involvement in creative activities designed to enable pupils to input into the project (Brett, 2016). Findings were translated into a written report, conference presentations, staff development activities and a useful dynamic resource pack for each of the schools. The resource pack was developed, with a view to it being updated via the ongoing addition of new materials. Sustainability of the community of practice will also be evaluated in 12 months’ time.

This piece of work does not claim the merit of a large-scale project with a rigorous methodology. It was more of an experiment in getting together school staff, who were not experienced researchers, and finding a way to work together in order to explore sensory aspects of school experience for autistic pupils. The aim of making the environment more autism friendly through a shared iterative process was central for all participants. University researchers with expertise in the field of autism were there to support the process, and worked closely with teachers from five schools from the Teaching Alliance. These included two special schools, and three “mainstream” schools, one of which had a specific autism provision. Participating special schools had both primary and secondary provision; the others were all primary schools. The project started with an initial meeting with school staff near the start of the academic year, and this report was written 18 months later. In discussion with the group, it was agreed that sensory audits (Autism Education Trust, 2012) would be completed by teachers to highlight awareness of why sensory concerns might be an issue. Following discussion of sensory audits, a series of school visits were planned in order for the researchers to observe particular scenarios and then discuss their findings with the school staff. Findings were reported back to the research group and points for good practice were shared. A mid-term conference for teachers was organised and evaluated six months into the project and a second conference is planned. Parent activities were built in and evaluated. A resource pack was developed for schools and is an ongoing project to which information can be added.

Activities and findings

Conferences

A large-scale interim conference was held at the midpoint of the research and school staff and parents were invited to attend. Speakers included the project researchers and others who had been identified as having useful insights to share. Speakers included an occupational therapist with an understanding of sensory issues and autism and a practitioner with expertise in Clever Classrooms (Barrett et al., 2015). Feedback was positive and delegates particularly commented on the benefit of having the opportunity to learn from insights directly from an autistic researcher with a PhD in autism who also had experience of parenting an autistic child. The second conference has yet to take place at the time of writing. It will take the form of a report back on the findings of the research which are outlined in this paper and a look forward to ensure the sustainability of the project. Feedback from the conference will also inform the training programmes of the teaching schools.

Pupil involvement

Throughout all of the research meetings, the discussion was punctuated by the ongoing refrain that it is necessary to see the issues under discussion from the perspective of the pupils affected by them. For those who communicate effectively verbally, it was easy enough just to ask them, for example, about their experiences of going out in the playground. For others, parental insights were clearly useful but only part of the story. Fortunately, LSBU’s CADS research group includes a doctoral student who was completing a thesis at the time about accessing the authentic voices of pupils who do not communicate easily via verbal means alone (Brett, 2016). Dr Sally Brett’s research confirms the premise that pupils’ voices need to be acknowledged to be frequently muddled, ambiguous, and contradictory and bound by context and complex interactions. Nevertheless, the findings generated rich data that unequivocally demonstrate that unconventional voices have a great deal to say and should not be excluded from participation or assumed to be inconsequential.

At the time of writing this paper, a pupil-focussed creative event is being planned, based on Sally Brett’s work, and designed to give pupils the opportunity of expressing their ideas about what they like and do not like about their school. Dr Brett utilises creative methods such as getting students to draw their impressions of situations and then describe in whatever way they are able the meaning of their drawings. Without putting words into the mouths of the children, the researchers aim to gain some understanding of the way pupils perceive their school in relation to its smells, sights, and sounds and so on using forms of supported communication appropriate to the individual. These are likely to rely quite heavily on the use of images. Brett’s work involving creating images with children to enable them to express themselves will be key in the next phase. We anticipate reporting on this aspect of the project in a subsequent paper.

Parent events

Parents attended the interim conference and had an additional opportunity to meet with the autistic researcher from the LSBU team who could also bring to the table the experience of parenting a teenager who is on the spectrum. The feedback received from mums and dads was overwhelmingly positive, many commenting that they had not actually spoken to an autistic, articulate, well-informed adult before. The insights arising from such an insider perspective were felt to be extremely useful and illuminating by parents who also commented that they felt able to ask all sorts of questions and receive very honest answers. Questions ranged beyond a focus on sensory concerns into broader issues focussed particularly around their hopes and concerns for the future. Interacting with a successful autistic academic was experienced by parents as reassuring. They particularly liked the fact that the autistic researcher was very positive about autism as a neurological difference and practical about ways to recognise and address barriers. Parents requested further workshops focussing on topics such as sleep and diet.

As well as being enthusiastic about meeting with the LSBU autistic researcher, parents also loved talking to each other. Their children are not all in the same school, and even some of the parents of children in the same school did not know each other. School transport home reduces incidental opportunities for playground meetings between parents so opportunities for getting together need to be carefully orchestrated. They also have to take into account practicalities such as timing and childcare. Most parents agreed that daytime meetings, when their sons and daughters are in school, would be easier in terms of childcare, although for others time off work was a problem. The idea of a social event, with the possibility of including the children, was suggested. Parallel activities in different rooms, such as a parent workshop and a separate facilitated pupil activity, might get over the hurdles of childcare and taking time off work. It may be that by introducing parents from different schools to each other a support network could grow organically. Providing the opportunity and stepping back can be effective. It is not necessarily the responsibility of the schools to grow the parental support network although the possibility of offering space for meetings was discussed and is entirely feasible.

Involvement of autistic researcher

The value of having an autistic researcher on the project has already been articulated, particularly in relation to the way parents responded. While the autistic researcher was paid for this project they are not a salaried LSBU member of staff. As is frequently the case, the issue of who pays for the time and expertise of an autistic expert not in full time employment raises its head (Martin et al., 2018). CADS at LSBU is totally committed to the authentic involvement of autistic researchers and includes this principle within funding bids as well as providing opportunities for autistic academics to work together via Participatory Autism Research Collective (PARC) (2018). If the money can be found there could certainly be further ongoing opportunities for parents to learn from autistic adults.

Ongoing staff training

Staff working outside special school settings in particular felt that refreshing the autism awareness of “mainstream” staff was essential, although all staff agreed that ongoing training and development was important for everybody. One teacher commented that at their mainstream school, staff sometimes expressed concerns about the behaviour of some autistic pupils who might, for example, make “unnecessary noises, be picky eaters or flap their hands for no reason”. The teacher felt worried that sometimes these observations were followed by suggestions that children needed to be in a special school setting or an inclusion unit. It was felt by the researchers that helping all staff to develop a greater awareness of why autistic pupils might be doing certain things would be the most useful approach. Any sort of “intervention” without understanding is likely to be ineffective and enabling staff to better understand their autistic pupils would be the aim of staff development activities (Martin and Milton, 2017). Again the importance of insider perspective was highlighted, i.e. if you want to know why an autistic person does x or y, a good starting point would be to ask them (see Chown, 2017; Murray et al., 2005; Milton, 2017; Sainsbury, 2000; Sinclair, 1993; Williams, 1996 and others). If the individual does not communicate verbally very easily a more nuanced approach to asking them may be required (Brett, 2016). Autistic experts with lived experience of autism are also be well placed to provide some useful ideas (Martin and Milton, 2017).

The group talked about de-emphasising the “special” aspect of education in staff development and emphasising the shared responsibility focus. The resource pack includes the SEND review guide (DFE) which provides an opportunity for schools to self-evaluate, and also to request an independent review if required. This could potentially provide a useful platform for bespoke training built on self-assessment and embedded into school improvement planning. Principles of Universal Design for Learning (UDL) (Meyer et al., 2014; Milton et al., 2016) are also covered within the resource pack with the aim of de-emphasising “special” and focussing on embedded good practice to create schools which cater effectively for all members of their community.

Case studies from individual schools revealing common themes

Feedback from the schools came in the form of case studies focussing on a particular aspect of the sensory environment, looking at the result of support strategies and sharing reflections and knowledge with the rest of the research group. It was noted by the researchers, however, that the plethora of sensory audit and other tools sent to the teachers at the beginning of the project could have been discussed and analysed in more detail, and the time constraints of the project meant that information recorded in these documents was not utilised to its full potential. The teachers did, however, value the opportunity to remind themselves of the importance of analysing the school’s sensory environment, and trying to look at it from an autistic person’s point of view. With more resources, a more methodical consideration of the information collected could have added to the project’s findings; for example, at the beginning of the project, teachers suggested that the impact of smell, such as in dining areas, had probably been under-examined.

The researchers also acknowledge that the following are case studies in a fairly basic sense. Although it could be argued that in some of these case studies, there is a certain amount of subjectivity in how the results of the strategy are reported, the teachers are able to observe the outcomes in a more natural setting. In being familiar with the pupils, the teachers are well placed to determine how effective a strategy had been over time (Cohen et al., 2011).

Case Study 1

Lunchtime provision was the focus of one of the research visits to a “mainstream” primary school in which a small “clubhouse” had been set up for children, including autistic children, who did not want to use the playground during breaks. This was a resource which had been developed prior to the school becoming involved in the project, as a result of staff expressing concerns about apparent difficulties at breaktimes, and which was reviewed in the context of the project. The teacher observed that this initiative worked better with a clear structure, including a visual timetable to show children which member of staff would be there, and what the focus activity would be. Children also had an element of free choice but the teacher noticed that choosing was not always easy for some of them and could be quite anxiety provoking. Originally the “clubhouse” idea had been attempted in a much larger space and had not worked well so the organiser moved the facility to a smaller room which worked better. Size may not have been the only factor but the decision to decamp elsewhere based on observing responses is illustrative of the way in which the organiser stepped back, observed and implemented environmental change based on pupil reaction. The teacher acknowledged that at first it had been difficult to get children to start coming, but that those who attended soon appeared to look forward to lunchtime in “The Clubhouse”. During a school visit, the researcher observed a pupil talking about seeing a friend at “The Club”. Concerns about segregated social provision and “labelling” were openly debated in research meetings, during which the organiser explained that the Club was not just open to autistic children, and also that children attending could also bring a friend. A common theme seems to be emerging from the various vignettes from different settings, i.e. that good autism practice is good practice which has potential benefits beyond the autistic community. Some children prefer not to play outside in the playground and this school appears to be offering an effective alternative which does not stigmatise by requiring the child to have a label in order to gain entry. The research provided an opportunity for other schools to think about ways in which they could sensitively approach the idea of providing different sorts of play spaces to cater for all pupils, some of whom need something a bit quieter and more contained.

Case Study 2

One teacher gave an example of how advice from the interim conference has made a significant impact on a pupil’s learning in the small (around eight pupils) autism base in which they work, which is attached to a “mainstream” primary school. The child has a particular interest in clocks, but initially it was felt by some staff that it would be disruptive to his learning if he had constant access to his clock. Following the conference, however, where this concern was discussed, the pupil now has access to his clock at all times, and this appears to have improved his learning experience: he is more relaxed, appears able to focus more, communicates and interacts more with staff and peers, and his parents have also commented on the positive difference at home. The pupil uses a “now and then” visual aid, alongside a visual timetable and visual instruction cards, to help him with the structure of the school day. Going with rather than against the interests of an autistic person can generally be seen as good autism practice (Martin and Milton, 2017).

Case Study 3

“Before and after” photos of classrooms were shared by one teacher in a “mainstream” primary school who had implemented the Clever Classrooms (Barrett et al., 2015) approach in a structured way. The Clever Classrooms approach looks at how the physical design of the classroom can impact on and improve the learning experience. As the school SENCo, the teacher had already been researching ways in which the learning environment can impact on students’ learning, and following the completion of the sensory audit, decided to focus on the classroom and how better the school could support pupils with ASD through improved environmental changes and better consideration of how a child with sensory processing difficulties may view a mainstream classroom. Aspects of Clever Classrooms found to be effective included painting the walls in calm colours, and keeping displays simple and not too “busy” while ensuring that some wall space was left blank to reduce visual clutter. The results were positive for all pupils, indicating again that very often good autism practice is good practice for all pupils. Pupils have commented on how calming the classrooms are, and how it is now easier to find things with trays, etc., being labelled. Displays have been taken down from windows, letting in more natural light, thus reducing the need for bright artificial lighting. Visual timetables, also introduced as a direct result of the project, were deemed to have had a similar systemic effect. The senior leadership team and the caretaker in the setting in which these initiatives were introduced were fully supportive, especially about the practicalities of finding ways to display visual material to best effect. Teachers were also positive about their workload being reduced as a result of consistency and clarity in displays. Pupils appear to be less distracted by visual and sensory stimuli by having one consistent colour used in the classroom for displays. The school is now considering how to use the consistency of this approach as a tool to help pupils transitioning into new year groups across the school. Within the resource pack, an article on UDL (Martin and Milton, 2017) illustrates the point that improving the environment for autistic children has wider benefits, and this has been reflected in positive feedback from all pupils, as well as from external parties such as the school’s educational psychologist.

Case Study 3

“Before and after” photos of classrooms were shared by one teacher in a “mainstream” primary school who had implemented the Clever Classrooms (Barrett et al., 2015) approach in a structured way. The Clever Classrooms approach looks at how the physical design of the classroom can impact on and improve the learning experience. As the school SENCo, the teacher had already been researching ways in which the learning environment can impact on students’ learning, and following the completion of the sensory audit, decided to focus on the classroom and how better the school could support pupils with ASD through improved environmental changes and better consideration of how a child with sensory processing difficulties may view a mainstream classroom. Aspects of Clever Classrooms found to be effective included painting the walls in calm colours, and keeping displays simple and not too “busy” while ensuring that some wall space was left blank to reduce visual clutter. The results were positive for all pupils, indicating again that very often good autism practice is good practice for all pupils. Pupils have commented on how calming the classrooms are, and how it is now easier to find things with trays, etc., being labelled. Displays have been taken down from windows, letting in more natural light, thus reducing the need for bright artificial lighting. Visual timetables, also introduced as a direct result of the project, were deemed to have had a similar systemic effect. The senior leadership team and the caretaker in the setting in which these initiatives were introduced were fully supportive, especially about the practicalities of finding ways to display visual material to best effect. Teachers were also positive about their workload being reduced as a result of consistency and clarity in displays. Pupils appear to be less distracted by visual and sensory stimuli by having one consistent colour used in the classroom for displays. The school is now considering how to use the consistency of this approach as a tool to help pupils transitioning into new year groups across the school. Within the resource pack, an article on UDL (Martin and Milton, 2017) illustrates the point that improving the environment for autistic children has wider benefits, and this has been reflected in positive feedback from all pupils, as well as from external parties such as the school’s educational psychologist.

Case Study 5

One special school reflected on the introduction of “brain breaks” to see whether they could positively affect pupils’ focus and concentration in lessons, which had been identified by staff as an issue which often affected both individual pupils and consequently the whole class. The new school occupational therapist conducted training on brain/sensory/movement breaks, with the aim of enabling children to refocus and de-stress. The researcher observed the effective use of these “brain breaks”, which the teacher had adapted slightly from the OT’s initial suggestion of every 20 min, and which were being used at the natural end of a session, with the choice of activity being given to a pupil. The teacher has reported improvement in the teacher–pupil relationship, where they can take part in “fun” exercise together, and observed that children appeared more motivated and eager to take part in classroom sessions, knowing that there would be a movement break at the end.

Further discussion points

A common theme which emerged from the ideas shared between project participants was that various solutions which staff hit upon to help autistic pupils with sensory sensitivities had the potential to be useful to everyone else too. School staff commented on becoming more aware of the potential impact of sensory processing differences upon social interactions for autistic pupils (Caldwell, 2014). This realisation challenges the idea of challenging behaviour, a term which became increasingly unpopular with school staff as the project progressed. Just as the parents benefited from opportunities to interact with other parents, the schools also learnt from each other throughout the project, both at the conferences and through discussions at the regular project meetings. Training opportunities for staff from other schools were highlighted by the teaching school and plans were being made to take this forward when the project ended. Staff were also planning ongoing visits to each other’s schools with the aim of learning from each other and incorporating good practice from other settings into their own environment. Taking the ambiguity out of what might be on the menu at lunchtime, developing visual timetables to make life more predictable, facilitating quiet playtimes and avoiding over busy displays, for example, all seemed to calm things down generally. UDL (Meyer et al., 2014; Milton et al., 2016) operates on the principle that thoughtful design which considers everyone’s needs reduces the requirement for bespoke individual adjustments.

Various frameworks which have incorporated the philosophy of UDL resonated with the project team. Reliability, empathy, anticipation and logic (REAL) principles, for example, can help things to run smoothly for everyone (Hastwell et al., 2012). No one thrives in chaos and reliability fosters a sense of security. Empathising with pupils about how they might be experiencing aspects of the school environment will help school staff to anticipate what is likely to work well and situations which should be avoided, such as unpredictable changes and sensory clutter. Logical communication increases understanding and feelings of safety and potentially reduces a sense of overload. Techniques, such as the use of visual timetables, enhance clarity for everyone.

SPELL is an approach advocated by The National Autistic Society and is similar to REAL. SPELL stands for Structure, Positive (approaches and expectations), Empathy, Low arousal, Links. Knowing the usual order of events in a day increases predictability and makes it easier to be more flexible within a framework. Teachers could employ a range of strategies to make things more predictable, such as a visual timetable which makes it clear to the pupils what is happening throughout the school day. Positive expectations based on understanding the pupil and their strengths and interests enhance motivation. SPELL advocates that links between learning experiences are made explicit rather than implied and understanding is checked. Calm and structure are enhanced to reduce anxiety and attention is paid to sensory overload. The SPELL approach has much in common with Clever Classrooms, REAL and Treatment and Education of Autistic and related Communication Handicapped Children (TEACCH) (Mesibov et al., 2005). A TEACCH classroom would include visual approaches to routine as well as areas for quiet focus rather than having every wall covered in bright displays. Picture Exchange Communication System (Bondy and Frost, 2011) can be usefully incorporated into a TEACCH classroom. Visual timetables to make routines predictable, and other visual prompts, can help autistic pupils and, for example, some for who English is a second language. Approaches discussed here owe much to Maslow’s (1943) ideas about there being a hierarchy of needs and are based on the same assumption that learning is only possible if pupils feel a sense of safety and belonging.

Resource pack

The resource pack is a dynamic document which is available in electronic and paper-based forms. Having the opportunity to browse through a folder over coffee in the staffroom was felt to be important by the team because of the potential for any member of staff to happen upon something interesting without trying too hard. Copyright rules were adhered to and full references of the content appear at the end of this paper. It may be that a named member of school staff in each setting takes responsibility for keeping the folder up to date and LSBU CADS has made a commitment to continue to send useful information through to the schools.

Summary and next steps

Interestingly the understanding of sensory issues which emerged from this project encompassed all of the senses. Staff also focussed on how sensory perceptions might impact upon communication and interactions. Terms like “challenging behaviour” were robustly discussed by participants who were keenly aware that sometimes sensory overload factors had a real impact on the way the pupil was interacting with their environment. Ideas about support strategies which may help autistic pupils with sensory concerns ultimately focussed almost exclusively on environmental change which was something that the researchers found very refreshing. The solutions which school staff came up with all had the virtues of being practical and beneficial not only to children on the spectrum but also to others who might find the school environment challenging. Principles underpinning UDL were appreciated by school staff who readily embraced the idea of, wherever possible, avoiding “special” in favour of embedded universal solutions which could benefit all pupils. Autistic expertise and pupil and parent voice were valued within the project and the idea of sustainability was built in form the outset.

The project team intend to consider ways in which the findings can be embedded into future development plans for mainstream and special schools within the alliance. Aiming to continue to work collaboratively in the sharing of good practice, further research funding is being sought around school-led evidence-based school improvement planning, focussing on embedding principles of inclusive practice within school development plans. School staff have decided to host at least two workshops each year to enable parents to continue to meet each other and develop their support networks.

A key message to come out of the research is that every teacher is a teacher of pupils with special educational needs, including autism. Therefore, opportunities to develop the sort of understandings which emerge from a school-based research project such as this one are relevant to every teacher.

References

American Psychiatric Association (2013), Diagnostic and Statistical Manual of Mental Disorders, 5th ed., American Psychiatric Publishing, Arlington, VA.

Ashburner, J., Ziviani, J. and Rodger, S. (2006), “Sensory processing and classroom emotional, behavioural and educational outcomes in children with autism spectrum disorder”, American Journal of Occupational Therapy, Vol. 62, pp. 564-73.

Autism Education Trust (2012), “Sensory audit tool for environments”, available at: [www.aettraininghubs.org](http://www.aettraininghubs.org).uk/wp…/05/37.1-Sensory-audit-tool-for-environments.pdf (accessed 30 January 2017).

Barrett, P., Zhang, Y., Davies, F. and Barrett, L. (2015), “Clever Classrooms: summary report of the HEAD Project”, University of Salford, Salford.

Bogdashina, O. (2016), Sensory Perceptual Issues in Autism and Asperger Syndrome: Different Sensory Experiences-Different Perceptual Worlds, 2nd ed., Jessica Kingsley Publishers, London.

Bondy, A. and Frost, L. (2011), A Picture’s Worth: PECS and Other Visual Communication Strategies in Autism, 2nd ed., Woodbine House, Bethesda, MD.

Brett, S. (2016), “Future selves: listening carefully to the voice of a KS5 pupil in a special school”, in Milton, D. and Martin, M. (Eds), Autism and Intellectual Disability in Adults, Vol. 1, Pavilion, Hove, pp. 55-9.

Caçola, P., Miller, H.L. and Williamson, P.O. (2017), “Behavioral comparisons in autism spectrum disorder and developmental coordination disorder: a systematic literature review”, Research in Autism Spectrum Disorders, Vol. 38, pp. 6-18.

Caldwell, P. (2014), The Anger Box, Pavilion, Hove.

Chown, N. (2017), Understanding and Evaluating Autism Theory, Jessica Kingsley, London.

Cohen, L., Manion, L. and Morrison, K. (2011), Research Methods in Education, 7th ed., Routledge, Abingdon.

Conson, M., Hamilton, A., De Bellis, F., Errico, D., Improta, I., Mazzarella, E., Trojano, L. and Frolli, A. (2016), “Body constraints on motor simulation in autism spectrum disorders”, Journal of Autism and Developmental Disorders, Vol. 46 No. 3, pp. 1051-60.

Hastwell, J., Martin, N., Baron-Cohen, S. and Harding, J. (2012), “Giving Cambridge University students with Asperger syndrome a voice: a qualitative, interview-based study towards developing a model of best practice”, Good Autism Practice, Vol. 13 No. 2, pp. 56-64.

Holmes, J. and Meyerhoff, M. (1999), “The community of practice: theories and methodologies in language and gender research”, Language in Society, Vol. 28 No. 2, pp. 173-83.

Howe, F.E. and Stagg, S.D. (2016), “How sensory experiences affect adolescents with an autistic spectrum condition within the classroom”, Journal of Autism and Developmental Disorders, Vol. 46 No. 5, pp. 1656-68.

Humphrey, N. and Parkinson, G. (2006), “Research on interventions for children and young people on the autistic spectrum: a critical perspective”, Journal of Research in Special Educational Needs, Vol. 6 No. 2, pp. 76-86.

Lane, S.J., Reynolds, S. and Dumenci, L. (2012), “Sensory over responsivity and anxiety in typically developing children and children with autism and attention deficit hyperactivity disorder: cause or coexistence?”, American Journal of Occupational Therapy, Vol. 66 No. 5, pp. 595-603.

Martin, N. and Milton, D. (2017), “Supporting the inclusion of autistic children”, in Knowles, G. (Ed.), Supporting Inclusive Practice and Ensuring Opportunity is Equal for All, David Fulton, Routledge, Abingdon, pp. 111-24.

Martin, N., Barnham, C. and Krupa, J. (2018), “Identifying and addressing barriers to employment of autistic adults”, The Journal of Inclusive Practice in Further and Higher Education No. 1, pp. 56-77.

Maslow, A.H. (1943), “A theory of human motivation”, Psychological Review, Vol. 50 No. 4, pp. 370-96.

Mesibov, G.B., Shea, V. and Schopler, E. (2005), The TEACCH Approach to Autism Spectrum Disorders, Springer Science & Business Media, New York, NY.

Meyer, A., Rose, D.H. and Gordon, D. (2014), Universal Design for Learning: Theory and Practice, CAST, Wakefield, MA.

Milton, D. (2017), A Mismatch of Salience: Explorations of the Nature of Autism from Theory to Practice, Pavilion Press, Hove.

Milton, D., Martin and Melham, P. (2016), “Beyond reasonable adjustment: autistic-friendly spaces and Universal Design”, in Milton, D. and Martin, N. (Eds), Autism and Intellectual Disabilities in Adults, Vol. 1, Pavilion, Hove, pp. 81-6.

Murray, D., Lesser, M. and Lawson, W. (2005), “Attention, monotropism and the diagnostic criteria for autism”, Autism, Vol. 9 No. 2, pp. 136-56.

Neil, L., Olsson, N.C. and Pellicano, E. (2016), “The relationship between intolerance of uncertainty, sensory sensitivities, and anxiety in autistic and typically developing children”, Journal of Autism and Developmental Disorders, Vol. 46 No. 6, pp. 1962-73.

Orsati, F.T. and Causton-Theoharis, J. (2013), “Challenging control: inclusive teachers’ and teaching assistants’ discourse on students with challenging behaviour”, International Journal of Inclusive Education, Vol. 17 No. 5, pp. 507-25.

Participatory Autism Research Collective (PARC) (2018), Participatory Autism Research Collective, available at: participatoryautismresearch.wordpress.com (accessed 10 June 2018).

Sainsbury, C. (2000), Martian in the Playground: Understanding the Schoolchild with Asperger’s Syndrome, Lucky Duck, Bristol.

Sinclair, J. (1993), “Don’t mourn for us”, available at: www.autreat.com/dont\_mourn.html (accessed 10 January 2018).

SPELL, available at: www.autism.org.uk/about/strategies/spell.aspx (accessed 11 January 2018).

Tammet, D. (2007), Born on a Blue Day, Hodder & Stoughton, London.

Toomey, K. (2007), “An introduction to the SOS approach to feeding”, Paediatric Feeding and Dysphagia Newsletter, Vol. 8 No. 1, pp. 2-10.

Wallerstein, N. and Duran, B. (2010), “Community-based participatory research contributions to intervention research: the intersection of science and practice to improve health equity”, American Journal of Public Health, Vol. 100 No. S1, pp. S40-6.

Wenger, E. (1998), Communities of Practice: Learning, Meaning and Identity, Cambridge University Press, Cambridge.

Williams, D. (1996), Autism: An Inside-Out Approach, Jessica Kingsley, London

Further reading

SEND Review.Gov.UK. available at: www.gov.uk/guidance/commissioning-a-send-review (accessed 11 January 2018).

Corresponding author

Nicola Martin can be contacted at: martinn4@lsbu.ac.uk