Adapting your school Environment to Support Neurodiverse Children

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A successful space is one that is suitable for both neurodiverse pupils and the school's pupil population as a whole.



PINS Environmental Audit Tool

Visual Audit (VI focus)

Lighting/glare

	Current Situation	Possible action (if needed)
Where are natural sources of light (and when is sunlight strongest in the room)?		
Are there blinds or curtains (preferably plain) which work and can control potential glare and control overall lighting levels?		
Are there any areas of shadow or darkness which might cause a difficulty?		
Does overhead lighting appear adequate for the task? If not, is there provision for task lighting?		
Are there areas of glare from work surfaces, mirrors or gloss finishes?		

Budget! Time! Resources! Costs!

- The aim of this talk to give you **ideas** about how to adapt your school environment to support neurodiverse children, and children with other aspects of SEN
- The expectation is if there are ideas here that you will find helpful for you to implement them gradually over time, to suit your school, and as your budgets allow.
- And many of these things you might be doing already.
- Some of the ideas are low tech and low cost, others are more expensive! I will try to show a range of options.



Which senses are we talking about?



Sensory Processing and Integration

Some autistic people experience hyper (over) sensitivity or hypo (under) sensitivity to everyday sights, sounds, smells, tastes and touches.

Where hypersensitivity is experienced, the natural response will be to avoid sensory input that can be aversive – for example, by flinching away when touched.

Where hyposensitivity is experienced, the natural response is to seek out sensory input – for example, by fidgeting or fiddling with objects, in order to gain sufficient sensory feedback to feel comfortable in their own bodies.

Most autistic people will experience both hypersensitivity and hyposensitivity. These may fluctuate depending on factors such as mood, expectations and environment.

Autism Design **Principles for Schools**

- <u>https://www.autismeducationtrust.</u> org.uk/resources/autism-designprinciples-schools
- Contains guidance and principles
- Contains case studies

Autism Design Principles for Schools

A practical guide to support schools in creating more inclusive learning environments

Assistive technology enabled document









Autism Design Principles for Schools





Its not just the classrooms...

- When thinking of adaptations:
- Think about corridors and lobbies
- Think about the **lunch hall** ...this is often the place that SEN children find most difficult, this is true for neurodiverse children and also deaf and VI children. Deaf children sometimes choose to switch off their hearing aids during lunch as the aids are saturated with noise.
- Think about noise and busy activity in the playground
 - Think about alarms buzzers and bells...
- Think about open environments (eg can be noisy)



Making good use of outdoor spaces

- To reduce noise in the lunch hall in the summer consider best use of outside spaces for eating lunch
- Eg picnic tables under a canopy for spring and summer time use
- Eg see example at Shooters Hill College
- Harder to achieve in winter!

Simple Geography: A Clear and Consistent Layout

- When looking to create an autism–friendly school environment, begin by establishing a clear and consistent layout for users to navigate. Seek to involve autistic pupils and design experts in participatory design sessions to gain their input on what this might look like in your space.
- Avoid linear corridors with abrupt directional changes where possible (feels restrictive, especially when crowded eg at lunch)

Good Proxemics

- Proxemics is the study of personal space and the impact personal space has on non-verbal communication, social interaction and behaviour.
- Autistic pupils can experience anxiety resulting from their spatial surroundings, you can reduce this by:
- Design spaces that reduce crowding and/or have easier exit ways
- Creating seating areas within circulation spaces, to help redefine the space from social to personal
- Making use of a quiet space or sensory room to provide sanctuary and an opportunity to reset (including customisable lighting, soundproofing and room for movement)
- Lunch clubs and breaktime clubs (use of buddies too)

Low arousal colours

- Colour plays an important role in the creation of a low–arousal environment, as we are constantly reacting to it in both the natural world and our built environment.
- Research conducted by Kingston University has concluded that autistic pupils preferred colours that were subtle (those that have grey undertones) with a preference for colours in the blue/green hue range. This included muted colours for material finishes for walls, floors and soft furnishings, as this helped reduce overstimulation and hypersensitivity by creating a more comfortable environment in which to work
- Research also showed the use of strong primary colours and bold patterns is not recommended.



Checklist

- Soft pastel colours are generally more suitable in creating autism-friendly environments.
- Avoid primary colours.
 - Always review the colour palette in both daylight and under artificial lighting to confirm its suitability for the space. The lighting conditions, room shape and design influence colour perception.



- Use colour coding for space identification and wayfinding.
- Specify subtle, low-arousal colours when decorating large spaces such as walls.
- Create a harmonious space by avoiding patterned floor and wallpaper finishes.



- Choose a matte and non-reflective finish.
- 5 Soft block colours with plain designs are suitable for soft furnishings.

TCES School Construction: Sensory Room Soft Pink



Acland Burghley School Common Room: Plain Low–Arousal Colours



Good Acoustics

- See detailed slides later in slide show
- Creating a calm environment using sound–absorbent materials is an essential consideration when designing learning spaces for autistic pupils.
- Hypersensitivity to sound is common among autistic pupils. Sound can be a source of distress and heighten anxiety. Whilst excessive volume can be problematic, it is also important not to create completely soundproof spaces (autistic pupils will need to access social spaces where soundproofing is not possible)

Subtle Lighting

- Access to daylight is important as it helps to regulate the body's biorhythm and sleep cycle
- Indirect natural sunlight is best suited to a classroom environment. A glare–free, naturally–lit classroom can offer a more comfortable environment for autistic pupils with a sensitivity to light
- Consider use of rooflights/ceiling lanterns where possible (also high windows)

Subtle Lighting Ideas

Fluorescent lighting should be avoided where possible because of its harsh and bright quality. It can flicker up to 100 times a second and emit an audible humming. The use of light covers or diffusers can reduce the bright glare and shield the flickering.

LED lighting can be used to create a calmer learning environment. This form of lighting is typically more energy efficient and does not emit ultraviolet light, unlike florescent lighting. Dimmable LED lighting can be used for scene–setting in classrooms, as well as sensory rooms, and create a focus on learning or stress reduction if required.



Design for Safety, and unobtrusive supervision

The school environment can be a source of anxiety for autistic pupils and present challenges in allowing them to express and manage their needs in safe and secure ways.

With this in mind, it is important to develop an environment that reduces the opportunity for distressed or dysregulated behaviour to lead to harm (see AET Design Principles)

A sympathetic planning approach and design can ensure that supervision does not feel overly institutionalised or clinical for practitioners and pupils (again see AET Design Principles).

Promote Sustainability

- see AET Design Principles
- Excellent advice re developing a sensory garden

Sensory Garden Concept



Two detailed case studies

- In the AET Autism Design Principles for Schools document there are two very good case studies:
- Birkbeck Primary School, Sidcup: redesign of a year 6 classroom to support neurodiverse pupils.
- Langdon Park School, Tower Hamlets: redesign of the Sensory Garden
- Students were very involved in the design of both

Ensure the classroom is orderly and not cluttered so that pupils can make sense of the environment

Visual 'clutter' can be distracting for some people, and for others it can lead to sensory overload

Also ... avoid ceiling fans!

Schedule

100 10000

• And where possible do not have brightly coloured or highly patterned: carpets; curtains/blinds; furniture; ceilings; walls; or artwork

Ensure sounds from classroom equipment are kept to a minimum

- If you are using a projector consider using whisper quiet options... or use a large screen tv for very quiet operation
- Check other electrical noises and where possible reduce them to a minimum
- Consider how much carpeting and soft furnishing can make a difference to sound quality
- If dryer fans are used in toilet areas ensure the noise isn't coming into the classroom area

Ensure that sounds from outside the classroom do not cause problems within classrooms.

- If the classroom is close to a road ensure there is good **double glazing**
- **Curtains** can also reduce noise
- Choice of doors and architraves make a difference to how much sound travels
- Extractor fans in toilets can be near zero noise depending on which model you buy eg Ventaxia's Silent Fan



Alarms



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- We all need alarms!
- You can train neurodiverse children who are fearful of alarms to learn to tolerate them.
- Please warn children ahead of a standard test that the alarm is going to sound soon.

Acoustic treatments (lower cost)

wers

We have made a

Hessian Covered notice boards

Hessian covered noticeboards

- Inexpensive, very effective
- Acoustic trick: mount the boards 1 CM off the wall using beading (wooden rods)... the hessian boards then become a relatively cheap baffle and can make a big difference to the sound of a room or corridor
- E.g. Knightsfield School for deaf children in Hertfordshire did this about 20 years ago. (They teased that they bought the hessian from John Lewis. Their school keeper did all the work).
- Never knowingly undersold $\textcircled{\sc {\odot}}$



Hushh-Ups for Hard Floors

- Hushh-ups are a safe and easy way to reduce chair noise. This simple solution improves the classroom listening environment for students and teachers.
- Available from <u>https://www.connevans.co.uk/pro</u> <u>duct/41035904/49HUSH120/Hush</u> <u>h-ups-30-chair-classroom-set---</u> <u>to-reduce-chair-noise</u>
- Price £356.40 (£297.00 ex VAT)



BabbleGuard Classroom Noise Indicator

- A traffic light style noise indicator
- encourages students to keep the classroom noise at a comfortable level, promoting concentration listening and learning
- Available from:
- <u>https://www.connevans.co.uk/product/14457</u> 645/86BABBLE1/BabbleGuard-Classroom-Noise-Indicator
- £274.80 (£229.00 ex VAT)
- Is there an app for that? See next slide





Bouncy Balls Website

- <u>https://bouncyballs.org/</u>
- Control noisy classrooms with bouncing balls!
- A fun and **free** noise management tool.
- There are rivals, try googling "classroom noise app"

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Acoustic treatments (Mid to Higher cost)

- Dedicated sound absorbing noticeboards
- Lots of companies sell them eg https://panelscreens.co.uk/room-acoustics/acoustic-wall-panels/
- Or https://acousticpanels.co.uk/product/acoustic-pinboard/
- See next slide...



Display & Noticeboards

O. Search...

2 A

Home / Room Acoustics / Acoustic Wall Panels / Muffle Acoustic Wall Panel Blazer





















Instant credit Government, Schools etc



Estimated lead times 5-10 working days



Muffle Acoustic Wall Panel Blazer

습습습습습 0 Reviews

Muffle acoustic wall panels have excellent sound-absorbent properties. These striking panels absorb sound waves before they become echoes.

Fabric

Choose options V

Size

Choose Options

Nursery Case study

- A room for two to three year olds in Erith with hard flooring and a high ceiling.
- One of the children in the room was profoundly deaf and we were trying to help him develop his listening skills with hearing aids but the room was too echoey and reverberant, very noisy for all at times.
- Social care early years funded **high cost** acoustic panelling for the ceiling. Six panels were fitted, they colour matched the ceiling and blended easily into the colour scheme.
- The transformation to the sound of the room was nothing short of incredible.



Royal Academy for Deaf Education Exeter

Architects: Stride Treglown Main Contractor: Midas Construction Joinery Contractor: Robert P Barry Products: TOPAKUSTIK - Topperfo 16/16/10-5 & Topperfo Plain LAUDESCHER - LINEA 4.2.4 & LINEA 4.2.1 Completed: Spring 2020

PROJECT INFORMATION

The Deaf Academy in Exeter is a school, college and residential home for deaf young people aged five to twenty-five.

Stride Treglown were initially appointed to develop the scheme for the new build and refurbishment of the existing academy. Works included a new building focusing on education, student accommodation and the refurbishment of the existing theatre on a seven-acre teaching campus.

The new classrooms are located around the 'Learning Forest'. This atrium space is a centre piece for the facility aiming to encourage a more engaging environment away from more traditional teaching spaces. This area is looking to bring in a more natural environment incorporating elements with great natural light whilst utilising our timber acoustic systems.

Midas Construction were awarded the contract to build the £10.5

million project that included classrooms, breakaway spaces, vocational workspace, dinning facilities, living areas and a

Project illustrations provided by Stride Treglown.

in pine with a white oak wax finish (further product information below).

refurbishment of a theatre. Robert P Barry Carpentry based in Plymouth had the responsibility for installing four of our systems - Topakustik's, Topperfo 16/16/10-5 and Topperfo Plain in a Birch Veneer along with our Laudescher LINEA 4.2.4 and 4.2.1

Acoustic treatments (very high cost, very effective)

https://www.acousticproducts.co.uk/casestudies/education/

















Soundfield Speaker Systems for Classrooms

- Juno by Front Row or Redcat 2 (rivals!)
- UK distributor for both
 <u>https://www.ihear.co.uk/collections/soundfield</u>
- Juno is £1,428.00 inc VAT
- Redcat is £1,362.00 inc VAT

DfE Regulations about sound quality: BB93

- <u>https://www.gov.uk/government/publications/bb93-acoustic-design-of-schools-performance-standards</u>
- Building Bulletin 93 (BB93) explains minimum performance standards for the acoustics of school buildings.
- The Building Regulations apply to **new schools and extensions** to existing schools so any school buildings built since 2003 should comply with the acoustic standards in BB93.
- BB93 first came into play in 2003, with an update in 2015.
- Surveyors/architects and builders are aware of the requirements



Harris Eltham

- Opened about 9 years ago, replaced a 1950s built secondary previously known as Eltham Green
- Brand new building ... built to **BB93 acoustic standard**
- Feedback from deaf students and a deaf colleague was very positive

Building Bulletin 102 (BB102)

Building Bulletin 102 provided non-statutory guidance on designing and planning accommodation in both mainstream and special educational needs (SEN) schools to provide a suitable environment for disabled and SEN children, including autistic pupils, in England. It was influenced by the Children's Act 2004.

Building Bulletin 104 (BB104)

Building Bulletin 104 was published in 2015 and superseded BB102. It provides non-statutory guidance for the development of appropriate learning environments that will enhance and support the education of disabled and SEN children, including autistic pupils, mainstream and SEN schools.

Part A provides floor area requirements for buildings for primary and secondary schools.

Part B provides guidance on the site area requirements for special schools, as well as alternative provision (AP), special resourced provision (SRP) and designated units.

Building Bulletin publications are directed at education advisers, architects and designers. They may also be useful to building contractors on school building projects, setting leaders and managers in other children's service to deliver a more inclusive environment for all by focusing on the following areas:

- Background and briefing.
- The design approach.
- Oesigning spaces.

PAS 6463:2022 Design for the mind – Neurodiversity and the built environment

PAS 6463 was published by the British Standard Institute (BSI). It provides guidance on designing the built environment to include the needs of people who experience sensory or processing differences and encompasses a wide range of conditions. These include autism, attention deficit hyperactivity disorder (ADHD), dyslexia and dyspraxia.

The document covers buildings and external spaces for public and commercial use, along with residential accommodation for independent or supported living. This reflects a commitment to ensuring that all users are considered when creating buildings or spaces, with input from subject experts and people with lived experience.

The document features technical guidance on acoustics, lighting, thermal comfort and wayfinding, providing information on creating accessible and comfortable built environments. It has been published to help organisations meet legal and social obligations, including under the Equality Act 2010 and Autism Act 2009, as well as Article 9 in the UN Convention on the Rights of Persons with Disabilities.

PAS 6463 does not cover the more complex requirements of SEN schools.



Smell....

- If a classroom is near the **school kitchen/dining area** and it affects a neurodiverse child consider ventilation and ensure the door is closed when possible.
- If a child is overwhelmed by smell, try using a sweatband with a drop of oil, shampoo, or perfume/aftershave that they like. Allow the student to take this with them to mask the smell they find uncomfortable.
- Try and ensure smells from outside the classroom are monitored and reduced, where possible

5 common smell triggers to be aware of....

01	02
FOOD ODORS	CLEANING PRODUCTS
Strong or unfamiliar food smells can be overwhelming for individuals with autism, especially if they have a preference for specific tastes and textures.	The chemicals in cleaning agents car be intense and may cause irritation.
03	04
PERFUMES & FRAGRANCES	BODY ODORS
Scented products like perfumes, air fresheners, and soaps can be particularly	Even natural body smells can be irritating for those with sensory

ENVIRONMENTAL **ODORS**

- Strategies for Managing Touch Sensitivity
- Managing touch sensitivity in autism often requires a multifaceted approach.
- Creating a touch-friendly environment at home and school is crucial for individuals with autism. This
 may involve choosing furniture and materials with textures that are comfortable
- **Desensitization exercises** and activities can be beneficial in gradually reducing touch sensitivity. These might include activities like playing with different textured materials, engaging in messy play with substances like shaving cream or sand, or practicing gentle touch exercises. It's important to approach these activities slowly and respect the individual's comfort levels.
- The use of **sensory tools and adaptive clothing** can significantly improve daily life for those with touch sensitivity. Weighted blankets, compression clothing, or textured fidget toys can provide comforting pressure or tactile input. Clothing made from soft, seamless fabrics or with tags removed can reduce discomfort from everyday wear. Be mindful of the need to adapt uniform when necessary.
- Developing coping mechanisms for unavoidable touch situations is essential. This might include deep breathing techniques, using visualization to stay calm, or having a code word or signal to communicate discomfort in social situations. Understanding that some individuals, even from a young age, may not enjoy physical affection like cuddling is crucial for parents and caregivers.

General issues...

- Talk to the children... ask them what helps, talk to their parents, ask them too
- In school: Pupils have a designated person or mentor to talk to.
- Make sure the classroom organisation and individual seating plan takes into consideration individual sensory concerns (e.g. A pupil with a fascination with light reflection does not sit by the window).
 Eg ensure pupils who become anxious by the close proximity of others are allowed ample space around their seat

- Try to ensure dinner halls and queuing systems do not cause distress (due to the noise levels, smells and crowds).
- Pupils are allowed to enter the dinner hall before or after peers to avoid queuing and crowds.
- Use of buddies
- A system of support is available for pupils experiencing sensory overload (at all times not just lunch)
- Eg consider the use of learning breaks when necessary
- Ask an expert: within KCC please do contact our specialist staff from AET/STLS, from STLS Sensory and PD, and from KEPS
- Please do share best practice with each other

Thank you for listening.



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