

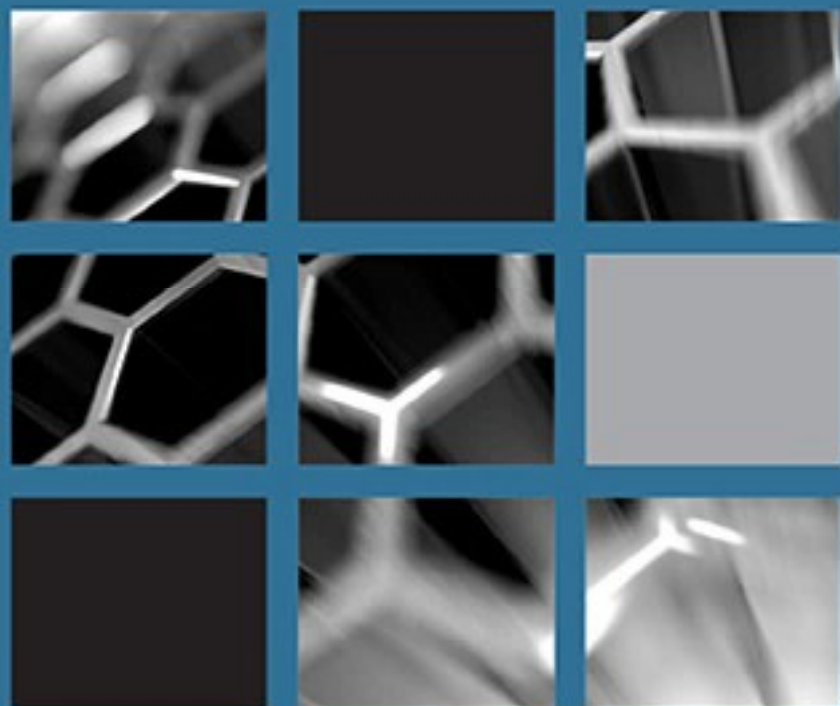
bild

all about people

GAP

CELEBRATING THE
FIRST 10 YEARS OF
THE JOURNAL

Edited by Glenys Jones



Published in partnership with The University of Birmingham
autism.west midlands and Autism Cymru

Designing environments for children and adults on the autism spectrum

Address for correspondence
E-mail
c.beaver@ga-architects.com

Christopher Beaver, London

Editorial comment

This is the first of two papers on building design within this issue of the GAP Journal. It highlights the challenges involved in creating good environments, particularly in the light of the recession and the cancellation of the new builds that were planned. Christopher Beaver is an architect who has been thinking about the design of buildings for those on the autism spectrum since 1996. Here, he identifies key features within existing buildings which usually require attention and offers some potential solutions. The second paper in this issue of the Journal is by Iain Scott, an architect in Edinburgh, who ran a project to involve the children on the autism spectrum in the design of school classrooms.

Introduction

This paper is intended as an overview of a number of design issues and choices that we face, particularly in these times of austerity when there is not a lot of money around. It is not intended as an academic paper but will draw on my experience of working with providers and educators since 1996 when my practice decided to specialise in designing autism-friendly buildings.

At that time there was little awareness that people on the autism spectrum would feel happier in a building designed specifically to recognise their needs and would, therefore, be likely to display less challenging behaviour and engage more effectively. This is surprising as we all feel happier in a well-designed building where, for example, we don't have to shout to make ourselves heard and where we can find our way from A to B without getting lost. But, be that as it may, in 1996 many people on the autism spectrum were confined to institutional buildings that were not fit for purpose. This realisation was the catalyst for my first article 'Breaking The Mould' that appeared in 2003 (Beaver, 2003).

Now, almost fifteen years on, the picture is significantly different, although there is still a lot to be done to bring schools and residential facilities up to a good standard across the board. There are still a lot of schools that are

not fit for purpose and many children and adults continue to be cared for in institutional buildings.

The educational environment

There is still debate about whether a pupil on the autism spectrum can flourish in a mainstream environment or whether s/he should go to a school specifically designed for pupils with autism. The simple answer is that it depends where the child is on the autism spectrum. There are many pupils that will thrive perfectly well in a mainstream environment although it is now increasingly common to find mainstream schools building an autism resource base within the existing building or as a stand-alone extension.

Building Schools for the Future

The Government's *Building Schools for the Future* (BSF) initiative was introduced with the commitment to rebuild or renew all of England's secondary schools within fifteen years. This included special schools which are further supported by Building Bulletin 102 setting out the standards and requirements for special schools. Sadly, this initiative has partly stalled due to cut-backs announced by the Coalition Government putting a stop to many projects up and down the country. This places many schools in a dilemma; should they do nothing and wait for the money for redevelopment to become

available or should money be spent on essential works to keep the school open for a few more precarious years? For those schools that are unable to offer a 'fit for purpose' environment, it is a question that most would rather avoid.

But, there is a further and less visible problem and that is the question of attracting staff. Teaching is a stressful occupation. If, on top of the usual demands, the teacher works in buildings which are far from ideal, with poor staff facilities, then it may be hard to retain staff or to attract applications. This is a serious problem because it is very difficult to teach pupils without a stable and experienced staff team. A new school would, of course, be more attractive to staff, but in the absence of funding, matters are likely to get worse.

New-build or refurbishment?

There are, of course, arguments in favour of both new-builds and refurbishment; it is not always a matter of money as refurbishments can cost as much as a new-build. One of the major impediments to redevelopment is that schools cannot just close down for the period of demolition and rebuilding and few, particularly in heavily built-up urban locations, have the space to build the new school and occupy it before knocking down the old one. Refurbishment can either be a 'cut and carve' exercise with a combination of demolition and partial rebuilding or more of a cosmetic exercise involving the upgrading of finishes, lighting and acoustic ceilings, for example. But dimensionally, some spaces will be difficult to change, with room sizes and existing ceiling heights being a limiting factor. Logistically, a major refurbishment can be highly disruptive, particularly in a special environment where pupils are unsettled by change. But more importantly the building services such as the heating and electrical installations are likely to be old and in need of total replacement. This will cause major disturbance particularly if underfloor heating is contemplated.

So we are back to the dilemma referred to above; what is to be done about the school (mainstream or special) that is not fit for purpose? We have been involved in a number of audits where we have made an inspection of a school and identified the major elements that render it unfit for purpose, focusing on matters of health and safety. If the school is unable to offer pupils a safe environment, then the headteacher and local authority are left exposed to serious criticism from parents, particularly in the event of an accident that could have been avoided.

So, whereas a new school may cost something in the order of £14M, to carry out essential works to meet health and safety standards may cost only £100,000 or so. This has been the case in the life of one particular school with 150 pupils in East London where the school has to remain open for one more year before it can be demolished prior to redevelopment. The same could be done for a school that has had its BSF funding withdrawn and has to continue in operation for a further period of time. No one would recommend this way of running an educational system but in times of financial expediency, it may be the only option.

Fitness for purpose

Teaching staff will be only too familiar with the problems that render their school 'unfit for purpose'; I hear stories frequently about incidents or how much will it cost to resolve a certain problem so that they don't have to waste time and valuable resources dealing with a recurring problem? But for the benefit of those who are not familiar with the problems that beset many schools, I am going to list out some of the issues (not an exhaustive list) that we find are common to many of the schools we encounter and suggest some solutions. To be able to resolve the potential dangers arising from these defects can remove the 'unfit for purpose' label as far as health and safety is concerned.

Radiators and exposed pipes

Most old schools that I have encountered have flat panel radiators with sharp corners, valves that can be tampered with and exposed pipes. The radiators are hot to the touch, as are the pipes that feed the water to them, and the sharp corners can cause a serious head injury in the event of a fall. Some schools will have elected to change these old radiators and replace them with low surface temperature radiators which are bulky but do at least deal with the problem of burning of the skin. A simple and relatively cheap solution, although not an aesthetic choice, is to enclose the radiator with a wire mesh which will keep hands away from the surface and still allow the heat through. The mesh will enclose the valve and the supply pipes although the latter might be more economically encased by using timber boxing.

Light fittings

Although it has been common knowledge for a number of years that fluorescent light fittings are disturbing to many people on the autism spectrum, they are still widely used in many older schools. This problem is

compounded by the fact that many are placed in or below the ceiling or on the walls where they can be reached by someone standing on a chair. The tubes are fragile and easily broken so present a number of hazards. Wherever we find fluorescent light fittings, we propose their replacement – particularly those that are in easy reach. Where the replacement means a new location, this can require alteration to the wiring so this can be an expensive item, but each case has to be viewed on its merits. Lighting is now very sophisticated and it requires a specialist consultant to unravel the many options and come up with the appropriate solution.

Exposed cables and conduit

We get so used to seeing exposed cables and wires of all description trailing along skirtings and up walls that we hardly even notice them. But they present a serious hazard. Some will be power or lighting cables and some will be data cabling that, if disturbed, can be costly to trace and reinstate the computers or projectors that they serve. We also find conduits in either mild steel or plastic which have been installed in an attempt 'to do things properly'! Mild steel conduit, although of a larger diameter so rather more unsightly, does not normally represent a risk as long as it is adequately fixed to the wall. But plastic conduit, being more flexible, is easy to get your fingers behind and pull from the wall. To rid a school of all exposed cables and conduits would, in most cases, be a task too widespread and costly to contemplate. But it is strongly recommended that an exercise is carried out to identify the areas of greatest risk so that at least these can be resolved by boxing in or some appropriate form of protection.

Wall-mounted items

Thermostats, call buttons, sensors, sounders are just some of the items that we find fixed to walls in buildings, many in easy reach of the floor. These can cause a lot of problems in schools if they are tampered with. The obvious answer is to fix them high up out of reach but this is not always possible with thermostats as to measure the temperature for accurate heating control, thermostats need to be about 1.8 metres from the floor. Unfortunately, many of the items that get fixed to the wall are not of a robust design so need to be protected by a wire mesh casing similar to the radiators. The preferred solution is to locate these fittings where they cannot be reached or replace them with tamper-proof fittings.

Glass

If you look around almost any school, you will find glass not only in windows but in doors, partitions, clerestories, reception areas, etc. It is fundamental that all glass in reach of staff and pupils should be safety glass which is to say toughened or laminated. Where windows are double-glazed, which may not always be the case in an old school, both glass layers should be safety glass. It will not be economical to replace large areas of glass with safety glass but a solution widely adopted is to apply safety film to the existing glass which will prevent the glass from shattering.

Doors and locks

This is a big item as it concerns not only the door itself but also the lock, vision panel and door closer. It is important that a school has a clear policy about security in the classroom or any other room used by pupils. I regularly see a variety of locks, key holes and sliding bolts on doors. The most common and in my view the worst solution is the sliding bolt fixed at high level (supposedly out of reach of smaller children and usually fitted by a teacher or handyman) fixed on the outside of the room. When I ask what happens in an emergency if a pupil gets locked in a classroom on their own, I am told that no pupil is ever left unaccompanied. However, it is unlikely that this never happens. My preference is to have no locks on doors involving keys or sliding bolts but to issue all staff with magnetic fobs which can be programmed to activate doors from both sides. This means that doors need a pull handle on one side, a push plate on the other and a magnetic lock. The big advantage is that if there is an emergency and the alarm button is activated, all the magnetic locks release automatically. There is no risk of a pupil being trapped.

Another potential danger I have noticed in schools is the number of rooms or spaces that are cupboards, storage rooms, meter cupboards, server rooms, etc. Again, I see doors with locks that can only be operated from both sides with a key. It is not beyond one's imagination that a teacher (or pupil) could get locked inside one of these rooms either by accident or as a prank. All such rooms should have a lock operated by key from outside but with a thumb-turn on the inside so that no key is required to get out.

Vision panels in doors are a potential danger area as all too often in old schools the glass is what is known as Georgian-wired. This is not safety glass and in a heated

moment it is not unlikely that a pupil may thrust a fist through the glass causing serious damage to the hand and wrist. One headteacher told me of an incident where one of her pupils nearly lost a hand due to the damage caused in exactly those circumstances.

Most doors to classrooms will have to be fire rated and will need a door closer. These arms operate with a scissors movement and not only present a 'swinging' opportunity but are also a risk in terms of trapped fingers. Although more expensive, the preferred door closer is the type that is fixed into the head of the door (so totally invisible) with a single arm that only projects when the door is opened. Door closers that are fixed into the long edge of the door are difficult to adjust so that they don't slam and are not recommended.

Thresholds and trip hazards

Most of our older schools were built before the Disability Discrimination Act became law and we commonly find steps and changes of level at door thresholds and a general dearth of ramps. Particularly dangerous are small changes of level in playgrounds or on the way to playgrounds where pupils are running and can suffer bad falls. Uneven paving or manholes that have not been set level with the ground can also cause falls and injury. These issues are not normally costly to rectify.

Managing large numbers of people

Even the simple routine of getting pupils with autism from the bus to the classroom in the morning (and the reverse at the end of the school day) can present management problems. Not all schools have the space to drive the bus into the school forecourt so that pupils arrive into a secured area. For those that disembark at the pavement, there is a temptation to run across the street (with obvious dangers) and even, once inside the school boundary, to run across playgrounds or grassed areas and not into the school building. In such circumstances, some simple fencing defining the desired route can ease the management task of getting pupils from A to B.

Fire exit signs and fire precautions

Finally, I will mention a common fact of life which is that old schools will almost certainly have fire escape signage that no longer complies with current legislation. The school will have undergone a variety of changes over the years; parts knocked down and extensions built with the result that the exit signs are either pointing the wrong

way or confusion is caused by an additional sign fixed next to an old one. I have seen situations where there have been as many as three signs in a single location. It is illegal to have more than one sign for each situation. Another problem is that I have seen conduits, cables and light fittings either obscuring an exit sign or fixed over it so that it becomes illegible. I can say with reasonable confidence that most schools being considered for any short-term upgrading will need the fire escape signage completely replaced. Considering the importance of being able to find your way out of a building in an emergency, this is high priority and not particularly costly. One additional point worth mentioning while on the subject of fire is that new schools now require a sprinkler installation. This is a relatively recent requirement but it does mean that there are many schools that do not have this added protection. I have heard it said that most fires in schools happen in the evenings or at weekends. I don't know what evidence there is for this but I would have thought that 'human activity' is more likely to be the cause of a fire, for example as a result of children and staff working in a science classroom or art room where there is a lot of paper around as well as exposed flame. My personal view is that the fire precautions for schools required by legislation (smoke detectors, emergency lighting and sprinklers) are adequate but we are left with a disparity between the standards in a modern school and an old school where sprinklers will not have been installed.

The domestic environment

It is very heartening to find that a lot more is now being done to address the day to day living environments of people on the autism spectrum in an attempt to get away from the institutional approach and offer the alternative of an autism-friendly environment. It is particularly encouraging that we get approached by organisations in countries as diverse as Indonesia, Denmark and America for help with projects where we sense a real passion for appropriate design. Also delegates from Greece, Italy and The Netherlands have attended our seminars which are a sure sign that the level of interest in this field is growing, not to mention the number of students doing dissertations on designing for autism who write to us regularly.

I don't want to leave this paper without saying something about the domestic environment although I have already written and spoken fairly extensively on the subject. In the interest of keeping this to a reasonable

length, I could perhaps refer readers to my paper written for the International Conference in Cape Town in October 2006 as I don't think a lot has changed since then. Also, Teresa Whitehurst (2009) contributed a research paper published in this journal which has something to say about the impact of autism-friendly design on children after moving into an early project of GA Architects.

Of all the features of autism-friendly design that I have talked and written about over the years, I think the most critical is the banishment of the corridor. The corridor is the feature that institutionalises buildings more than anything else and is as common in educational as it is in residential buildings whether for children or adults. Of course one has to get from A to B; all buildings need circulation routes but how much better a circulation area than a corridor. The corridor is like a conduit or drain running in a straight line, monotonous and like a racetrack which it often becomes. Whereas the circulation space can be many different things; a space to sit and socialise, a space to be alone and read, a space to play or sit in groups reading stories at bedtime and also a space for getting from A to B. In Denmark they even use the circulation space in schools for sitting in groups with their lunch box but then there is a different culture there in terms of eating lunch and who provides it!

The other features of autism-friendly design are equally important – good acoustics, way finding and a clear geography, good lighting, heating and ventilation and uncomplicated surfaces and non-stimulating colours. These apply as much to residential as to educational buildings and the more that can be done to respond to the environmental needs of children and adults on the autism spectrum, the more the rest of society will benefit.

I am often asked what the differences are between designing for children and adults. My answer to that is that many children of fifteen years and older are just as strong as an adult. So in terms of challenging behaviour that can result in damage to buildings that are not sufficiently robust, I would say that there is no difference.

Adult services

A relatively new development is the work being done by a number of providers who offer services for adults on

the autism spectrum. There are many adults on the autism spectrum capable of employment. But, without training and support, doors can remain closed to otherwise willing and capable people. We hope to be involved in more projects where supported living facilities for adults can be combined with providing training ranging from life skills, packaging, basic tasks in supermarkets to gardening and many others. In particular we look forward to evaluating these projects to record their success (and failings) and to build a formula for greater success in the future.

Concluding comments

Without a doubt there is a far greater awareness of the need for autism-friendly design than in 1996 when I first got involved in this specialist field. Schools, residential providers for children and adults are all aware that they need buildings that recognise the sensory needs of those in their care. But, it is vital to start with a good brief and I would say this, which is a quote from my October 2006 Cape Town paper:

'The heart of the brief cannot be written down. It has to come from an understanding of the autistic mind; the things that are comforting and give a sense of security, a feeling of space where there are places for being alone and for socialising, an easily understood geography with no threatening or over-stimulating features. This understanding can only come with time and patient observation of how children and carers interact.'

I might be overstepping the mark if I claimed that the UK is a leader in this field of sensory design but there is certainly a great deal of interest and I think that if the work of many of the specialists with whom I rub shoulders continues at the pace it is at the moment, the UK will be up there with the leaders.

References

- Beaver, C (2003) Breaking the mould *Communication* 33(7), 40.
- Beaver, C (2006) Paper written for Cape Town Conference.
- Whitehurst, T (2006) The impact of building design on children with autism spectrum disorders *Good Autism Practice Journal* 7 (1), 31–38.