



DESIGNING ENVIRONMENTS FOR CHILDREN AND ADULTS WITH ASD

Christopher Beaver - ga architects (c.beaver@ga-architects.com) www.autism-architects.com

Introduction

Autism is now high profile and you can read about different aspects of ASD almost every day in the media. Most of what I read is concerned with the basic question of where autism comes from, what are governments doing to cope with the increasing number of children with ASD, should children with ASD be taught in special or mainstream schools as well as all the scientific research that is being carried out so that we can learn more about the condition etc.

I hardly ever hear concern or interest being expressed about the environmental conditions in which children and adults live their daily lives whether it be the home, the classroom or the workplace. Yet it is vitally important. Many young people with disabilities live in care and just about every Local Authority or County Council (I am talking here about the UK but it must be similar in most other countries) has a duty to care and educate the increasing numbers needing care beyond the home.

I am constantly amazed at how unsophisticated even the most sophisticated providers are when it comes to building buildings. Where do we find an architect? What sort of architect do we need? Are there any architects specialised in this field, indeed is there anything special about designing buildings for ASD? How do we brief an architect? These are common questions that I hear all the time and I want to spend the next few minutes available to me talking about the major issues as they have appeared to me since 1996 when I first started working in this field.

The biggest shock I had was when I was speaking to a national provider who, in answer to my question 'how do you go about selecting and briefing an architect?' replied 'oh we don't, we go to one of our approved builders and he finds one'.

Architects and Brief Writing

Writing briefs for buildings is a difficult and specialised task at the best of times. But first of all, what is a brief? It is not just a list of rooms with sizes; I often talk about the 'technical brief' but it is not that either. It is about the performance of the building in use. To know how a building is going to perform requires a profound knowledge of who will use it and how it will be used. In the context of what we are discussing here that means those that are being cared for and those that are doing the caring. Both have totally different needs.

There seems to be an unwritten rule that the more specialised and knowledgeable a provider is, the less capable they are of drawing a brief together. Either they think that everyone knows what they know or they just don't think of the pressing issues at the time. They are good at answering questions but if you don't know what question to ask, you simply don't get the answer.

My first excursion into designing for ASD was backed up by a brief assembled after long hours spent with the Head of Care who, at my request, described a typical 24 hour cycle in the life of a child and a carer. This was supplemented by answers to all sorts of questions about room shapes, durable finishes, storage requirements, lighting and data cabling etc. We thought we had it all cracked.



The building started on site and all was well until the rooms started to take shape. Then came the questions: 'are the beds going to be fixed to the floor, will the carpets be taken under the skirtings so that they can't be ripped up, what measures have been taken to stop the children getting on to the roof?' Right up to two weeks before handover there were new items coming into the brief that had never been mentioned before. The result was that the cost went up and whilst the client got a building that it is very pleased with and regards as 'ground-breaking', the fundraisers were left having to work overtime to find the extra money.

My message is simply this: it is very difficult to get it right first time if you have never done it before. It is essential that providers find an architect who has the experience of at least one building behind him. After my first experience I retrospectively rewrote the brief incorporating all the things that had come into the project during the construction phase. All buildings and clients are different but there is a vast list of needs that are common to any building designed for this user group.

For my next project (which was a respite building) I simply sent this retrospective brief to the client and asked him to strike out anything he didn't want and add in anything that he considered was missing. I had it back within a week and reckon that I have 90% of the essential brief; the rest will come through discussion.

But 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.

Feedback Study

A further tool for continuing success is the feedback study. After all the effort required to assemble a good brief the essential question to ask is 'did we get it right?'. As a matter of policy, we carry out a feedback study on every building once it has been occupied for at least six months whether it is asked for or not. This is an effective way to find out what worked and what didn't. A room matrix is sent to care staff, cleaning and maintenance staff and any other participant wishing to take part and the comments are collated into a single document. The comments can be very revealing and give those writing the brief for future projects the opportunity to learn from the successes and failings of the last. It also has to be remembered that staff leave so although the head of maintenance may have many years experience of dealing with routine problems so knows what works and what doesn't, once he has gone all that knowledge and experience goes with him. A good feedback study can be a useful 'aide-mémoire' when it comes to remembering the mistakes to be avoided in the future.

Keeping Up With The Times

I agonised about what heading to use for what I want to say next because it can come across as critical of the hand that feeds me. The fact of the matter is that I often come across such comments from providers as 'carpet over my dead body or we have been using these lockable door handles for fifteen years and they are the only ones that work'. Fifteen years ago that may have been true but new products come out and technology moves on. Maintenance staff do know





an awful lot about the buildings they maintain because they have to live with them every day. But architects must lead the way in bringing forward new products and finding materials or ways of doing things that solve the problem even better than before.

In the examples cited above I won one and lost one. I got the carpet manufacturer to put down a free sample in a room that was then subjected to just about every indignity; it stood up to the treatment and we got our carpet. Conversely I regret the day I gave in on the door handle issue; children are still getting locked in their rooms and I have to bite my tongue to avoid the inevitable comment.

Having said that, I learnt from one of the maintenance staff how to design an indestructible door stop that can be made and fitted for pennies in as many minutes! But the message to architects is 'question everything and lead the way; once you give way to an inferior solution, you have lost'.

Design Issues

I would like to refer you to an article I wrote for the magazine of The National Autistic Society (Communication volume 37 no.3 page 40) which says it all. You can find it at www.autism-architects.com.

The title Breaking the Mould is precisely what we have to do. I am sure we have all seen buildings with long corridors giving access to bedrooms, low ceilings and shiny easy to clean surfaces which are noisy and unfriendly. It is this that we have to get away from. With so little regard (at least in my experience) for the importance of designing environments for ASD, it is essential to re-think the whole brief-writing process so that we come up with buildings that are sensitive to the needs of the users and carers. Those with ASD can be challenging in their behaviour so buildings have to be robust, easy to clean and capable of standing up to rough treatment. It sounds like a brief for a detention centre or boys boarding school. This, of course, is the challenge for architects; to design a building that will stand up to challenging behaviour, be easy to clean and maintain yet feels like home.

Quite apart from the basic planning of the building which I will come back to, there are basic fundamental issues that are 'key':

Acoustics is probably the most important aspect of design to get right since it influences the choice of materials and so the look and warmth of the building. Noisy spaces are to be avoided. A sense of calm will undoubtedly encourage better behaviour and a feeling of well-being amongst residents and staff. Carpet on the floor will reduce the impact of foot traffic and will absorb sound as well as provide opportunities for decorative treatments. We have also found that rough wall finishes such as fair faced brickwork with raked joints (used sparingly) can be very successful at breaking up reflected sound waves and so reducing noise levels; but should only be used in locations where there is no risk of self-harming. Ceilings are difficult to deal with but we have successfully used timber slats set about 10 mm apart with an acoustic sound absorbing mat in the cavity behind. A proportion of the sound goes through the gaps and is not reflected back into the space. Timber is a warm material and can be left natural or stained in any colour.

Ventilation of spaces with windows on only one face never works very well. In addition, open windows are an invitation to those with a tendency to 'escape'. There is a lot to be said for high level windows which can only be opened and closed by staff. They are out of reach of escapees and can be located so as to encourage cross ventilation. It is important for residents' well-being to



live in a building that has a freshness about it. I am sure we are all only too familiar with the smell of an institutional building.

A further aspect of ventilation that I want to touch on (which came to light in a feedback study) is mechanical ventilation in bathrooms. It is not enough to work to extract rates dictated by building regulations and other regulating authorities. After six or more residents have taken a shower in a space of half an hour or so, the walls will be running with condensation and the carers are left with a bathroom that is literally dripping. Complain to the mechanical engineer and he will simply say that he has designed to meet the building regulations. But it is not good enough and is something that has to be flagged up in the brief for special attention.

Heating has been a problem area for many years. Traditional radiators have to a large extent been replaced by low surface temperature radiators with the advent of stricter health and safety legislation. Both have inviting gaps behind them which are ideal for 'posting' a variety of objects such as clothes, toothbrushes, toys and so on. Low surface temperature radiators are ideal for jumping off but are also ugly and bulky. They should, in my opinion, be avoided at all costs.

Underfloor heating is, without doubt, the preferred option. It is an invisible heating system which takes no space, has no sharp corners and provides comfort conditions in a well insulated building without the need for any back-up heating. It is often criticised for having a slow response and this is true to an extent. But properly zoned and with the timers set to match hours of occupancy, it works exceptionally well. One word of caution is that if you have any intention of screwing furniture or other items to the floor, special provision is recommended to avoid a screw penetrating a water pipe.

Lighting is something that can make or break a building and it takes a great deal of careful thought and selection of light fittings to get it right. Electrical engineers commonly do the lighting and usually show you some pictures of light fittings they have chosen out of a catalogue. Their main concern is whether the recommended lighting levels are achieved but this has nothing to do with ambience, flexibility and the overall quality that good lighting can add to a building. This is where a specialist lighting designer can make a real contribution.

Care should be taken to avoid flickering fluorescent lighting as this can be disturbing to people with ASD. Compact fluorescent is acceptable but the specification always needs to be checked to make sure that fittings are fitted with the appropriate diffusers.

It is common for children and adults with ASD to sleep with the light on but a lighting level suitable for waking hours may not be suitable at night. Flexibility is the key here so that the lighting level can be reduced. One possibility is to achieve this by means of a dimmer or scene-setter but these are usually fragile mechanisms and are easily damaged. It is a difficult problem which I have yet to solve.

We have also been asked for flexibility in the design of lighting for common areas. Care staff have indicated that as it gets nearer to bedtime, it would be a great benefit to be able to reduce the lighting level to encourage a sense of quiet as preparation for sleep. Interestingly, although the day is usually highly structured, it is less common to have a hard and fast bedtime as a single rebel can cause a group protest with alarming results. The concept of voluntary bedtime, albeit encouraged by 'mood' lighting seems to be much preferred.



Colour can play an important part in the 'feel' of a building. It is a big subject which I will not embark on in any detail. Suffice it to say that there are neutral colours, calming colours, disturbing and stimulating colours. Careful choices have to be made to ensure a good balance between the common and private spaces. It is a good idea to encourage residents to choose the colour for their room from an approved range.

Planning and layout will dictate how the building works and is used. Space and perhaps the 'sense of space' is the critical consideration. A space 5 x 3 metres which is 3.5 metres high will have a greater 'sense of space' than a space 5 x 3 metres with a 2.5 metre high ceiling. That is a crude example but we have found that sloping ceilings combined with curved walls can create not only a greater 'sense of space' but also a more interesting space to move around in.

The most difficult space is the corridor. We have banished the corridor from our buildings and even the word is now outlawed. Of course there has to be a means of getting from A to B but we prefer to call that the circulation space. It has to be an interesting space, not just a box shape, and should be multi-functional. We have effectively turned the circulation space into a play space that provides access to bedrooms, activity rooms or whatever. But they also contain hinged toy or storage boxes which double as bench seats. The children have invented their own way to use this space and have, as expected, turned it into a play space with the result that the living room is left to those wanting to watch television, look at books or play board games. Another activity that has developed is that the circulation space is also used at bedtime for story reading with children grouped around sitting on the bench seats and on bean bags. So the institutional corridor has been turned into a social and activity space; one might almost call it the focal point of the building. There is no doubt that the children feel liberated by the sense of freedom this space offers them.

A simple layout with unfussy detailing and easily understood materials and colours are much preferred. Anything too complex will confuse. Easy recognition of spaces and rooms is essential and this can be determined by carpet colours and the way spaces flow from one to another. We have found that curved walls help some children to move through the building as they like to follow the curve and avoid sudden corners.

Maintenance is a constant problem in an environment where challenging behaviour is prevalent. There are two schools of thought. Either use materials that are so robust that they are virtually indestructible. These will tend to be unfriendly in appearance and costly to repair if they do get damaged. Or use friendly materials that are easy and cheap to repair although they may have to be repaired more often. If our mission is to provide environments that are as much like home as possible, there is no doubt in my mind that the latter solution is much preferred. I don't know how many facilities managers will agree with me!

Cleaning is probably thought about last by architects but is absolutely key when caring for children who will soil their sheets, urinate in cupboards and vomit wherever it happens. A good 'on the spot' industrial quality laundry is needed so that carers can respond immediately to 'accidents' and cope with the copious amounts of linen and clothes that have to be washed and ironed.

That is only part of the problem. Carpets and wall surfaces and even ceilings (beware the throwers of food in the dining room) have to be durable and easily cleaned. As I have said already, shiny vinyl floors are to be avoided (except for non-slip vinyl in bathrooms) so great care has to be taken when choosing the carpet. We have not yet managed to get clients to accept carpet in single bedrooms because these are unsupervised spaces but equally the acoustic problem is less acute where there is only one person most of the time.



Outdoor spaces are an essential part of any individual's environmental awareness. A secure play space that is overlooked by residents and carers is a great asset and can provide the children with a sense of independence. They can enjoy the freedom without the feeling of being obtrusively observed.

Conclusion

Although I have called this talk **Designing Environments for Children and Adults with ASD**, I have talked mostly about children. That is because my experience has been mostly with children. Notwithstanding that, I believe that the same problems occur in buildings for all ages.

I believe most strongly that the happier people are the better they behave. So buildings where children live in care must be warm and friendly, provide an environment with enough space that allows independence and is fun to live in. That is the brief we give ourselves every time we undertake a commission. One of our projects which is for twelve children with profound ASD is the subject of a research paper by Teresa Whitehurst (The impact of building design on children with autistic spectrum disorders) published in the May 2006 issue of Good Autism Practice; further information from TeresaW@sunfield.worcs.sch.uk

I could not better Teresa's concluding statement so I quote her here *'Environments designed and created specially for children with ASD clearly have a beneficial impact not only on the children themselves but also upon those who care for them. This intricate interplay and delicate balance between environmental factors and human factors converge to create a space where children can be children – not just children with a disability'*.

Profile: Christopher Beaver

Christopher Beaver is an architect and senior partner in **ga architects**, a private architectural practice specialising in special needs buildings and more particularly in the design of environments for children and adults with ASD and other learning difficulties.

It was in 1996 that **ga architects** first became involved in designing for ASD. The first brief was to design a specialist building for 12 children with profound ASD. This met with some success and was viewed by many providers all faced with the same problem of building a building that was robust yet still had some semblance of home. Christopher contributed an article to the Autumn 2003 issue of the NAS magazine, Communication, called 'Breaking the Mould' which was based on the building of this first ASD project.

Since 1996 Christopher has worked on a number of residential and educational projects for children and adults with ASD and is keen to spread the word that there is still much to do. His message to providers is that these buildings are not cheap and that a lot of thought and experience has to go into developing a brief for the designer.

