

Case Studies ...



@Bristol

Location

Harbourside, Bristol

Brief project description

The construction of a centre for science and technology, natural history and the environment, comprising attractions and facilities (Explore and Wildwalk) and including an IMAX cinema.

Cost of project

£97.3 million

Participants

Main funding partnership: Millennium Commission (£44.3m); South West of England Regional Development Agency (£17.1m); and Bristol City Council (£15.7m). Architects, Michael Hopkins & Partners (Wildwalk); Chris Wilkinson Architects (Explore).

Timescale for the project

@Bristol opened in July 2000. During 2001 and 2002 it won a series of architectural, environmental and tourism awards.

Space location

@Bristol is housed in a redeveloped dockside warehouse (Explore) and a new building (Wildwalk and IMAX). There is a dedicated education suite in each building.

Background to the project

@Bristol, an educational charity, is part of a £450 million urban rejuvenation scheme in the city's derelict Harbourside area.

The development process

The two education suites were conceived and designed when the project's main focus was on finalising exhibitions, and prior to the development of a clear education strategy. The education suites were situated away from the exhibition areas with education originally seen as a separate activity. Fitting-out of the suites was said to be 'at the end of the queue when the money started to run out'.

The outcome

@Bristol delivers an extensive programme of workshops, themed events and specialist resources supporting curriculum requirements for Primary and Secondary pupils and their teachers. There are also numerous family and other group events and outreach activities. Much of this programme is carried out in the two education suites and around the interactive and multi-media exhibition halls, including a TV studio and planetarium.

The flexible and creative use of spaces and a good understanding between the education and exhibition teams help to overcome the disadvantages of location and fitting-out of the suites – disadvantages created by there being little specialist educational programming input during development. Both education and exhibitions benefit from belonging to the same department, comprising education, project management, ICT and maintenance staff. In addition, the building is wired throughout, adding to the ability to adapt spaces for different activities.

Excellent chemistry and bio-chemistry labs are offset by the existence of a specialist food science lab that can no longer be justified. The two laboratories need upgrading in order to offer all the technical facilities for lab-based work across the science curriculum.

The Wildwalk education spaces are regarded as superficially elegant but impractical. The main building (or 'Explore') learning spaces are not finished to the same standard as the exhibition spaces; however, they are seen as 'serviceable'.

Specific problems for the centre include some poor acoustics, difficult access to toilets and storage facilities, and a noisy air-conditioning system. Ben Barker, Education & Programmes Manager, points to the fit-out not being wholly suited to young children, with desks and workbenches that are too high. But the overriding problem, adds Director of Learning Catherine Aldridge, is that the project was initially more 'architecture-led than looking at day-to-day practicalities'. For example, the Wildwalk foyer has such bad acoustics that two groups together create an unacceptable noise. The main access to the Wildwalk education suite is by a small lift, making it frequently unusable by groups.



Features:

- The need for input from education staff (at a high level) in the development process for a new site
- The need to consider ease of access for educational groups to dedicated education spaces and in terms of circulation around the site
- The need to consider the location and visibility of education spaces in relation to exhibition areas
- The need to consider education as a funding priority when developing a new building which includes education spaces
- The benefit of close working between education and exhibition staff



Indeed, some original design decisions seem to have ignored the fact that the education team would be handling large groups. The meet-and-greet system had to be relocated from the education suites to the main foyer, making a trolley store redundant. There are no dedicated lunch facilities. The TV studio, within the exhibition area, is a closed space that discourages visitor participation, and is being rethought.

Lessons learned

- Always ensure that there is educational involvement and expertise at the development stage, with a clear vision for the programming needs of the spaces
- Running a state-of-the-art science centre requires regular updating and refurbishment
- The visibility of learning spaces – or, in the case of @Bristol, integrating them within the exhibition spaces – is now a priority
- Ensure that there is a workable balance between space for front-of-house activities and space for workshops, storage and offices

Key factors

- An honesty about what is wrong, coupled with creative thinking and hard work to make the spaces work sufficiently well
- A joint approach to education and exhibition development
- A clear understanding about what needs to be changed in any future development
- A proactive approach to learners, in terms of the interactive outreach programme and seeing schools as crucial partners in developing future learning programmes and spaces, including 'virtual' learning spaces

'We know that science centres have pioneered valuable ways of motivating, making accessible, engaging, and conveying fundamental scientific concepts. The challenge for us is to be more proactive in getting schools to accept and absorb these new techniques.' *John Durant, Chief Executive, @Bristol*

The flexible and creative use of spaces and a good understanding between the education and exhibition teams help to overcome the disadvantages of location and fitting-out of the suites – disadvantages created by there being little specialist educational programming input during development.



Bagshaw Museum

Space title

The Education Room

Location

Batley, Kirklees, West Yorkshire

Brief project description

A dedicated, permanent Education Room with the facilities – including toilets – to enable the Museum to offer a wide variety of activities to schools and other educational users.

Cost of project

£225,000

Participants

Client, Brian Haigh for Kirklees Metropolitan Council; Architect, Paul Turner of Kirklees Estates, Properties & Markets. Funders, Heritage Lottery Fund (HLF) (£115,000); European Regional Development Unit (£90,000); Kirklees Metropolitan Council (£20,000); plus £85,000 for art works from Arts Council England.

Timescale for the project

Initial contact was made with the Council architects in 1994, and a Heritage Lottery Fund application submitted in March the following year. HLF approved the grant in September 1995 and work began in December; however, the first contractor went into liquidation and a new contractor recommenced the project in August 1996. The Museum was re-opened in November of the same year.

Background to the project

Bagshaw Museum is housed in a Victorian Gothic mansion in parkland overlooking Batley. Built in 1875 as a private house, it was purchased in 1909 by Batley Corporation and opened in 1911 as a museum containing varied collections including local and natural history.

The Museum houses displays which embrace local and natural history, Ancient Egypt, and objects from around the world. In 1986 Brian Haigh was appointed to run the Museum which, following local government reorganisation, had come under the control of Kirklees Metropolitan Council and was part of a group of museums and galleries. His priority was to develop the Museum's educational services. Despite lack of space and inadequate budgets, school usage of the Museum and its collection increased, placing great strains on the limited facilities available. An extension was needed to provide a dedicated Education Room and toilets; the emergence of Lottery funding made this more than a pipe dream.

The development process

The original building and the potential budget dictated the scope of the new space, which had to be located on the ground floor. It was out of the question to use existing rooms, because of their decorative interiors and because doing

so would reduce the Museum's display capacity; however, building something new to match the high standards of the original stone building would be expensive. 'We knew what we wanted and now needed to put something down on paper, get a better idea of costs and start applying for funding,' says Brian Haigh.

Haigh determined what he wanted by assessing how schools use the Museum, and by talking to teachers and artists. He also looked at art spaces in schools and education spaces in other museums, and drew on his own experience as a teacher taking school parties to museums and galleries. Although schools are the Museum's main users, it also works with local community groups; they too were consulted and the plans adapted to ensure that the space was flexible enough to meet the diverse needs.

The Museum worked with Paul Turner, a Council architect, and it was decided to build on the side of the Museum. Haigh gained approval from local councillors and officers for leisure & recreation and education: 'Their interest was that we provide better facilities, but they were also keen to know how we would pay for it and what the revenue implications might be.'

Turner had to address two challenges: to create a design that was sympathetic to the existing building, and which would partly be below ground level because of the slope of the land. Both Haigh and Turner wanted the building to reflect the Victorian architecture and materials but also to look contemporary.

Key considerations included the need for a lot of light coming into the building. The decision to reject a flat roof, avoiding water and security problems, and to go instead for a steep pitched roof mirroring the roofs of Walter Hanstock's original building, created the opportunity for skylights. It was also important for artists to work in the space, and a programme of art works was incorporated into the design.

Despite trying different layouts, neither curator nor architect could create the space they wanted on the restricted site. 'That was the main disappointment and we had to acknowledge what could be done on this particular site,' Haigh concludes. 'I knew what I wanted and stuck out for it. There are people who say, well you can manage without this – or, can we go for a cheaper option? I didn't want to cut corners. I wanted very good finishes.'



Features:

- The benefit of having a project champion with educational expertise
- The benefit of consulting teachers and other users
- The benefit of involving artists in the development process
- The challenge – in terms of design constraints and costs – of adding education space as an extension to a museum housed in a historic house
- The value of natural light in an education space
- The advantages of knowing what you want from the outset

The outcome

The Education Room is compact and airy. Light streams in, especially from skylights in the steeply pitched roof. Kathryn White, current curator, calls it 'a modern bright jewel that connects with the rest of the building'. She reports that 'children love that sense of space and light; it just doesn't look like a school classroom'.

The space measures 94m² and caters for 35 to 40 children doing a range of activities. Primary schools come from across northern England. Groups can be divided into two, with one working in the Museum and the other in the Education Room. The space's flexibility allows the Museum to programme conferences, corporate events, and evening and weekend talks, as well as school, community and holiday activities.

The extension is divided into two parts by a corridor, which provides access from the original building. A glass screen with coloured panels by Kate Baden Fuller separates the Education Room from the other facilities; the same stained glass architect was responsible for the huge sculpture that hangs in the roof space, and for the decoration of the terrazzo floor of the corridor.

Walk on around the corner and you reach the new toilets: the Museum now has a 'Loo of the Year Award' for their child-friendly facilities and unique tile decoration based on themes from the collections by a local artist.

Inside, storage and a sink take up the back wall, hidden behind cupboard doors. Tables and chairs are readily stackable. At the far end, a door leads into a small courtyard where children can work outside or have their lunch in warm weather. Again, art works (by Marlon Brandis and Andy Hazell) have been created around this area.

Carpet has not proved the most suitable floor covering, although children do like to sit on the floor as well as on chairs; it looks grubby from all the clay and paint which has been used in the room, and worn from the numbers of people passing through. Another problem has resulted from the temporary cessation of building work in early 1995 – due to the insolvency of the original contractor. As a result of water getting into the foundations at that time, salt periodically fluoresces from the plaster of one of the walls.

Safety concerns required less than compatible fire doors. The stained glass of the Education Room doors had to be reinforced between two sheets of strong clear glass, but (adds Haigh) 'we did get very expensive non-reflective glass which would not break and did not compromise the colour of the stained glass'. Haigh also won a battle over commonly used but 'unattractive' Georgian wired glass.

Lessons learned

Overall, the space works and does what is required of it. Rethinking small details would gain more space and storage remains a Museum-wide problem: 'A strong education programme requires a lot of storage.' Haigh would also like to have created a dedicated working space to plan and put exhibitions together. Mistakes should be 'put right immediately rather than storing up problems for the future'. He cites some faulty plumbing and wrongly cut stone lintels. 'It's all about quality. Whatever happens, stick to your guns. You can't change part-way through; it's too expensive. So stay focused.'

For architect Paul Turner, this was an exciting project and different from the more mundane work that local authorities must do. He stresses the importance of establishing close links with the client – 'make sure you know what they want and they understand that is what you are giving them'.

Key factors

This project highlights the importance of having someone with vision, drive and not a little cunning to 'run with' such an initiative. The client was clear about what was needed, and what experience he lacked he happily sought from others. His background in both education and museum work was vital, as was his ability to work within the local authority set-up, identifying the main people to persuade and influence. He gives credit to others in the local authority who backed him, and identifies a critical ingredient when he talks of someone's personality being as important as their experience in key posts. 'If someone sees the value of what you are doing, you are halfway there.'

'It's all about quality. Whatever happens, stick to your guns. You can't change part-way through; it's too expensive. So stay focused.'



Bishops Wood Environmental Centre

Location

Kidderminster, Worcestershire

Brief project description

To design a sustainable building in harmony with its environment, and causing minimal environmental damage, both in construction and in use. The building should use energy and water as efficiently as available technology permits, with materials having minimal environmental impact in manufacture.

Cost of project

£300,000

Participants

National Grid Transco, which owns the land, and Hereford & Worcester (now Worcestershire) County Council, which owns the Centre, each put up £100,000. The local Training & Enterprise Council (TEC) gave another £100,000. The architects were a county council team, comprising Iain Paul, Dave Millis, Duncan Bicknell and Isobel King.

Timescale for the project

Bishops Wood Centre opened in 1989. Three years later, in 1992, planning began for the new building; this was completed and opened in 1994. In 1995 it was runner-up as *Green Building of the Year*.

Space location

Bishops Wood covers 70 acres (28 hectares) of ancient and newly planted woodland, meadows and ponds. The site includes a straw-bale house powered by solar cells and wind generators, a reconstructed Saxon hall, and an environment-friendly 'Home for Life' building by artist and architect Roger Dean. He is designing an early-years environmental centre for the site.

Background to the project

In 1989, the Centre inhabited a single portakabin (later two). Its popularity meant that staff soon needed a permanent and larger building incorporating classrooms, toilets and office space – one which fulfilled their environmental principles, and accommodated their learning programmes for schools on sustainability, biodiversity and the natural world. The Centre also offers courses and seminars for education and environmental professionals; advises schools and business on environmental matters; and runs a forest school scheme for early-years children.

The development process

How do you design a successful indoor space with the aim of encouraging children to go outside? Director John Rhymer explains: 'Most of our learning takes place outside. This makes the indoor space even more important because children are there for a relatively short time at the start of their visit. So a building needs to do a special job of enthusing and motivating the children for what we are going to achieve during the day.'

The building had to create a visual excitement and anticipation in children and adults, sharpening their senses. It also had to link built and natural environments. 'When it came to briefing the architectural team,' says John Rhymer, 'we knew what we wanted from the building but not what it might look like. That was the architects' job.'

The building's circular design 'just evolved' as the most practical way to fulfil the design requirements, says architect Dave Millis. 'It was a hard battle with ourselves as we thrashed out the ideas we had for an organically designed building. It is really a simple building that came through a lot of hard work.'

The outcome

'We wanted, and got, a building that demonstrates best practice in terms of sustainability and enables people to see what that best practice is,' John Rhymer confirms. 'Many things are on the surface, and people can see what the building is made of.'

The timber building has solid tree trunks supporting the perimeter, with intermediate supports and beams of laminated wood. Paints and stains are organic. External walls use a breathable wall technology. Insulation is made from recycled telephone directories. Roofs are made of turf and cedar shingle, and insulated with rockwool and warmcell.

Inside is what Dave Millis calls 'an Aladdin's cave of the environment'. Children arrive at the meeting space (a gazebo), go to the cloakroom area, then into the large central space with floor and walls decorated with animal and plant patterns. Coloured footprints of different animals guide visiting classes to the various rooms. Throughout, children can open cupboards and discover exhibits for themselves. The building combines child-related and adult-related spaces and fittings, such as windows at different heights and every surface being touchable. Local schoolchildren made some of the door handles.

In the foyer, a central stairwell or tower, made from reclaimed bricks, both supports the building and acts as a thermal store. Vents in the roof and floor maintain an even temperature as the air circulates around the building. A foyer display incorporates electricity meters recording its different uses; energy use is monitored for efficiency, with lights going off and audio-stats turning the heating down when rooms are unoccupied. Water is conserved via a grey water system and reed bed sewage treatment. Chains hang from the building so children see where the water runs when it rains and understand the water cycle. In the toilets, large murals, painted by A-level students, explain the water cycle. Both paper towels and hot air dryers are available for hand drying and visitors are invited to make an informed choice. Paper towels are now composted on site.

Features:

- A sustainable space which uses its own structure as part of the learning process
- The challenge of seeing a building as a 3D teaching tool
- The challenge of designing indoor spaces which encourage visitors to engage with the outdoor space
- The benefit of architect involvement and enthusiasm
- The benefit of observing children and other visitors in action as part of the design process



'Ideas for the design came from seeing what [the children] do and how they move through and around a building; how they use their eyes and senses.'



In the Woodland room, children can explore shelves with natural objects and view, via close circuit video cameras, mice and voles feeding, and video footage of badgers and foxes visiting the previous night. The Woodpecker room has one-way glass to watch birds at nearby feeders and nest boxes. A weather station on the roof transmits information to an automatic display inside. The Solar room, housing the resource library, provides passive solar heating. The linoleum flooring is made from sustainable sources of cork chips, linseed oil and jute. The south-facing part of the roof has solar panels providing hot water.

The building nestles in woodland rather than in a clearing. Designing the outdoors was as important as the indoor spaces, explains forest school coordinator Jenny Doyle. Trees were cleared sufficient for the building, and trees will eventually grow through the boardwalk. The path from the car park meanders through the wood so you don't see the building until you are close.

A tight budget and some lack of skilled workers meant that some plans were abandoned, such as windows in the staircase tower. The work took 18 months rather than six: architects did a lot in their own time and staff, architects and their families did the cleaning up and planting.

Lessons learned

'When we first moved in we said we were 98% happy with the building. There was a lack of vents in the solar room because of the budget, and a dead-end in the cloakroom – children tend to get caught up there. It worked extremely well for a number of years, until we became victims of our own success.' There was pressure to increase numbers and a building meant for two classes now copes with three. The portakabins are still used.

The rooms were designed with children in mind but are not like classrooms, so they also work well for adults.

However, facilities are not specifically designed for early-years children. Problems are overcome by, for example, providing steps up to sinks and loos and regulating hot taps. For teacher Helen Ferguson, successful use of the building means a balancing act between adult and children's sessions. 'We would also like more toilets because of the greater number of children.'

The smaller classroom accommodates 60 young children, or 30 adults – but only 15 bag-laden A-level students. Demand for adult use has grown significantly, and this has led to a shortage of storage space. 'We have odd-shaped equipment which does not fit easily into drawers and cupboards – even though our storage space was quite considerable,' says Rhymer. Similarly, office space became inadequate quite early on. Some storage space is used for other things: for example, space for stackable chairs became the electricity cupboard because the fuse boxes were too big to be accommodated in their originally allocated space.

Dave Millis adds: 'Technically, we would have liked blinds which come into play as the sun moves around. We also wanted ducting that moved warm air around the building before being evacuated. But at the time, there was little expertise in innovative ventilation arrangements.'

Key factors

The most crucial aspect of this approach was that architect Dave Millis spent time observing the children. 'Ideas for the design came from seeing what they do and how they move through and around a building; how they use their eyes and senses.'

He continues: 'We had never been involved in a job like this before, and there was little information on how to do it. We started with a raw brief of the spaces needed. We began to see the building as a three-dimensional teaching tool, and how that relates to the Centre's work and the landscape. Talking to people helped us build a vision of what it should look like and how it should be built.' He also cites the Centre's infectious enthusiasm. 'If you have an enthusiastic client, the building reflects that. If you get clients who don't know what they want, you have problems.'

On ICT, John Rhymer argues: 'We don't want to stick children in front of computers here, but rather put them in touch with the real world.' However, computer and video technology can enable the team to extend the influence of a visit with advance preparation, web links to the Centre's activities, and downloadable materials for teachers and pupils.

Rhymer concludes: 'The adults who come here tend to comment on the spaces, exhibits and fittings. The children don't comment, their eyes just light up.' Perhaps the most revealing comment comes from architect Dave Millis: 'I come back regularly. I can't keep away.'



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Bolton Museum & Art Gallery

Project and Space title

Clare Activity Space

Location

Bolton Museum & Art Gallery is located in a 1930s purpose-built crescent in the centre of Bolton, Lancashire.

Brief project description

A flexible, multi-use education space located within the main Museum gallery.

Cost of project

Bolton Museum & Art Gallery could not afford to fund the space from existing budgets and so applied to the Clare Small Grants Programme for museum and gallery education, funded by the Clare Duffield Foundation. The Museum requested funding of £20,000, but due to fierce competition for limited funds received £12,150. The education space has been created using this reduced budget.

Participants

Dave Edwards is the Museum's Education & Access Manager supported by two part-time Education Access Officers, Tricia Harper and Miriam Moritz. Further support is provided by Liz Shaw, House Manager for Hall i' th' Wood Museum. Jon Finch, ex-Collections Services Manager (now Head of Policy & Development at North West Museums, Libraries and Archives Council), was involved in planning the education space and Ged Gaffey, the Borough's Building Services Manager, handled the fit-out.

Timescale for the project

Work on the education space started in October 2003 and was completed in December 2003. The space was officially opened in February half-term week 2004.

Space location & dimensions

The education space is, in fact, two spaces located at the rear of the first level of the general Museum gallery, on either side of a staircase and with a short open corridor linking one side to the other. The two spaces measure 86.52m² in total.

Summary of the project brief

A flexible education space located within the body of the Museum and providing easy access to the Museum's collections for learners of all ages. The space should be dedicated to educational activities and contain flexible seating and work tables, sinks and storage for resources.

Background to the project

Education is central to the work of the Museum, with a busy programme attracting 11,000 school and family visitors out of an overall annual visitor figure of 127,000 – although, as Dave Edwards explains, 'all previous education work has been done in galleries, with no facilities'. Bolton Museum & Art Gallery is funded by Bolton Metropolitan Borough and houses a collection comprising Fine Art, Egyptology, Natural History, Local and Industrial History and Ethnology.

The Museum building is home to an aquarium (in the basement), an extensive library and archive on the ground floor and the Museum & Art Gallery on the first floor. The basement also houses a purpose-built lecture theatre.

The three first-floor galleries display an impressive Egyptology collection, an art gallery (with changing exhibitions) and a general Museum gallery on two levels housing a wide range of artefacts including one of the key inventions of the industrial revolution, Samuel Crompton's 'Spinning Mule'.

The development process

Gillian Wolfe, Specialist Adviser to the Clare Duffield Foundation, visited the Museum in May 2003, as part of the assessment process for the Small Grants Programme. This meeting led to a review of options for the location and layout of the education space.

When the Museum learned that a reduced amount had been awarded for the project, the education team met to discuss priorities. It was decided that access to water and a floor to be messy on were the essentials, and that the space could do without a fitted screen to separate it from the rest of the gallery – the screen would have been an expensive addition because of the gallery's high ceilings and the location of the education space on either side of a staircase.

The outcome

The education space was created by removing four display cases and their contents. The area to the left of the stairs – when looking from the body of the gallery – has been fitted with two sinks at different heights and kitchen-style units with a linoleum splash-back. As the sink area is located within the body of the Museum, there was a concern about the danger of flooding and damage to artefacts. The simple solution – thought up by one of the education staff – has been to install a stopcock under each sink and a lock on the sink cupboard doors: the water is turned off and the cupboards are locked when the education space is not in use.

The education space houses stools and mini-tables which can be set up to create one long rectangular table, or rearranged into small clusters of tables. The area benefits from three full-length windows, although currently these are covered in UV film. The space can be used for slide shows – the team briefed 'dim-out' rather than 'blackout' – for formal education and for informal family sessions including handling sessions.

Features:

- An education space located within the main exhibition spaces
- The possibility of creating an effective, new learning space on a limited budget
- Finding that creating a dedicated education space can improve the morale of staff and raise the profile of education within an institution
- The benefit of a strong project team
- The need to focus on priorities and on achieving the possible



The space is home to one Apple Mac computer which is used for running slide shows or CDs. The education team's view is that, with limited resources, it is best to focus on what the Museum has to offer rather than trying to compete with schools in the provision of IT and ICT. As David Blair (a freelance educator) explains: 'When classes come here ... they're not here to look at a computer, they want to see the real thing.'

The area to the right of the stairs will house temporary displays, low-tech interactives such as a wooden Noah's Ark and a Lighthouse, along with informal seating.

The education space lacks the kind of storage needed for bulky art materials, stimulus materials and interactives. A useful cupboard under the stairs is currently used by the cleaners; a large museum store located behind the sink area of the space currently houses the Museum's insect collection. The aim is for the education team to take over the use of both spaces, but not in the immediate future.

There are ambitious plans to redevelop Bolton town centre, focused on the Museum and Le Mans Crescent of which it is part, but these involve potential PFI initiatives or substantial bids to the Heritage Lottery Fund. While plans are developing, the Bolton education team are pleased to have created a new, dedicated space on a limited budget – and a space that works well. As Dave Edwards says, 'We don't think of this as finished ... we have the floor, we have the sinks, the units, but apart from that it's developing and it will change.'

Morale has been boosted by the effective teamwork displayed during the project, and by the new-found visibility of education within the Museum. The team are pleased that they did not install a screen and feel that the open-plan space works well. A change in flooring from the gallery to the education space is the only discernible difference which helps to ensure a seamless sight line.

Lessons learned

- To create an education space, you may not need as much money as you think – but you *will* need to be clear about what you want, identify your priorities, and be realistic about what you can afford

- If you know a friendly architect, consult them – advice will not necessarily cost you
- An open-plan education space may mean that noise management is a potential problem, but it also brings benefits, notably the visibility of learning as an activity central to the working of the site
- Make storage a priority or you will struggle forever after. Storage in an art space needs to be capable of holding 3D objects (stimulus or works created in the space). A plan chest is the best thing for larger paper sizes
- Standard kitchen units will not be sufficiently deep for storing art paper, and the central support strut at the front of the cupboard will make it difficult to use the storage space effectively. Standard kitchen shelves will not be strong enough for heavy art materials
- Standard drain fittings will not be robust enough to deal with paints, sand and other art materials; you will need a wide-bore drain and a filter – in this instance, plumbers may not always know best

- Work out good wall display space to avoid problems with unstable display screens
- Focus on the possible – grand schemes are exciting, but they can prove distracting

Key factors

- Teamwork and commitment
- Working out priorities
- Clarity of vision and determination to create a new education space, however limited the budget



'We don't think of this as finished ... we have the floor, we have the sinks, the units, but apart from that it's developing and it will change.'



Dyrham Park

Space title

Learning Centre

Location

Dyrham Park, near Bath

Brief project description

An education base for activities focused on Dyrham Park, a 17th century historic house and gardens managed by the National Trust within the Trust's Wessex Region. Education provision takes place throughout Dyrham Park – in the house and grounds – and reaches a wide range of audiences, from Primary school pupils to Scout groups, family groups and garden enthusiasts of all ages including groups of young offenders.

Cost of project

Over the last four years, staff have spent time discussing options for developing the best kind of education space for the property. The Learning Centre was moved from an existing, smaller space one morning – in March 2003 – by six members of staff. A total of £360 was spent on flexible storage units and lighting from IKEA.

Participants

Dyrham Park is managed by Property Manager, Wendy Stott. Dale Dennehy is Garden & Park Manager. Susie Gay is part-time Education Co-ordinator, covering Dyrham and another local property, Lacock Abbey. Barbara Webber is Learning & Interpretation Officer at the Wessex Regional Office.

Timescale for the project

Four years to consider and develop the space; a morning's work to set it up.

Space location & dimensions

A suite of three rooms – a workshop (28m²), a meeting room (13m²) and a living-history space (19m²) – converted from an unused student flat located in the stable block of Dyrham Park.

Summary of the project brief

A flexible space providing a base for visiting schools and other educational groups; a safe space where students can make a noise, make a mess, leave bags and eat lunch.

Background to the project

Susie Gay was appointed four years ago as part-time Education Co-ordinator. When she arrived at Dyrham there was no desk for her to work at, and no dedicated space for education. Education took place on an *ad hoc* basis, with 'Arts in Trust' activities being housed in a temporary marquee.

Initially, discussion about the location of education activities at the property focused on the idea of using the Scullery, but there were problems: this space is located within the main house, raising issues of access, security and conservation. There was even a debate about what colour paint could be used on the walls. At this point, Susie decided that an alternative space would have to be found.

The need to provide access for groups of 45 to 60 educational visitors at a time – many of whom are school children – is a challenge for many National Trust properties, but particularly for a property like Dyrham where fragile tapestries and books, as well as delicate fittings, limit the number of 'light hours' in the house to 1,000 a year. Dyrham is one of only 13 properties cared for by the Trust with this level of restriction.

The development process

Dyrham Park is a late 17th century house with a Victorian kitchen and orangery. The history of the house does not fit very easily into the National Curriculum, in that it is a particularly complex period of history and tends to fall between key areas of study. Over time, and through a process of trial and error, Susie Gay has found that the property is well suited to work relating to the art and design curriculum, in that the quality of the interiors and of the craftsmanship involved in creating them provides inspiration for school children from Primary level through to GCSE and A-Level students: 'Working with children and getting them to understand about the history of the house ... actually looking at the architecture ... observing the way things are ... they do this much more successfully through art.' This focus on art and design activities required the development of a flexible space, close to the house and grounds, with access to water.

The arrival of Wendy Stott as Property Manager in 2001 led to a review of education provision. The property's first dedicated education space was in a room called High Chamber, in the stable block. This first space was not ideal, in that it was located at the top of a steep flight of steps and shared outside space with Dyrham's salvage area – the space reserved for rescuing valuable artefacts in case of a fire or other emergency at the property. However, the space was out of the main house and had access to its own toilet facilities. Most importantly, it provided Susie Gay with a base from which to start developing the property's education programme.

Any changes to the use of rooms within the house have to be approved by the Trust's curatorial staff, based at the property and in the regional office. To complicate matters, Dyrham receives a grant from the Historic Buildings & Monument Commission, which means that English Heritage also has to be consulted. Once the education centre was to be located in the stable block, concerns about conservation and access became less acute.



Features:

- The need to consider conservation and security issues in an historic house
- The need to take a 'whole site' approach to the delivery of a learning programme
- The possibility of developing effective learning provision through the creation of a learning space, using what is available as a starting place
- An education centre as a base for learning rather than the focus of learning activities
- The possibility – with determination and a willingness to improvise – of creating an effective learning space on a limited budget

In 2003, Wendy Stott and Susie Gay agreed to relocate the education space in an unused flat in another wing of the stable block. The flat provided more rooms and easier access, and the only person who needed to be consulted about the move was the Building's Surveyor who was able to confirm the load-bearing capacity of the floors.

The outcome

The Learning Centre was opened in March 2003. The Centre has a dedicated staircase – but no lift access – and its own bathroom. The main workshop space is converted from the flat's kitchen/dining area: the kitchen cupboards are used for storing art materials; the kitchen sink and draining area are used for washing up after art activities. The workshop space houses some art work created on site – currently a selection of colourful *papier mâché* bowls on display on the mantelpiece and a wood and metal chair created by one of the artists who regularly work with school groups.

As all of the Learning Centre is regularly used for meetings (in addition to learning activities), the kitchen area allows for the provision of on-site refreshments.

Natural light is plentiful in the workshop with a window into the stable block courtyard and, on the other side, into an internal garden area. The other two rooms have less natural light, with windows only into the courtyard. The living-history space is currently under development as a housemaid's bedroom; Susie Gay has been assembling a handling collection of furniture, fabrics and fashion from properties throughout the Trust.

Pupils at Key Stage 2 are the main educational visitors, although KS1 (House & Homes), KS3 (Glorious Revolution) and GCSE students undertaking course-work are also significant users. Young people with special needs are welcome, although students with limited mobility tend to use the Scullery or Orangery rather than the Learning Centre because of ease of access. Adult education is important to the property, particularly groups from the Workers' Education Association.

Lessons learned

It is important, in an historic house, to make the most of the setting. An education space is necessary, but as a base, not always as a place of learning in its own right – as Barbara Webber comments: 'The space becomes the base. It isn't the space for learning always, but is the base for the day.' Susie Gay notes that 'children ... remember a lot more about working in an historic house by working in the Scullery and the Orangery ... they get a special experience from doing that'. Working in a neutral space like the Learning Centre is 'a bit more like working at home'. Barbara Disney, an artist who works with children at Dyrham Park, confirms that using the historic spaces is 'a fantastic experience ... for the children and for me ... something completely other'.

Charman Flindell, a local Headteacher who has visited the property with her school, comments on the need for a variety of learning spaces: 'There isn't just one that's the way you'll learn ... I think that's the delight of coming to an old house or going to the beach ... they're both different and both very good experiences for children provided the right people are there working with them and actually bringing out the strengths of the place.'

Key factors

The approach to learning at Dyrham Park is flexible and improvisatory. As Barbara Webber explains, education spaces and education activities are tried out: 'Nothing is set in concrete ... it's all fluid and flexible depending on what the Trust's strategy is in terms of learning ... what the property wants to do.' Dale Dennehy notes that it is not a matter of choosing '... the ideal space, but quite often the available space'; of answering 'the need that arises at the time'.

The new Learning Centre is not seen as answering all the educational needs of the property. Dyrham Park currently receives more than 100,000 visitors of which approximately 1,600 are recorded as educational visits. The park and gardens have the capacity to take more visitors, but the house may be reaching its limit on visitor numbers; discussions are underway about converting a barn space in the Park as an alternative (and additional) base for outdoor educational activities.

Dale Dennehy notes that it is not a matter of choosing '... the ideal space, but quite often the available space'; of answering 'the need that arises at the time'.



The Horniman Museum

Space title

Education Centre

Location

London Road, Forest Hill, London

Brief project description

A new Education Centre as part of a larger redevelopment of the Museum.

Cost of project

Building costs of £13.5 million, of which the Education Centre cost £642,000.

Participants

Client, Horniman Museum; Architects, Allies and Morrison; Funders, Heritage Lottery Fund (HLF) plus a range of grant-giving organisations and individual donations.

Timescale for the project

In 1995 planning began for a new development, with the submission to HLF of a grant application in 1997. The original grant award of £17 million was cut by 20% and a new design approved. The 'new' Horniman opened in June 2002 and projected visitor figures of 250,000 were exceeded by 14% in the first year.

Space location & dimensions

The Education Centre forms part of the new development at the front of the Museum, and comprises 200 square metres. The Museum, in the Art Nouveau architectural style, is situated in 16.5 acres (6.6 hectares) of landscaped gardens on a hill overlooking London.

Background to the project

Frederick Horniman was a Victorian business leader, tea merchant, MP, and philanthropist. He was also a prodigious collector of cultural or ethnographic artefacts, natural history specimens, and musical instruments. In 1901 he commissioned a new museum from architect Charles Harrison Townsend to house his vast collection. He then donated both the museum and the collection 'to the people of London forever, as a free museum for their recreation, instruction and enjoyment'.

To celebrate the Museum's centenary, the trustees commissioned a new extension to expand and enhance the overcrowded galleries; provide new facilities such as a café and shop; and create a new Education Centre. The overall aims of, and requirements for, the Centre included the creation of:

- two multi-functional, self-contained education spaces (each about 68m²) for the full range of education activities such as wet work to object-handling sessions, plus presentations, workshops and seminars
- associated facilities such as toilets, lunch areas, cloakrooms, and storage
- a centre that would accommodate school and family groups, community and adult learning groups both within and outside Museum hours

- a bright, spacious, creative feel to the space

An adjacent Hands-on Base was also to be redesigned and upgraded.

The development process

The original brief was put together by the director and senior management team, comprising head of finance, assistant director for curatorial and public services, and head of collections management and special projects. The latter, Kirsten Walker, acted as project champion or leader through whom all consultations were channelled and became the key link with the architects.

The Museum's different teams, such as education, were asked to specify what they wanted in terms of spaces and what should be in them. Drawings and descriptions were circulated for comment and amendment at the two key stages of applying for planning permission and agreeing the detailed designs. The teams were also brought in to discuss specific aspects of the development that affected their future work. An internal team, plus an external consultant, handled access issues.

Two advantages of this approach were that the Museum was always on top of the budgetary implications of changes, and that there was one person able to maintain long-term oversight of the development process.

Kirsten Walker explains: 'One factor was that we started to design the project with one group of people and finished it with another. For example, the head of education changed halfway through and each wanted different things. So we were able to adapt to the changing needs.'

Finbarr Whooley, who runs curatorial and public services, adds: 'One difficulty was interpreting complex drawings. So we always tried to ensure that they were understood. Even so, people sometimes didn't take things seriously until they saw them in reality. That didn't really happen with the education team because they crawled all over the plans.'

Head of Education Carolyn Roberts explains her team's approach: 'We used a 3D model to test the logistics of the "get ins" and "get outs" of the number of groups visiting each day. This helped us plan the layout of furniture and understand the capacity of the spaces for different activities. 2D plans can be hard to follow and models can provide a more accessible and faster consultation format. Each team member acted as an advocate for the different audiences they served, and consulted informally with local contacts and networks in the community.'



Features:

- The value of a project leader, providing continuity in a long and complex building project
- The need for education staff to find a way of understanding, and engaging with, the plans for a new learning space
- Coping with a budget cut part-way through a project
- The value of education staff being involved in sourcing fittings and furniture for a learning space
- The importance of managing the realities of a finished space



This coherent framework for developing the new building also enabled the Museum to cope with having to reduce the budget by 20% because of the eventual size of the HLF grant. Space sizes were reduced or redesigned and a new aquarium was abandoned. But there were to be no cuts in quality. The overall result, according to the staff, is 'a better building' because they had to think harder about what they really wanted and had to be more creative in designing particular areas.

The outcome

Despite having to be scaled down, the Education Centre does what the Museum intended. The two rooms, with a set of sliding doors, have created 'a transformable space that works'. Just as vital, the Centre is self-contained within the Museum with an additional, separate access so that activities can be held outside Museum hours. Access from within the Museum is by a door with a coded lock to prevent unauthorised entry.

The whole Centre is enhanced by large windows down to the floor and, in one room, by skylights. One room is used for wet work; the other for 'dry' activities such as workshops, seminars and lectures. However, their success often relies on good management in order to overcome some less successful space and fittings decisions.

For example, the second room can only be accessed through the first as a corridor could not be accommodated in the final design. The sliding doors are very heavy because of the acoustic baffling, which in turn does not work as well as intended. So discussion sessions in one room cannot be scheduled at the same time as a school group's lunchtime in the other. All security staff are trained to work the heavy sliding doors.

The toilet facilities are exclusive to the Centre. They are fitted to a high quality and usable by all ages – although some fittings are not best suited to heavy use by children, and do need regular monitoring to keep equipment and cubicles working effectively. There are not enough toilets but the number was determined by the size of space available. For the same reason, the Centre's corridors tend to be too narrow but coat-hanging space is recessed. The general management and cleaning regime for the Centre is carefully organised to ensure a smooth operation, helped by the fact that Deputy Facilities Manager Barbara Alcaraz has an education background. The regime is hampered only by a lino floor that has a tendency to ruck up in places.

There is some making-do. For example, the 'green' building attached to the front of the Museum in the 1990s was to be a temporary interactive classroom and environment centre. The education team now uses part of it as offices because they have outgrown those in the Education Centre itself.

Lessons learned

The importance of sourcing fittings and furniture is one of the major lessons to come out of this Horniman development. The results tend to be more successful where the education and facilities teams made the decisions, rather than those with less direct experience. Often the teams were asked to state their requirements but were not involved in the selection or purchasing process. This has led to the heavy sliding doors; cupboard shutters that are hard to operate, and catch fingers because of too little space between shelf edge and shutter; ropes for working blinds that children love to play with; and hi-tech soap dispensers that cannot cope with children's endless fascination with new things. In short, high quality should not lead to over-sophistication.

'Look for simple, straightforward solutions when fitting-out heavily used areas,' recommends Barbara Alcaraz, 'and always test things out first.' A related issue is being able to source replacement parts both easily and inexpensively: this means seeking, wherever possible, local suppliers or those experienced in dealing with schools' needs. Head of Education Carolyn Roberts adds: 'We did source the tables, chairs and benches ourselves. They are light, foldable or stackable, easy to clean and replace. We looked at what schools use and went to educational suppliers, got samples and tested them out.'

Key factors

The critical success factors of the new development, and of the Education Centre in particular, include the detailed, collaborative and firmly led development process; the determination not to have the vision spoilt by a major budget reduction; and the emphasis on drawing on the direct experience and expertise of the users – both staff and school and community participants. Head of Development Marcus Pugh points out that it is a building that now works for all its diverse participants: 'The Horniman is very consultative, formally and informally, and that has led to a great resource.' He adds, 'It has become a bit like a village hall in the way the local community use it for activities.'

'We did source the tables, chairs and benches ourselves. They are light, foldable or stackable, easy to clean and replace. We looked at what schools use and went to educational suppliers, got samples and tested them out.'



The Lighthouse, Scotland's Centre for Architecture, Design and the City

Space title

The Education Workshop

Location

Glasgow, Scotland

Cost of project

Design and construction, £12 million; fittings & fixtures, £0.5 million

Participants

Client, Glasgow 1999 Festival Company; Architects, Page and Park (Glasgow); Interior Designers, Javier Mariscal (Barcelona) and Sam Booth (Glasgow); Funders, Glasgow City Council, Scottish Enterprise Glasgow, Heritage Lottery Fund, Historic Scotland, Scottish Arts Council, Strathclyde European Partnership.

Timescale for the project

The idea of building an architecture centre in Glasgow was first proposed in 1994, when Dr Stuart Macdonald (now Director of the Lighthouse) worked as Senior Adviser for Strathclyde City Council. The project was approved during the Glasgow Design Festival in 1996 and work began on the building in January 1998. The Lighthouse opened in July 1999.

Space location & dimensions

The Lighthouse is located in the centre of Glasgow, Scotland's largest city. The Education Workshop (250m²) is one of three dedicated learning spaces within the Education Centre (1,000m²) that occupies the whole of the second floor of the building; other spaces include the Young Designers' Gallery, an interactive gallery for children aged from three to eight (the Wee People's City), and an ICT centre.

Summary of the project brief

The requirements of the Education Workshop were clear from the start: an accessible, multi-functional, flexible and inspirational space for learners of all ages to engage with architecture and design as a creative process.

The space should incorporate facilities for hands-on learning, e-learning and reflective learning as well as a dedicated, creative learning space for small children. It should provide display spaces for the work created on site and well-designed storage for art and design resources and for visiting school parties. In summary, in the words of Stuart Macdonald, 'a learning environment designed, built and furnished to the same standards of quality as any other space in the building as a whole'.

Background to the project

Glasgow is the birthplace of architect and designer Charles Rennie Mackintosh who designed the building in which the Lighthouse is housed. The creation of the Lighthouse was central to Glasgow's reign as UK City of Architecture and Design in 1999 and to the city's continuing cultural regeneration since then. The Lighthouse is the only architecture centre in Scotland, and is the largest architecture centre in the UK.

The development process

The Education Centre was always seen as being central to the plans for the Lighthouse project, and teachers, educational bodies and educationalists were consulted in the early stages of the project's development.

The internal fit-out of the Education Centre was briefed by Stuart Macdonald, drawing on his own experience as an educator and adviser, and using the expertise of the wider team involved in planning Glasgow's tenure as the UK City of Architecture and Design.

The outcome

The Education Workshop is a large, rectangular room with high windows along one side of the room providing good natural light. It can accommodate groups of up to 60 school-aged students working on practical art-making activities, or be converted into a lecture space for 80 adults. A bench running along the whole length of the windows houses Apple Mac computers; glass storage units display art work and architectural models. An overhead power track and wall-mounted sockets ensure that computers and electrical equipment can be used flexibly in the space.



Features:

- A dedicated educational space central to the whole development of the building, both philosophically and physically
- The value of a site director with an educational background
- The value of purpose-built fittings and furniture
- The value of building display space into an education space, e.g. transparent display cases forming the walls of an internal room
- The benefit of close working between education and exhibition staff



The wall opposite the windows is fitted with full-length wooden cupboards used for storing tables, school bags, and art and design resources. The wood is solid and well finished. The sink area was made to order – by a firm specialising in fittings for prisons – constructed of industrial stainless steel and housing two sinks, one at ‘child height’ and the other for adults. There are large steel cupboards on either side of the sink and kitchen-style cupboards above.

At the far end of the Workshop is a glass-walled room used for meetings or quiet study. The walls of the room – which look onto the Workshop space and out onto the central areas of the Education Centre – are constructed as transparent cube-shaped display cases for art work created on site.

The education offices are easily accessible from the Workshop space, allowing for easy interaction between workshop participants and the education and technical support staff. The visibility of the space, and of the education staff within it, sends out a clear message about the accessibility and importance of education to the work of the Lighthouse as a whole.

In the four years since the Lighthouse opened, the Workshop space has worked well. Demand for computer-based work has increased well beyond the original plans, leading to the installation of Apple Macs in the Workshop and the purchase of a mobile computer trolley housing ten i-books, to supplement the facilities in the computer suite.

The Lighthouse receives more than 40,000 educational visitors per year, out of a total visitor figure of 150,000.

Lessons learned

- Learning has to be seen as integral to the purpose and layout of a building, and planned-in from the beginning of the design process
- Education spaces and staff must be visible to all visitors/users
- Education staff must work to foster a sense of ownership, so that users of the Centre respect the spaces, cleaning and tidying at the end of an activity

Key factors

- A director with a background in education
- A clear vision for the organisation, with education as part of the core mission
- An organisational commitment to education: at the Lighthouse, the education and exhibition staff together form a Lifelong Learning team and meet on a monthly basis to discuss plans and review priorities
- A management style which places education and exhibition/curatorial staff on an equal footing
- An exhibition space within the education space: at the Lighthouse, the Young Designers’ Gallery houses a range of exhibitions throughout the year
- A planning process that integrates the planning of exhibition programmes and education

‘... a learning environment designed, built and furnished to the same standards of quality as any other space in the building as a whole ...’



The River & Rowing Museum

Space title

Education Centre

Location

Henley-on-Thames, Oxfordshire

Brief project description

The Museum was planned in two phases of development and included a multi-function education space. However, as the project developed, a second building was added to the plans and a purpose-built education room was included. Both phases were completed in time for the opening in 1998. After five years, there is now a need to increase the space available for education use and '... to improve on the quality of everything that education do'.

Cost of project

The total cost of building the River & Rowing Museum up to opening in 1998 was in the region of £10 million. The planned cost of the redevelopment of the Education Centre will be in excess of £500,000.

Participants

Design and construction of the Museum as a whole was mainly funded by the Arbib Foundation, while funding to set up the education service came from the Esmée Fairbairn Foundation. The Museum was designed by David Chipperfield Architects.

The redevelopment of the Education Centre has been designed by a local firm, Blackwood Architects, working closely with David Chipperfield Architects. Funding for the redevelopment is being sought from the Heritage Lottery Fund.

Timescale for the project

The development of the Museum as an institution and a building took about ten years, with contracts being signed in the early 1990s and construction completed by August 1998.

In 2003, the Museum held a fundraising ball to raise the match funding required for redeveloping the Education Centre; planning permission was obtained and the application to the HLF was submitted in December 2003. If funding is allocated, the work is planned to start in autumn 2004.

Space location & dimensions

The Education Centre forms the ground-floor level of one wing of the main Museum complex. Currently it comprises one dedicated education space plus a separate foyer containing coat-hanging space for visitors' belongings, and male and female toilets. The existing teaching space measures 72m². The new Education Centre will measure 450m², with enlarged teaching space (216m² in total).

Summary of the project brief

The Museum's plan is to convert the storeroom located adjacent to the current education studio into a second dedicated education space; and to develop a large, informal learning-space 'foyer' incorporating toilets, cloakroom and lunch area with refreshment bar. The new Centre will also allow for improved storage, education offices, and preparation space.

The foyer will be created by building an extension on to the front of the Education Centre, over the existing terrace. This will avoid the expense of ground works – the whole building is located on the flood plain and rests on stilts.

Background to the project

The Museum's education programme has proved highly successful, attracting approximately 8,000 educational users in 2003 – out of an overall figure of 60,000 visitors to the Museum. The education programme is led by a full-time head of education, with an education administrator and assistant, and delivered by a team of six freelance museum tutors who liaise directly with teachers in developing and testing courses. There are a total of 21 curriculum-related courses covering a wide range of subjects and age groups – attendance is charged at £2.95 per head including VAT (2003 prices), with overhead costs subsidised by the Museum. Details of the education programme are published in an annual course prospectus. The Museum also offers a variety of less formal courses for adult learners, children and family events, and adult specialist lectures.

The development process

The River & Rowing Museum is a successful and award-winning building. As Paul Mains, Chief Executive, explains, any problems with the present education space developed from the original brief: 'The architect's brief here was largely about the galleries and the public spaces. Yes, there was an Education Centre, but the architect wasn't particularly focused on that and his experience wasn't in that area. If we learn anything from this ... we didn't perhaps have a strong enough team facing up to the architect and the architect therefore took more responsibility ... it's an inspiring space, but the devil is always in the detail and sometimes that requires a much more collaborative approach.'

The plans for redevelopment of the Centre have been created through a collaborative process involving the Museum staff, Paul Swart as a specialist in school building, and David Chipperfield as a concept architect. All parties have been keen to maintain the integrity of the original building.

Paul Swart, the architect for the redevelopment, confirms the need to pay real attention to the process: 'I think you can't underestimate the focus you have to put on getting a building into position. In doing that, all else gets excluded unless you set up a separate team to do the next phase or to look at how the Education Centre will work. You can't help the fact that everyone is drawn into that construction spiral.'



The outcome

The existing Education Centre is an attractive and useable space, but does have flaws:

- It can be cold, and natural light is limited to one large glass window at the far end of the room and high-level windows along one side
- The original fitted furniture matched the rest of the building, but proved to be less than practical for its function: the cupboard doors were heavy and the height of the surfaces was not suitable for adult or child users. The Museum team solved these problems themselves, replacing the cupboard doors and creating pull-down worktops to cover the sinks, all with the help of a friendly local builder. The result is an improvement, but there are still some difficulties – the sinks have to be aired to prevent mildew, and the pull-down worktops are rather heavy
- The floor covering is traditional lino which shows every mark: it has to be washed twice a day and treated with a coat of emulsion polish once a week. Paul Swart points out that, in an education space, the floor covering should be vinyl with welded joints
- There is a lack of storage space, particularly for large-scale interactives, e.g. those used to demonstrate river processes. These items are currently stored underneath the education room and moved around, as required, by two maintenance staff. The storage space restricts the use of clay and plaster as do the sinks, in terms of the disposal of materials

- Access to the Internet is limited by the structure of the building which has exposed concrete ceilings and no grids or holes for cables. Chris Adams, the Museum's Property Manager, was previously facilities manager in a large Secondary school and knows from experience the need to over-specify in terms of cabling by 400%; this rule will be employed in the foyer space of the redeveloped Education Centre

Lessons learned

The major lessons learned for the River & Rowing Museum are the need for:

1. An education manager to oversee an education project
2. A project team to oversee the new developments
3. An architect with real understanding of education processes and spaces

Paul Swart has observed lessons in practice at the River & Rowing Museum, to see how children move around and to see the space in use. As an architect, he thinks that experience in educational settings is vital: 'You need to have been through a few temporary classrooms and a few Primary school extensions to learn the nitty gritty ... there's not a lot of architecture in some of these things and you don't want to have it, in a way; you want to suit the children first.'

Chris Adams, Property Manager, points out that a useable, versatile space is one of the most difficult spaces to design because 'something is always at the expense of something else'. He goes on to emphasise the importance of the architect's approach and experience: 'The architect in this area needs to be the sort of architect who will come in, spend time, listen, look, listen again, go back, come back and keep working until you come to the point where everybody is confident in it [the brief] – not just the architect and ... not just the client.'

Key factors

Emily Leach started work at the Museum as a curator, having worked for the Oxfordshire Museum Service in both educational and curatorial roles. When the River & Rowing Museum opened, she became Head of Education and has managed the education programme ever since; her breadth of experience is invaluable to the Museum.

The River & Rowing Museum team enjoy healthy debates about what they are doing and why. In the redeveloped Education Centre, storage space will be separated from preparation space, and will be designed to facilitate organisation and order. **The team would like to have a dedicated education technician whose job it is to maintain equipment and to ensure that items are labelled and always stored in the right place.**

They have discussed the use of new technology and conclude that, while Internet access is desirable, it is also important for a museum to offer something 'other' in terms of an educational experience. As Emily Leach says, 'I've tended to take the line that it is handling objects that's important because you can do that here and you can't do it in the classroom.' Paul Mains agrees: 'The point is that they're coming to the Museum for a different experience.'

Paul Mains further points out that it is vital to be realistic about what you can offer and how often facilities will be used. A lecture theatre may sound like a necessity, but if it's only used twice a month, it's a waste of space. He adds that the River & Rowing Museum is fortunate in that it has dedicated spaces for corporate hire and an in-house maintenance team who look after all the day-to-day running of the spaces in the Museum, including the Education Centre. It also has in-house IT expertise and plans to develop its use of new technologies, with flat screens and audio-visual displays in the galleries and other areas of the Museum.

Features:

- The need to plan for the future, creating a building that can accommodate changes, e.g. cabling for new technology
- The challenge of coping with success
- The importance of a strong project team
- The need for input from education staff (at a high level) in the development process for a new site
- The value of an architect who spends time understanding education and the use of education spaces



Techniquiest Science Discovery Centre

Location

Stuart Street, Cardiff

Brief project description

To design and build the first purpose-built science discovery centre in Britain.

Cost of project

Total £6 million, of which the build cost £3.7 million and fit-out £2.3 million.

Participants

Clients, Cardiff Bay Development Corporation with Techniquiest; Architects, Ahrends Burton & Koralek (ABK), London; Funders, Welsh Office (European Regional Development Fund), Wales Tourist Board and Welsh Development Agency.

Timescale for the project

Techniquiest first opened in temporary premises in 1986. In 1988 it moved to the Cardiff Bay area and began planning for a new building. Seven years later Techniquiest opened in new premises redeveloped from a 19th century engineering works in the old docks area.

Space location & dimensions

Cardiff Bay is a regeneration area. Techniquiest covers an area of 3,000m², half of which is permanent exhibition space on two levels, and has more than 160 exhibits exploring scientific phenomena.

Background to the project

Techniquiest's mission is to develop people's understanding and appreciation of science. It is aimed at schools, other educational groups and leisure visitors, and operates an outreach programme.

As well as an Exhibition Hall on two floors, the site comprises a 100-seat Science Theatre, a 30-seat Planetarium, a multi-purpose Lab for workshops and continuing professional development courses for teachers, a Hub with Internet facilities, and a Discovery Room with curiosity boxes for school children aged from seven to 11, and families.

Techniquiest's programmes cater for two different audiences: schools in school hours, and families and the public at other times. Themed programmes for schools from early years to post-16 offer demonstrations in the Theatre and Planetarium, exhibition visits, written material for teachers and pupils, and Laboratory and Discovery Room sessions.

Techniquiest designs and makes its exhibits in its on-site workshops. A trading company, Techniquiest Enterprises Limited, offers consultancy services and sells or rents out exhibits and exhibitions.

The development process

Cardiff Bay Development Corporation, a fixed-term urban regeneration organisation, raised the funding and commissioned the architects. However, explains Techniquiest Director Colin Johnson: 'Realising they did not have the operational experience of such a centre, the Corporation told the architects that while they were the client in one sense, the functioning client was Techniquiest. We had a series of meetings and brought in people to refine our mission and sat down with the architects and looked at the details and how to match the needs with the budget available.'

By redeveloping a 100-year old building, the architects were required to build around an existing envelope.

Techniquiest's project manager liaised with Cardiff Bay, whose own project manager liaised with the contractors. A Cardiff-based architect was the 'interface' between Techniquiest and his main London office. For example, he drew up the office space and, with Techniquiest, specified the furniture.

The outcome

The building is well laid-out and adaptable to changing needs. Both architect and client regard it as 'a model for co-operation'.

Operations Manager Angela Roostan says: 'The architect listened to us and mostly did what we wanted. We had to fight for a few things. For example, we wanted a lunch area but didn't get it; we did get a cloakroom, which is now used as the lunch area. We wanted to retain as much of the education and exhibition areas as possible. But we realised that to attract schools, we needed somewhere for them to put their coats and eat their lunch, otherwise they wouldn't come.'

The quality of furniture is high; less so the fittings. A compromise was made between the fittings and keeping within budget or using the money for other things. Colin Johnson acknowledges: 'There was a cost within which the project had to be achieved. The overall standard of fittings, such as lights and doors, is not good. But the quality of the envelope and the ambience, style and feel are brilliant.'

The Lab is regarded as the least thought-out of the spaces in terms of facilities – for example, it has no hot water. This was because there was little idea of what the Lab should be used for. This is seen as 'a classic example' of requirements changing as projects develop. The Lab was originally earmarked for in-house development work rather than for public use.



Features:

- The need for careful, detailed thought at the start of a development process
- The need to build adaptable buildings that can evolve with the changing needs of the users
- The importance of facilities such as lunch areas and cloakrooms in supporting the uses of a dedicated learning space
- The reality of budget compromises and the need to know priorities
- The importance of managing a space well, e.g. cleaning



There is a clash between the look and practicality. A combination of high levels of glass and a white finish makes it hard work to keep the building looking good.

A pale carpet in the exhibition area was soon changed for a more practical colour.

It is too early to assess the long-term maintenance costs of the building, but currently they do not differ from the projections. The Centre closes for three days a year for a comprehensive maintenance and cleaning overhaul.

New projects and activities have put the building more under pressure, especially in terms of office space. Two portakabins have been erected behind the building as a partial and temporary solution.

Lessons learned

The building has evolved, rather than been radically altered, in response to changing needs. Its location means that additions can only be made upwards rather than to the sides. Staff say they could do with two more wings to the building.

Pressure on space means that priorities are drawn up for the use of any vacated space. For example, Education Director Dr Anita Shaw comments: 'Given the way that science communication is going, it would be wonderful to have breakout rooms for debates with post-16 students. There is no space for that now.'

She also cites the need for another lab, and extra exhibition space to bring in temporary exhibitions. The Planetarium doubles as a story dome, meaning that the large projector must be moved in and out. The main inconveniences remain inadequate office and storage space.

Science teacher Sue Woodberry comments: 'The only problem is that the labs are not big enough for teachers and students. They can be cramped for practical work.' Primary Deputy Head Yvonne Scott notes how her pupils 'like the talks but also love the treat of playing on the floor of the exhibition area'. There is some pressure from regular school visitors for more frequently changing or increasing exhibits, but every new space or development has staffing and revenue implications.

Two key lessons have been learned. The more enclosed spaces there are, the more staff you need. Minor 'opening-up' modifications have been made to allow better use of the educational spaces.

Noisy spaces, such as the staffroom, should be located away from quiet spaces, such as conference rooms.

The nuts and bolts of a visit have become well organised. Staff meet the coaches and explain what will happen; coats and bags go into trolleys and are locked away safely. The reception area is open, airy and light. A decision was made not to put up pay barriers, to encourage the friendly atmosphere. Groups leave from a different exit so as not to clash with other groups arriving. However, arrivals can still cause short-term blockages in reception. There are no problems with the toilets.

One initial concern, says Colin Johnson, was lost children. 'However, the architect seems to have designed the building so you don't get lost within it. You quickly get a sense of how it works. This means that signage is not crucial.' In addition, staff are always in attendance in unsighted areas.

Key factors

Spaces need good organisation, combined with sufficient, knowledgeable and collaborative education and floor staff to make them work well. Staff are encouraged to 'think about their first time here and to appreciate that that is how many of the visitors will feel'.

Demonstrations and workshops are well staffed. Anita Shaw explains: 'There are always at least two people in the Lab who combine a science background with good presentation skills.'

Spaces have been created which do not look or feel like a classroom but in which educational or pedagogic activities can take place. With on-site workshops, where the exhibits are designed and developed, staff can see how exhibits work and adapt them accordingly. Seemingly mundane things are treated with great importance, such as the value of high-quality cleaning.

Changes in ICT since the building was planned and constructed ten years ago mean that the building has become increasingly less constraining in this respect; Technquest is moving to wireless operations, with upgrading in the Science Theatre and the Lab.

The continuing adaptability of the building is due to the design and layout of spaces being carefully thought about at the start. Technquest did not want a 'signature building', but rather one that worked and did what they wanted it to. 'This is a modest little building compared to other centres since built,' says Colin Johnson. It was a wise decision.

'The architect listened to us and mostly did what we wanted. We had to fight for a few things. For example, we wanted a lunch area but didn't get it; we did get a cloakroom, which is now used as the lunch area. We wanted to retain as much of the education and exhibition areas as possible. But we realised that to attract schools, we needed somewhere for them to put their coats and eat their lunch, otherwise they wouldn't come.'



Ulster Folk & Transport Museum

Space title

The Education Room in Cultra Manor, the Ulster Folk & Transport Museum's Education Centre

Location

The Ulster Folk & Transport Museum is a national museum established in 1958 and funded by the National Museums & Galleries of Northern Ireland. The Museum is located in County Down, close to the centre of Belfast; it is home to a wide range of exhibit buildings forming a town and a rural area occupying 140 acres (56.6 hectares) of open countryside. Extensive transport galleries cover a further 35 acres (14 hectares).

Space location & dimensions

The Education Room measures 60m² and accommodates a maximum of 20 students taking part in art and craft activities. Groups are usually split into two, with one group using the tables and the other working at the looms or with other equipment.

Background to the project

Learning for all ages is central to the activities of the Museum. Primary schools are a major audience, but so too are adult learners – from City & Guild students studying textiles, to members of Northern Ireland's thriving Textile Guilds who come to study and use traditional craft skills.

Educational activities take place throughout Cultra Manor and at various locations in the Museum as a whole: in the Transport Museum, in the Folk Galleries and in the many exhibit buildings in the open-air museum. Primary school children re-enact Victorian court cases as part of their History Northern Ireland Curriculum studies in a recreated Courthouse in the town; this successful project was initially funded through the Clore Small Grants Programme. Also in the town is a residential centre used predominantly by school groups; the centre has living, sleeping and eating accommodation for 76, but no dedicated learning space.

The Museum attracts 180,000 visitors of which between 30,000 and 40,000 are educational. At peak times, the Museum can receive 8,000 visitors in a day.

In the early days of the Museum, Cultra Manor was used for offices, archives and libraries. Jonathan Bell, Head of Curatorial Services, explains that in the 1980s the Museum benefited from the political situation in Northern Ireland in the sense that money was given to 'bolster anything that held Northern Ireland together in any way'. This resulted in a big expansion of the Museum including the building of new administrative offices and an archive in a separate building.

The development process

The Education Room was created within Cultra Manor in the early 1980s, to replace a prefab classroom in the grounds (which is still used as a lunch area) and in response to growing demand from school groups – many visiting the Museum as part of the 'Education for Mutual Understanding' initiative. As Jonathan Bell explains, the education space was created from the Museum's reference library stacks: 'It was never really fitted-out ... it was multi-functional, left over from what was here before ... it obviously isn't ideal.'

The outcome

'Children love coming into the big house ... it's full of mystery ... having all the trees around ...' *Members of the Focus Group*

The education space has wood-effect walls, rather like a chalet or tree house, and large windows looking out onto parkland. Although the windows are large, they are low – as is the ceiling – and the result is a dark room, especially in the summer when the trees are in full leaf. The original library lighting is still in place, but has been updated recently with an energy-saving system which means that the lights go out if there is insufficient movement in the room – fine when the room is in use by young children, but not so good when older learners are working on sedentary activities.

The Education Room is located above the Manor's kitchen which can make the room hot and smelling of food. The room for education staff – located next to the kitchen – is 'like a cupboard' and has no storage.

The education team have first claim on the Education Room, but share this and the other spaces within Cultra Manor with corporate events and catering. No resources or work are displayed in the space for the main reason that the room cannot be locked up; it is used at weekends for catering which can add to the difficulties, since education staff and learners often have to clean tables before starting work.

The Education Room is used mostly for practical craft activities and makes use of the sink in the kitchen next door. Although there are plenty of power points, some do not work, which causes problems with craft activities that involve sewing machines or other electrical equipment. The poor artificial lighting is a problem for close work; sometimes, adult learners bring their own desk lights. Storage is a real problem in that there are no built-in cupboards and, of the cupboards that are available, one is reserved for the Textile Guilds who use the space almost every weekend. The room is also used for Adult Courses at weekends.



Features:

- The challenge of managing learning spaces which are also used for other purposes, e.g. catering
- The importance of a learning space as a place that users can 'own', where they can reflect on what they have seen and heard, and where they engage in practical activities
- The challenge of making the best of spaces which are not purpose-built
- The challenge of embracing new technologies
- The challenge of creating an active educational programme, rather than a programme which reacts to demand



Pieces of equipment, such as looms, are left out, but everything else is stowed wherever possible. It can be difficult for visiting tutors to manage the space; they have to find a member of the education staff for the cupboard keys, and locating the equipment they need for a class can be 'tricky' – as can the cleaning.

The education team feel strongly that, despite the inadequacies of the space, it is vital to have an Education Room for which students can feel a sense of ownership. It allows learners to reflect on the contents of the Museum, to concentrate on activities and to use technical equipment such as looms. The education space is a place where learning is taken seriously, a centre of excellence where learners can be taught to a high standard.

For such a large museum, providing dedicated space for education is a real problem. The catchment area for the Museum is vast and demand is already heavy: in fact, the Museum's educational activities are often booked up a whole year in advance. There is great potential in post-Primary education, but booking so far in advance is difficult, as is taking children out of school for the day.

The staff feel strongly that the learning capacity of the Museum is restricted by the spaces they have. Given the Museum's outstanding craft- and other collections, they would like to be able to work more with Further and Higher Education students. As Alison Campbell, the Museum's Head of Public Services, explains: 'It's the physical constraints that are going to make the difference between us being a really good education provider and being an excellent one.'

The education staff would very much like to be able to provide computers and Internet access, but this is an area where facilities in the Museum as a whole are severely limited – the education team has a joint email address and Internet access from only one computer. There is a slide projector and an overhead projector, but finding them can be a challenge, as can finding the pile of books needed to prop them up!

Lessons learned

The staff at the Museum are very clear about what they need and want:

- A purpose-built education centre located near the Museum's town area
- A 'meet and greet' area
- Access for all kinds of users including students with disabilities
- A multi-functional and flexible space with:
 - Storage space for study collections
 - Storage for materials and equipment
 - Sinks and 'rolling furniture'
 - A cloakroom
 - A lunch area
 - Dedicated education toilets for children
 - Dedicated toilets for visitors with disabilities
 - Wet areas
 - Dedicated display space for resources, stimulus materials and work
 - Furniture for education use only, including separate dry and wet work tables
 - Computers with access to the Internet and to the Museum's collections

- IT support
- Controlled lighting
- Controlled heating
- A lecture room

- Internal transport around the Museum

Key factors

'What we're doing is so diverse ... we do need to cater for smaller groups and larger groups and performing arts and traditional craft workshops and lectures.' *Alison Campbell*

The Ulster Folk & Transport Museum has the collections, the policies, the physical space, and the staff commitment and enthusiasm to offer much more to educational visitors of all kinds. Valerie Wilson, the Museum's textile curator, sees her job as 'making aspects of the collection more accessible to support the crafts programme, education workshops and exhibitions'. She sums up the situation well: 'We don't need to actually do more here; we just need to do what we're doing with maybe better resources to make best use of the creativity and the expertise in the staff and external tutors that we have.'

Arlene Bell, Head of Education, adds that the Museum needs to consult more, to evaluate the education programme and try to find ways of doing more: 'It's the learners as well as the teachers we should be asking.'



The education team feel strongly that, despite the inadequacies of the space, it is vital to have an Education Room for which students can feel a sense of ownership. It allows learners to reflect on the contents of the Museum, to concentrate on activities and to use technical equipment such as looms. The education space is a place where learning is taken seriously, a centre of excellence where learners can be taught to a high standard.

The Women's Library, London Metropolitan University

Location

Old Castle Street, Whitechapel, London

Brief project description

To create a new building for the Library and its collections, comprising space for a reading room, archives, exhibitions, education facilities, and seminars.

Cost of project

£6.9 million including a Heritage Lottery Fund grant of £4.2 million. The London borough of Tower Hamlets donated the land.

Participants

Client, London Guildhall University (now London Metropolitan University); Architects, Wright & Wright; Funders, Heritage Lottery Fund and other donors including Bridgehouse Estates, the Clore Duffield Foundation, HEFCE, and the London Development Agency.

The education staff comprise a part-time access & interpretation manager and part-time assistant. Because of the nature of the collections, the majority of education groups are of Secondary school age or adults, with a minority of Primary-age groups.

Timescale for the project

In 1995 Maureen Castens, then the University's Head of Academic Services, and Deian Hopkin, Vice Provost, started planning a new building for the Fawcett Library and archives; Wright & Wright Architects were appointed. Two years later an application was made to the Heritage Lottery Fund, which awarded a grant in 1988. Antonia Byatt was appointed the first director of the Women's Library in 2000 and the new building opened in February 2002.

Space location & dimensions

Situated in Whitechapel on the site of a Victorian wash house and laundry, the Library occupies 2,000 square metres. The Activities Room is 30m²; the Clore Mezzanine is a multi-function space on top of the Clore Seminar Room, both of which measure 70m².

Background to the project

The Women's Library – formerly the Fawcett Library and its archives – holds the UK's most extensive collections of women's history, comprising books and pamphlets, journals and magazines, personal papers, records of societies and associations, plus photographs, posters, banners, and other visual materials. However, in 1995 the Fawcett, owned and run by the (then) London Guildhall University, was inadequately housed in a cramped basement with limited access and prone to flooding.

This project started as one woman's idea for a new home, and a new role, for the Fawcett Library. Maureen Castens explains: 'The University had this very valuable collection in a very unsatisfactory environment. But it wasn't something that just belonged to the University. It was part of the national heritage, and should be in a building to which everyone could come – not just academics.'

The idea was to create a building that combined library, museum and cultural centre, containing a reading room, archives, exhibition hall, education spaces, conference facilities and a café. It would also be a resource for Tower Hamlets' local communities.

The development process

Architects Wright & Wright were appointed early, with the detailed brief still to be agreed. This squared with the architects' principle of putting time and money into getting the brief right. The client/architect relationship thereby became a more organic process, and paid dividends: for example, architect Clare Wright realised the importance of the Library being on a separate site rather than located within an existing University building.

Client and architect believed that the new building should make a positive and sensitive contribution to its urban surroundings and to local regeneration; provide secure and environmentally appropriate storage for the collections; and be physically accessible and as sustainable as possible. They also agreed that education had to be central to the Library – a significant statement of intent given the paucity of dedicated education spaces in libraries and archives.

A University briefing committee comprised mainly librarians; there was no direct educational, archival, curatorial or development input until later. Clare Wright therefore took responsibility for researching and establishing educational space requirements, visiting other sites such as the Dulwich Picture Gallery and the Geffrye Museum. She explains: 'I was the only one on the team with children and so knew about school visits and the impact of 30 children at a venue and their need for lunch space.'

At first the University did not fully appreciate the project's potential and the building's 'footprint' was reduced. Eventually, however, there was a commitment to the need for 'a high-quality, high-prestige space'.

Staff appointed before the building's completion, such as Director Antonia Byatt, brought a more specialist and hard-nosed approach to thinking about location and flexibility of spaces. For example, exhibition space was added to the reception area to encourage in passers-by. A space-eating, ground-floor shop was deemed too risky and abandoned. Staff meeting rooms were changed into office space to cope with the proposed increase in staff. The architects' design ensured flexibility in opening and closing-off different parts of the building to reduce the need for security staffing for events.

The outcome

The finished building delivers all the spaces required over five floors, with education and exhibition spaces on the ground and mezzanine floors; café and toilets on the first; reading room on the second; and offices and archives sharing the next two floors. The basement houses more archives, plus toilets, cloakroom and lockers. The structure is a reinforced concrete frame clad inside and out with brick and set behind the façade of the original Victorian wash house. Other materials used are stone, oak, steel and glass. To meet strict environmental standards for archives, the building is passively controlled rather than air-conditioned: this reduces heating costs and environmental damage by 80% compared to conventional buildings – a first for the City of London and an HLF exemplar.

Features:

- The importance of seeing learning and access as central to the role of a library and archive
- The challenge of combining group activity and individual research in one building
- The value of an architect who understands the need for educational provision and is prepared to research best practice
- The value of a strong client/architect relationship
- The challenge of a limited site
- The limits of flexibility and multi-use



The most important lesson is that organisations change, both in terms of the activities they engage in and of how they want to operate once a building is in use.



There are three education spaces. The Activities Room behind the ground-floor reception area and the Clore Seminar Room in the exhibition hall cater largely for teacher and student sessions. The open-plan Clore Mezzanine area above the exhibition hall is used for a variety of educational activities, especially for younger children – the floor was laid so that children can sit or lie on it to work. This area also has full audio-visual links. Café and toilets are adjacent. All three spaces are used for handling sessions. There is a large sink in the Activities Room, which also has 'teaching walls' and projection facilities and leads on to an external courtyard, which visitors can use. However, wet work is also done in the mezzanine space because the education team realised they could use the sink and running water in an adjacent disability toilet.

Activities do have to be carefully scheduled to ensure that quiet sessions are not disrupted by noisy ones nearby. Nevertheless, says Access & Interpretation Manager Jo Green, the education spaces within and above the exhibition hall enable participants to move easily between their own work and reference material.

A more serious problem is the 'flawed logic' in the original plan of assuming that the education spaces need only cater for half a class at a time. In addition, no space was made available for group work in the Library itself. This logic has merely created logistical difficulties. The lack of a specified lunch area is less problematic, because only a small number of Primary-age groups visit the Library.

The difficulties of an enclosed seminar room located within the exhibition hall are highlighted when exhibitions are on – such as cramped areas for viewing and noise problems. Clare Wright explains: 'The ethos of the organisation changed. The original idea was for a home for a special library collection, with a fixed idea about exhibitions of valuable artefacts.' This meant, for example, that the exhibition hall had to have steel-lined doors for security, and unpainted brick walls so that dust would settle on the brick rather than on the objects on display. Exhibition cases are set into exposed brick walls, which are not intended for hanging exhibits except via an inflexible hanging system. This has had to be ignored, and curatorial staff drill into the walls when setting up exhibitions.

Given the restricted site, it was vital that the internal spaces 'were made to work hard'. Thus, many rooms were not labelled for an exclusive use but seen as multi-activity spaces. For example, chairs in the seminar room are lightweight and stackable on trolleys so the room can be used for other activities. The mezzanine level also has adaptable furniture to cater for teaching sessions or dining events, as well as children's workshops.

The requirement to build on a smaller site than was originally intended also led to some inevitable compromises. For example, the locker room is in the basement and the reading room on the third floor, in order not to reduce reading-room space. The same problem of not quite enough room means occasional blockages on stairs and at corners as groups move around.

Lessons learned

There was always what Maureen Castens calls, 'the difficulty of the bleak honesty of the specification' – in effect, how to negotiate for the right building within the context of a limited, and limiting, site. This was both a design exercise and a political one. 'Maybe we should have been tougher or more overt, because there are some things we might have done differently.'

The building reflects two inevitable tensions when education work and archives are brought together. One is between quiet research and vibrant group activity, which can be largely resolved by careful planning. The other, between accessibility and security, is seen as 'irresolvable', with some of the Library's new participants finding the physical requirements of security 'strict' or 'daunting' and the manifestation of some of the security doors unwelcoming.

Some space has not been used as fully as envisaged – partly because some of the technology plans were lost by agreeing an inadequate budget, and partly because there is some conflict between the intention for flexibility and the reality of designing a space. For example the café was designed with a dual use in mind, and has a white unadorned wall at one end which could work as a lecture and presentation space, but there are no blackout facilities and the service bar is static.

Further, the Library has learnt that flexibility and multi-use can have a limit or 'break-point' relating to the complex organisation required and the occasional internal confusion and conflict about what a space is actually for.

The most important lesson is that organisations change, both in terms of the activities they engage in and of how they want to operate once a building is in use. The challenge faced by both client and architect, says Clare Wright, was to address: 'What happens when a great deal of money is given to a very small organisation to create a quite different sort of organisation ... The Library was changed from being in a basement with ten readers and no education or development programme to what it is today. How best can an organisation plan for that?'

Part of the answer lies in building flexibility into the spaces. In educational terms it also means, for example, clarifying the age ranges to be catered for and the activities to be offered. Given the smallness of the site the architect had to work with, the building is surprisingly adaptable – except for the inflexibility of the exhibition hall. The Library staff are more ambitious than the building design allows for, and they now run programmes in a building not wholly adaptable for their purposes.

Key factors

The project was driven by the close understanding that existed between its originators, Castens and Hopkin, and Wright & Wright. This collaboration enabled both client and architects to address – if not always to resolve – the contradictions, tensions and complexities of an ever-changing brief, which continues to develop even after the building is complete.

'I was the only one on the team with children and so knew about school visits and the impact of 30 children at a venue and their need for lunch space.'

