Techniquest 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 Techniquest; Architects, Ahrends Burton & Koralek (ABK), London; Funders, Welsh Office (European Regional Development Fund), Wales Tourist Board and Welsh Development Agency.

Timescale for the project
Techniquest 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 Techniquest 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. Techniquest covers an area of 3,000m^2, half of which is permanent exhibition space on two levels, and has more than 160 exhibits exploring scientific phenomena.

Background to the project
Techniquest'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 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.

Techniquest'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.

Techniquest designs and makes its exhibits in its on-site workshops. A trading company, Techniquest 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 Techniquest 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 Techniquest. 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.

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

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