



partnerships for schools

This case study looks at how strong design is stimulating and enhancing the teaching and learning at Dalry Primary School.

Key project information

- School:** Dalry Primary
- Age range:** 5-11
- No. of students:** 370
- Location:** Rural
- Free school meals:** 36 per cent
- Local authority:** North Ayrshire

# Culture and cultural learning as drivers for school design

## Summary

Dalry provides a strong example of how good building design can stimulate and enhance pupils' learning. When planning the new school building North Ayrshire Council wanted to think radically about the purpose, use and function of the facilities they were creating. They appointed artists to the design team, who worked alongside architects, planners and project managers to develop an innovative approach to the project and an inspiring building.

## Project description

Dalry Primary School opened in 2007 after a £9 million new build project. This case study describes the processes that North Ayrshire Council used throughout the project and the resulting design. The lead artist on the project was Bruce McLean.

Dalry Primary School is unique and distinctive. The local authority and school team recognised that children are constantly learning and wanted to create an environment that facilitated ongoing staff and pupil engagement with education throughout the school. The building is unconventional, with a design which aims to stimulate the senses, curiosity and wonder, and the excitement of its inhabitants. This is achieved through tactile, interactive and visual installations.

The building is a learning resource and has been designed to support a range of different disciplines and curriculum uses. For example, children can see how the building operates by studying exposed pipe works in the ceiling, or they can learn about other languages by feeling the text of signage in Braille. A glass panel in the language room displays 1000 words which the children can absorb and explore, whilst the history room helps the children develop a positive sense of identity through an artwork focussed on local and globally renowned Scottish writers and inventors.

Public art techniques and artists have been used to create physical representations of key learning principles. For example, children can play with an oversized abacus in a mathematics number room, whilst a second maths room contains an installation by artist Gary Woodley. Zones and spaces are clearly delineated through the use of materials and colour coding.

Young people's preferences and learning styles have creatively inspired the design of all spaces. The conical library spirals at child friendly height and is linked to the inflatable ICT suite on a Pythagorean axis, allowing young people to explore and learn from the mathematic principles behind the design. The layout of the library provides a safe world for the imagination. Fiction is contained in the interior conical shelving, where soft cushions invite the reader into the space. Non-fiction is on the exterior

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shelving of the cone, so that young people can easily and quickly locate the resources they need to support learning across the curriculum.

Artists were involved at all stages of the design process. They were commissioned to produce artworks throughout the building, but they were also integral to the design team from the beginning of the process. The artists brought a fresh perspective to questions about use, function and occupancy. They were able to question and challenge assumptions about learning and spaces. For example the building itself adheres to the mathematical principle of the Golden Section, or Divine Proportion, allowing learners to engage with this concept and its history.

David Watts from Ayrshire Council, said: “We stripped back our reasoning to ask some very basic questions about what education is for and to challenge set assumptions on design of school buildings... we emerged with a core value for Dalry as being a place to learn, grow and dream in. We even asked teachers what shapes their classrooms were and whether they were fit for purpose, these were our starting positions.”

The lead artist on this project, Bruce McLean, refers to this approach as ‘Imbedded Intelligence’. The school, local authority and artists all wanted to create a space where pupils could constantly learn through the fabric of the building as well as through conventional teaching.

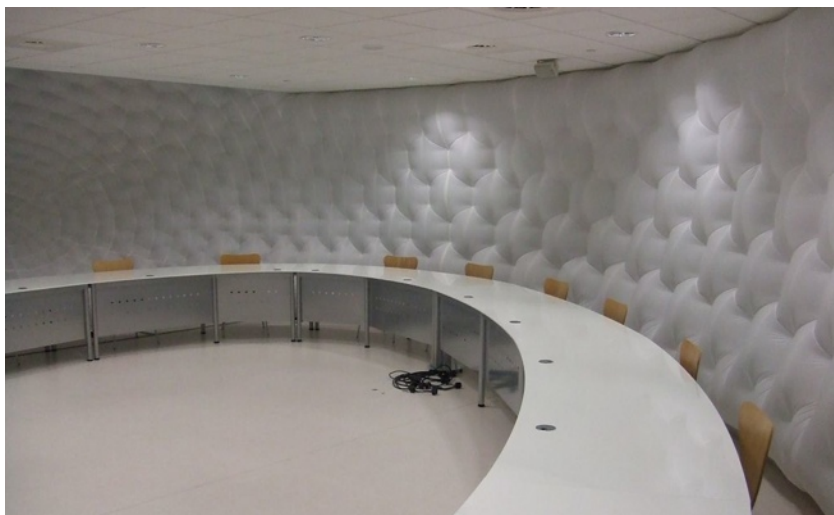


Primary school pupils traditionally spend the majority of their school life in one classroom, over an academic year. The team at Dalry wanted to encourage the children to explore new environments and experiences, including the outside world.

At Dalry, learning takes place outside the building and in a diverse suite of spaces and designated areas. For example there is a designated environmental area, which provides observation points to the natural surrounding landscape. There are also large flexible areas and intimate classrooms of 7m x 7m.

The concept and designs were not arrived at arbitrarily. A long process of careful research and consultation with a wide range of experts, from design and educational professionals to the children themselves took place. Extended workshops used drama, visual arts, film and discussion to explore how children use space, what their ideal school would look like and how it would work – these ideas were considered and interpreted by the design team and incorporated into the school.

The building’s development is well documented<sup>1</sup>. The Head of Education Services at North Ayrshire Council, Jim Leckie had been exploring artists’ commissions for schools in the early 1990’s. Leckie was keen to explore ideas, and commissioned a feasibility study for a new arts-



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led approach to school design called 'Primary Space'. The feasibility project was made possible with the help of awards secured from the Scottish Arts Council and Sport Scotland.

The school is divided into three main zones:

1. A community area that includes a full-sized games hall and facilities, refectory, kitchens and administration.
2. A central spine that houses services, toilets, cloakrooms, meeting rooms, the Sound House, an informal sound studio for the school, and an inflatable ICT suite, called the Data House. This suite contains all the school's ICT needs and resources in

one purpose-built space, designed as a crash-landed spaceship. Pupils refer to the ICT suite as 'the brain'.

3. A separate block located away from the main building and housing all the conventional classrooms. Each one contains a unique art feature integral to its structure.

Dalry has been very successful in developing community use of its facilities and is used 60 per cent of the time by its local community. This is a significant achievement in an area of geographic isolation. The sports hall / auditorium is state-of-the-art and seats 500 people.

## Classrooms

There are 14 classroom spaces loosely themed to an area of the curriculum:

### Mathematics 1 'Number Room'

One wall is a giant abacus containing 70 'rotamoulded' spheres with magic square<sup>2</sup> artwork.

### Mathematics 2 'Geometrical Form Room'

A sculpture depicts seven platonic solid<sup>3</sup> shapes in lime wood alongside an artwork plotting the intersections between geometries by artist Gary Woodley.

### Language 1

Features a fourteen metre LED dot matrix display and an internal wall consisting of the 1000 most common words found in English language inscribed across a glass panel.

### Language 2

'Dalry' is represented in sign language and stencilled on the wall.

### Geography 1 'Map Room'

An aerial photograph of Dalry is displayed on laminate and a glass panel depicts a folded and unfolded Dymaxion map of the globe.

### Geography 2 'Observatory'

An image is etched onto the window glass describing the relative size of the earth and the sun, together with a full size image of a black and white cow.

### Science 1 'Colour Room'

Coloured shapes are stencilled on the window glass by artist John Hilliard.

### Science 2 'Light and darkroom'

Features an acrylic prism, and artwork depicting the changing phases of the moon.

### Nature 1 'Structures'

A two-sided glass panel displays the mathematical formulae for an unfurling leaf.

### Nature 2 'Biology'

A large stencilled image of the human brain is depicted together with pictorial representations of the seven senses

### History 1 'History of the Room / School'

Design models for the school are displayed in acrylic cases mounted on a wall together with a glass panel depicting a traditional Ayrshire sash and case window. There is also a quotation from William Blake on a window pane.

### History 2 'Famous local Scots'

Names and dates of seven famous Scots, (Watt, Macintosh, Kelvin, Dunlop, Fleming, Bennie and Baird) are stencilled on a wall.

### Art 1 'Art History'

Seven inspirational statements from prominent artists (Buckminster Fuller, Miles Davis, Bresson, Corbusier, Gabo, Brancusi and Matisse) appear on polycarbonate panels.

### Art 2 'Artwork'

A wall is replaced with tuned timber panels (creating a huge xylophone) together with a laminate panel internally featuring architectural idioms for a new school of thought.



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Funded partly by Sport Scotland, it was purposefully designed as a community facility and offers a range of provision, from international standard basketball courts to three large wooden topped cages which can store equipment below floor level and can be raised to different heights to form a stage. It has a control room with cinema quality projection and sound systems.

## Key lessons learned

- Artists and architects should collaborate from the inception of the project.
- It is important that original ideas are given the chance to flourish, and if the logistics of the project are thrashed out at an early stage then this can be supported.
- Concern can exist over the quality of the artist's involvement, as their work tends to be carried out in isolation. In addition many contractors tend to find some of the specifications bizarre when presented with a medium in which they are unfamiliar.
- Artwork needs to be installed at the same time as the buildings are erected to ensure that all details are properly incorporated.

## Conditions for success

- A local authority willing to think and act beyond conventional approaches to school design and act as an informed commissioner of public art.
- Good partnership working between artists and design teams and school representatives.

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## Key contacts

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## References

1. [www.publicartonline.org.uk/casestudies/education/dalryprimaryschool/documents.php](http://www.publicartonline.org.uk/casestudies/education/dalryprimaryschool/documents.php)
2. A magic square is a square grid filled with numbers, in such a way that each row, each column, and the two diagonals add up to the same number
3. In geometry, a platonic solid is a convex polyhedron that is regular, in the sense of a regular polygon. Specifically, the faces of a Platonic solid are congruent regular polygons, with the same number of faces meeting at each vertex; thus, all its edges are congruent, as are its vertices and angles.