

Super structures

Some nurseries are wearing their green credentials on their sleeve by using eco-friendly buildings. **Annette Rawstorne** reports

Today's modern building techniques mean that children can be cared for in inspiring eco-friendly nurseries that do not have to cost more than those built using traditional construction methods.

'Many nurseries want to be more eco-minded for both their ethos and their brand, and families are attracted to those that promote the environment and ecology,' says architect and founding partner of AY Architects Anthony Boulanger.

'With building projects placing such a huge burden on the environment, and environmental sustainability being an increasingly important issue, being eco-friendly is important for all building projects and something that we have to adopt.'

Nick Clegg, director of Eco Classrooms and Nurseries, agrees that many nursery owners are looking to move away from bricks and mortar constructions to options that combine sustainability with being cost-effective, quick to build and have low running costs.

A building that is eco-friendly or sustainable can be described in



Rocking Horse Nursery has been awarded Passive House certification

various ways but it often refers to one where the design, construction or materials used make the building more energy-efficient, healthier and do not deplete natural resources.

Readily available materials are also being utilised. For example, using pulped recycled paper for insulation instead of asbestos, which is not only dangerous for our health but takes hundreds of years to decompose.

PASSIVE HOUSE PRINCIPLES

When approaching a project with an environmental strategy, AY Architects tends to rely on Passive House (PH) or 'Passivhaus' design principles, where a comfortable interior temperature can be maintained without active heating and cooling systems – hence 'passive' (see case study).

It is a method that originated in Germany in the 1990s. There are lots of criteria to be met to be certified PH, but elements include:

- Optimised orientation and shape of the building.
- A building 'envelope' including super insulation, air tightness and reduced thermal bridging.
- PH-approved windows, doors and MVHR system (mechanical ventilation with heat recovery). The windows in PH buildings are often large and orientated towards the equator to maximise exposure to the sun, known as 'solar gain'. AY has adapted this approach to accommodate the needs of nursery settings.

'We have a strategy that we have developed over many years. Many nursery clients do not have massive budgets, but using passive design principles, we take advantage of the

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- www.ayarchitects.com
- www.bmjarchitects.co.uk
- www.ecoarc.co.uk
- www.ecodesignconsultants.co.uk
- www.a-zero.co.uk
- www.afl-architects.com

MODULAR BUILDING SUPPLIERS

- www.ecoclassroomsandnurseries.co.uk
- www.cotaplan.co.uk
- www.tgescapes.co.uk
- www.portakabin.co.uk/lilliput.html

FURTHER INFORMATION

- Passive House Institute, www.passivehouse.com
- Rocking Horse Nursery, www.abdn.ac.uk/rockinghorse/about



natural environment as much as we can, rather than rely on expensive, renewable energy installations where the returns can take a long time and the technology can break, which can lead to additional maintenance costs,' says Mr Boulanger.

'Our approach is to take the things that work well, such as the natural ventilation and solar heat gain and disregard others, such as a requirement for a foyer in a building which does not work well in a nursery where you want freeflow indoor and outdoor play.'

AY Architects designed award-winning Montpelier Community Nursery in Camden, north London, which cost £429,000 to construct and was completed in 2012. Daylight is brought into the nursery through strip windows in the roof which have a north-south orientation and provide natural ventilation. There are deep overhangs which allow passive solar heat gain during colder months but block out the high summer sun.

The superstructure is constructed with pre-fabricated solid timber panels and the building is clad with Forest Stewardship Council (FSC)-certified timber boarding. Its roof is covered with a biodiversity sedum blanket which provides a good habitat for wildlife and can

also bring benefits such as conserve energy and reduce noise and air pollution.

SUPPORTING LOCAL COMMUNITIES

'Children are learning about being environmentally friendly at a young age and they understand that a building is not just pretty but that thought has gone in to how it is built and where the material has come from,' says Mr Clegg.

His company aims for around 60 to 70 per cent of the construction materials to be sourced locally and to use local tradespeople where possible to support the sustainability of communities.

case study: Rocking Horse Nursery, University of Aberdeen

When it became apparent that the Rocking Horse Nursery's original building was no longer fit for purpose, the University of Aberdeen decided to replace it with an eco-friendly structure.

'Sustainability is the way to go and the university was very keen to implement this,' says nursery manager Sarah Walker. 'It is an important ethos to have and to promote it with our early years children. We can talk about the efficiency of the building and through our outdoor play and other activities we can talk to them about sustainability.'

After much consideration it was decided to build a passive structure, a

Eco Classrooms and Nurseries are modular and use timber frames so the actual build can take three to four weeks instead of around six to eight months. They are designed to be energy-efficient and incorporate natural insulation products such as sheep's wool, recycled wood fibre and Thermafleece natural hemp.

Mr Clegg says while the buildings cost around a quarter less to build than with traditional methods, their longevity is equal and most materials are recyclable.

MAKING BUSINESS SENSE

Having a well-designed, sustainable nursery building can help protect

big learning curve for BMJ Architects and Burns Construction, which had never been involved in such a project.

Fraser Lovie, policy advisor at the University of Aberdeen, says it was a 'leap of faith' for everyone concerned and they all had to adapt quickly. 'No-one dared to go wild with a nail gun in case they damaged the membranes and compromised the air-tightness,' he adds.

The nursery, completed in 2015 at a cost of £1.9 million, became the first in Scotland to be awarded Passive House certification in recognition of its energy-efficient design. Four years on

tips

- Engage an architect and contractors who share your eco-friendly ethos.
- Consult EYFS guidance, which sets out nursery building requirements such as indoor space ratios.
- When looking at designs, think about storage, easy access to the outdoors and acoustics.
- Be aware that mechanical installations, such as photovoltaics (solar panel systems) and ground source heat pumps can be expensive to buy and maintain. They are also unlikely to give a return on small buildings so research whether your nursery will benefit – grants to fund these can sometimes be sourced if you do decide to install them.
- Consider off-site prefabrication, which can reduce costs and minimise disruption.
- It may be possible to have a phased construction if you have a very limited budget.
- Factor in a contingency of at least ten per cent of the construction costs for unanticipated expenses.

Children enjoy an environment that builds an eco-friendly mindset at Rocking Horse

the Earth but can also make economic savings for nursery owners and provide benefits for everyone using the building, including:

- Reduced maintenance costs.
- Reduced energy and water bills.
- Maximising natural light enhances the nursery environment along with reducing the need to use lights.
- Improved health of staff and children through better air quality, reducing the amount of sick leave.
- Enabling the space to be used efficiently and provide a good learning environment.

The nursery building can also be a successful marketing tool for your nursery business. It can be designed to be distinctive as well as efficient and make its 'green status' a selling point for parents. ■

and the nursery staff and children give the building a big thumbs up.

'We find the design works well,' says Ms Walker. 'Underfloor heating from an air source heat pump was installed as a back-up system, but the highly insulated envelope, combined with high-quality windows, doors and skylights, ensure the space is warm. We have doors leading from the play rooms outside but also a vestibule door that we can use in winter to stop the warmth from escaping.'

While Mr Lovie says they are learning how to fully optimise the system, they can already see big energy savings.