Kindergarten in Dwabor
Building a prototype for Ghana

The opening in February this year of a new school building in Dwabor, Ghana, heralds a bright future for kindergarten education in the country.

Designed by Arup with Davis Langdon and the Sabre Charitable Trust in partnership with the community, the school has been built from sustainable local materials with the help of volunteers. This new kindergarten is to be the model for a roll-out across the KEAA district of Ghana, and its design and construction proved to be a learning experience for everyone involved.

Arup became involved in the Dwabor project after global construction consultants Davis Langdon selected the Sabre Trust as their first international charity partner. Arup provided the engineering and design expertise to develop the prototype kindergarten school. And volunteers from the two firms travelled to Ghana to help build the school, working in partnership with the local community.

As Arup’s project manager for the kindergarten, Hayley Gryc had the challenge of bringing together the volunteer design team. “I didn’t know whether it would work, if we would be able to get together outside working hours,” she says. “I had to ask people to give up their free time and cope with a totally different culture. But the team worked really well. It was a joy to do the workshops together and create the design.”

A chance to learn from the community
The project involved local people from the beginning. When Hayley and the team first visited Dwabor, they didn’t take any of their initial designs with them — just questions for the local community to put to them during workshops.

The result is a finished building that’s a world away from the village’s rundown old kindergarten. The new school’s light, airy and cool classrooms are perfect for a curriculum of activity-based learning. The modular design means it can be easily adapted to suit different community needs.

The new building also uses sustainable local materials — including waste products like coconut husks — in inventive ways. Hayley believes this approach is something that will benefit her day-to-day work. “This project shows how important it is to understand local needs,” she says. “We learnt that understanding how people in Ghana built for hundreds of years ago can provide you with materials that are a better fit than many modern ones. It’s something I think we could do more of in developed countries too.”

For Tim White, the Dwabor kindergarten gave him the chance to return to Africa after a previous spell travelling in the continent.

As resident engineer for the project, Tim found himself in Ghana for a little longer than he originally expected. “I arrived in Ghana at the start of April 2009,” he explains. “The original timeframe was four months to complete two classrooms, the toilet block and the kitchen. That turned out to be overly optimistic and I ended up being there for nearly eight months in total.”

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The problem...
There is a chronic shortage of kindergarten facilities in Ghana.

The KEAA district lies on the coast of this west African country where, until 2007, there was no formal kindergarten education. As a result, early years teaching has been woefully underfunded. Often communities have no school buildings, equipment or trained teachers. Where they exist, the schools are often dark and poorly ventilated.

Sabre — a small charity working with the Municipal Education Office in KEA — wanted to come up with a design for a school that would significantly enhance the way early years schooling takes place in Ghana. To achieve this, they enlisted the help of Arup and Davis Langdon.

...and the solution
Working together, a design for a sustainable, modular building that provides the perfect learning environment was achieved.

It is a modular, scalable design which maximises daylight and ventilation while minimising heat and noise. The distinctive roof collects rainwater to use later, and contains fibres from coconut husks which dampens the noise from rain. Colourful slatted bamboo windows pivot to let in the light without any glare. The low level walls are made from stabilised soil blocks. Pozzolana (made locally from fired palm kernels) in concrete reduce the Portland cement content and hence the environmental impact.

Finally, the design includes outdoor teaching areas.