

# Modular disability aids for world's poorest

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Cara O'Sullivan in the MERU workshop

Brunel University London design engineering student Cara O'Sullivan's final year project aims to help developing countries make their own disability aids using modular components.

A modular kit of interchangeable mobility aid parts from crutches to walking frames is set to change the lives of some of the world's poorest

[people with disabilities](#) thanks to a design engineering student from Brunel University London.

Inspiration hit Cara O'Sullivan, 21, from Battle, East Sussex, after a year's placement with the Medical Engineering Resource Unit (MERU), a unique charity in Epsom, Surrey.

Explained Cara: "The changes that MERU products can make to the lives of children with disabilities inspired me to fund-raise to manufacture a range of the products for a charity called Kiya Survivors, which offers support to young people with disabilities and their families living in poverty in Peru and Tanzania.

"Whilst visiting Kiya Survivor's physiotherapy centre in Peru, I realised that while the developed world can be generous in donating unwanted walkers and crutches, they come from a wide variety of different manufacturers and so perfectly good parts from one walking aid can't be used to repair another one.

"Back at Brunel when it came to developing a project for my final year it was clear that I could use my design and engineering skills to help not only the youngsters I had met in Peru, but those in similar circumstances around the world.

"The key element is to simplify everything - walking sticks, crutches and walkers – to design core interchangeable components which work together like Meccano and, just like the toy, can be easily and quickly disassembled and re-used.

"By being so adaptable, the walking aid will be able to meet the user's exact needs and provide the required support throughout changes in their condition. The system is more sustainable and cost effective because the walking aid will gradually evolve with the user rather than having to get

an entirely new aid each time their condition changes.

"An aim of this project will be to produce a design manual for the modular parts so they can be made by the many thousands of skilled developing world craftsmen and mechanics who keep cars, trucks and bikes running with little or no access to spare parts.

"Harnessing their incredible skills and inventiveness will be the key to achieving widespread adoption, and fits in with the ethos of helping build long-term local economies rather than simply donating finished goods."

Just weeks into the project, which will form part of the prestigious Made in Brunel Exhibition on London's South Bank in Summer 2015, Cara is already coming across unexpected challenges.

"By exchanging knowledge with the charity Crutches 4 Africa I learnt how local craftsmen hand-carve walking stick and crutch tips or ferrules from old car tyres," she said.

"While you have to admire the skill involved it's very time-consuming and simply mimicking what works best in developed areas of the world where both inside and out there are endless hard surfaces to navigate, so rubber ferrules work best.

"In the poorest parts of the world paved roads and pavements are a rarity and most homes have floors of beaten earth. So copying a design which works best in the West is not necessarily the best solution."

Provided by Brunel University

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