From a dissertation to a life-changing business for children

3D-printing ExpHand Prosthetics was founded by Kate Walker after she realised her dissertation project could change the lives of millions of children in the UK and beyond. Maddyness shares insight on this brilliant initiative.

Temps de lecture : minute

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Three years ago Kate Walker was searching for a dissertation project with a purpose. As a Product Design Engineering student at Loughborough University, Kate knew that her work had the potential to change lives. But it wasn't until she met Zoey, a little girl with congenital upper-limb loss, when Kate finally had her 'Eureka!' moment and founded ExpHand Prosthetics.

> *"My dissertation was my chance to prove that engineering can make a true difference to someone's life. I had thought about designing a medical device before, but it was my encounter with Zoey that made me realise the lack of suitable prosthetic limbs for children." - Kate Walker, Founder of ExpHand Prosthetics*

A fresh outlook on an old issue

The more Kate investigated the prosthetic market, the more obvious it became that existing devices do not meet the needs of children. Her research indicates that 45% of children are dissatisfied with their prosthesis, which are often designed for adults.

Rather than children having to fit into the prosthesis, why can’t the prosthesis fit them? This was the initial question that set Kate on her mission to create an artificial limb that grows with its wearer. The price was another obstacle in access to prosthetic devices. The cost of an upper limb device starts at £5,000, which few families can afford on a consistent basis.

> *“The fact that children grow so quickly means that they would need a new prosthesis almost every year. Aside from the financial implications, children have barely any time to get used to their prosthesis before they need a new one. So, I wanted to create a prosthetic device that becomes part of children’s lives and can grow alongside them.”*

PROSTHETIC ACCESSIBILITY IN THE UK

DATA FROM RESEARCH ON CONSUMER BEHAVIOUR TOWARDS PROSTHETIC LIMBS

70% PARENTS FOUND EXISTING PROSTHETSES TOO EXPENSIVE

95% PARENTS WISH TO PROVIDE THEIR CHILDREN WITH PROSTHETIC DEVICES

45% CHILDREN ARE DISSATISFIED WITH THEIR PROSTHESES

MOST IMPORTANT ATTRIBUTES

MOTOR CONTROL

SENSORY FUNCTION

HUMANESS

A GLOBAL ISSUE

30M PEOPLE IN NEED OF PROSTHESES*

70% DEVELOPING COUNTRIES DON'T HAVE THE NECESSARY TECHNOLOGY

$26k AVG. COST OF CHILDREN'S PROSTHESES**

*Source: World Health Organisation
**Based on US market

The transformative powers of 3D-printing

3D-printing was revolutionary in terms of allowing the customisation and price requirements of children in the UK and beyond. The manufacturing process allows customised prosthetic hands to be ready in a few days and at the fraction of the price of other devices available. Kate's prosthetics are manufactured using PLA, a biodegradable plastic, which means her prostheses can be repurposed or recycled when they are no longer needed.

By the end of her final year of university, Kate had already designed the ExpHand – an affordable, adjustable and customisable upper-hand prosthesis, with a life span of up to 7 years. Her device is suitable for children aged 3 to 10 and it easily adjusts as they grow, without needing to visit a specialist.

From a university project to a business

Armed with a 3D-printer and with Zoey in mind, Kate's project was a success among her peers and supervisors. And it was the university staff that encouraged Kate to turn her dissertation idea into a business! In the space of six weeks, ExpHand Prosthetics was established, bringing Kate closer to fulfilling her promise.

In 2019, Kate won the Loughborough University Undergraduate Business of the Year Award. She was also crowned *Ingenuity19's Experian Entrepreneur of the Year*, and selected to participate in the EIT Healthcare Entrepreneurship Summer School, BioCity Business Accelerator Programme, and Engineers in Business Competition.

> *"These opportunities have taught me a lot – providing expert mentoring and invaluable*

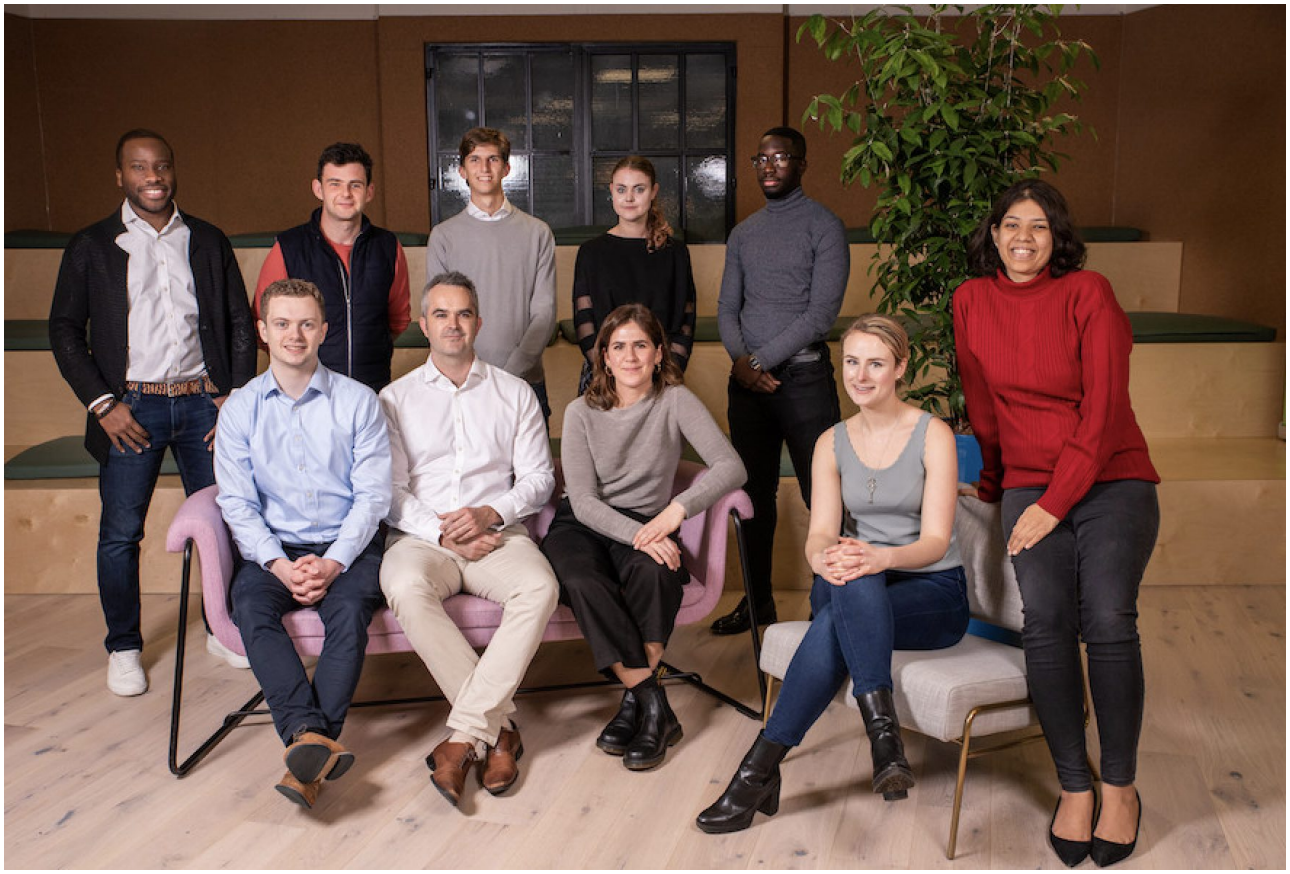
> *networking opportunities as well as much needed funding to accelerate the business while raising the profile of ExpHand.”*

Looking ahead

From her office in The Studio; Loughborough University's graduate startup programme, Kate is currently on the path to launch the ExpHand prosthetic upper limb by the end of 2020. The product is currently tested by children with upper-limb differences – including Zoey, who are giving feedback for final improvements.

Initially, he ExpHand will only be available in the UK, but worldwide distribution will be coming soon after. Kate is searching for ways to expand the ExpHand product range to accommodate other types of limb differences and she is currently working on additional devices that can aid the limb different community.

Discover ExpHand



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