



Design for Extreme Affordability

Stanford Students Innovate in Developing Economies

Design for Extreme Affordability is a two-quarter course offered at Stanford's **d.school** jointly by the **Graduate School of Business** and the **School of Engineering**. This multidisciplinary project-based experience creates an enabling environment in which students learn to design products and services that will change the lives of the world's poorest citizens. Students work directly with course partner organizations on real world problems, the culmination of which is actual implementation of solutions and real change.

Over the past fourteen years, 525 students have worked with 52 partner organizations in 30 countries on solutions in the areas of agriculture, architecture, energy, food processing, irrigation, lighting, medical devices, nutrition, sanitation, stove technology and water catchment and purification. Partners are often the implementers of these innovations, but sometimes student teams form their own organization to carry an idea forward.

Here are a few Extreme projects that have launched from the course:



The lack of a well-balanced diet leads to vitamin and mineral deficiencies and serious long-term health problems including impaired physical and psychomotor development. A solution students from 2009 came up with provides vitamins and minerals at local maize flour mills, the closest thing to centralized food distribution in rural areas. They called it Amaize and it is a simple device for electric millers that proportionately dispenses nutrients into grain that is both affordable and accurate. After 4 years of tinkering with the project, our partner, Project Healthy Children, is now selling Amaize with a new name: Sanku. Learn more about this incredible machine on the Sanku website, sanku.com. Students in 2016 worked with Sanku to create a grain bag supply chain innovation that allows millers to provide fortified grain without a price increase to the customer.



Clubfoot is a congenital birth defect that results in the internal rotation of one or both feet. With a new case occurring in every 750 births and over one million untreated cases worldwide, clubfoot is one of the leading causes of disability in the developing world. Left untreated, clubfoot results in physical deformity and social stigma. The miraclefeet brace created by students from 2012 is a low-cost (<\$20) foot abduction brace designed to treat clubfoot using the non-surgical Ponseti method. With proper compliance, treatment success rates of 95% can be achieved. Learn more on the MiracleFeet website, miraclefeet.org. And view a video about the project here: extreme.stanford.edu/projects/miraclefeet-brace.



Noora Health (formerly CareCompanion), is an organization that grew from a project in partnership with Narayana Health in India. This nonprofit organization trains family members of surgery patients to assist in the rehabilitation of their patient, improving patient outcomes by freeing up nursing time and equipping families with basic health expertise. They have programs running in many Indian hospitals covering medical issues ranging from cardiology to neonatal and maternal care. Learn more on their website, noorahealth.org. Here's a video about working with their first partner, Narayana Health: vimeo.com/107512429



For the 80% of Rwandans who can only afford to have a dirt floor in their home, EarthEnable provides an affordable, healthy floor. By paving dirt floors, diarrhea and parasitic infections are reduced while also providing a beautiful addition to a home that customers say give them pride in their home and dignity in their lives. Learn more on their website: earthenable.org. Here are several stories about some of their flooring customers: www.youtube.com/playlist?list=PLSYJa89oMXotL_7LOVofjYl3eIAQWJEmq

A few other widely known products that grew from the course include: **d.light**, a low-cost solar powered lamp that replaces kerosene and other dangerous and unhealthy lighting options for those living in poverty, and **Embrace**, an affordable infant warmer that is designed for resource constrained health providers. Our longest running partnership is with **Proximity Designs** in Myanmar. We've worked with them on several different irrigation-related projects.

Here is a link <https://vimeo.com/69203035> to a 20 minute video segment about us that we particularly enjoy. It is with Sanjay Gupta of CNN's The Next List.

Visit extreme.stanford.edu to learn more about the course, students, and projects. Contact us at extreme@dschool.stanford.edu.