Social Innovation in the Curriculum: A Model for Community Engagement and Design Intervention

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SOCIAL INNOVATION IN THE CURRICULUM: A MODEL FOR COMMUNITY ENGAGEMENT AND DESIGN INTERVENTION

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ABSTRACT

Social impact implies the capacity to create positive social change for communities and individuals. It is essential that innovation addresses the needs of those less fortunate, and empowers individuals and communities for improved societal wellbeing. This necessitates a fresh approach to curriculum and pedagogy, and educators have responded by engaging with humanitarian aid agencies to expose students to real world problem scenarios.

These social design educational initiatives, however well intentioned, are often remotely located and students lack access to users and communities in need. Without this interaction, cultural and contextual aspects can be misunderstood, and solutions may be misdirected. A local context facilitates engagement and allows co-design processes to occur.

The social project discussed in this paper has proven to be an effective model for social design. Students engage with end users within their *local* community, using design skills to respond to specific needs. Recipients benefit from assistive solutions, whilst students develop empathy and understanding. This design intervention model has delivered successful outcomes, and a unique learning experience.

1 INTRODUCTION

Socially responsible design or *design for need* are important agendas for higher education. It is essential that engineering and design graduates are ethical and responsible in their professional activities, cognisant of the potential impact of their professional activities and understand their capability to make positive contributions to global communities. Although Papenek in *Design for the Real World* (Papenek 1971) may have advocated for improved societal balance through new design agendas more than forty years ago, it is apparent that designers have interpreted their role as complementary to business strategies and a market-driven approach (Morelli 2007). Whilst design is a value-adding activity where aesthetics, usability and functionality and manufacturability are the key concerns, Howard (2000) argues that designers are impelled to participate in the creation of lifestyles that 'demand the acquisition of goods as a measure of progress and status.' Fuad-Luke (2009) continues this theme stating that "during the past two centuries it could be argued that 'design' was self-absorbed in its own culture, besotted in the power bestowed upon it by commercial interests, and assured of its ubiquitous presence in consumers' lives.

Students reflect this consumer culture in their work, often seeking to add marketability through aesthetic development, rather than adding value though user empathy and social impact. Yet it is often in empathetic projects that are not market-focussed that the greatest design impact can be realised.

If graduates are to make a meaningful contribution to issues of global concern, students must be taught the values of social design and gain practical hands-on experience in designing socially responsive and culturally appropriate products and infrastructure. This necessitates a fresh approach to curriculum and pedagogy. The social engagement model discussed in this paper has proved an effective tool for engaging students in participatory design within their local community; proving a valuable learning experience, and establishing a ethical framework for future professional practice.

2 DESIGNING FOR SOCIAL IMPACT

2.1 The other 90% — acting for the marginalised

"The majority of the world's designers focus all their efforts on developing products and services exclusively for the richest 10% of the world's customers. Nothing less than a revolution in design is needed to reach the other 90%" (Polak 2009). This statement from the founder of International Development Enterprises, a global non-profit organisation, inspired the Design for the Other 90%, exhibition and book from the Cooper-Hewitt National Design Museum. This exposition showcased successful design solutions for the survival needs of the world's marginalised people, demonstrating the power of social design in driving transformational change and improving societal well-being (Smith, 2007). Most communities in developing nations are marginalised, lacking the basic fundamentals to live a healthy, productive life, and the tools for empowerment and self-determination (Melles et al 2011). However this marginalisation is not the exclusive preserve of third world economies. In many 'first world' nations, poor health, and the limiting effects of ageing and disability, results in diminished quality of life, and reduces the potential for individuals to make meaningful contributions to society. Social design can start at home.

2.2 Design as an agent of change

"Could the creation of well-being and not goods and services, be a new purpose for design?" (Fuad-Luke 2009). Product design is seen as having a fundamental role in the emergence of consumerism, "a contingent practice, rather than one based on necessity" (Margolin 1998). Products are often imposed on the consumers, who are then burdened with the subsequent social, environmental and economic impact. Whilst designers and engineers are not always the instruments of these problems, they are the professions with the technical ability and user understanding to affect better solutions. Yet to effect effective solutions, a participatory or co-design engagement process is required where "design thinkers become embedded in the lives of the people they are designing for" (Brown and Wyatt 2010). Social impact can really only be achieved by understanding the individual and societal needs within their specific social, environmental and economic contexts (IDEO 2008).

Sanders and Stappers (2008), signal a shift from a broad user-centred approach to a participatory co-design mindset and practice, where the designer assumes the role of facilitator in the design process,

"whilst the person who will eventually be served through the design process is given the position of '*expert of his/her experience*', and plays a large role in knowledge development, idea generation and concept development." Whilst the designer still plays a critical role in realising solutions, participatory design displaces the sole expertise and authority of the designer, instead calling for a more cohesive relationship between stakeholders. Morelli suggests that co-design and user participation are required for sustainable product innovation, suggesting "designers will no longer be proponents of a set of product and services, but rather the facilitators of a system of value co-production" (Morelli 2007). This new mode of engagement between designer and end user is fundamental to the successful implementation of social design.

2.3 Design for social innovation

Social impact relates to the capacity to create positive social change on communities and individuals. Designers and engineers have a responsibility to "envision and give form on material and immaterial products that can address human problems on broad scale and contribute to social well-being" (Margolin 2002). In recent years designers have been moving beyond engaging with consumer culture, instead exploring new forms of practice, for example, social innovation. "The sustainable development agendas are providing an opportunity to ask fundamental questions of design itself" (Chick 2012).

In response to these informed narratives, it is evident that designers and engineers must realise the potential of design as an agent of change to make a broader contribution to society, rather than to enhance marketability by influencing consumer behaviour. Product design should be seen as a value adding activity that should extend far beyond aesthetics, usability and manufacturability, towards a model where social impacts and design intervention are the key agendas.

It is evident that "designers can play a significant role as 'shapers' of society' (Tromp et al 2011) through design interventions that encourage behaviour change, and social impact.
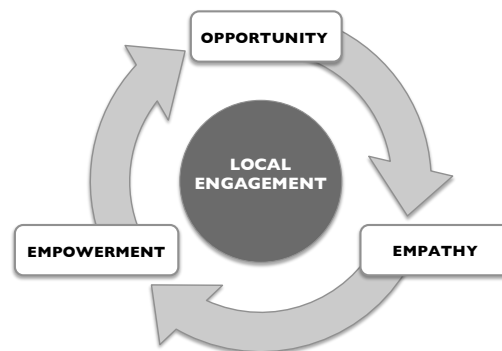

Figure 1: identifying key aspects of design intervention

Figure 1 describes a process for local engagement, highlighting the three core concerns; opportunity, empathy and empowerment. It is necessary for designers and local community to find opportunities for the engagement process, from which understanding, empathy and co-design will emerge. A sharing and collaborative spirit is a fundamental aspect for a healthy society. Successful design interventions are those that result in solutions that empower the end user and their community.

2.4 Design activism

Fuad-Luke *identified 'design activism', an emerging practice where designers are using "the power of design for the greater good."* He defined a practice of 'design thinking, imagination and practice applied knowingly or unknowingly to create a counter-narrative aimed at generating and balancing positive social, institutional, environmental and/or economic change' (Fuad-Luke 2009). In this, he is both advocating a reform of design practice, and the pursuit of social change though the practice of design. Many design agencies are already responding and challenging the design community to respond to global challenges (e.g. openIDEO, DesignthatMatters) and social projects are emerging that advocate a different type of design from a market-driven approach (e.g. Fixperts, Project H Design, DesignthatMatters - refer Section 6.1). These projects provoke new definitions of design practice, placing the designer at the centre of a new paradigm where design is an enabler of societal change.

3   EDUCATING FOR SOCIAL CONSCIENCE

Design has the potential to make a significant contribution to global wellbeing and betterment of societies, yet design education is understandably focussed on graduate employability and industry needs. This can mean curricula that are strong on the skills required to service a consumer-product-service model, but one that neglects the needs of community and society. But if we are to address critical global issues, the next generation of design and engineering graduates will need not only awareness of complex cultural, societal and environmental concerns, but also an embedded ethical philosophy that underpins their professional practice.

The idea that design should be responsive to society and the environment is not a recent concern. In 2008, the 124 design university members of Cumulus, signed the Kyoto Design Declaration, making a commitment to sustainable development and their role "in the further education of our youth within a value system where each of us recognises our global responsibility to build sustainable, human centred, creative societies" (Sotamaa 2009). In doing so, these institutions acknowledged their obligation to future generations to educate a more ethical graduate who understands the need to meet the needs of the present without compromising the needs of future generations.

3.1 The need for a responsive social approach amongst designers and engineers

It is not always apparent that this message is resonating within educational institutions. "The lack of social concern among graduating engineers has led to questions into how the social and technical realms can be more closely linked. Among the many challenges engineers can address, are enabling technologies to benefit developing nations" (Atwater 2013). It is important that social problems are integrated into the curriculum as challenges to emphasise that engineering is not just about technological advance. Instead, students need to understand the appropriate use of technology, so that as graduates they will use their skills and knowledge to deliver cost effective and viable empathetic solutions. To achieve this, curricula will need to incorporate experiential (project-based) learning models that deal explicitly with social issues. It is not sufficient to simply 'lecture' on these issues; students must have the opportunity to develop empathetic engagement skills.

3.2 Collaborating with local communities

Design can effect change and make a strong contribution towards addressing the problems faced by less advantaged communities. There is a strong imperative for curricula to establish empathetic understanding and develop student understanding of their potential contribution to global issues (e.g. Margolin (2002) Morelli (2007), de Vere (2011) and Ramiraz (2011) etc). However, students often lack geographic access to the communities that they seek to assist, with end users only accessible through intermediaries, such as humanitarian aid agencies. This is a significant barrier to user engagement and the participatory design processes that are so meaningful in successful social design.

For social projects to be effective, both in outcome and educational terms, a more local project context is required, where students can directly access target communities and end users (Melles 2011). Working locally within an easily accessible context can help students establish understanding and empathy, whilst directly aiding marginalised groups and individuals within the community.

The Fixperts Educational project (www.fixperts.org) (described below) is an example of a social project that provides an appropriate platform for students to achieve a meaningful social contribution, within a local context. This model allows for user-engagement throughout the design, making, testing and implementation process and creates opportunities for students and their educators to add value to their local communities. Students are able to realise viable design outcomes that deliver an immediate impact, whilst understanding their own potential to make a positive contribution to quality of life. These are important lessons for young designers and engineers.

4   FIXPERTS

Fixperts (fixperts.org) is a creative social campaign and design education project launched in 2012 following the *Power of Making* exhibition at London's Victoria and Albert Museum (Charny 2012), as a platform for designers to engage with their communities; using design intervention to help people with everyday problems. Initially created by Daniel Charny and James Carrigan as a volunteering platform, the Fixperts education framework was then developed by Charny. Fixperts is now managed by the creative consultancy *From Now On,* which has developed the resources and facilitated global

growth. It operates as an open knowledge and expertise sharing resource, with the mission that 'fixing' is a valuable creative and social activity. Fixperts encourages people to use the power of fixing, design and making to help those in need, and uses short documentary films to share solutions and insights and to inspire others to undertake similar projects.

The project involves student designers and their tutors engaging with the local community to identify a person with a genuine problem with the potential for transformational impact. It is an example of 'research in the wild' where students and end users work together to co-design useful solutions.

This is achieved through encouraging creative problem solving, developing empathy, building resilience, working with people with real needs, and promoting open access design.

There is an expectation that the journey from problem to solution will be a shared adventure; inspiring, motivating and sometimes difficult, but always educational and beneficial.

4.1 Global impact network

Since its launch in 2012, the Fixperts network has spread globally with universities in 18 countries now engaged with the Educational Project. The map below shows the global distribution of participants who have contributed more than 250 social innovation projects at the time of writing. This rapid growth is due to the enthusiasm with which design and engineering lecturers have embraced it as a learning tool for engaging students in social design. Whilst some universities such as Kingston and Brunel in London have participated in this initiative shortly after its inception, the network now engages students as far away as China, Poland, Africa, India Israel and Mexico.

Figure 2: The global spread of Fixperts – location of participating universities

This has resulted in a global movement of 'Fixperts', people who practice social innovation and publish their work on an open sharing platform.

4.2 Education project

Design educational environments are a valuable resource of creativity and enthusiasm, and students are willing recipients of product design experience in a real world context. It is for this reason that the education project is at the core of Fixperts. In addition to providing a platform for the dissemination and sharing of 'fixes' and design intervention expertise, Fixperts provides educational guidelines to support design and engineering academics to deliver social design intervention projects.

The project aims to promote social values through design, and create opportunities for students to:
- make a strong connection between design and problem solving,
- experience working in a collaborative team on real world projects at human scale,
- learn to listen, develop empathy and understand the needs of end users,
- see the impact of direct positive application of their creativity and social engagement.

It provides a valuable learning experience and the opportunity for students to make a meaningful contribution within a local context, through engagement and design intervention.

The Fixperts education model of engagement has four main stakeholders:
- *Fixperts* (people who love to make and improve things – the design students),
- *Fix Partner* (a person within the community who has a 'fixing challenge'
- *Master Fixpert* (a tutor directing student process and solutions), and
- *Film Maker* (to document the process and outcome)

The Fixperts process, starts with a community engagement process and culminates with a working design prototype being supplied to the Fix Partner, with the entire engagement, design prototyping and user testing journey documented in a three-minute film which is uploaded to the Fixperts website (http://fixperts.org/fixfilms/). These Fixfilms have been downloaded more than 400,000 times.

4.3 Community engagement

What is a good Fixperts project? Any problem within the local community that requires a design solution is a suitable project for Fixperts, however with the caveat that, within the constraints of student ability and resources, it must be viable and achievable within the project timeframe. Ideally projects should have a measurable impact for the community partner, and the potential for further development and scalability for wider (open source) distribution.

Securing a suitable partner is not without its difficulties. Students are required to reach out into their local community and engage with community support groups, charitable organisations, neighbourhood businesses, and social and sports clubs. This requires students to interact with a diverse demographic, some of whom may have significant disabilities. This can be confronting, and challenging for students. Students must manage the project with diplomacy, whilst deferring to the needs and opinion of the partner, and ensuring an inclusive and respectful decision-making process. The tutors (Master Fixperts) play an important role at this stage in ensuring that students are well briefed to enable a sensitive and empathetic approach, whilst respecting the participants' privacy and confidentiality.

4.4 Process

Fixperts is a collaborative process, not a service. As a one-off design intervention, it is experimental by nature, and initially solutions are likely to be of a temporary nature. The Fix Partner challenges the students' skills and imagination, and in return receives a working prototype, and the knowledge that they have contributed to student development, and helped build a film repository of social innovation.

Students initially undertake an observation of the partner's daily routines to identify problematic or frustrating situations, or issues that they have learnt to ignore or work around. In most instances students use a process not dissimilar to the Social Design Methods Menu (Kimbell and Julier 2012); spending time understanding people's experiences and resources on their own terms, taking methodical steps to analyse and address these with their active participation, storytelling, and developing design solutions based on the way people actually do things in their own context. However, rather than storyboarding, filmmaking provides the project narrative.

4.5 Project examples

Typical Fixperts projects are either supporting or enabling devices, with the focus on making a positive impact in the daily life of the Fix Partner (usually someone with a disability or restrictive medical condition. Solutions tend to be a bespoke design, an innovation or an adaptation of an existing product to improve usability. The outcomes below are a selection of recent assistive designs.

Figure 3. Examples of Fixperts outcomes (left to right): assistive feeding device, a button fastener for arthritis sufferer, and a thumb brace for a sufferer of Ehlers-Danlos Syndrome.

4.6 Outcomes and benefits

The Fixperts education project has significant learning outcomes. The satisfaction of developing and delivering a solution to a real world problem, results in a heightened sense of student achievement. Tutors have observed a subsequent boost in confidence and an emerging enthusiasm for design as an agent for change, rather than just a profession. Fixperts provide the opportunity for students to make a

meaningful contribution to societal wellbeing. An evaluation of Fixperts by the Tavistock Institute Of Human Relations (Tavistock 2016), noted the following benefits in its Theory of Change analysis.

4.6.1 Benefits to Fixperts (students)

Fixperts provides opportunities to develop transferable skills, especially in communication and community engagement. The project allows students to make a clear connection between design and problem solving, experience and understand design at human scale, refine observational and analytical skills, develop story-telling, film making and teamworking skills, and enjoy the positive social impact of their creativity.

4.6.2 Benefits to Fix Partners (those in need)

Project outcomes have facilitated greater independence in the achievement of everyday tasks, and a sense of empowerment in having greater control and choice. Partners also feel pride and increased confidence as a result of having been part of an innovative design team. Projects that are well made and well meant can have significant impact in the lives of the Fix Partner.

4.6.3 Benefits to wider society and creative communities

"This is the first voluntary group I've encountered, that drags Design out of the showroom or gallery, directly to those who actually need these skills now" (Instructables.com).
The Tavistock report notes "Individuals, small businesses, sporting clubs and charitable organisations have experienced design interventions that have resulted in social impact through a beneficial design solution. Fixperts enforces the values of creative problem solving and social good." (Tavistock 2016).

4.6.4 Benefits to educational institutions

The project provides a concise and structured way to develop student skills and introduce them to concepts and values of social and user-centred design. Fixperts also has value in helping the universities fulfil their obligations to their local community, through an engagement process that yeilds positive and beneficial outcomes. There is also value for both staff and students by facilitating learning and comparison by engaging with an international design network.

4.7 Issues and concerns

Some barriers to successful project implementation and outcome realisation have surfaced. Whilst projects are generally successful, it is apparent that the academics and technical staff supporting the projects have a vital role in avoiding potential difficulties to ensure a successful outcome.

4.7.1 Managing expectations

The project develops one-off solutions for a specific individual or group need. Solutions are experimental prototypes and all stakeholders must understand the possible limitations of the final solution. Outcomes may not have the quality of execution or longevity of a manufactured product. It is important that tutors (Master Fixperts) are involved in initial project selection and scoping to ensure that outcomes are realistic, achievable and safe.

4.7.2 Safety

Concerns exist about the safety and durability of prototypes and the public liability issues, and it is therefore critical that the technical and lecturing staff work closely with student teams to ensure safe and appropriate design solutions, especially with regard to Health and Safety repercussions (e.g. stability, structural strength, electrical circuitry, exposure to hazardous environments etc).

4.7.3 Ethics

Fixperts projects must conform to university ethical and safety standards, through staff supervision. Working with children, the elderly and those with disabilities requires sensitivity and empathy. Care must be exercised regard to the ethical implications of filming and publishing films, particularly with regard to respecting individual rights to privacy and the depiction of children. Many institutions require students to undergo ethical training before the start of the project, and participants to sign an *informed consent* form and a photographic release form to allow for internet publication of the film.

4.7.4 Film making

Fixfilms, which are uploaded to Vimeo and linked to the FixFilms website, must exhibit an engaging and compelling documentary style. However students often have no experience in filming and video editing processes, nor storytelling and narrative development. As films utilise video footage, still and time-lapse photography and stop motion animation, with added subtitles, voice over, and musical soundtracks, it is advisable to conduct advance training in filming and video editing techniques.

5 FUTURE DIRECTIONS

In recognition of its achievements, Fixperts, won the 2016 Blueprint Award for Design. Although a relatively young project, Fixperts has quickly established global reach and impact through the Education Project, which engages university-level design and engineering students with their local communities. But there are other avenues for future development and further societal impact.

5.1.1 Schools project

Fixperts ambition is to have the programme taught at every level of education. The organisation is working with an UK examination board on a new science, technology, engineering and maths (STEM) technical qualification, which will see Fixperts projects tested in schools as part of a new technical qualification at GCSE level. This has the potential for widespread social awareness and design impact.

5.1.2 Project scaling and social entrepreneurship

Opportunities exist for the further development and scaling of project outcomes. Whilst some problems and solutions may be unique to a specific user and their environment, there are many commonalities regarding the difficulties people have living with physical disabilities or impairments. It is therefore appropriate that the design solutions be made available as open source designs, in order that many others can benefit from the students' creativity.

An additional consideration is whether support should be found to enable the commercialisation of these designs as specific assistive products.

6 DISCUSSION

NESTA has defined Social Innovation as "innovation that is explicitly for the social and public good." Its Open Book of Social Innovation (Murray 2010), identifies six stages of social innovation:
1. Prompts, inspirations and diagnoses,
2. Proposals and idea,
3. Prototyping and pilots,
4. Sustaining,
5. Scaling and diffusion, and
6. Systemic change.

It would appear that since 2012, Fixperts has moved through Stages 1 to 5 successfully, with a sustained contribution and an increasing global network and reach and impact. It is too early to see systemic change, however a large number of design educators have included the initiative in their curriculum and each year hundreds of new designers engage in Fixperts projects. In addition, the future inclusion of Fixperts projects in the UK National Curricula will see social innovation embedded in tertiary education. This has great potential for future systemic change as the next generation of designers, engineers and school leavers will have a unprecedented level of social awareness and the tools and inclination to make a positive contribution to their communities. Murray (2010) states "systemic innovation is very different from innovation in products or services. It involves changes to concepts and mindsets as well as to economic flows: systems only change when people think and see in new ways." Whilst a relatively young project, it is apparent that Fixperts has the potential to change the mindset of the young participants; this has immense value in driving future systemic change.

6.1 Similar programmes

Fixperts is not the only social project that uses design for social impact. There are many programmes that engage in social innovation or design intervention projects; some of these are discussed below.

6.1.1 Remap (UK)

ReMap custom-makes equipment to help disabled people live more independent lives. This charitable organisation has been running for more than fifty years, with similar social objectives to Fixperts, although limited to disability support. There is no pedagogical programme, instead Remap relies on professional engineers, 'makers', occupational therapists and physiotherapists as volunteers to achieve its objectives. Whilst outcomes are hugely beneficial to the target user, and potentially scalable into assistive products, the reach or impact of ReMap is not as extensive as with an educational project.

6.1.2 Project H Design

The USA-based Project H Design is a team of humanitarian designers engaging locally to improve the quality of life for the socially overlooked. Its programs "teach rigorous design iteration, tinkering, applied arts and sciences, and vocational building skills to give young people the creative, technical, and leadership tools necessary to make positive, long-lasting change in their lives and their communities." Project H Design has three core activities as follows:

- Studio H is an in-school design/build class for 6th-12th grade students who apply their core subject learning to design and build audacious socially transformative projects. It was the subject of the award-winning full-length documentary film, *If You Build It*.
- Girls Garage is a design and building program and dedicated workspace for girls ages 9-13. Integrating design, engineering, serious skills and social justice, it is an after-school and summer program that equips girls with the confidence and tools to build anything they can imagine.
- Unprofessional Development is a teacher education initiative, which brings project-based learning into classrooms through workshops and hands-on learning experiences. It communicates that "making, building and design are pathways to an empathetic, socially just education."

6.1.3 DesignThatMatters

Design that Matters (DtM) is a non-profit design company that collaborates with social entrepreneurs to solve problems in global health for the poor and underserved communities in developing countries. DtM creates new products and services that allow social enterprises in developing countries to offer improved services and scale more quickly. Its collaborative voluntary process uses students, academics and industry professionals, to design new tools to improve healthcare and education in Africa and Asia. Unlike Project H Design or Fixperts, it has no embedded educational program.

6.1.4 Engineers without Borders educational programmes

Engineers Without Borders (EWB) sees engineering as the catalyst for change. For twelve years, it has worked in more than thirty countries on collaborative development projects using engineering to improve lives. The Engineering for People Design Challenge, delivered in partnership with more than 26 global universities, featured on the *New Radicals 2016* list for '*changing the UK for the better*.' The Challenge, which is embedded in undergraduate engineering curricula, provides students with the opportunity to learn and practice the ethical, environmental, social and cultural aspects of engineering design. This initiative is driving systemic change in engineering education. EWB is also involved in Youth Outreach workshops in schools, as part of the STEM Ambassador Programme.

6.1.5 Open IDEO

Other open-innovation platforms such as OpenIDEO, Design21, and DESIS focus on social activism through design, providing a facilitation platform and challenging people to collaborate to develop solutions for societal or environmental issues for the collective social good.
OpenIDEO is a global community that empowers members to collaborate to address global issues. It operates in two core areas; design challenges and chapters. Design Challenges address social issues through a three to five month collaborative design process, whilst OpenIDEO Chapters activate people in more than twenty cities around the world to develop solutions that impact their own communities.

6.1.6 DESIGN 21 Social Design Network

Design 21 aims to inspire social consciousness by connecting people and organisations. It uses an extensive database to link member designers, design organisations and design projects, and provides a forum to help non-profits request design assistance.

7 CONCLUSION

Manzini (2014) talks about the role of designers as facilitators, as triggers for new social conversations, as members of a co-design team, and also as *design activists* proactively launching socially meaning design initiatives. Fixperts is an example of design activism, an initiative that has implications far greater than the local impact of a single design intervention, however beneficial to the targeted user. It has proven to be inspirational and mobilising, encouraging design and engineering students to use knowledge and skills in a meaningful social way; achieving design for social innovation that is "more probable, effective, long-lasting and apt to spread" (Manzini 2014).

The Fixperts Education Project provides students with valuable insights into the potential of design to resolve societal problems and has established an ethical agenda for its global network of participants. It provides a platform for students to have an immediate societal impact through design intervention. For students this is highly motivating and rewarding, and for local communities, highly beneficial.

ACKNOWLEDGMENTS

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