Community Engagement: Unlocking the Potential of Social Entrepreneurship Using Universal Design and Interdisciplinary Teams

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COMMUNITY ENGAGEMENT: UNLOCKING THE POTENTIAL OF SOCIAL ENTRAPRENURESHIP USING UNIVERSAL DESIGN AND INTERDISIPLINARY TEAMS

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ABSTRACT

Background: DIT's Product Design students, Enable Ireland Assistive technology Expert Users, nursing students from Trinity College Dublin and medical design students from Purdue University, USA, were brought together in interdisciplinary teams to solve social barriers using collective skills and principles of universal design. Teams competed to create designs for prize money and to present their design at an Enable Ireland Assistive Technology event hosted in Microsoft.

Aim: This paper aims to describe the background to this interdisciplinary approach to designing with the community, and investigates any occurrence of students demonstrating entrepreneurship qualities.

Methods: A literature search using the key terms "interdisciplinary research" and "Entrepreneurship" revealed relevant sources. These were then used to explore the evidence base beneath events like the community design challenge.

Findings: The authors reflect on students accomplishments and propose instances where the student may have demonstrated an entrepreneurship

quality. Although the total times for the events were 4-6hrs, strong teams were created. This is evident in the student feedback and with the design outcomes. Finally community events such as this design challenge have social benefits, which range from corporate sponsorship to inspiring student projects.

Discussion: Community based Interdisciplinary events have real potential to contribute actively to the disability community in Ireland and can inspire social entrepreneurship.

Introduction:

The school of mechanical and design at Dublin Institute of Technology (DIT) has pioneered an innovative teaching programme which is unique to Irish engineering education. Its Level 8 BSc in Product Design was launched in 2003. A key component of the 4th and final year was the development of a medical design module; within which there is a particular focus on educating students about assistive technology (AT).

This new module was first rolled out in 2007 and was structured to enable students to learn about assistive technology (AT) in an experiential manner by exposure to real life experiences [site visit with disabled participant follow up]. The fundamental concepts of assistive technology (AT) design are delivered over a six week period comprising six hours of small group teaching.

The learning outcome for this portion of the module is the development of an assistive technology (AT) device concept through engaging with the real world of practice (Cook and Hussey 2007). Assistive Technology (AT) is taken in its broadest sense, that is the creation of any device or product that assists with independent living and community engagement. To achieve these learning outcomes, a community engagement project was developed by one DIT lecturer in collaboration with Enable Ireland, Ireland's leading advocacy and support organisation for those living with disability in the community. It was also supported by DIT's Students Learning with Communities Programme (SLWC). Collaboratively a design workshop that brought DIT students and adults with disabilities together was developed. This involves a preliminary two -hour workshop (held at DIT) followed up by a two-hour site visit to Enable Ireland's AT training service; a 2000 word report and students' individual presentations to the disabled participants, Enable Ireland staff and lecturing staff at DIT eleven weeks later.

This module has encouraged and empowered students to develop AT Design concepts; indeed the success of the students' designs has led to the creation of a partnership between DIT, Enable Ireland, and key external organisations, whose aim is to support students to bring their design to fruition. These partnerships include, disabled members of our community, Paralympians, Enable Ireland, British Telecom Ireland, Microsoft Ireland, school of nursing and midwifery Trinity College Dublin, school of biomedical engineering Purdue University, and Leckey (a Northern Ireland based researcher & manufacturer of Assistive Technology).

Community engagement has improved our student engagement and inspired them to participate voluntarily in assistive technology design events. This level of commitment and endeavour has led us to consider whether this innovative approach has also led to students exhibiting entrepreneurship qualities. This paper will now detail instances where it has been deemed that students have demonstrated entrepreneurship qualities.

Method:

Since Ireland entered recession in September 2008, there has been an increasing focus on Entrepreneurship. Mainly due to its associated benefits of economic growth and increased employment (Audretsch, Grilo, & Thurik, 2011). To determine if students who have participated in community engagement exhibited qualities associated with entrepreneurship a literature review was conducted to identify a list of potential entrepreneurship qualities that could be considered firstly in an informal way prior to formal evaluation. An article by Pofeldt (2014) was identified as a seminal article, which described a study of more than 1,000 entrepreneurs which identified a short list of the 10 qualities of highly successful entrepreneurs. These are:

1. **Business Focus:** "*They base decisions on the potential to turn a profit*".
2. **Confidence**: "*They know themselves well and can read others*".

3. **Creative Thinker:** "*They know how to turn an existing product or idea into something even better*".

4. **Delegator:** "*They don't try to do it all*".

5. **Determination:** "*They battle their way through difficult obstacles*".

6. **Independent:** "*They will do whatever it takes to succeed in the business*".

7. **Knowledge-Seeker**: "*They constantly hunt down information that will help them keep the business growing*".

8. **Promoter:** "*They do the best job as spokesperson for the business*".

9. **Relationship-Builder:** "*They have high social intelligence and an ability to build relationships that aid their firm's growth*".

10. *Risk Taker: "They have good instincts when it comes to managing high-risk situations".*

A reflection by the authors compared these 10 qualities to that witnessed in student interactions during community engagement sessions, projects, and in there endeavours after graduation. Some case studies will now be considered, under the heading of each of the 10 leadership qualities that highlight how students demonstrate these skills.


Findings:

The 10 entrepreneurship qualities are outlined below with a brief description of how universal design and community engagement can facilitate students to demonstrate each entrepreneurship quality. Evidence is provided to identify how students are perceived to have demonstrated the key qualities.

1. **Business Focus:** "*They base decisions on the potential to turn a profit*".
   Very often technology for individuals with disability is costly, and this factor, together with a high abandonment rate (due to frustration, or difficulty with use) makes access to products difficult. The idea is that a cost effective design could

be later developed by the students independently at a low cost, either through self-motivation or as a component of post-graduate studies.

Product Design student **Christopher Wallace:**
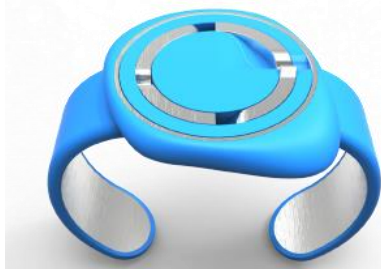
The first Universal Design Grand Challenge (2014) was won by Christopher Wallace from Dublin Institute of Technology for his tactile wristwatch design called 20:20. Christopher walked off with both the Judge's Choice Award and People's Choice Awards

2. **Confidence**: "*They know themselves well and can read others*".

A significant number of students have conducted volunteer work for Enable Ireland. Students have also forged successful design careers within Assistive Technology companies.

Product Design graduate **Michael Torrens**

"Comfee Seat" has won two major awards at this year's Irish Design Institute (IDI) Award ceremony including the coveted Universal Design accolade. Ben shares the success with our Leckey design team. From L-R: Ben Harris; Paul McClean, Textiles Engineer; Michelle Ferguson, Design Engineer; **Michael Torrens**, Product Designer.

3. **Creative Thinker:** "*They know how to turn an existing product or idea into something even better*".

Students realise very quickly that AT devices are not the 'panacea for all ills'. Indeed the challenges of using 'off-the-shelf' generic AT devices becomes

immediately clear, as people with varying degrees of disability experience difficulty adapting to and using these generic devices. Since 2007 product design students have strived to understand the current design issues and create something better, in total there have been over 250 designs.

4. **Delegator:** *"They don't try to do it all".*

In general students very naturally, and without direction share the tasks among the group. Beyond suggesting that students need to break into small groups, limited instruction is provided. Nevertheless students naturally find their way into groups and the delegation process begins. The students are keenly aware that the design and creation of a product is something that could be done by one person. However they are disinclined to do this and this is not something that has occurred over the journey with this endeavour. This is perhaps because of the expectation of group effort, or an unwillingness to take all the responsibility. At the same time the community engagement process challenges the students to do the best they can for the service users so they move beyond the "I" to the "we". Excluding service users from the process might appear emotionally challenging, because, for example to exclude a disabled person from a design that they themselves have contributed to would seem needlessly cruel. In essence the somewhat competitive, selfish behaviour or difficulties with group work that are sometimes witnessed among student-only cohorts does not occur in this context. Delegation to service users, fellow students and new students readily occurs in varying degrees across the teams. Anecdotally it would seem that groups where this works ultimately produce a better product that is potentially a prize winner. This makes sense, because, if one bright engineer took it upon himself to do all the work, without delegating to the team, the spirit of community engagement would be lost and the product, while making engineering sense, may not be fit for purpose.

5. **"Determination:** *"They battle their way through difficult obstacles"*.

   Indeed several students have independently pursued their designs with resultant PhD projects; governmental funding; prizes and media success.

   Product Design graduate **Philip McKeown**

Graduates of assistive technology training course showcase talents

by Business Reporter

GRADUATES of the 2010 Enable Ireland assistive technology training course showcased their innovations in Dublin yesterday.

Philip McKeown displayed his prototype wheelchair which can move from a sitting to a standing position, while Nadine Lattimore devised suitable technologies to enable a young adult with a visual requirement to achieve full independence.

Some 46 students graduated yesterday bringing the number of graduates from the course to 232 after 10 years.

Microsoft Ireland also presented Enable Ireland with a cheque for €57,000.

Culture Minister Mary Harafin said the skills the graduates have acquired open to "a range of opportunities regardless of the path they follow".

"I would like to commend Microsoft and Enable Ireland on the great partnership that they have in place. Together they are helping to raise the level of awareness and use of assistive technology in Ireland and helping us as a nation focus on the potential and abilities that people have rather than focusing on disabilities.

"Congratulations to both organisations on an innovative and effective partnership," she said.

Electronic assistive technology is used by people with disabilities to aid [...] a major supporter of the development of the Assistive Technology Training programme for the past decade," he said.

Chairman of Microsoft Europe Jan Muehlfeit and Culture Minister Mary Harafin met graduate Philip McKeown who displayed his prototype wheelchair which can move from a sitting to a standing position.   Picture: Maxwells

DIT student Mr Philip McKeown showing his assistive technology (AT) prototype to Minister of state Mary Harafin and Jan Muehlfeit (Chairman of Microsoft Europe).

6. **Independent:** *"They will do whatever it takes to succeed in the business"*.

   The student leadership that developed at the project's conception has spearheaded new and exciting developments for this field into the future. Furthermore what started out as a lecturer driven project is now managed jointly by students, disabled partners and Enable Ireland/DIT staff, with all taking an equal place in planning and managing the workshops, but with students and service users clearly leading on the project outputs – the design innovations. This is evidenced not only in practice but by the many collaborative publications arising from the project.

7. **Knowledge-Seeker**: *"They constantly hunt down information that will help them keep the business growing"*.

   The initial event is a one-hour preliminary workshop (held at DIT) followed up by a two-hour site visit to Enable Ireland's AT training service. Students work

independently on the project, and are able to consult with academic staff. At the outset there was an open invitation for further following up visits to the participations at the Enable Ireland site. However, quite spontaneously many of the students took up this offer of visiting with community users, sometimes up to six visits, thus students took on a leadership role within this aspect of the module very early on. This is now common practice within the module and entirely student driven.

8. **Promoter:** *"They do the best job as spokesperson for the business"*.
A student whose assistive technology research, which was conceived through community engagement won the national "Present Around the World" competition organised by the Institute of Engineering and Technology (IET) in 2013.

Product Design graduate Pearl O'Rourke, a PhD student in the DIT School of Manufacturing and Design Engineering, has won the Irish final of the "Present Around the World" competition organised by the Institute of Engineering and Technology (IET). The competition aims to help young engineers globally to develop and improve their presenting skills. It is run on a regional basis, culminating in an international final. Pearl went forward to represent Ireland in the regional final in Malta

9. **Relationship-Builder:** *"They have high social intelligence and an ability to build relationships that aid their firm's growth"*.

Product design students have consistently shown their social intelligence when meeting with users of assistive technology, nursing students from TCD, and medical engineering undergraduates and postgraduates from Purdue University.

10. **Risk Taker: "**They have good instincts when it comes to managing high-risk situations".

Over 250 design concepts have been exhibited to users of assistive technology. Students take two main risks when exhibiting, the first is seeking feedback and the second is that they may be giving their idea away. Additionally, some students have taken on more risk by disseminating their ideas through conferences, television and newspaper media, and competitions.

Conclusion:

The entrepreneurship qualities discussed and the associated student accomplishments detailed by the authors proposes that community engagement can facilitate a student to demonstrate their entrepreneurial qualities.

An article by Gielnik et al (2015) assesses the belief that "entrepreneurial passion drives entrepreneurial effort", this articles main conclusion was that "Entrepreneurs increase their passion when they make significant progress in their venture and when they invest effort out of their own free choice. These points of "make significant progress" and "free choice" are instrumental to this community engagement program. Students in the program can "make significant progress" because all the stakeholders necessary to make informed decisions are present i.e. assistive technology user, Nurses with clinical experience, and assistive technology providers. Product design student are able to exercise "free choice" in selecting and designing their concept/idea, there is no academic feedback on their design thus allowing them to take informed decisions based on their free choice.

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