Technological University Dublin

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Where There Is No Engineer Chapter 06

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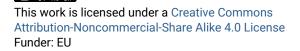*Technological University Dublin*, Sean.Ohogain@tudublin.ie

Recommended Citation

06 – Where There Is No Engineer – Learning Outcomes & Programme Rules

This generation of professionals need to be:

- **Creative and Enterprising**

- **Effective Communicators**

- **Globally Engaged**

- **Active Leaders**

- **Committed to Continuous Learning**

Engineers and associated professionals need an understanding of the effects of complexity, uncertainty, environmental limits, social acceptability, and community participation & accountability within their designs. In addition they need to work in multidisciplinary teams and engage across a broad spectrum of policy, governance and ethical dimensions. This development education initiative contributes to all of the above learning outcomes.

The programme can also contribute to the competencies a young professional needs to acquire to achieve Chartered Status. These are listed by Engineers Ireland as follows:

- Use a combination of general and specialist engineering knowledge and understanding to optimise the application of existing and emerging technology

- Apply appropriate theoretical and practical methods to the analysis and solution of engineering problems.

- Provide technical, commercial, and managerial leadership.

- Use effective communication and interpersonal skills.

- Make a personal commitment to abide by the appropriate code of professional conduct, recognising obligations to society, the profession and the environment.

This design initiative will support a wide spectrum of core curriculum learning outcomes:

- Students will be introduced to the design process and experience what it is to be a professional working on real life practical problems;

- Through the background research required, students will gain an ability to undertake problem identification and to apply knowledge and understanding of basic science and engineering principals;

- By defining the problem statement, students will gain an ability to communicate effectively, not only with engineers but more importantly with the community at large;

- Students will develop a basic awareness of global development issues and approaches to ensuring that basic rights and needs are fulfilled;

- Students will understand the importance of listening, engaging with and respecting local knowledge before proposing solutions;

- Students will have demonstrated an understanding of the need for high ethical standards in the practice of their profession, including the responsibilities of the profession towards people and the environment.

This design initiative will support a wide spectrum of continued professional development (CPD) components including the following:

- Ability to function effectively as an individual and in multi-disciplinary and multi-cultural teams, with the capacity to be a leader, not only to influence but to inspire and manage;

- Ability to undertake continuous and lifelong learning ;

- Ability to think and not learn by heart;

- Display an understanding of theorems and formula not just the application of same;

- Ability to invent and innovate, not to copy, replicate or play it safe.

- Professionals will be challenged to not only acquire skills and facts in relation to global development but will examine their own value base regarding issues such as overseas aid, trade and debt.

- Professionals will carry out a risk assessment for each design to assess the likelihood and probability of risks within their design solution and its impact on local and global development.

6.1 Who can participate?

Undergraduate
Teams are eligible to participate in the "Where There Is No Engineer" undergraduate design initiative on the provision that they:

- Are enrolled in a Level 7, 8 or 9 course in a University or Institute of Technology in Ireland or Northern Ireland.

- Teams must have 2 – 6 members.

- Individuals can also enter provided they can meet the requirements of the project themes and/or design brief.

Professional
Teams are eligible to participate in the "Where There Is No Engineer" professional design initiative on the provision that:

- Postgraduates and professionals can compete in teams either from one or more organisations. Professional teams from one or more companies must nominate a lead organisation.

- Individuals can also participate by combining together and forming a team.

- Each participant must respect the privacy of all participating organisations and communities. All entrants to the competition must acknowledge that ideas and designs entered into the "Where There Is No Engineer" design programme become the right of the programme partner(s) to use. The individual entrants also retain the right to develop their concepts separately.

6.2 What are the categories?

The programme will operate at different categories ranging from undergraduate to postgraduate to professionals. The programme is open to students and professionals across the disciplines of engineering, architecture, urban planning, science, business, social science, arts, media etc. Organisations participating within other development challenges in Ireland and UK may also enter their submissions for consideration in this design initiative.

6.3 How can I participate?

Individual third level Institutes of Technology and Universities will decide how to integrate the programme within their respective modules.

The programme can be run in either semester 1 or semester 2 courses.

Water is pumped from the pan using a treadle pump. JilloDabassa (on left) is just one of the community members who will take their turn to pump water for the benefit of all. The water is carried to water tanks which then gravity feed the irrigation pipes.

Source: Gideon Mendell, Concern, 2012

An introductory lecture at the start of the module can be provided for all participating teams. The aim of this lecture is to provide an introduction to the subject areas, provide a development context for the design initiative and explain how the programme will progress. This can be organised by emailing the programme coordinators. Email contacts can be sourced on the project website (www.wherethereisnoengineer.org). Depending on the individual module, a design review is held with external evaluators organised by EWB / DTC. Final presentations are also reviewed by EWB evaluators. Participating colleges also get access to EWB/DTC educational resources. Each institute may enter an unlimited number of teams into the programme within their institution.

Each academic institute will be responsible for assessing their own teams' submissions and selecting up to a maximum of four team submissions for external judging in the National finals.

6.4 What project area can I choose?

Teams may wish to address a single theme or provide an integrated design solution for two or more of the development themes.

Typical home in Marsabit, Kenya. Due to its high altitude, Marsabit serves as a dry season grazing destination – many animals will have migrated there at this time.

Source: Jennifer O'Gorman, Concern, 2012

6.5 What are the Submission Requirements?

Each University or Institute of Technology may nominate up to four team submissions for external judging. The final submission should take the form of a short written report using the template included in Appendix A, and an A0 poster. This can also be downloaded from our website www.wherethereisnoengineer.org.

Teams are welcome to submit additional supporting material produced over the course of the design initiative (photos, videos, models, laboratory testing etc.). Supporting material should be carefully selected by students and should only be included if it enhances the report reviewer's ability to understand the design proposal.

6.6 Report Review Process

Internal module assessment within respective colleges and the "Where There Is No Engineer" programme assessment are separate processes. The "Where There Is No Engineer"

team will assess student reports purely for the purpose of selecting teams for entry into the National Finals. Individual academic institutes are free to integrate the programme into their own respective evaluation processes.

Report reviewers can be professional engineers, academics, graduate students, returned overseas placement volunteers, development professionals etc.

All submissions will be judged against a common set of criteria and guidelines. These criteria will be outlined on the programme website.

A multidiscipline engineering judging panel will decide upon a short-list of entries in each category.

Final judging will be based upon both the original entry and the presentations.

6.7 National Finals Day

The selected teams / individuals within each category will be invited to participate in the National Finals.

Finalists will be required to make a 10 minute presentation to a panel of judges:

- Judging is a voluntary role

- Judges are selected by the programme co-ordinator who will aim to cover as many different disciplines, professions and backgrounds as possible in order to ensure a fair an efficient judging process.

- Judges assess entrant's presentation on the basis of their content, style and the team or individual's ability to answer questions relating to their proposal.

- Entrants are encouraged to be creative in their presentation content and style - presentations will not be limited to powerpoint.

Further Information:

www.dit.ie/dtc
www.wherethereisnoengineer.org
www.ewb-ireland.org

WHERE

Where There Is No Engineer
Designing for Community Resilience

Creating a Community of Global Professionals

By participating in the program, students and professionals will have the opportunity to:

Design creative solutions to real life development projects.

EWB Ireland

DTC Research Group

Irish Aid
An Roinn Gnóthaí Eachtracha agus Trádála
Department of Foreign Affairs and Trade

SOLID GROUND
A GLOBAL ADVOCACY CAMPAIGN OF HABITAT FOR HUMANITY

European Commission

Habitat for Humanity®