A Culture of 'Universal Empathy' in Design at the Institute of Technology Carlow

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Abstract

This paper discusses the development of a culture of 'Universal Empathy' within Product Design programmes at the Institute of Technology Carlow. The concept draws from the inclusive, holistic nature of Universal Design and its principles together with a deeply human centric and empathic approach to design learning. Focusing on the undergraduate programmes of Industrial Design and Product Design Innovation, it will offer frameworks, case studies and examples of how this culture and ethos is developing.

Universal empathy transcends four years of the undergraduate programmes and it compliments traditional design skills such as sketching, prototyping and technical detailing. It relies on studio and contextual based learning and ultimately trusting in the design processes. From first year this culture is initiated when the seven principles of Universal Design are introduced. These principles are blended with studio based learning using methodologies to understanding human behaviours and projects using basic empathic tools. This embedded understanding of the importance of the user creates a foundation for the development of the culture.

By fourth year, humanistic understanding and empathy are deeply embedded within the design process. The honours degree major projects are a demonstration of an accumulation of empathic learning. A series of frameworks allow learners research chosen areas and explore human centred problems within the area. While engaging with this process the learners start to research plan, conduct field research activity and explore and understand findings. These findings are then synthesised into five potential directions for conceptual development. This project identification process involves a unique framework of identifying real world problems and understanding the narrative around them. Due to the embedded culture of universal empathy these research findings generally embody many of the seven principles of Universal design.

Foreword

Universal Empathy is a methodology used in design education and research at the Institute of Technology Carlow (ITC). It involves holistic engagement with users with empathic understanding of problems leading to the development of creative human centred solutions. This approach has the ability to deliver design solutions that embrace the seven principles of universal design. However universal empathy cannot function in isolation or as a standalone module. Therefore, across the design programmes in ITC there is no specific module titled Universal Empathy. It is embedded within the programme, the philosophy and the methodologies that form the culture, research activities, and creative problem solving in which the design programmes at ITC are grounded.

Historical Context

A culture and philosophy within a programme must be embedded over a sustained period of time. Since 1973, Carlow has delivered undergraduate and postgraduate programmes in Design. Within this time, it has developed a culture of studio and workshop practice based learning. As one of the first Regional Technical Colleges in Ireland in the early 1970's, Carlow R.T.C adopted Design education from its inception. Its purpose in doing so was to fulfil roles identified within the *Mulcahy Report* of 1967 created by a Steering Committee on Technical Education. (Mulcahy, 1967) The Mulcahy report sought for the new Regional Technical Colleges to "…educate for trade and Industry" p.11 and in the case of design education, grow the demand for both "Craft Apprentices" and "Art and Design" (p.14) in Ireland. Another milestone in this period was the government initiative, Kilkenny Design Workshops. Commenced in 1965 following the *Design In Ireland Report*, the Kilkenny Design Workshops sought to grow design and creativity in Irish Industry (Marchant and Addis, 1985). Until the closure of the workshops in 1988, Carlow R.T.C acted as feeder school for graduates, and in later year's designers returned as lecturing staff to Design programmes with similar design philosophies.

Through its lifetime, Carlow's specific remit developed within Industrial design and Product Design Innovation respectively. 2008 saw the establishment of DesignCORE (Design Centre of Research & Enterprise) with a view to 'Humanising Innovation'[1] and spanning both academic and industry research. The culture of universal empathy developed on the undergraduate programmes was used as the driver for strategic development of designCORE. It embodied a Human Centred Design approach and since has developed its disciplinary reach into anthropology and psychology, cognitive understanding, and enquiry into people, behaviours and cultures.

Since the establishment of designCORE, the undergraduate programmes have been enhanced in learning and teaching approach. A stronger focus on a balanced mix of hard and soft skills delivered to the learners was adopted. Traditional hard skills and values of Industrial Design including making, sketching and technical detailing were integrated with soft skills of empathy, objectivity, enquiry and ultimately human understanding.

Creating and Developing a Culture of 'Universal Empathy'

Embedding the importance of the user and reinforcing a culture of Universal Empathy throughout design programmes requires a number of conditions and some key philosophies. The following is a descriptor of these.

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[1] designCORE Strategic Plan 2014-2018

- **Studio Based Learning**: ITC have established, supported and maintained studio based environments. These environments create a base to develop the culture of enquiry and creative exploration through problem and practice based learning. For Product Design this extends to workshop facilities to allow for the acts of three dimensional making and exploration. Studio based learning provides a safe environment to explore through failing and fosters enquiry within a grouping. Research however cannot happen in the isolation of a studio therefore the studio ethos must extend to primary research to garner empathy.
- **Integrated Modules** - In recent years, in line with the Bologna process, Design educators have been required to modularise programmes. However the isolation of modules can be counter intuitive to studio based learning. Projects and research need to be integrated and span across multiple modules with a focus on allowing time to research and in turn achieving universally design outcomes.
- **Supportive Management Structure** - design education needs to be managed with an understanding of the flexibility of the design process.

Adopting Philosophies

- **Allowing Learners Ownership of their work**. From the first year of learning, they are taught to conduct primary research and identify with the significance of findings derived from it. Following primary research learners need to be allowed use intuition, judgment, empathy and creative exploration, together with teamwork and objectivity in appraising design output. This learning approach is therefore both discovery and experiential based (Bruner, 1961, Kolb, 1984). Learners deal with ambiguity and are allowed to explore, discover and experiment creatively within a given problem area.
- **Trusting in the Design Process** is developed within early years of design education. It is apparent early in a learner's development when trust is not applied as they become solution driven without truly understanding the problem. The studio environment creates a safe environment for exploration and development of solutions derived from research.
- **Allowing Time for Research**. "It is important to give research time" (Curran, 2008) is a mantra that was adopted by designCORE in its formative years and subsequently in undergraduate programmes. In contemporary 3rd level education however, having time to immerse within research could be seen as a privilege rather than a right. With current pressures on design education such as financial constraints, staffing and loss of studio based learning; rigorous, deep design research could be under threat. At ITC learners are offered freedom to immerse themselves into environments where certain problem statements exist and freedom to explore and enquire from a humanistic level within that environment.

Fig. 1 Key Research Touch Points

Implementing and Embedding of Universal Empathy

The implementation of a philosophy requires acceptance of and willingness from all staff members delivering on the programme. If isolated to one staff member, there is little chance of it being successfully embedded as a culture. If all staff members across all modules engage with the philosophy, opportunities for implementation naturally increases. Learners engage with universal empathy across all four years of the undergraduate programme. There is an incremental learning curve for learners on how universal empathy is intrinsically linked with the design process. The table below is indicative of this learning curve.

Year	Focus	Activity	Overarching Learning Outcomes
One	**Skills Acquisition**	Learners engage with studio based education through creative problem solving. They achieve this by investigation and experimentation through doing and learning through failure.	• Engage With Empathic Research • Overcome Fears • Begin Trust in the Process • Learn Through Failing
Two	**Skills Application**	In this year learners gain a deeper appreciation of empathy. They develop and further apply their skills of creativity and research through problem based learning.	• Individually driven and integrated empathic research • Development of empathic design solutions
Three	**Design Theory Practice and Reflection**	Learners deal with wider social issues and understand how empathy can have impact on real world problems. They continually apply the skills learned and use reflection to document learning.	• Relevance of empathic research socially & culturally • Testing and assessing universally designed solutions
Four (Hons Degree)	**Synthesis of Learning**	All learned outcomes and skills are synthesised in this year. This accumulates in a major design project which engages with the universal empathy research process.	• Full Engagement and Application of Universal Empathy • Development of Universal Design Solutions

Table 1. Learning outcomes with Universal Empathy in undergraduate design programmes.

Typically learners entering year one of the Design programmes are of differing cohorts of age, abilities, nationalities and social backgrounds. Therefore it is important to start at a universal base to develop core design skills and progress this iteratively through the first year of study. Over four years, projects vary from group research in a controlled environment to deep immersive research. Implementation and embedding of this process is not faultless. Learners can be fearful, self-conscious and embarrassed when engaging with immersive design research. As a result learners need to be managed and reassured of the value and purpose of what they are being instructed to do. Engagement and confidence building in the process is required during the early stages of research.

Case Study 1. First year Universal Empathy Project

Universal Design and empathy are introduced to learners in their first year of study through a studio based design project. This project allows for the introduction of the seven principles of Universal Design. Through the course of the project these principles are blended with contextual learning methodologies to understanding human behaviours.

As part of their *Design Appreciation* module the main social drivers for and the history of Universal Design are explained by discussing concepts of societal inclusion and the rapidly growing ageing population. Empathy is discussed as an approach to designing, while highlighting the importance for designers to empathise with users. This is achieved by designing and developing empathy tools within groups. (e.g. vision impairment glasses, earplugs for hearing impairment, masking tape on hand joints to simulate arthritic conditions Fig. 2) Empathy tools help in developing understanding and empathy prior to creating design solutions.

Each group is assigned one of the seven principles of Universal Design to research in parallel with empathy testing. They are then encouraged to conduct contextual research in real world situations and document these scenarios through photographs and verbal feedback. The objective for the learner is to extract findings based on their research that define and frame a problem that needs to be addressed. Subsequently a phase of conceptualisation occurs where the first design solutions are investigated and the iterative design process begins. Final solutions are articulated through prototypes and tested with the empathy tools developed in the early stages of the project.

Fig.2 Examples of empathy
tools created by learners

Learning Outcomes

This case study allows for multiple learning outcomes in the early stages of studio based learning. A core learning outcome is to understand Universal Design principles and apply these into practice by empathic means. Learners conduct primary research and learn to move outside of their rational boundary to work in context with real situations. Furthermore, learners begin to understand the extremes of human capability through physical ergonomics and cognitive ability. Importantly, this is also the first opportunity for them to begin to understand the role of design in terms of social responsibility.

Universal Empathy in Final Year Projects

In the final year of the honours degree in Product Design Innovation a holistic approach is adopted based on the embed culture created in the previous years. The process to creating good universal design solutions involves a four phase research approach. Contained within these phases are standard design tools of concept development, product architecture, prototyping, testing, design for manufacture and assembly (DFMA) and concept realisation. For the purpose of this paper the focus will be on the research pathway and the development of the project proposal. In ITC learners engage in the research process adhering to the three philosophies of *ownership, trusting in the process* and *allowing time for research.*
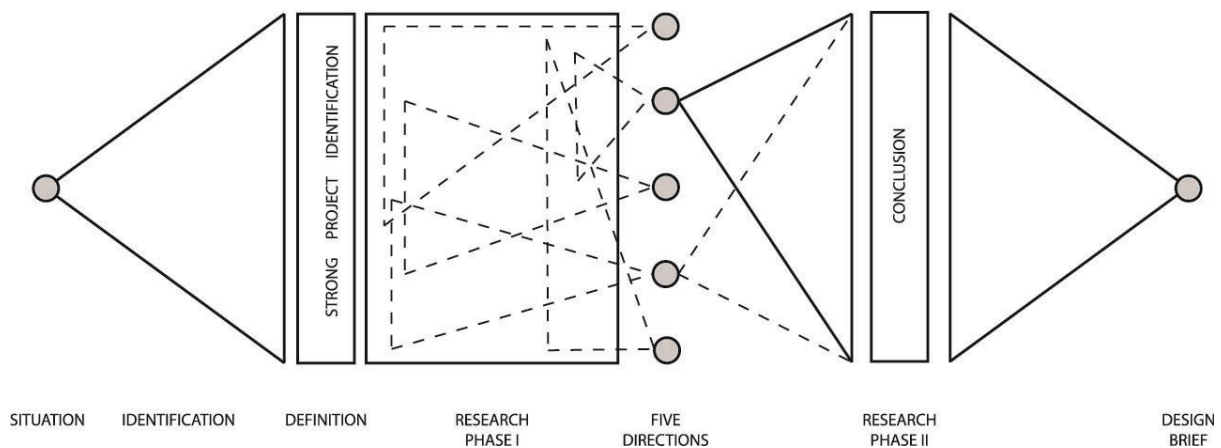
Fig.3 the Research Process

The research process utilised is illustrated through a series of inverted triangles to indicate when focus needs to be broadened or narrowed or aligned with key touch points in the process. This process runs over a three month time frame and aligns with five final year modules.

Situation and Problem Identification

The project selection phase begins at the end of the third year when learners are briefed to consider potential projects over their summer break. They are asked to keep an open and inquisitive mind, looking at social and culturally topical issues, personal interests and opportunities. Key to this briefing is that they are asked not to seek products or solutions for redesign per se, however seek out problem areas. At the commencement of the final year, five problem proposals are submitted. These five proposals are reviewed and synthesised by a selection committee consisting of design staff and the learner group.

Problem Definition

It is important for learners to define the problem area clearly and concisely. To aid this process they are given the problem definition framework (fig. 4) and asked to submit two problem areas. At this juncture there are two viable research projects and the decision as to which one is selected occurs in consultation with student and project supervisors. Awareness of opportunities within the problem area is important at this point however a regular misperception is that a fully defined solution is required. Fear of an unknown process and a misperception of academic expectancy can occur. Therefore there is a need at this early stage for continuous reassurance and guidance together with trust in the process.

Research Plan and Problem Scoping (Research Phase I)

Learners deliver a detailed research plan based around their chosen research problem area. Early secondary research is introduced at this stage to reinforce relevant knowledge needed to conduct meaningful, open and safe research in the chosen area. This may include for example research into stakeholders, language, legislation, ethical considerations and field research opportunities. As part of research planning, learners are asked to propose field research opportunities that will ground them within the context of the problem and stimulate them to engage with the task and the stakeholders.
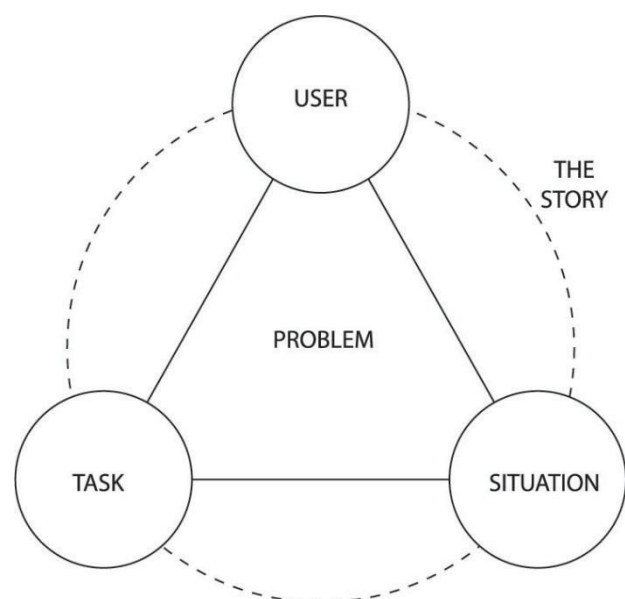

Fig. 4 Problem Definition Framework

From an academic perspective supervisors are required to be flexible and allow time for off campus primary research engagement. The culture that has been instilled in earlier years becomes evident at this point when learners take a human centred approach to their research. At the conclusion of research phase one, there is a presentation deliverable of research findings. This is the first point where focus begins to move to product solutions from problem statements, where understanding of findings are extrapolated. On extrapolation of findings from research phase one there is a requirement to present five project directions. This is another opportunity for the project to expand and identify opportunities in product development. Learners are asked to submit opportunities that range from safe to highly conceptual concepts. This is again achieved, through collaborative discussion with supervisors, and user stakeholders, a final direction is chosen.

Research Phase II

During this phase the project direction is finalised with a focus on immersive research both primary and secondary. There are a number of field trips conducted in this phase combined with initial test rigging to test findings. At the conclusion of this phase, a research report (approx 10,000 words) is submitted, detailing the research undertaken, the methodologies used and the conclusions extrapolated. A design brief is then drawn up by learners and used as the contract for the

development of the design solution. While this research process runs as part of the 'Applied Research & User Centred Design' module it is important to note it is not conducted in isolation. Multiple modules run concurrently and are intrinsically linked to help enhance and compliment, manage and facilitate it.

Case Study 2 Therapeutic Horse Riding Aid (Jack Gregan) - Winner of the Universal Design Grand Challenge 2015

At problem proposal stage Jack Gregan identified an opportunity within the area of equine therapy. Equine therapy is based on contact with a horse's rhythm and movement which is transferred to the rider while the horse is walking. This therapy is currently being used as a treatment of Attention Deficit Hyperactivity Disorder (ADHD), Autism, Cerebral Palsy and Down Syndrome as well as Addiction, Anxiety and Behavioural issues. The physical benefits are an increase in muscle tone, core strength, posture, flexibility and joint movement. The psychological benefits are improvements in self-confidence, responsibility, control, patience and self-discipline.

Through the summer months prior to fourth year, Jack identified a horse riding centre in Co. Wexford that assisted in equine therapy. Despite having no prior knowledge or experience in this area, immersive research in context of the riding centre offered excellent opportunities for empathic research in this area. The connections built at this stage grew after the initial field trip and offered opportunities for further primary and onsite testing.

It was identified through the research phase that there was no specialised equipment available for Therapeutic Horse Riding. Standard riding saddles detached the user from the movement of the horse and bespoke approaches failed to reach on optimum user experience. The key problem identified was the necessity to have the user correctly positioned and supported on the horse, otherwise the therapy is ineffective.

Fig 5. GO therapeutic riding aid designed by Jack Gregan

The GO therapeutic riding aid addressed all these issues and provided a creative and empathic universal design solution for all stakeholders. In this instance patient, therapist and animal.

Conclusion

The concept 'Universal Empathy' draws from the inclusive, holistic nature of Universal Design and its principles together with a deeply human centric and empathic approach to design learning. It transcends four years of the undergraduate programmes and it compliments traditional design skills such as sketching, prototyping and technical detailing.

The development of a culture is initiated when the seven principles of Universal Design are introduced in early years. These principles are blended with studio based learning using methodologies to understanding human behaviours and projects using basic empathic tools. This embedded understanding of the importance of the user creates a foundation for the development of the culture.

By fourth year, humanistic understanding and empathy are deeply embedded within the design process. The honours degree major projects demonstrate an accumulation of empathic learning. The frameworks discussed allow learners engage in research and explore human centred problems within an area. While engaging with this process the learners start to research plan, conduct field research activity, explore and understand findings. These findings are then synthesised into five potential directions for conceptual development. This framework of identifying real world problems and understanding the narrative around them is embedded in a culture of universal empathy and embody many of the seven principles of Universal Design.

Key to the success of this process are learners taking ownership of the project, trusting in the design process and allowing time for research while supported by studio based learning, integrated modular system and a supportive management structure. Through the process of Universal Empathy, tangible Universal Design solutions are achieved.

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