A case-study report on an undergraduate extra-curricular pilot module in Transdisciplinary

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Introduction

21st Century skills development involves a holistic approach to thinking and problem-solving and includes elements such as; collaboration, citizenship, creativity, communication, higher order thinking and global mindedness¹. In alignment with these identified needs, Trinity College, Dublin (TCD) has set a goal to develop graduate attributes along four core pillars. Many of these attributes do not fall within discipline boundaries and an integrated approach to teaching and learning is necessary. An extra-curricular series of workshops (Transdisciplinary Design and Innovation) was piloted in Feb 2017. It was designed to foster an open, creative and collaborative spirit in problem-solving for undergraduate students across all disciplines. It incorporated the pedagogical practice of transdisciplinarity, and, unlike subject-based approaches focusses on changing people's perceptions, exploration of self and the discovery or creation of new knowledge"2. Transdisciplinarity works at a level beyond disciplines and its goal is the understanding of the present world^{3,4}. It is student-led and not prescribed⁵ and it stems from real-life problems or issues raised by students⁶.

Table 1: Transdisciplinary Design and Innovation Module overview: 5, 2 hr session; 10 hours contact time

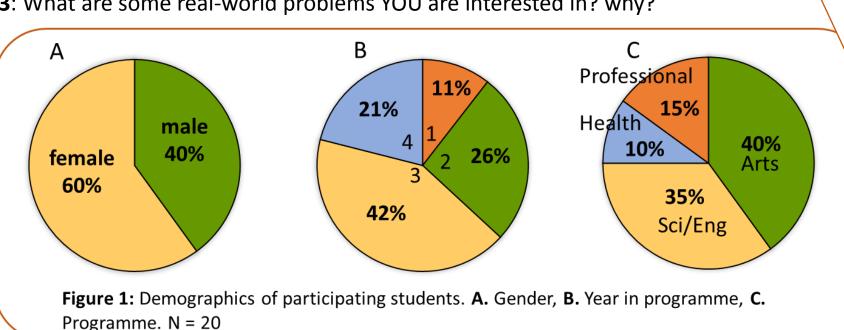
	Workshop 1 – Café	Workshop 2	Workshop 3	Workshops 4 & 5
Theme	Identify	Develop	Understand	Act
Key aim	Introduce students to each other.	Understand and experience effective communication	Recognize 'wicked problems'	Digital skills – coggle.it, Poster design skills Develop collaborative learning skills
Theory	Brief overview - Empathy activity	Dialogue & Communication Design thinking	Creativity, Complexity Wicked Problems Transdisciplinarity	Facilitate thinking process, can the groups get to a transdisciplinary approach?
Plenary and Break-out groups	World Café° Students rotate after each round to mix up groups.	Assign groups. Using a mind map: - Solidify topic - Identify stakeholders	Role play as stakeholder Identify dichotomies and tensions within the issue	Move towards an action that addresses the tension around a dichotomy within the issue Plenary: Groups to share their ideas and get feedback from other groups

° Café questions:

Q1: Identify and discuss a positive learning experience and/or a challenge you have had as a

Q2: Do you think your course should be addressing 'real world' problems? Why/why not If so, how can this be accomplished?

Q3: What are some real-world problems YOU are interested in? why?



Students' identified reasons for taking workshops:

Develop skills in:

- Communication Critical thinking
- Creative thinking
- Analysing Leadership

Team work

Learn about:

- Social responsibility New approaches
- to problem solving Educational diversity

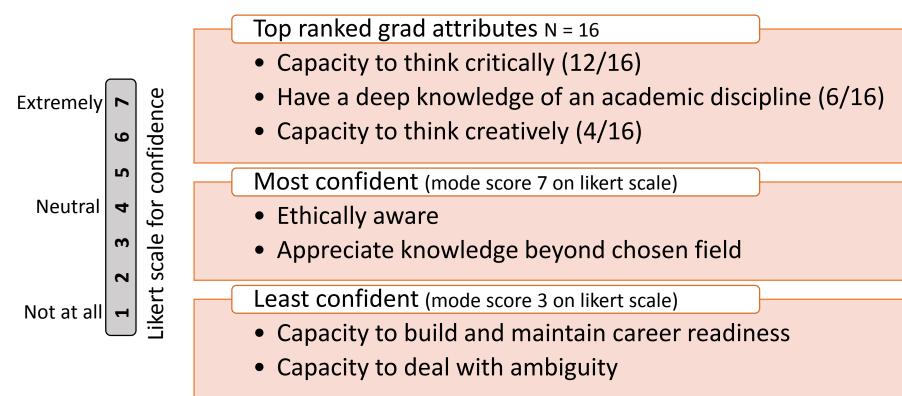
Gain perspective on:

- Own discipline Structuring thought
- How others think and approach problems

Research Methods

- Personal development: Minimise ignorance
- Develop broader ways
- of thinking Become comfortable
- in diversity Change from old patterns of thinking

Students' perceptions of graduate attributes before the workshops



Students' perceptions of graduate attributes after the workshops

Top ranked grad attributes

• no longer any clear attribute identified by all students

Most confident (mode 7 on likert scale)

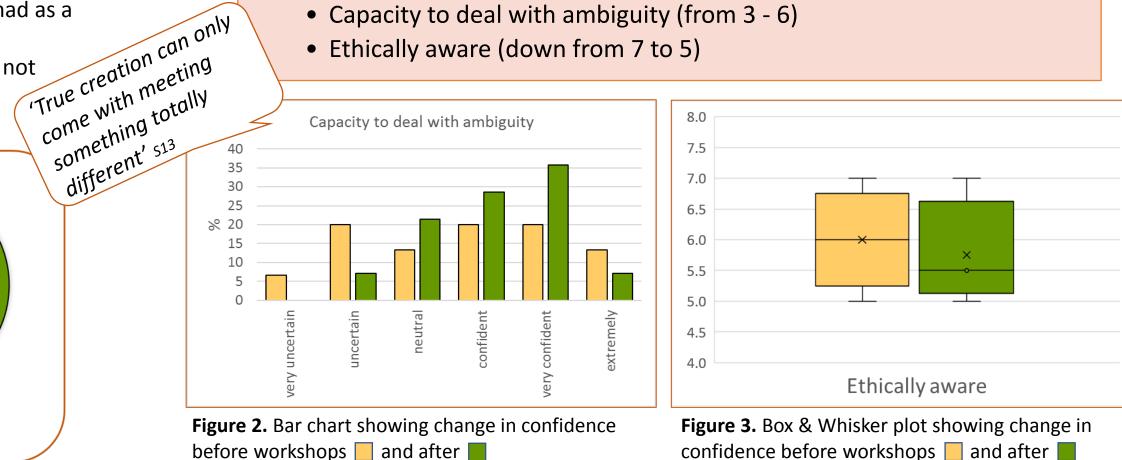
- Appreciate knowledge beyond chosen field (no change)
- Demonstrate a passion for continual learning (from 5)
- Ability to connect with people (from 5.5)
- Has a global perspective (from 5)*
- Uses reflective practice for personal development (from 5)

Least confident

• Capacity to build and maintain career readiness (from 3 - 4)

Other notable changes

- Capacity for independent research (from 5 − 6)**
- Capacity to deal with ambiguity (from 3 6)
- Ethically aware (down from 7 to 5)

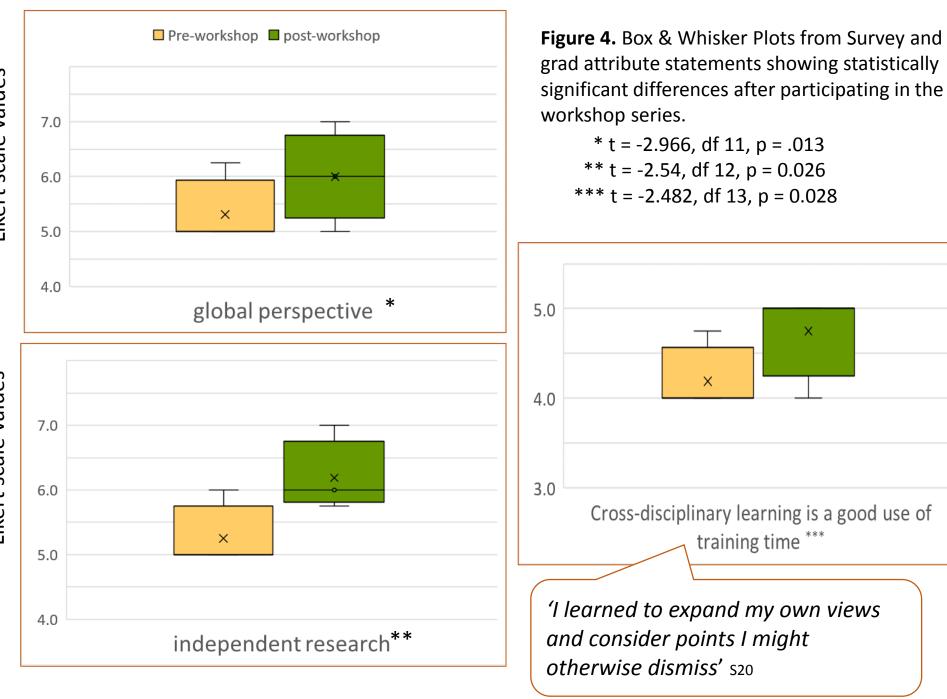


Students were asked to fill in questionnaires at the beginning of workshop 1 and workshop 5. Survey Instruments consisted of modified Interdisciplinary Education Perception Scale (IEPS)⁷ and modified Readiness for Interprofessional Learning Scale (RIPLS)⁸. Chi-squared analysis and paired t-test were conducted where appropriate; significance was determined at 95% (two-tailed).

In addition, students were asked to rank the top 6 graduate attributes in order of importance and score their confidence level in all 23 attributes identified by TCD.

Students were given reflective questions to fill out after workshop 1, 2 and 3.

An exit survey will be conducted after the Trinity Week Showcase Event – April 12.



Summary

A transdisciplinary approach is used in these workshops and even with only 10 hours of contact time, significant changes in students' attitude and approach with regard to crossdisciplinary grad attributes can be observed.

Students' expectations generally fell into two categories; 1. transferable skills for their future careers, especially in the area of collaboration, active listening and communicating and 2. working through wicked problems in a cross-disciplinary way and developing a broader perspective about global issues.

'I hadn't realized the extent to which what we dedicate our time to and study affects our perspective and priorities' s4

'[skills in active listening] will impact upon my practice as a [clinician] by allowing me to respect and understand other clinicians opinions and expertise.' s8

Students have stated they have become more empowered, reflective, self-aware and confident. 'I found myself thinking about the concept of dialogue over the weekend and trying to distinguish conversations I was having.' s9

As one student put it, 'education needs to change's18, another mused, '[I learned] that somewhere in the college people understand that mixing ideas up is important.' \$13

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