

# Effects of a design thinking led learning experience on collaboration, problem-solving and satisfaction in physiotherapy and dietetic students



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## Background

Learning to develop skills in critical thinking, problem-solving, effective communication and collaborative practice are core to contemporary healthcare professional (HCP) curricula to enable the next generation of HCPs to deliver effective evidence-based, person-centred care<sup>1, 2</sup>.

The Design Thinking (DT) process supports the development of skills in critical thinking, problem-solving, collaboration and communication and is consistent with patient-centred care<sup>3</sup>. To the best of our knowledge, the DT approach is yet to be applied in the education experience and curricula of physiotherapists and dietitians.

### Aims

This study aimed to assess the effect of a design thinking learning experience in an authentic ‘real world’ environment on i) physiotherapy and dietetics students’ skills in interprofessional collaboration and social problem-solving and ii) their satisfaction with the learning experience.

## Methods

A single group quasi-experimental study with a pre-test: post-test design. The study was conducted in University College Dublin from September to November 2023. All students involved in the development of a university-wide healthy eating active living campaign (23 MSc in Clinical Nutrition & Dietetics, 23 Professional MSc in Physiotherapy) were invited to participate.

Data were collected using self-administered anonymous questionnaires: the Interprofessional Collaborative Competency Attainment Scale-Revised (ICCAS-R), the Social Problem-Solving Inventory-Revised Short Form (SPSI-R:SF) and a bespoke questionnaire exploring student satisfaction with the experience. For the ICCAS-R and SPSI-R:SF, each item is rated on a 5-point Likert scale with totals calculated for each subscale as well as for a cumulative score. Higher cumulative scores are indicative of a higher level of interprofessional competency and social problem-solving.

The study was approved by the Human Research Ethics Committee-Sciences in UCD (LS-C-23-162-Dervan Low Risk).

## Results

**Ninety one percent (42/46) of students completed the ICCAS-R and SPSI-R:SF**

### Collaboration

| Skill dimensions                       | Pre mean (SD) | Post mean (SD) | Mean difference (SD) | t-test | p*     |
|----------------------------------------|---------------|----------------|----------------------|--------|--------|
| Communication                          | 15.7 (2.2)    | 19.6 (2.2)     | 3.9 (3.5)            | 7.1    | <0.001 |
| Collaboration                          | 9.6 (1.7)     | 12.2 (1.6)     | 2.6 (2.2)            | 7.7    | <0.001 |
| Roles & Responsibilities               | 13.5 (2.1)    | 16.4 (1.8)     | 2.9 (2.2)            | 5.8    | <0.001 |
| Collaborative patient-centred approach | 9.0 (2.1)     | 11.3 (1.9)     | 2.3 (2.5)            | 5.8    | <0.001 |
| Conflict management/ resolution        | 10.1 (2.1)    | 12.5 (1.6)     | 2.4 (2.9)            | 5.3    | <0.001 |
| Team functioning                       | 5.9 (1.3)     | 8.1 (1.4)      | 2.1 (1.9)            | 6.9    | <0.001 |
| ICCAS-R total                          | 63.8 (8.6)    | 79.9 (8.5)     | 16.07 (12.8)         | 8      | <0.001 |

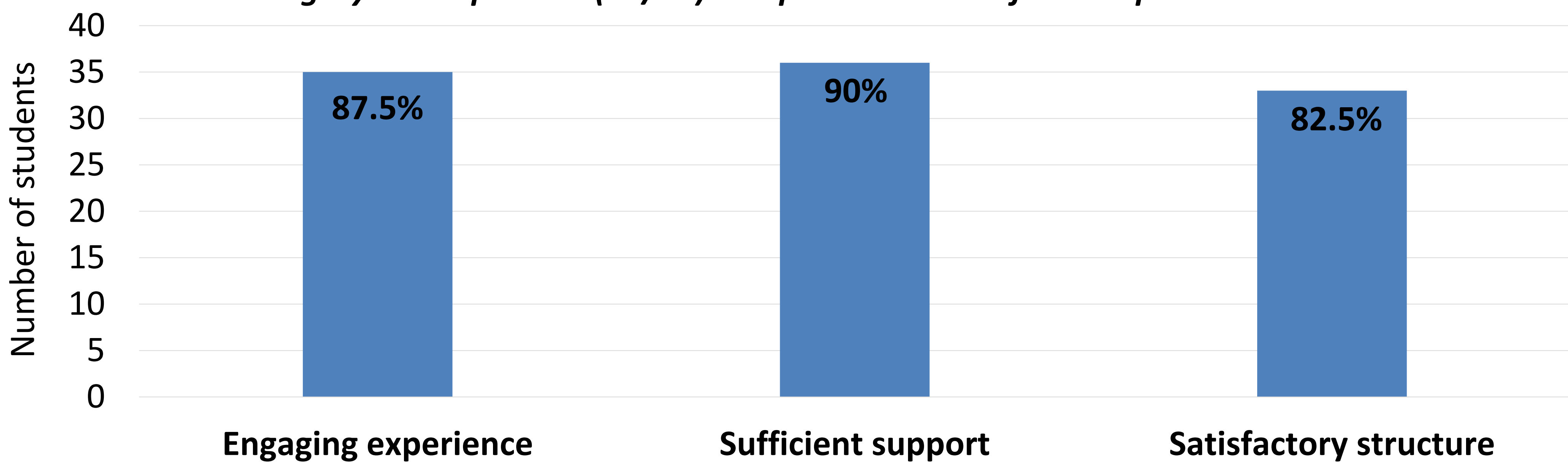
### Social problem-solving

| Skill dimensions               | Pre mean (SD)  | Post mean (SD) | Mean difference (SD) | t-test | P*    |
|--------------------------------|----------------|----------------|----------------------|--------|-------|
| Positive problem orientation   | 100.6 (10.44)  | 103.1 (12.64)  | 2.5 (15.93)          | 1.01   | 0.315 |
| Rational problem-solving       | 95.33 (12.99)  | 100.12 (12.62) | 4.76 (17.69)         | 2.5    | 0.89  |
| Negative problem orientation   | 97.96 (11.71)  | 92.89 (9.18)   | 5.04 (13.01)         | -1.74  | 0.18  |
| Impulsivity-carelessness style | 93.71 (12.53)  | 94.71 (14.29)  | 1 (20.89)            | -0.31  | 0.758 |
| Avoidance style                | 96.42 (10.63)  | 95.5 (12.05)   | 0.83 (17.34)         | 0.378  | 0.757 |
| SPSI-R:SF total                | 102.21 (10.71) | 105.64 (10.53) | 3.49 (14.07)         | 1.58   | 0.122 |

SD=Standard deviation; SPSI-R:SF=Social Problem-Solving Inventory-Revised-Short Form. \*p=significant difference between the groups (p<0.05).

### Experience satisfaction

**Eighty seven percent (40/46) completed the satisfaction questionnaire**



## Conclusions

A DT led approach in an authentic ‘real world’ environment can improve skills in interprofessional collaboration and facilitate an engaging learning experience for dietetics and physiotherapy students. Further work is required to develop and assess the impact of DT on social problem-solving skills.

References: 1. Van de Grift, T.C., Kroeze, R. (2016) Design Thinking as a Tool for Interdisciplinary Education in Health Care. *Acad Med*, 91(9), 1234-8. 2. Cengiz, Z., Gürdarp, Z., Oltuluoglu, H., Aslan, H., Çevik Aktura, S. (2023) Developing nursing students' self-efficacy and problem-solving skills via high-fidelity simulation. *Teaching and Learning in Nursing*, 18(4), 167-173. 3. Huang, C.Y., Tsai, L.Y., Chung, C.H., Shih, F.F., Wang, Y.M. (2023) The effect of design thinking approach in interprofessional education programme of human sexuality course: A quasi-experimental design. *Nurs Open*, 10(2):967-976.