

APPLICATION FORM

SECTION A APPLICANT DETAILS

Please provide details for all investigators

Principal Investigator

Name: John O'Mahony
Address: Department of Surgery, Cork University Hospital, Cork, Ireland.
Institution: University College Cork, Cork (UCC) HSE South, Cork
Job Title: Clinical Lecturer in Surgery (halftime)
Contact phone no: 021 4901528
Email Address: j.omahony@ucc.ie

Co-Investigators

Co-Investigators	Name:	Institution and Email:
1	Michael Leigh	UCC; m.leigh@ucc.ie
2	Noelle Flood	National University of Ireland Galway (NUIG); n.flood@nuig.ie
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Project Title

Association Between Learning Style Preferences and Anatomy Assessment Outcomes in Graduate-Entry and Undergraduate Medical Students

Project Summary (Max 200 words)

An improved understanding of the relationship between anatomy learning performance and approaches to learning can lead to the development of a more tailored approach to delivering anatomy teaching to medical students. This study will investigate the relationship between learning style preferences, as measured by Visual, Aural, Read/write, and Kinesthetic (VARK) inventory style questionnaire and Honey and Mumford's learning style questionnaire (LSQ), and anatomy and clinical skills assessment performance at an Irish medical school. Additionally, mode of entry to medical school [undergraduate/direct-entry (DEM) vs. graduate-entry (GEM)], will be examined in relation to individual learning style, and assessment results. A better understanding of the relationship between anatomy learning performance and approaches to learning has the potential to inform the delivery of course content and the development of a more tailored approach to delivering anatomy teaching to medical students.

Research Question

The question asked by the proposed project is whether there exists a relationship between medical students' preferred learning styles and their preferences for specific teaching-learning methods in anatomy education.

Project Description (Max 800 words)

Please provide brief details of the proposed project under the following sections:

- Background
- Aims and Objectives
- Proposed methods
 - study design & methodology
 - participants, recruitment, inclusion/exclusion criteria
 - data analysis
- Dissemination Plan
- ethical considerations (please state whether formal ethics approval will be sought and where from)

Background:

Learning style may be defined as the complex of characteristic cognitive, affective and physiological characters that serve as relatively stable indicators of how a learner perceives, interacts with and responds to the learning environment (Smith et al., 2001). Educators have, for many years, noticed that some students prefer certain methods of learning more than others. These dispositions, referred to as learning styles, form a student's unique learning preference and aid teachers in the planning of small group and individualized institutions (Jones et al 2010). Therefore, healthcare educators need to be aware of and understand and learning preferences of their students in order to utilize the most effective teaching methods and maximise the student learning experience (Riley et al., 2005). Existing studies have shown that students who employ more active, self-directed experiential learning strategies report greater interest and engagement in anatomy learning activities, as well as demonstrating increased interaction with peers and instructors (Diaz and Woolley, 2015). A better understanding of the relationship between anatomy learning performance and approaches to learning has the potential to inform the delivery of course content and the development of a more tailored approach to delivering anatomy teaching to medical students.

Research aim:

The primary aim of this study is to investigate the relationship between learning style preferences, and both anatomy assessment outcomes at the School of Medicine, University College Cork. The secondary objectives are to examine the relationship between mode of entry to medical school (direct-entry medicine [DEM] vs. graduate-entry medicine [GEM]), and the putative link between learning style and assessment performance during the first year of both undergraduate programmes.

Design:

The proposed study is quantitative in design. Various models of learning styles have been grouped into four general categories: personality models, information processing models, social interaction models, and instructional preference models (Claxton and Murrell, 1987). The current study will be based on a comparison of informational processing and instructional preference models. An example of a learning style instrument based on information processing is Honey and Mumford's Learning Style Questionnaire (LSQ), which is derived from Kolb's experiential learning cycle (Honey and Mumford, 1986). An example of an instructional preference model is the Visual, Aural, Read/write, and Kinesthetic (VARK) model and questionnaire, which is designed to identify the following sensory modalities: Visual (V), Aural (A), Read/write (R), and Kinesthetic (K) (Fleming and Mills, 1992).

Ethics:

This study has ethical approval from the Clinical Research Ethics Committee of the Cork Teaching Hospitals (CREC 4422 – expiry June 2018).

Methods:

All Year 1 DEM and GEM students (n=204) will be administered (a) the 16-item VARK questionnaire, version 7.1 (Fleming, 2011) to determine the VARK learning style preferences of the medical student sample. Based on their responses, students will be grouped as either unimodal (V, A, R, and K), or multimodal based on their learning style preferences. The inventory will also return the strength of preference for each modality of each student, calculated based on the number of question responses associated with that modality; in this way, a student's score for each of the V, A, R, and K modalities can be represented in the numerical range of 0–16 (where 16 indicates that answers given to all questions in the inventory will reflect a preference for that modality); (b) All students will also be administered the Honey and Mumford LSQ (Honey and Mumford, 1986). This 80-item questionnaire consists of statements, where students are requested to indicate whether they agree or disagree with the information presented. In a non-medical learning environment, it has been shown that the LSQ possessed no predictive validity, but strong test–retest reliabilities, over a two-year time period (Kappe et al., 2009). The total percentage results of final summative assessment marks for anatomy modules of GEM and DEM students will be obtained from the central student examination records at the School of Medicine at UCC. All results will be converted into percentages for the purpose of this study, and will be coded categorically based on degree class.

Analysis:

All quantitative data will be summarised as percentages or mean values. Group differences (e.g. mode of entry to medical school, programme year) in relation to continuous measures or categorical data will be examined using appropriate parametric or non-parametric statistical tests. The threshold for statistical significance will be set at $P < 0.05$ and to control for family wise error rate, a Bonferroni adjusted alpha level will be employed. Statistical analyses will be carried out using IBM SPSS [v. 20; IBM SPSS, Armonk, NY].

Dissemination Plan: The results arising from this project will be disseminated as primary scientific and educational literature and presented at conferences and workshops by project team members. These conferences will include the annual INMED meeting, as well as the Annual Meeting of the Anatomists of Ireland. This project will make extensive use of social media, as the results of this project will be of considerable interest not only to the UCC Medical Society but also student societies across medical schools in Ireland. It will also form the basis of a manuscript to be submitted to Anatomical Sciences Education.

Project Budget

Description of Costs	Amount Required €
Two-month subscription to Typeform online survey distribution website	80
Cost of 30 x 10 euro One4All vouchers to incentivise and reward participation in the planned project	300
Statistical support for projects (dedicated biostatistical support based on 15 hours (€40.95/h)	614.25
Total	€994.25

Project timeline/Gantt chart

	03/2017	04/2017	05/2017	06/2017	07/2017	08/2017	09/2017	10/2017	11/2017
Apply for ethical approval: Done									
Part 1: Data Collection									
Part 1: Analyse Data									
Writing and submission of paper									
Conference presentation									