

Centre for Medical Education

Summer Studentship Project Summaries

For studentships commencing on 17th June 2024

Please find below an overview of the summer projects available in the Centre for Medical Education.

There are 13 projects available to choose from, however only 8 will be funded.

Some projects may support more than one student.

Places are allocated competitively.

It is possible to complete some of the projects remotely, however, this is at the discretion of the project supervisor(s).

PROJECT 1: A review of online medical education resources used for revision

Supervisor(s): Dr Kathy Cullen & Dr Vikki O'Neill

Project description:

It is becoming increasingly difficult to navigate the huge volume of online resources available for use in medical education. These resources can vary very widely in their relevance, accuracy and cost. This summer studentship aims to address this issue by compiling a guide to help discern which online resources are most useful to help QUB medical students grow their knowledge and skills, in particular those which offer help in preparing for MCQ and OSCE assessments. The project will involve generating succinct yet informative reviews of each resource, outlining their respective pros and cons, and usability. The guide will be hosted on the portal. There is also the potential to generate brief video demonstrations of the online resources.

Benefits to the student(s):

The student will gain useful new skills in creating educational resources for undergraduate students and staff. The successful student will also have an opportunity to gain skills and experience in interrogating the integrity and quality of online content related to medicine. The student will develop a familiarity with several online learning platforms.

Project duration: 8 weeks

This project could be completed remotely, if requested.

PROJECT 2: Neurodiversity

Supervisor(s): Dr Mairead Corrigan

Project description:

"Neurodiversity describes the idea that people experience and interact with the world around them in many different ways; there is no one "right" way of thinking, learning, and behaving, and differences are not viewed as deficits" (Baume and Freuh, 2023). It helps to promote the view that neurological differences are to be recognised and respected as any other human variation.

This project aims to:

- explore the learning needs of medical students who are neurodiverse;
- identify how students who are neurodiverse can be supported;
- develop information for staff about neurodiversity to enhance understanding.

Benefits to the student(s):

The student will gain experience of writing a protocol so the project can be submitted to the Faculty Research Ethics Committee. They will develop skills in collecting data using focus groups and / or questionnaire. They will develop their creative skills in designing training / resources for staff.

Project duration: 8 weeks

This project could be completed remotely, if requested.

PROJECT 3: Development of Medical Statistics resources

Supervisor(s): Dr Vikki O'Neill

Project description:

The medical curriculum requires students to take some lectures and tutorials in statistics (see, the General Medical Council's Outcomes for Graduates¹). Statistics classes introducing basic data analysis, t-tests and chi-squared tests, are often cited as being anxiety-inducing experiences for students. This project aims to reduce the 'stats fear' through the development of resources, helping student's to engage with the course material and make learning statistics more fun. Resources could include instructional videos, explaining key statistical concepts, explaining how to perform basic statistical analysis, crib sheets to support revision, etc. The project will also aim to develop a bank of statistical based Multiple Choice Questions (MCQs) on Canvas for students.

Benefits to the student(s):

The student will have the opportunity to build upon their existing statistical knowledge through the development of teaching resources. The student will develop knowledge of best practise MCQ writing. The student will also gain knowledge of the statistical software. The student will develop IT and AV skills.

Project duration: 8 weeks

This project could be completed remotely, if requested.

¹ Outcome 26: Newly qualified doctors must be able to apply scientific method and approaches to medical research and integrate these with a range of sources of information used to make decisions for care.

PROJECT 4: Choose Own Ophthalmology Adventure

Supervisor(s): Dr Michael Williams

Project description:

The aim of this project is the creation of a new learning resource: a choose your own adventure style ophthalmology book, with the reader playing the role of a clinician treating patients in an Eye Casualty setting, making decisions and being 'sent' various ways depending on their decisions.

Ophthalmology has a basic core of knowledge, but is best remembered by applying that knowledge to clinical practice. Exposure to clinical practice is part of all medical courses, but is always limited in terms of total time available. It's also usually not possible for student to follow cases from presentation, through decisions being made to outcomes. This project involves creating a resource that gives students a chance to do this, in an interactive, entertaining and informative way.

Benefits to the student(s):

1. Development of clinical and practical ophthalmology knowledge
2. Closely supervised writing practice
3. A concrete and novel output - book, app and/or website - with measurable uptake
4. Learning about dissemination of a learning resource

Project duration: 6 weeks

This project could be completed remotely, if requested.

PROJECT 5: Creation of a Multiple Choice Question Bank based on real patient videos

Supervisor(s): Dr Janet Rogers

Project description:

Speaking Clinically and Virtual GP are archives of recorded patient interviews made available by the Medical Schools Council, with hundreds of patients describing their own experience of illness. Each video helps to convey a patient's perspective of common (and less common) conditions within a healthcare setting.

These provide scope for developing a bank of MCQs for medical students at QUB using a short video clip as part of the stem, from which to develop questions using a Single Best Answer approach and providing immediate feedback in the form of explanation/justification for the correct answer with links back to learning resources. While at one level, this would create a useful collection of MCQs for revision purposes, at a deeper level, juxtaposing questions with a real patient account would better simulate the knowledge retrieval, integration and application that occurs during patient encounters, and provide feedback to students about their current level of competence.

There is also scope within this project to record and edit short videos with patients and /or Simulated Patients to use for as further resources.

Benefits to the student(s):

- Consolidation of existing knowledge and promotion of a broad understanding of clinical practice as it relates to medical students.
- Improved understanding of the nature of Multiple-Choice Examinations within Medicine.
- Development of written communication skills, in providing explanations for correct answers.
- Development of project management and IT skills

Project duration: 4 weeks

This project could be completed remotely, if requested.

PROJECT 6: A SSC on sexual and gender-based violence

Supervisor(s): Dr Mairead Corrigan

Project description:

This project aims to develop a SSC on sexual and gender-based violence to be delivered to third-year students in the autumn semester for the 2024-25 academic year. The student will develop teaching materials. They will recruit guest speakers for the SSC and will liaise with the SSC coordinators and professional support staff.

Benefits to the student(s):

The project will allow the student to enhance their knowledge of the topic. It will develop their teaching and training skills, leadership and teamwork skills. They will connect with relevant third-sector organisations.

Project duration: 8 weeks

This project could be completed remotely, if requested.

PROJECT 7: Diversifying Case Based Learning

Supervisor(s): Dr Mairead Corrigan & Dr Paul Hamilton

Project description:

This project requires two students to review and to develop new CBL cases. One student will be responsible for cases that include patients from minority ethnic groups and the other student will be responsible for cases where patients are from the LGBTQIA+ community.

The students will survey students to identify learning needs. They will organise working groups of students and relevant third sector organisations. They will liaise with relevant academic staff in developing learning outcomes and developing resources and training for facilitators.

Benefits to the student(s):

The students will be contributing to a core element of the curriculum. Through writing the cases students will learn about different clinical conditions. It will provide an opportunity for students to develop leadership skills by organising and chairing working groups. They will contribute to academic discussions about developing cases that feature minoritized groups at conferences and by writing for publication.

Project duration: 8 weeks

This project could be completed remotely, if requested.

PROJECT 8: Mapping QUB resources to the MLA content map

Supervisor(s): Prof Neil Kennedy, Dr Desi Karakitsiou & Ms Fiona Harkin

Project description:

The GMC have produced a content map for the AKT component of the MLA². Many students are using this as a guide to their study and revision. Students are unaware of the excellent resources available already in QUB that are relevant to the map, and some find it challenging to find them in the portal. The student(s) will create a hyperlinked guide to existing QUB and high-quality, free external resources for each clinical condition and presentation mentioned in the map. Resources to be linked will include online textbook chapters, lectures, videos and self-assessment tools such as Capsule or case studies. The guide will be hosted on the portal.

Benefits to the student(s):

The student will learn about resources which may benefit their own study. They will learn IT and presentation skills.

Project duration: 8 weeks

This project could be completed remotely, if requested.

² <https://www.gmc-uk.org/education/medical-licensing-assessment/mla-content-map>

PROJECT 9: Visualising exam techniques through machine learning

Supervisor(s): Dr Vikki O'Neill, Dr Karen Cairns, Dr Helen Oram & Dr Kathy Cullen

Project description:

Computer-based testing has now become an accepted standard testing method, particularly accelerated during the COVID-19 pandemic. By utilising the keystroke information gathered from computer-based testing, valuable insights can be gained into how students interact with both individual questions and assessments as a whole. Keystroke logs identify all of the actions taken by students during an assessment. Selection of items, question order navigation, question bookmarking, and repeated question viewing, are just some examples of the 'actions' which can be recorded.

Graphs frequently allow for the visualisation of relational knowledge between interacting entities. This study aims to identify the best method for graphically visualizing the navigation patterns created during computer-delivered assessments. Graphs also play a useful role in machine learning techniques aimed at making predictions or discovering new patterns. For example, identifying the different behavioural approaches to written assessment papers through ad-hoc discovery and examination of patterns that are not previously considered. Furthermore, through data mining techniques we will discern how student certainty and stress-behaviours can impact exam performance.

By studying the information on different student exam techniques, we can gain important insights into the varying success of these techniques, which will be useful in supporting students in their future exam preparation and learning.

Useful references:

- Cadez, I., Heckerman, D., Meek, C., Smyth, P., & White, S. (2003). Model-based clustering and visualization of navigation patterns on a web site. *Data mining and knowledge discovery*, 7, 399-424.
- Hamilton, W. L. (2020). *Graph representation learning*. Morgan & Claypool Publishers.
- Oram, H., O'Neill, V., Cullen, K., McAleer, J., Sharpe, C., & Galloway, J. (2022). Investigations of candidate behavioural approaches to computer-delivered examination papers using clickstream analysis. In: Association for the Study of Medical Education (ASME): Annual Scientific Meeting

Benefits to the student(s):

The student will gain a deeper understanding of assessment techniques. The student will conduct a literature review of current assessment feedback, particularly feedback based on keystroke data. The student will have the opportunity to write the project up to submit to a conference for presentation +/- abstract publication, which will enhance their CV. The student will be given training in the statistical software R.

Project duration: 8 weeks

This project could be completed remotely, if requested.

PROJECT 10: Candid conversations

Supervisor(s): Dr Mairead Corrigan, Ms Mairead Boohan & Dr Janet Rogers

Project description:

This project aims to develop a virtual community of practice through the sharing of experiences that enable students and staff to learn from each other that will support personal and professional development and a supportive and inclusive learning and working environment that celebrates diversity.

Student and staff stories and experiences will be recorded on video and will be uploaded to the portal. The videos will reflect the diversity of our students and staff, who will volunteer to participate.

Examples of videos may be experiences of:

- minoritized groups with protected characteristics;
- international students and staff;
- students with chronic health conditions;
- plus many more.

Benefits to the student(s):

This project will improve the student's interviewing skills as they will be required to develop questions to guide what participants talk about in the videos. It will provide them with an opportunity to expand their networks with students and staff through recruitment of participants for the videos. They will learn IT skills of videoing and editing. They will have the opportunity to present the project at conferences.

Project duration: 8 weeks

This project could be completed remotely, if requested.

PROJECT 11: Updating CBL resources for Encompass

Supervisor(s): Dr Paul Hamilton

Project description:

Case based learning in years one and two utilises realistic supporting materials to improve authenticity. These are currently designed to mimic the Northern Ireland Electronic Care Record (NIECR). Healthcare records in Northern Ireland are moving to a new platform (called Encompass) in 2024, so there is a need to update our materials into a new format.

Benefits to the student(s):

Learning how to create electronic materials for educational purposes; increasing familiarity with medical data; increasing exposure to electronic health record systems.

Project duration: 8 weeks

This project could be completed remotely, if requested.

PROJECT 12: Delivering ophthalmology in General Practice

Supervisor(s): Dr Michael Williams

Project description:

The new QUB Medical Curriculum, C25, has led to increased curricular time in GP, and less in Ophthalmology. Most medical graduates are not going to be ophthalmologists, but will become GPs, and in that setting will be seeing patients with visual and eye problems. This project will explore whether delivery of ophthalmology teaching in GP and by GPs is feasible and useful.

- what do the stakeholders (GPs, students, ophthalmologists, medical school leaders, patients) think with regard to how to do this: what content would be useful, and what resources are would be most useful to help GPs deliver this?
- creation of a sample of resources
- piloting delivery: assessment of practical and educational impact
- presenting more widely and seeking feedback

Benefits to the student(s):

- Development of ophthalmology and educational knowledge.
- Networking: liaising with a range of healthcare and educational professionals.
- Creation of a new educational resource and opportunity to publicise and disseminate it.
- Contribution to patient care.

Project duration: 6 weeks

This project could be completed remotely, if requested.

PROJECT 13: GMC Practical skills and procedures: creating an up-to-date video repository

Supervisor(s): Dr Michael Trimble, Dr Robin Baker, Dr Andrew Spence, Dr Desi Karakitsiou, Ms Mairead Boohan and Ms Fiona Harkin

Project description:

The GMC's Outcomes for graduates (2018) sets out what newly qualified doctors from all medical schools must know and be able to do. In Practical skills and procedures they outline the core set of practical skills and procedures, and minimum level of performance that newly qualified doctors must have when they start work for the first time so they can practise safely. The Centre for Medical Education is collating a repository of video guides to assist students and their tutors in the learning and teaching of these skills. There are already suitable videos for many of these items but other will need videos to be created. Also, some of the existing videos will need to be updated and replaced. Students undertaking this project will be involved in the creation of new video content.

Benefits to the student(s):

Students will gain knowledge and skills in the production of online learning resources, including video production and editing. They will gain experience in project management. They will be able to reflect on the roles and responsibilities of the university and the GMC in medical education. At the same time, they will acquire a deeper understanding of the skills themselves which will benefit their clinical education.

Project duration: 8 weeks

This project could be completed remotely, if requested.