Foundations in Medical and Health Sciences Education

Contact Information

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Site

Institute of Health Sciences Education (IHSE)

General Information

Foundations in Medical and Health Sciences Education is a non-clinical elective intended for clerkship students in their 3rd or 4th year of the undergraduate medical curriculum at McGill, as well as for residents and fellows at all levels of postgraduate training. Based in the McGill Institute of Health Sciences Education (Lady Meredith House, corner of Peel and Pine), the elective will be offered on an annual basis in Period 6 of the rotation schedule, which generally falls between November-December of the calendar year. We will accommodate a maximum of 12 students per year and seek to ensure wide representation across health professions disciplines and stages of training.

Full-time participation in all course activities is expected. Prior to enrolling, students are asked to obtain permission from their program directors to be excused from any competing training commitments (e.g., clinics, academic half-days, etc.) for the duration of the elective.

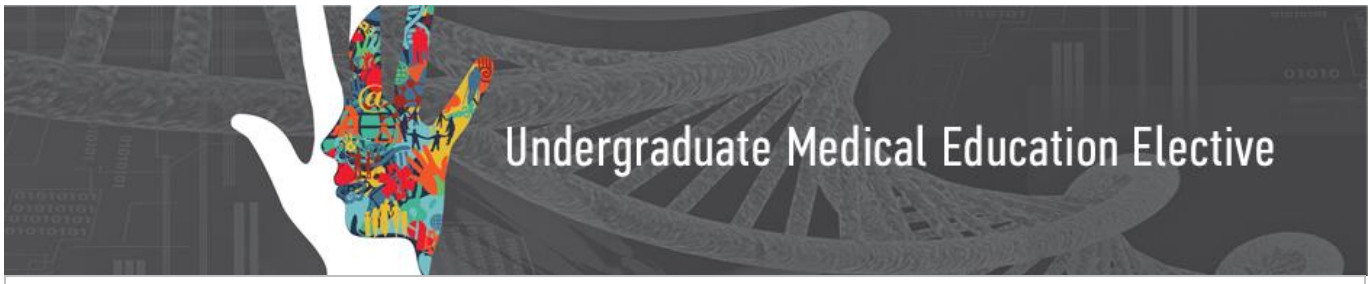
Click here to see what students thought of the course!

Elective Duration

4 weeks

Instructor Information

Course leaders:
Robert Sternszus, MDCM, MA(Ed.), FRCPC
Faculty Member, McGill Institute of Health Sciences Education
Pediatrician, Montreal Children's Hospital



Stuart Lubarsky, MD, MHPE, FRCPC
Faculty Member, McGill Institute of Health Sciences Education
Neurologist, Montreal General Hospital

In addition to the course leaders, various instructors from the IHSE will facilitate small group sessions on selected topics in medical education (see below).

Course Overview

This 4-week immersive elective is intended to expose students and residents to the broad field of health sciences education. Through interactive lectures, group discussions, individual and group projects, and participation in the activities of the Institute of Health Sciences Education and other faculty-led educational initiatives (e.g., faculty development workshops), learners will develop essential knowledge and skills in curriculum design, teaching and learning, assessment, program evaluation, and educational research and scholarship.

For learners wishing to focus chiefly on research in medical education, the Institute of Health Sciences Education offers a separate elective (Scholarship in Medical Education) during which participants will have the opportunity to develop a scholarly project in medical education under the supervision of selected members of the Institute.

Learning Outcomes

By the end of this 4-week elective, participants will be able to:

1. Describe fundamental principles of teaching, learning, assessment, and scholarship in medical and health sciences education.
2. Design a curriculum or educational program related to medical and health sciences education.
3. Transform an idea or problem in medical and health sciences education into a researchable question and conduct a literature review relevant to that question.
4. Present ideas and lead classroom discussions effectively.

Instructional Method

This 4-week project-based course will centre around the creation of a program or curriculum in medical and health sciences education (see Appendix 1). Students will be provided with a few options of programs/curricula that they can work on and will be working in small groups to complete the project (e.g., create a program to teach communication skills to first year medical students). Each week of the course will have project milestones that must be met, and all formal teaching sessions during that week will be designed to help the learners achieve those milestones. Students will present their projects to Institute members during week 4 of the course. Students will also learn how to ask pertinent and answerable research questions in medical and health sciences education, and to apply this skill toward their own curricular designs.

Additional learning activities include:

- Attendance at the Institute meetings and Health Sciences Education rounds
- Direct observations of teaching in different settings (Simulation Centre, lectures at McIntyre, clinical teaching, etc.)
- Participation in faculty-led educational initiatives (e.g., faculty development workshops)
- Suggested readings
- A significant portion of time will be devoted to group and individual work on the two course assignments (see below)

Required Course Materials

None. However, a list of suggested resources is provided in Appendix 2.

Course Content

General themes and topics of the course include:

- Introduction to *Foundations*
- Learning theories
- Curricular mapping and alignment
- Needs assessment
- Writing learning outcomes
- Teaching in simulation environments
- Effective lecturing
- Effective teaching in clinical settings
- Feedback and coaching
- Expertise development in health professions education
- Innovations in health professions education
- Implicit bias, equity and diversity in health professions education
- Teaching and learning in an interprofessional context
- Principles of assessment
- Principles of program evaluation
- Research and scholarship in health sciences education
- Developing a research question

- Methodologies in health sciences education research
- Searching the literature
- Knowledge translation
- Competency-based education

Assessment

For each student, an Elective Assessment Form (EAS) will be completed based on his or her performance in the following areas:

- Group project: Written paper describing their curriculum/program and the educational principles that underlie it
- Group presentation: Presentation of their curriculum/program to the Institute members
- Individual project: Written abstract describing how they have transformed an idea or problem in health sciences education into a researchable question, and how they would address it
- Participation/peer-assessment

Please refer to **Appendix 1** for detailed descriptions of the course assignments.

Course Evaluation

Students in the course will be asked to fill out a course evaluation focused on the overall usefulness of the course, as well as on its individual components, upon completion of the course. We will also seek feedback from students on an informal basis throughout the duration of the course.

Appendix 1 – Assignments

Assignment 1 | Design a curriculum or educational program related to health sciences education (group project)

Along with 3-4 colleagues, you have been chosen to join an Educational Task Force assembled to devise a proposal outlining a new curricular component or educational program intended for implementation in your health sciences school. In your proposal, we will ask you to consider the questions below (which we will address in greater detail through interactive teaching/learning sessions throughout the elective). Bear in mind that we are interested not only in *how* you intend to address these questions, but also in *why* you have chosen to do so in the manner that you have. You will meet with your supervisor on a regular basis throughout the elective to discuss your progress and obtain ongoing feedback on your work.

At the end of the month, your group is expected to submit a final report (maximum length **15 pages**, excluding references and appendices) summarizing the architecture of – and rationale behind – your proposed educational innovation. You will also be asked to present your curricular innovation to the members of the education board who selected you to undertake this important task.

Questions:

1) What are the **needs** that your proposed curricular component or educational program is intended to fulfill?

2) What are the expected student **learning outcomes**?

3) What **content** will be included, and how will it be organized?

4) What **educational strategies** and teaching/learning methods will be adopted?

5) How will achievement of the learning outcomes be **assessed**?

6) How will you know that your curricular component or educational program has been **effective**?

Assignment 2 | Transform an idea or problem in health sciences education into a researchable question (individual project)

Research in health sciences education is often sparked by the observation of a concrete educational problem, phenomenon or conundrum in one's local setting. The investigator's challenge is then to transform ideas spawned by these observations into researchable questions, and to conduct literature reviews relevant to these questions to determine what is already known about the topic. The ultimate goal of health sciences education research is to contribute new knowledge to the field that has applicability beyond the narrow confines of your own educational setting.

In this individual assignment, you are asked to come up with a research idea of your own. It can be aimed at answering a question related to the development, delivery, or evaluation of the curricular component or educational program you are designing for Assignment 1, **or** it can address any other topic of interest to you in health sciences education. At the end of the month, you are expected to submit a **300-word abstract** that includes a **title** and the following contents:

1) A description of the educational **problem, phenomenon** or **conundrum** you are attempting to address

2) A single, concise statement of your **research question or objective**, using SMART criteria and PICO format (where applicable) to guide you

3) A description of the **search strategy** you have employed to elucidate the research gap your question or objective aims to address (note: you are NOT expected to actually carry out the review or summarize the literature in the domain you have selected)

4) A brief description of the **methodology** you intend to employ to answer your research question/objective

5) A description of the broader **implications** of the potential findings from your research

**Examples of completed assignments from previous years will be provided on MyCourses for your reference*

Foundations Reading/Resource List

Learning theories

Ertmer P, Newby TJ (1996). The expert learner: strategic, self-regulated, and reflective. *Instructional Science*, 24, 1-24.

Knowles M. *The Modern Practice of Adult Education: Andragogy Versus Pedagogy*. New York, NY: The Association Press, 1970.

Ormrod J. *Human Learning*, 5th ed. New Jersey: Pearson Education Inc., 2008.

Shambaugh RN, Magliaro SG (1997a). Learning beliefs. In *Mastering the possibilities; a process approach to instructional design* (Chap 3, pp. 2-21). Boston: Allyn & Bacon.

Spencer J, Jordan R (1999). Learner-centered approaches in medical education. *BMJ*, 318: 1280-1283.

Ten Cate O, Snell L, Mann K, Vermunt J (2004). Orienting teaching toward the learning process. *Acad Med*, 79: 219-228.

Torre D, Daley B, Sebastian J, Elnicki M (2006). Overview of current learning theories for medical educators. *Am J Med*, 119 (10): 903-907.

Expertise development

Anders Ericsson K. (2004). Deliberate practice and the acquisition and maintenance of expert performance in medicine and related domains. *Academic Medicine*; 79(10): S70-S81.

Lubarsky S, Dory V, Audétat MC, Custers E, Charlin B. Using script theory to cultivate illness script formation and clinical reasoning in health professions education. Can Med Educ J. 2015 Dec 11;6(2):e61-70.

Schmidt HG, Norman GR, Boshuizen HPA (1990). A cognitive perspective on medical expertise: theory and implications. *Acad Med*; 65 (10): 611-621.

Schmidt HG, Rikers R (1997). How expertise develops in medicine: knowledge encapsulation and illness script formation. *Med Ed*, 41: 1133-1139.

Curricular mapping and alignment

Davis, M., & Harden, R. (2003). Planning and implementing an undergraduate medical curriculum: the lessons learned. *Med Teach*, 25(6): 596-608.

Dent, & R.M. Harden (Eds.), *A Practical Guide for Medical Teachers, 2nd ed*. Edinburgh: Elsevier Limited, 2005.

Posner GJ, Rudnitsky AN (Eds.), *Course design: a guide to curriculum development for teachers* (7th. ed). Boston: Pearson, 2005.

Prideaux D (2003). ABC of learning and teaching in medicine: Curriculum design. *BMJ*; 326: 268-70.

Shambaugh RN, Magliaro SG (1997b). Design tools. In *Mastering the possibilities; a process approach to instructional design* (Chap 3, pp. 22-55). Boston: Allyn & Bacon.

Needs assessment

Ratnapalan S, Hilliard RI. Needs Assessment in Postgraduate Medical Education: A Review. *Med Educ Online*. 2002 Dec;7(1):4542.

Shambaugh RN, Magliaro SG (1997c). Needs assessment. In *Mastering the possibilities; a process approach to instructional design* (Chap 3, pp. 56-88). Boston: Allyn & Bacon.

Writing learning outcomes

"Bloom's Revised Taxonomy": Bloom's Taxonomy | Center for Teaching | Vanderbilt University

Chatterjee D, Corral J. How to Write Well-Defined Learning Objectives. *J Educ Perioper Med*. 2017;19(4):E610. Published 2017 Oct 1.

Implicit bias, equity and diversity in education

Kumagai AK, Jackson B, Razack S. Cutting Close to the Bone: Student Trauma, Free Speech, and Institutional Responsibility in Medical Education. Acad Med. 2017 Mar;92(3):318-323.

Teaching in simulation environments

Fanning RM, Gaba DM. The role of debriefing in simulation-based learning. Simul Healthc. 2007 Summer;2(2):115-25.

Gaba DM. The future vision of simulation in health care. Qual Saf Health Care. 2004 Oct;13 Suppl 1(Suppl 1):i2-10.

Effective lecturing

Steinert Y, Snell L. Interactive lecturing: Strategies for increasing participation in large group presentations. Med Teach 1999; 21 (1): 37-42.

Effective teaching in clinical settings

Aagaard E, Teherani A, Irby DM. Effectiveness of the one-minute preceptor model for diagnosing the patient and the learner: proof of concept. Acad Med. 2004 Jan;79(1):42-9.

Wolpaw TM, Wolpaw DR, Papp KK. SNAPPS: a learner-centered model for outpatient education. Acad Med. 2003 Sep;78(9):893-8.

Schon D. *The Reflective Practitioner: How professionals think in action*. New York: Basic Books, 1983.

Teaching and learning in an interprofessional context

A National Interprofessional Competency Framework (Canadian Interprofessional Health Collaborative [CIHC]): National-Framework.pdf (ipcontherun.ca)

Orchard CA, Curran V, Kabene S. Creating a Culture for Interdisciplinary Collaborative Professional Practice. Med Educ Online. 2005 Dec;10(1):4387.

Feedback and coaching

Burgess A, Mellis C. Feedback and assessment for clinical placements: achieving the right balance. *Adv Med Educ Pract*. 2015;6:373-381.

Landreville J, Cheung W, Frank J, Richardson D. A definition for coaching in medical education. *Can Med Educ J*. 2019;10(4):e109-e110.

Sargeant J, Lockyer JM, Mann K, Armson H, Warren A, Zetkulic M, Soklaridis S, Könings KD, Ross K, Silver I, Holmboe E, Shearer C, Boudreau M. The R2C2 Model in Residency Education: How Does It Foster Coaching and Promote Feedback Use? Acad Med. 2018 Jul;93(7):1055-1063.

Sargeant J, Lockyer J, Mann K, Holmboe E, Silver I, Armson H, Driessen E, MacLeod T, Yen W, Ross K, Power M. Facilitated Reflective Performance Feedback: Developing an Evidence- and Theory-Based Model That Builds Relationship, Explores Reactions and Content, and Coaches for Performance Change (R2C2). Acad Med. 2015 Dec;90(12):1698-706.

Innovations in education

None

Principles of assessment

Cook DA, Beckman T (2006). Current concepts in validity and reliability for psychometric instruments: theory and application. *AJM*, 119: 166.e7-166.e16.

Epstein R (2007). Assessment in Medical Education. *New England Journal of Medicine*, 365(4), 387-396.

Linn RL, Miller DM. *Measurement and Assessment in Teaching.* (9th ed.). New Jersey: Pearson Education Inc., 2005.

Miller, G.E. The assessment of clinical skills/competence/performance. Acad. Med. 1990;65(9):s63–s67. ("Miller's Pyramid")

Pellegrino JW, Chudowsky N, Glaser R (Eds.). Knowing what students know: The science and design of educational assessment. National Academies Press, Washington, DC, 2001.

Van der Vleuten CPM (1996). The assessment of professional competence: developments, research and practical implications. *Adv Health Sci Edu*, 1: 41-67.

Van der Vleuten CPM, Schuwirth LW (2005). Assessing professional competence: From methods to programmes. *Medical Education*; 39:309-317.

Principles of program evaluation

Biggs, J. (2001). The reflective institution: assuring and enhancing the quality of teaching and learning. *Higher Education, 41*, 221-238.

Frye AW, Hemmer PA. Program evaluation models and related theories: AMEE guide no. 67. Med Teach. 2012;34(5):e288-99.

Kirkpatrick, D. L. (1994). Evaluating training programs: the four levels. San Francisco: Berrett-Koehler. ("Kirkpatrick Model")

Wilkes M, Bligh J (1999). Evaluating educational interventions. *BMJ*; 318:1269-72.

Research and scholarship in medical and health sciences education

Bordage G. Conceptual frameworks to illuminate and magnify. Med Educ. 2009 Apr;43(4):312-9.

Boyer, E. L. (1990). Scholarship reconsidered: Priorities of the professoriate. Carnegie Foundation for the Advancement of Teaching.

Ringsted C, Hodges B, Scherpbier A. (2011). 'The research compass': An introduction to research in medical education. *Med Teach*, *AMEE Guide No. 56*, 33: 695–709.

Tekian A, Roberts T, Batty HP, Cook DA, Norcini J. Preparing leaders in health professions education. Med Teach. 2014 Mar;36(3):269-71.

Varpio L, Paradis E, Uijtdehaage S, Young M. The Distinctions Between Theory, Theoretical Framework, and Conceptual Framework. Acad Med. 2020 Jul;95(7):989-994.

Developing a research question

Beckman TJ, Cook DA. Developing scholarly projects in education: a primer for medical teachers. Med Teach. 2007 Mar;29(2-3):210-8.

Young M, LaDonna K, Varpio L, Balmer DF. Focal Length Fluidity: Research Questions in Medical Education Research and Scholarship. Acad Med. 2019 Nov;94 (11S Association of American Medical Colleges Learn Serve Lead: Proceedings of the 58th Annual Research in Medical Education Sessions):S1-S4.

Methodologies in medical and health sciences education research

Grant MJ, Booth A. A typology of reviews: an analysis of 14 review types and associated methodologies. Health Info Libr J. 2009 Jun;26(2):91-108.

Greene, JC. Toward a Methodology of Mixed Methods Social Inquiry, Research in the Schools, 2006, Vol. 13, No.1, 93-98.

Miller, Delbert C., and Neil J. Salkind. *Handbook of Research Design & Social Measurement*. Thousand Oaks, Calif: Sage Publications, 2002.

Searching the literature

Health Sciences Research Basics: Introduction - Health Sciences Research Basics - Guides at McGill Library

Ovid Medline Database Guide: Ovid Database Guide

Knowledge translation

Kaufman DM (2003). ABC of learning and teaching in medicine: Applying educational theory in practice. *BMJ*; 326: 213-16.

Thomas A, D Gruppen L, van der Vleuten C, Chilingaryan G, Amari F, Steinert Y. Use of evidence in health professions education: Attitudes, practices, barriers and supports. Med Teach. 2019 Sep;41(9):1012-1022.

Competence by Design

Competence by design (Royal College of Physicians and Surgeons of Canada): Competence by Design :: The Royal College of Physicians and Surgeons of Canada

Van Melle E, Frank JR, Holmboe ES, Dagnone D, Stockley D, Sherbino J; International Competency-based Medical Education Collaborators. A Core Components Framework for Evaluating Implementation of Competency-Based Medical Education Programs. Acad Med. 2019 Jul;94(7):1002-1009.

Websites

https://www.macpfd.ca/hper-curriculum

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