Shaping research integrity among research postgraduates via a discipline-specific approach to research ethics education

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To go in line with the significant development of research integrity education for postgraduate students around the globe and to uphold the advocacy of responsible conduct of research across the university campus, all research postgraduates (RPgs) of the University of Hong Kong (HKU) must comply with the HKU Policy on Research Integrity. Besides the fulfilment of general ethics requirements as stipulated by the Policy (e.g., seeking ethical approval before data collection, submitting the full dataset by the time of thesis submission), all RPgs are required to attend two compulsory courses related to the realm of research integrity before the confirmation of their candidature. Both courses intend to train them to become technically and analytically competent as well as sensitive to the ethical, legal, social, and environmental implications of their research. The proposed presentation is to report on these two courses, *Thesis Writing* and *Research Ethics*, which are complementary to the intensive formal and informal teaching and mentorship that comes from effective supervision of research and/or research collaboration.

The first compulsory course, *Thesis Writing*, aims to develop RPgs' systematic knowledge of how to write about their research and apply such knowledge to their writing in a professional and ethical manner both within and beyond the course. To achieve this aim, seven topics, each of which conceptualises the writing of a thesis systematically by presenting the expectations, conventions, structure and organisation of a typical thesis in a research discipline, are covered: (a) identification of a research gap and making the gap explicit; (b) the subsequent formulation of a research problem or research questions; (c) acknowledging the work of others and commenting on the literature in the field along with discourse features and language used in reviewing literature; (d) reporting and discussing the writer's own research results as well as findings; (e) the writing of abstracts, introductions and conclusions; (f) the use of verbal signposts and verb tenses across the thesis; and (g) issues of language delicacy, along with citation practices and bibliographic formats. Each lesson in the course is made up of concise input sessions from the teacher, followed by small group discussions of texts which illustrate the learning focus covered in the input sessions. Authentic examples from HKU theses, accompanied by discussion questions, are used to guide students' analysis of texts including structure and language use in a specific section of a thesis. One feature of this course is that it is run in two themes: (1) humanities and related disciplines and (2) sciences and related disciplines. RPgs choose between the two themes according to their research disciplines, and are guided to explore the course topics in relation to their own discipline-specific contexts. They finish the course within four weeks (two 3-hour lessons per week) and complete a portfolio consisting of a literature review and a critique related to their research area. At the end of the course, it is expected that RPgs' awareness of the various skills at different stages of writing a thesis will be enhanced and they will be able to move forward in their thesis writing systematically and ethically.

The other compulsory course, *Research Ethics*, which lasts for 12 hours, reinforces the importance that the University places on the preservation of the values and principles of re-

search integrity in all research conducted at the university. It is offered to research postgraduates of different faculties via five broad disciplines: (1) Faculties of Business & Economics, Education, Law and Social Sciences, (2) Li Ka Shing Faculty of Medicine and Faculty of Dentistry, (3) Faculties of Arts and Architecture, (4) Faculty of Engineering, and (5) Faculty of Science. The topics and the corresponding teaching foci/approaches thus vary according to the discipline concerned, as shown in the table below:

Disciplines	Topics/ teaching foci/approaches
Business & Economics, Education, Law and Social Sciences	issues of authorship, mentoring, and professional ethics for academics in the university, the conduct of human-subject research, with a particular focus on survey, ethnographic, archival, and qualitative research
Arts and Architecture	major texts, tenets, and topics pertinent to conducting ethical research in the creative academic disciplines, such as arts, humanities and architectures
Medicine and Dentistry	the conduct of clinical research (i.e., pharmaceutical and medical device trials, epidemiological studies, and the concepts of good clinical practice and clinical equipoise)
Engineering (and technology education)	good engineering practice, laboratory safety, human subjects research protections, conflicts of interest and good scientific conduct
Science	the conduct of basic science research in a laboratory setting, the standards of good laboratory practice and laboratory safety from the perspective of an ethical commitment

Through succinct lectures and in-class case-based discussions, RPgs will acquire essential vocabulary, principles, and practices conducive to the promotion of research integrity in general and in their relevant disciplines. They will also encounter terminology, texts, and tenets that relate to good conduct in the teaching and research professions. By the end of the course, they are required to complete a web-based learning programme on research integrity and a case study showing their understanding and application of the core concepts/principles of research integrity in their discipline. It is hoped that the students will be able to apply principles of responsible conduct to different stages of their research project and critically evaluate their own and others' research practices in terms of potential risks and benefits.

A number of measures have been adopted to strengthen the two compulsory courses so as to establish a closer connection between the courses and the research disciplines of the postgraduates. Those measures target at the course nature/structure, the design of course materials and activities, the involvement of faculty teachers, faculty deans and the University Librarian, and the use of an internet-based plagiarism detection service and a research ethics and compliance training programme. The presentation will elaborate on these measures adopted so far, as well as their effectiveness, and highlight the challenges in running courses on research integrity in a discipline-specific manner. Ways to tackle these challenges will also be discussed during the presentation.

Keywords: research integrity education, discipline-specific approach.