EDITORIAL:

Undergraduate Research, Scholarship, and Creative Inquiry

Guest Editors: Anisa Vahed[1], Helen Walkington[2], Jenny Olin Shanahan[3] and Sibusiso Moyo[4]

Editorial Note

Academic and professional practice development is taking an ever-more dominant role in higher education and is evolving through undergraduate research, scholarship, and creative inquiry (URSCI) in the undergraduate curriculum, particularly in courses involving interdisciplinary and multidisciplinary modules/subjects. Such courses are critical to engaging students in more meaningful and deeper learning experiences and enabling them to experience real-world issues, all while developing various disciplinary and professional skills as part of both a specific content area and more general competencies.

By developing and enhancing URSCI skills, graduates from higher education institutions gain the agility to adapt to changes in the world. Inter- and multi-disciplinary approaches are required to tackle global challenges such as climate change, food security, and public health. Such engagements and experiences are particularly important as employers increasingly expect graduates to have higher-order literacies and communication skills in addition to their discipline-specific knowledge. This special issue, therefore, presents original work and nuanced ways that faculties around the world actively engage students in URSCI. It comprises the following topics:

1. Analysing inquiry-, problem-, project-, or practice-based teaching and learning practices as well as design thinking methods used to facilitate research-like learning experiences among students.
2. Mapping the trajectories of curriculum design and development in promoting URSCI, particularly inter-disciplinary and multi-disciplinary modules/subjects.
3. Reviewing institutional enablements and constraints of implementing research in the undergraduate curriculum.

Through these perspectives, the special issue aims to deepen understanding of the complexities and dynamics of URSCI, and the implications for both higher education and the profession.

We start with **McKenna and Boughey's** article, which draws from the field of Sociology of Knowledge to identify the challenges of introducing research in the undergraduate curriculum and then to guide students in 'being' researchers who produce, not just reproduce knowledge. **Serekoane and Agumba** undertake a similar idea about students shifting their self-concepts from recipients to creators of knowledge. Their article explains how they employed inquiry-based and reflexive pedagogies to foster 'research-minded' learning. With a foundation in Freire's notion of *critical pedagogy* and the elements of high-impact educational practices, they lead students through structured inquiry in the first year, guided inquiry during the second year, and open inquiry in the third year.

Ngubane, Hay, and Jacob explore how undergraduate research contributes to graduate attributes. Their article focuses on engineering students and confirms the role of research experiences in motivating students to engage in postgraduate study. Their novel model integrates industry experts as stakeholders and broadens the expected range of potential outputs from undergraduate research to include business ideas. In a related approach, **Perrin and Sun** describe an educational model entitled Syntegrative Education, which creates an industry-orientated ecosystem that embraces learning, research, innovation, entrepreneurship, and social interaction to ensure graduates are future-ready with entrepreneurial graduate attributes. Their case study provides useful insights into how students are introduced to research

[1]Durban University of Technology (South Africa), anisav@dut.ac.za
[2]Oxford Brookes University (United Kingdom), hwalkington@brookes.ac.uk
[3]Bridgewater State University (United States of America), Jenny.Shanahan@bridgew.edu
[4]Stellenbosch University (South Africa), smoyo@sun.ac.za

and inquiry-based learning through real-life problems, proposed and initiated by industry leaders, who in turn work as mentors for students alongside academics.

A personalised and detailed account of mentoring undergraduates at four different institutions is provided by **Mojica.** Despite the differences in each institutional setup, the author argues that the objectives of mentoring students in undergraduate research remained constant: to enable students to access knowledge and acquire research skills while developing their own identities as scientists. The author supports having postdoctoral fellows and graduate students act as additional mentors as they too develop in their future academic careers.

Amplifying the value of industry engagements in URSCI, **Naicker and Singh's** article describes industry-based research opportunities for students in food science courses. Their findings draw out the student voice in relation to authentic research assignments. The authors also identify challenges with research literacy resulting from the need for earlier research exposure for students. They highlight the important role of institutional support in designing further research opportunities. Providing a different perspective on how institutions can support undergraduate research, **Eaton, Richardson, and Schmidt** make the case for course-based undergraduate research experiences (CUREs) to be embedded early in the student learning experience in order to provide equitable opportunities for all students. The authors break down the ways in which CUREs can be included in the curriculum from a small scale within a session class to an entire course. They outline two fascinating CURE projects in depth and their potential to enhance more independent learning through research for undergraduates. In the same vein, **Rulfs, Roberts, Buckholt and Whitefleet-Smith** trace the evolution of the design of their institutional laboratory-based curriculum, predominantly in biosciences, to enable discovery-based learning and authentic research. The transformation in student responses to their research experiences as they progressed through the research process and their journey to becoming scientists encouraged the authors to think about ways in which more modes of laboratory research at the undergraduate level could be interdisciplinary, particularly in granting students a greater sense of purpose**.** This finding about 'purpose' resonates with Walkington and Ommering's (2022) recent paper in *Studies in Higher Education,* 'How does engaging in authentic research at undergraduate level contribute to student well-being?', in which a sense of purpose was shown to fulfil a psychological need for learners.

Analogous to Perrin and Sun providing novel ways of developing the curriculum to promote undergraduate research, **Pillay and Govender** report on two South African universities utilising undergraduate research in the curriculum to promote and mainstream the United Nations' Sustainable Development Goals (UNSDGs). Their study examines the effects on first-year students who researched UNSDG 11: Sustainable Cities and Communities. The authors found that students not only developed valuable research skills and motivation for future research opportunities, but also a sense of environmental stewardship and positive career aspirations.

From a pedagogical perspective, **Reddy** details how problem-based learning (PBL) using groupwork engages undergraduate students in research methodology. She reports that while students appreciated sharing ideas and workloads, the "free-riding" phenomenon prevailed, which threatened collaborative learning within a group. Although peer assessment and assessment of individual contributions were frequently used to overcome this, the author asserts that the phenomenon needs to be evaluated further in an intervention study. **Dongwe and Zulu** also write about pedagogy, as they reflect on how the COVID-19 lockdown and the sudden move from face-to-face to online instruction posed particular challenges for those teaching course-based undergraduate research experiences. Their study uses auto-ethnographic reflections and other qualitative data to analyse the success of an unanticipated, but abruptly necessary, online research module. A Community of Inquiry framework proved to be an effective means of communicating the instructor's cognitive, teaching, and social 'presence' when compassionate pedagogy was needed more than ever.

Etbaigha, Bayat, and Moloi address decoloniality in URSCI. Their article highlights the Language Portrait (LP) research tool as a creative inquiry resource for undergraduate students embarking on a scholarly journey to discover and potentially decolonise their subjectivities. The authors argue that the coloniality of English in the South African context has undermined subaltern students' scholarly knowledge-production and contribution, ways of thinking, and how they value themselves outside accepted western norms as embodied in the English language. Using LP enabled the authors' students to pragmatically approach English as a tool to negotiate the world without being bound by it, and to use Arabic as a resource

to imagine a different world. This small decolonial step activated through LP calls for further research in the teaching of subaltern and indigenous languages.

Finally, the editors of this special issue, Anisa Vahed *(Durban University of Technology, South Africa)*, Helen Walkington *(Oxford Brookes University, United Kingdom)*, Jenny Olin Shanahan *(Bridgewater State University, United States of America)*, and Sibusiso Moyo *(Stellenbosch University, South Africa)*, take this opportunity to thank the peer reviewers in generously giving their time and expertise, the editorial and production team for their continued excellence, and the contributing authors for their conscientiousness in keeping to deadlines despite their challenges. We hope that you enjoy this special issue as much as we enjoyed working on the project. Happy reading.