

Interdisciplinary enquiry into learning and teaching: lessons from geography

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Abstract

In this chapter we explore how research in the discipline of geography can help you to undertake productive enquiry into learning and teaching in higher education. We outline the characteristics that geographers in higher education possess and highlight how these relate to the broad and synthetic nature of research in the discipline. Rooted within its interdisciplinary imperative, educational enquiry in geography spans subject matter and approaches found across the spectrum of the humanities, and the social and natural sciences. We present four case studies of enquiry into teaching and learning carried out by geographers, selected to demonstrate analogies between disciplinary and educational enquiry across the research process. These examples highlight the range of questions that have been posed, the types of concepts in learning and teaching that geographers have engaged with, and the breadth of methodological approaches they have employed. We define the steps you might take if you wish to adopt new ways of researching your teaching and student learning. We finish by reflecting on some of the benefits of adopting a geography-specific approach to higher education enquiry.

Key words: interdisciplinary enquiry; signature pedagogy; threshold concepts; students as researchers; partnership learning.

Learning outcomes

By the conclusion of this chapter it is anticipated that you will:

- Appreciate the wealth of approaches that geographers can contribute to research into learning and teaching in higher education;
- Be able to identify the questions, methodologies and findings from typical research in learning and teaching undertaken by geographers;
- Understand how your own teaching context might provide avenues for educational enquiry; and
- Be aware of the publication outlets available for research into geography learning and teaching, in order to share your work at an appropriate level.

Introduction

'Geography is not like most disciplines. It is not the province of a small band of experts. It is something much broader, older and diverse.'

(Bonnett, 2012: 41)

The Royal Geographical Society (with the Institute of British Geographers) defines geography as 'the study of Earth's landscapes, peoples, places and environments' (www.rgs.org). This definition highlights the immense breadth of the subject. Geography is a 'dynamic, diverse, all-encompassing discipline' (Crane, 2016: 296), which bridges the social sciences (human geography) and the natural sciences (physical geography). While human geographers attempt to understand dynamic cultures, societies and economies, physical geographers examine changing physical landscapes and the environment. As such, geographers persistently breach their porous disciplinary boundaries to work with cognate disciplines such as sociology (cultural geographers) and ecology (biogeographers). Both individually and collectively, geographers adopt diverse ways of thinking, knowing and doing and this stands them in good stead for considering modes of enquiry appropriate for educational problems.

In this chapter we advocate that, as a geographer with a distinctive set of competencies, you are well equipped to engage in the scholarship of teaching and learning as defined by Cambridge (2001: 3):

*'problem-posing about an issue of teaching or learning, **study of the problem through methods appropriate to disciplinary epistemologies**, application of results to practice, communication of results, self-reflection, and peer review.'*

Your familiar disciplinary knowledge, understanding and skills provide a foundation of resources to help you frame and systematically investigate questions related to the enhancement of student learning. As you may be aware, there is a wealth of literature about learning and teaching in geography, and you may already be taking a scholarly approach to understanding your students' learning and enhancing your own teaching. Referring to the existing generic and discipline-specific literature on higher education and embracing a healthy dialogue with educational scholars will enable you to move towards educational research, where knowledge is made public and legitimated by those beyond your immediate context (Ashwin & Trigwell, 2004). If you embrace this approach you can join the growing number of geographers who are shaping higher education and expanding our understanding of learning and teaching, personally and collegially, within the discipline and more widely.

We begin this chapter by outlining the characteristics you possess as a geographer in higher education, highlighting how these shape your engagement with the research process. We identify how you can draw upon your disciplinary mode of research to undertake productive enquiry into learning and teaching in higher education, in order to enhance your practice and that of your colleagues. To do this, we present case studies, allowing you to learn from the experience of geographers who are established in undertaking and publishing such research. These case studies have been selected purposefully to highlight the distinctive nature and range of educational enquiry that has been undertaken by geographers around the world, and to demonstrate analogies between disciplinary and educational enquiry across the research process. Finally, we highlight the steps you might take if you wish to move beyond your immediate zones of expertise (and comfort) to adopt new ways of researching your teaching and student learning. We conclude the chapter by reflecting on some of the benefits of adopting a geography-specific approach to higher education enquiry.

The nature of geographers and their relationship with research

Geographers in higher education possess recognisable characteristics, each with implications for the style of educational research they may carry out, and these are considered in turn in this section. These characteristics include: being reflexive about the discipline; appreciating and, where appropriate, adopting an interdisciplinary mind-set; and considering a variety of sometimes multiple methodological approaches to research, stemming from a variety of ontological positions, which together highlight the complex relationship of the researcher to knowledge. Focussing on core concepts such as place and identity, geographers can use their disciplinary research approaches to think about diverse educational spaces, and learning and teaching practices. Given these plural characteristics of geographers in higher education, it is perhaps not surprising that they often apply their research skills beyond thematic areas of the discipline to seek answers to pedagogic questions.

One of the key characteristics of geographers relevant to this chapter is that they develop a **reflexive mind-set**. They are open to critically examining the discipline's development across a range of different contexts, using this understanding to shape the discipline and resulting in a plurality of knowledge production and academic practices (Sidaway & Johnston, 2007; Castree, 2011; Erikson, 2012; Dyer *et al.*, 2016) (Case Study 2). Geographers, therefore, are at home with the notion of enquiring into their own practice and using the outcomes of this enquiry for enhancement and development. Through their reflexivity, geographers have brought questions concerning higher education enquiry into mainstream discussions in the discipline, particularly in relation to its signature pedagogy (Shulman, 2005) of fieldwork (Case Study 1), but also more broadly with respect

to learning and teaching (Case Studies 2-4). This helps to explain why educational enquiry is clearly viewed as a sub-set of disciplinary research by many geographers, not only as a means to enhance their disciplinary practice, but to advance the discipline per se.

Aligned with this reflexivity, Skole (2004: 739) notes that geography is the 'pre-eminent **interdisciplinary** environmental discipline'. This is partly because many academic geographers come from different disciplinary backgrounds and they are content as a consequence to embrace disciplinary diversity, synthesizing approaches and methods from multiple domains, whilst being mindful of how these build upon and work with their own disciplinary epistemes. Geography's interdisciplinarity, as it were, is partly explained by its intradisciplinarity. In addition, geographers do not comprise a single academic community with strong internal coherence, but form interdisciplinary conglomerates of separate communities working with and writing for a range of audiences (Johnston, 2003). As the 'world discipline', with vast intellectual and practical reach (Bonnett, 2008), geographers research applied problems pertaining to topics as diverse as climate change, poverty, migration, biodiversity loss and natural hazards. They often work with other physical and social scientists, to connect different forms of understanding and to ensure the application of multiple perspectives and modes of enquiry to these broad investigative areas. Exemplifying how interdisciplinarity can and should work, geographers collaborate in learning and teaching research with colleagues from outside their discipline, including those in educational development (Case Study 4). It has been argued that geography provides 'necessary' knowledge (Bonnett, 2012), which can be used to help us understand and attempt to resolve some of society's pressing problems. This parallels educational enquiry, where the creation of new knowledge has relevant application to a range of individuals over contemporary and future time-scales. Knowledge production in both fields is about making sense of their requisite worlds of enquiry, in all their diversity and complexity.

It therefore comes as no surprise that geographers possess a **breadth of ontological understanding**. Whilst physical geographers traditionally tend to adhere to the empiricist tradition, aiming to comprehend an objective, measured reality, and human geographers traditionally tend to adopt the realist tradition, aiming to interrogate the subjective meanings, values and emotions inherent in knowledge production, most geographers through their training have an appreciation of both sides of the discipline. This leads on to a broad epistemological understanding about how knowledge is acquired, transmitted, altered and integrated into conceptual systems (Case Study 3). As a result, geographers view higher education research questions through a range of epistemological lenses,

opening up knowledge about learning and teaching to the possibilities of evolution, diversity and challenge (Case Study 4); something that is undoubtedly central to the success of geographers in educational enquiry.

Geographers refer to a **range of different concepts** to interpret the world. The generic concepts that define the discipline are space and place, scale and connection, proximity and distance, and relational thinking (Jackson, 2006). The distinction between space as an objective container versus place as humanised and invested with meaning allows geographers to consider learning environments through both interpretivist and positivist lenses (Case Studies 1 & 3 for example). Geographers consider scale hierarchies and the linkages between processes and scale. They are particularly effective at synthesizing, thinking synoptically about the 'big picture', taking the complex interaction of phenomena as their starting point and seeking patterns, structure and meaning (Case Study 3). They embrace relational thinking, considering constructions of 'self' and 'other', and this provides an ideal framework for interrogating actors, agency and fields of knowledge in higher education enquiry (Case Study 4).

Geographers are familiar with both **quantitative and qualitative research approaches**. The quantitative approach tends to embrace extensive research designs, finding variables for concepts, measuring them, and using statistical techniques and mathematical modelling to interrogate large 'representative' data sets (Case Study 3). The qualitative approach, by contrast, tends to employ intensive research designs, interpreting the subjective experience of individuals via methods such as ethnography, (auto)biography, oral history, participant observation, semi-structured interviews, focus groups, and visual and documentary analyses (Clifford *et al.*, 2016) (Case Studies 1, 2 & 4). Some geography researchers purposefully adopt mixed methods, combining qualitative and quantitative approaches within individual projects in order to first derive, and then explain, patterns or trends. Educational research undertaken by geographers will certainly showcase multiple methods of enquiry depending on the problem under consideration, validated by the epistemic context of the research question.

Geographers are sensitive to the **situated nature of knowledge production** (Rose, 1997), recognising the impossibility of undertaking and communicating social research that is 'value free'. They consider the positionality of the researcher and the context of the research participants (Gold, 2002). As such, geographers take account of their own position in their research and they expect different perceptions of the world and different experiences of situations and places, as we might

expect these to arise from students and staff in higher education (all Case Studies). Geographers understand that students have multiple and intersecting identities, with different aspects coming to the fore at different times, and they acknowledge this in their educational enquiry (Case Study 4). As a result, they take particular account of context and social interactions, acknowledging the lived and emergent experiences in learning and teaching environments. This places them in a strong position to deal with the complexities of educational research (Berliner, 2002).

Learning environments are particularly important for geographers researching into higher education pedagogy. Geography academics **work within and across a range of learning spaces** including the lecture theatre, seminar room, the 'field', laboratory, library, informal spaces and virtual learning environments (Hill *et al.*, 2016). They recognise that space is not defined solely as a passive physical entity but by learning in a plurality of places that can be brought to bear by staff and students as active constituents in learning. As such, geographers undertaking educational enquiry have examined the use of learning spaces not just in a conventional sense, but re-framed as spaces where students can gain new conceptual understanding (Case Study 1) or spaces of possibility in terms of learner engagement (Case Study 4).

Educational enquiry in geography: case studies

As a geographer you are familiar with the generic process of research, undertaking rigorous and systematic enquiry that is ultimately subjected to public criticism (Figure 15.1). This research process is applicable equally to disciplinary and educational enquiry in geography and it thereby offers a framework to guide your higher education research. You begin by defining a problem and clarifying the rationale for undertaking your study. You consider the theoretical and conceptual context to your research problem, critically evaluating the literature associated with your topic. You then design a sampling framework and select appropriate methods to collect empirical evidence. After data collection is complete, you analyse your data to tease out and present key findings, interpreting the data in the light of your overall aim and referring back to the literature. You also highlight the limitations of the research and make recommendations for future work. At this point in the process, you are ready to complete the research cycle by communicating your findings to others.

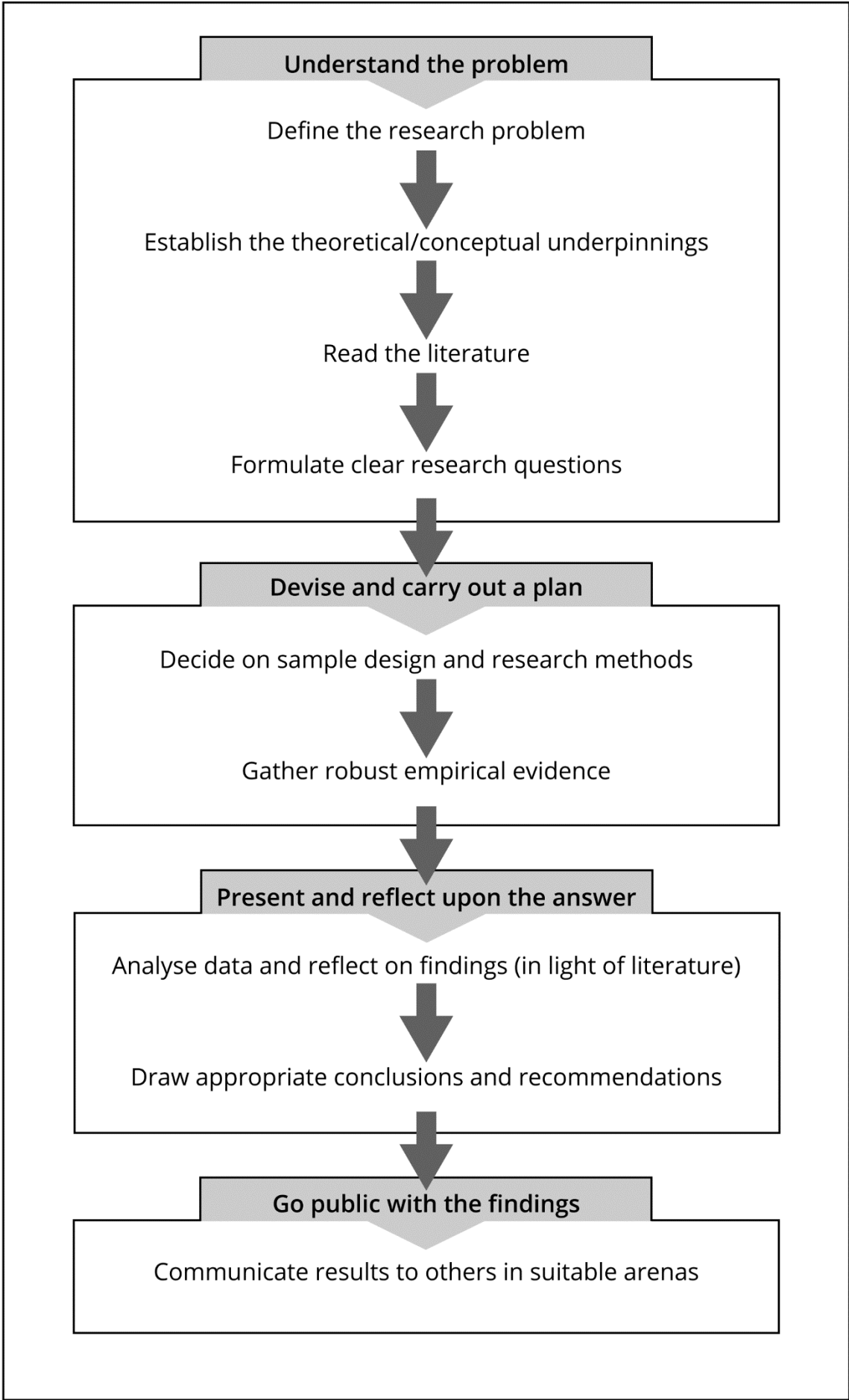


Figure 14.1 The research process expressed in a simplified linear format: applicable to disciplinary and educational enquiry in geography

This section presents four case studies, selected purposefully to demonstrate analogies between disciplinary and educational enquiry across the research process. The case studies include enquiry into fieldwork, teaching-research links, learning theory/styles, and learning partnership. Integrated within them are many of the characteristics of geographers noted above such as interrogating data across scale, reviewing literature across disciplines, methodological breadth, attention to diversity and positionality in both cognitive and affective learning domains, and a holistic consideration of disciplinary content and pedagogy. We hope, through our choice of case studies, to showcase the wealth of knowledge, understanding and practice that geography can offer all those undertaking educational enquiry (from whatever discipline); something we will return to at the close of this chapter.

We begin our case studies with a signature pedagogy of the discipline. Fieldwork has always been central to the enterprise of geography (Bracken & Mawdsley, 2004), encouraging a holistic form of educational enquiry where multiple issues are examined contemporaneously. In this active, experiential and discursive learning environment the content of the discipline and pedagogy are richly entwined. Learning in the field is about 'viewing the world', but it is also about a 'world view' and seeing things differently, making links between local and global processes and relations, and appreciating something of one's own place and responsibility in all this. The challenge for geography educators is to facilitate fieldwork that blends knowledge, experience, emotions, analysis and reflection, allowing students to explore and challenge social and personal values and preconceptions (Hill & Maddrell, 2014).

In Case Study 1, Richard Phillips explores the way that students relate to new places and are given responsibility to influence this encounter themselves. As his disciplinary research interests are based in curiosity and adventure, Richard's thematic research, educational research and teaching are closely connected in this paper. And yet he also notes the profound influence in the research of a diverse group of geography teachers, freelance educators, academics, artists, activists, and others beyond the academy, the Geography Collective, whose approach is embedded in exploring, questioning and experimenting with the planet, and this stretches his thinking beyond traditional academic geography.

Box 1 starts here

Case Study 1: Playful and multi-sensory fieldwork (Phillips, 2015)

Phillips examines undergraduate geography students' experiences of innovative fieldwork pedagogy. Building on his disciplinary research, the main focus of the paper is the affective experiences of British students once in a distant and novel location (New York) as they undertake self-styled, playful and curiosity-driven field research. The author is thereby working within familiar epistemological, conceptual and methodological arenas, asking questions and seeking answers just as for his disciplinary research.

The paper privileges the individualised learner experience of innovative fieldwork pedagogy rather than focussing on the teacher perspective. The author establishes a broad research intent, questioning how students might experience New York when the visual is not allowed to dominate. Acknowledging that a systematic and representative sample of student fieldwork is not feasible for such realist research, the researcher adopts a case study methodology, producing his own summaries of student work and supplementing this with extracts from their research projects. The author narrates the experiences of four students and integrates largely geographical and sociological literature, including ideas from the Geography Collective, psycho-geography, and situationist principles and practices.

Those students who choose to experience the city in a novel way are inspired to learn actively and creatively. The author notes that new ways of seeing can provoke structured ways to explore more familiar places as a result.

Box 1 ends here

Geographers have been at the forefront of advocating research-led educational approaches in higher education. This focus has stemmed from the belief that linking research and teaching benefits student learning. A paper by Healey (2005) was influential in directing geographers to consider how the research-teaching nexus could be embedded in practice in specific curriculum areas within the discipline. Furthermore, once students become researchers, venues for them to share their findings have been created, such as online journals dedicated to student research in the discipline (Walkington, 2012) and multi-disciplinary undergraduate student conferences (Hill & Walkington, 2016; Walkington *et al.*, 2016).

Case Study 2 outlines research undertaken by a collaborative group of international academic geography staff and students. The paper focuses on embedding research and enquiry skills early in the undergraduate geography curriculum in recognition of the importance of the teaching-research nexus.

Box 2 starts here

Case Study 2: Embedding research-based learning in the curriculum (Walkington *et al.*, 2011)

This article provides a range of practical examples, taken from geography courses internationally, illustrating how to engage students with the research process through skills-based approaches. The case studies demonstrate that by embedding research skills development early, scaffolding provided throughout a degree programme can support geography students as they become producers of knowledge.

A qualitative research approach is adopted. During an International Network for Learning and Teaching of Geography in Higher Education (INLT) writing retreat, 52 participants were involved in a liquid café style activity. The research team began by exploring academic staff perceptions of the skills that students need to engage in research at undergraduate level. After generating an initial list collectively, the academic staff were asked to identify those skills that they personally found the most challenging to teach early in the curriculum. They were asked about teaching research skills and, through conversations, participants left a narrative description of why these skills were challenging to teach early in the undergraduate curriculum.

The researchers analyse their data following the interpretivist tradition, grouping the skills identified for undergraduate students to become effective researchers, presenting exemplars of practice in a format that begins with lower level researcher skill development and progresses to more complex higher-order researcher abilities, and addressing barriers to skills development in the curriculum in an holistic way.

Box 2 ends here

As the higher education student population diversifies, the challenge of how best to provide appropriate and fulfilling learning experiences for all has become increasingly important. This has stimulated interest in the issue of student learning styles. Mick Healey *et al.* (2005) presented for the

first time in geographical literature a large data set on the learning styles of higher education geography students (Case Study 3). The research aimed to assess whether geographers have a predominant learning style and whether this varies between and within countries. It brought into the consciousness of geography educators the fact that individuals differ in their preferred learning styles, supporting the development of a diverse, aware classroom.

Box 3 starts here

Case Study 3: Learning styles among geography undergraduates (Healey *et al.*, 2005)

Examining learning styles in an holistic and integrated manner, this research is carried out by members of the International Network for the Learning and Teaching of Geography in Higher Education (INLT) based in the UK, Australia, New Zealand and the USA. The researchers search for individualised responses across scale, seating their questions within multi-disciplinary literature.

The research is quantitative, based in empiricist ontology. The sampling framework is extensive, with learning styles calculated for over 900 undergraduate geography students drawn from the 12 universities of the contributing authors, purposely representing a range of types of institution. Learning styles are assessed in class, through informed consent, by distributing a paper copy of Kolb's (1985) Learning Style Inventory. Students are classified into one of the four learning styles of diverger, assimilator, converger and accommodator. The results are analysed statistically using Chi-Square to test for significant differences within and across countries.

The study revealed significant international differences in the predominant learning styles of geographers in the four countries. The researchers note that a key implication of their findings for educational practice is the diversity of learning styles that teachers will encounter in their students. If teachers are to challenge and develop students equally, they need to ensure that across their programmes they vary their teaching methods, the learning opportunities they facilitate and the assessment methods they use.

Box 3 ends here

Educators around the world are increasingly recognizing that engaging undergraduate students actively in their learning can be transformative for both students and academic staff (Healey *et al.*, 2014; Johansson & Felten, 2014). In line with this trend, there has been a shift in higher educational

enquiry in geography from the enhancement of geographical understanding to engaging students as partners in learning (Moore-Cherry *et al.*, 2016).

In Case Study 4, Peter Felten and colleagues (2013) call for expanding inclusive student engagement in the scholarship of teaching and learning. The research originated in an interdisciplinary writing workshop of the International Society for the Scholarship of Teaching and Learning (ISSOTL).

Box 4 starts here

Case Study 4: Expanding student engagement in learning and teaching (Felten *et al.*, 2013)

In this paper, university academic and professional staff and students explore why some students tend to be excluded from the scholarship of teaching and learning (SoTL) and what opportunities exist for generating more inclusive higher educational partnerships. As such, the genesis of the paper and the pedagogy it espouses are inherently inter-related.

The paper is based on evidence from over 50 items of secondary literature and biographical accounts from the authors and key informants. Face-to-face dialogue over two days allowed the different perspectives and experiences of the contributors to be voiced. Participants progressively made contributions, generating meaning that was rationalised into an analytical framework for the research. As such, the argument unfolded from multiple voices. The collaborative meeting was followed by digital conversations to develop the manuscript for publication. In essence, boundary-crossing skills were put into practice, including integrating knowledge from different disciplinary domains, being open to multiple perspectives, coping with complexity, and adopting language that could be understood across different subjects.

The authors conclude that integrating diverse voices into SoTL has the potential to challenge existing practices, to open up novel research methodologies and approaches to meaning-making, and to engage with new audiences. Inclusive engagement offers tremendous potential to enhance student and staff learning and to help redress exclusionary practices.

Box 4 ends here

Next steps for your educational enquiry in geography

If you are already undertaking research into learning and teaching we hope that these case studies further inspire you. If you are new to this type of research, and are just starting to consider how you might develop your reflections on teaching into a more robust approach, you may find the following a useful starting point:

- Identify like-minded colleagues in your department or institution. Having someone to bounce ideas off or collaborate with will give you more confidence in your research and potentially enrich your activities. Working with other geographers is a good starting point, but colleagues in other departments interested in educational enquiry will also make good allies. It might also be helpful to get in touch with those in your institution involved in educational development as they will have both a knowledge of educational enquiry and may know who else across the institution is interested in researching this area.
- Join an appropriate community of practice. There are a range of generic and geography-focused networks nationally and internationally. Examples of geography-related networks are shown in Table 15.1. These groups are very welcoming of colleagues from across the globe and they offer a variety of resources, networking and professional development opportunities.
- Look at the geography learning and teaching journals and publications (Table 15.2), and those from wider higher education research. The *Journal of Geography in Higher Education* and the *Journal of Geoscience Education* are natural outlets for articles. Accessing this literature will help you learn from previous studies, evidencing ways of framing research problems, selecting suitable methods, and interpreting and disseminating findings appropriate to context.
- Start with your classroom and students. Consider what issues spark your interest in relation to your teaching and your students' learning. Is there something they particularly struggle with? Can you introduce interventions to aid specific students with their performance? Do you need to explore how to effectively teach a new topic, using novel technologies or in a different learning environment? Are there new assessment methods you would like to try? Find an area that interests you and use it as a starting point for exploring the literature and developing your own research plan. If you are embarking on this type of research for the first time it is best to start at a small scale. As some of our case studies have demonstrated, rich information can be gathered from a single class of students.
- Reflect on the research approaches you are familiar with and think about how they might be applied to the subject of education. Consider what methodologies might be most appropriate for the topic you are interested in exploring and identify where this matches your existing research skills and where you might need to develop or learn about new methods.

- Attend or contribute to conferences and events. Education-related conferences or sessions within larger discipline events tend to be very welcoming of new researchers and those who wish to discuss ideas or work-in-progress. The emphasis is often on sharing ideas and building a community rather than critiquing or defending territory.

Table 15.1 Useful geography-related learning and teaching networks

Networks
<ul style="list-style-type: none"> • International Network for Learning & Teaching in Geography (INLT): http://www.ucd.ie/inlt/ • The GEES Network: https://teachingfocusedgeesnetwork.wordpress.com/ • The Higher Education Research Group of the Royal Geographical Society (HERG): http://www.herg.rgs.org/ • The Higher Education Network of the Geological Society (HEN): http://www.geolsoc.org.uk/hen • The Geography Education Specialty Group of the Association of American Geographers: http://www.aag.org/cs/membership/specialty_groups • The Geoscience Education Division of the Geological Society of America: https://www.geosociety.org/GSA/About/Divisions/GSA/Division/Home.aspx

There are particular areas of educational enquiry that we might tackle as geographers in the future, shaped by our disciplinary knowledge, skills and values. A fundamental opportunity resides in the increasingly flexible and informal spaces of learning. There is scope for geographers to enter into dialogue with researchers from other disciplines about how they might conceptualise learning environments beyond institutional boundaries. The development of digital technologies, especially in relation to wireless connectivity and mobile technologies, is facilitating the movement of geography learning and teaching beyond formal classroom space, allowing e-learning to take place anywhere, anytime. Numerous questions arise from this process, not least how mobile technology is creating new roles for students as creators rather than consumers of disciplinary and pedagogic knowledge. Equally, the open movement is making educational resources available for use and re-use worldwide, raising issues about good practice and copyright law.

Due to the social nature of fieldwork, geographers are comfortable working and learning with their students. As such, they are potentially more normalised, when compared with other academics, to work in educational partnership with students. This begs a number of questions, particularly relating to inclusivity and ethics. These questions relate to the development of skills required for students and staff to work effectively in partnership, how a multiplicity of contested/marginalised voices can be made audible, what physical and virtual spaces are needed for participants to participate in

meaningful social interactions and dialogue, and what kinds of organisational culture and structures are needed to enable student engagement to thrive.

Other potential areas of enquiry include: high impact pedagogies to improve the professional development of undergraduate and early career geographers (instilling GeoCapabilities and Graduate Attributes); internationalisation and Trans-National Education as institutions increasingly develop overseas campuses whilst sharing curricula; promoting synergistic educational activities between geography and other disciplines; and re-thinking the geography postgraduate experience to render it more relevant to individuals/society. These are just some ideas for areas that sit comfortably within geography's remit, but nevertheless may extend the parameters and focus of your current research.

Conclusion

What is distinctive about geography-oriented higher education enquiry is our holistic understanding of complex problems and our ability to make connections between different scales with respect to problem-definition (re-defining or re-contextualising the objects and practices of pedagogic enquiry). This emanates from our adoption of an empirically based, yet theoretically informed, synthetic approach, our application of autopsy - or seeing for ourselves and making critically aware judgements - and our broad repertoire of relevant skills, knowledge and competencies which allows us to work with practitioners within and across disciplines. With our feet in both the physical and social sciences we also possess an extensive vocabulary and this helps us to begin conversations with fellow researchers across disciplinary divides (Hill & Walkington, 2016) and with educational scholars.

There are lessons here for others who wish to work in an interdisciplinary manner in educational enquiry. You must firstly be socialised within and confident about your own disciplinary epistemic roots, identity and approaches (Becher & Trowler, 2001) if you are to successfully create interdisciplinary ways of thinking, doing and knowing. Effective interdisciplinary teaching and educational enquiry are not likely to occur without a strong disciplinary base. You must then welcome a diversity of epistemologies, methodologies and language to communicate with others in negotiating comprehensive approaches to ambiguous issues. You can gain support in this endeavour from joining learning and teaching communities of practice within your institution and further afield, and by accessing the wealth of higher education literature.

Educational enquiry can open up new forms of critical pedagogic geography. We are open-minded enough as geographers to appreciate that our training does not necessarily reflect the 'optimum' approach to any research problem and that working with colleagues in different disciplinary fields may provide us with the best way forward. Integrating some of our disciplinary ideas, concepts and methods with those of educational scholars, we can expand our appreciation about who we are as geographers and what the discipline can become. Contrary to any argument about dilution of geographic identity, we might celebrate an expanded identity forged through educational enquiry. Teaching geography defines us just as much as researching geography, so educational enquiry in the discipline should be natural for us and for the evolution of our subject. Finally, along with the assimilation of the other subjects in this book, disciplinary-based research into learning and teaching will help to promote a more complete understanding of higher education pedagogies. Combining a wide range of knowledge, skills, experiences and perspectives can reveal the routine conventions and assumptions that inform the questions we ask about learning and teaching and enable more transformative approaches to educational enquiry. We hope we have inspired you to enrich your personal practice, and the wider field of higher education pedagogy, by having conversations with others from a range of backgrounds and disciplines, within and beyond the fluid boundaries of 'geography', and by undertaking your own educational enquiry.

Further reading and suggested activities:

- Further reading one – GEES network blog on 'what works': <https://teachingfocusedgeesnetwork.wordpress.com/what-works-for-teaching-and-learning-in-he-gees/>.
- Activity - Look at the way the researchers who have written for this blog have been integrating research into their practice. Consider your own teaching context: what opportunities are there for you to work in partnership with your students to investigate the effectiveness of your own practice? What broader questions interest you that might form a collaborative enquiry with other geographers?
- Further reading two – Decoding the disciplines: helping students learn disciplinary ways of thinking (Pace & Middendorf, 2004): <http://decodingthedisiplines.org/>.
- Activity – Use the first two steps of the Decoding the disciplines model to identify potential research questions in your teaching and to unpack your epistemological framework.
- Further reading three - Moving toward a signature pedagogy in geography (Komoto, 2008).
- Activity - Review and reflect on the suggested signature pedagogies for geography in relation to your own teaching practices as a vehicle for identifying learning environments or learning and teaching approaches to explore further through research.

References

- Ashwin, P. & Trigwell, K. (2004) Investigating Staff and Educational Development. In P. Khan and D. Baume (Eds) *Enhancing Staff and Educational Development*. London: Kogan Page, pp. 117-131.
- Becher, T. & Trowler, P.R. (2001) *Academic Tribes and Territories*. Buckingham: Open University Press.
- Berliner, D.C. (2002) Educational Research: The hardest science of all. *Educational Researcher*, 31, 18-20.
- Bonnett, A. (2008) *What is Geography?* London: Sage.
- Bonnett, A. (2012) Geography: What's the big idea? *Geography*, 97, 39-41.
- Bracken L.J. & Mawdsley E. (2004) 'Muddy glee': Rounding out the picture of women and physical geography fieldwork. *Area*, 36, 280-286.
- Cambridge, B.L. (2001) Fostering the scholarship of teaching and learning: Communities of practice. In D.A. Lieberman and C. Wehlburg (Eds) *To Improve the Academy*. Bolton, MA: Anker, pp. 3-16.
- Castree, N. (2011) The future of geography in English universities. *The Geographical Journal*, 177, 294-299.
- Clifford, N., Cope, M., Gillespie, T. & French, S. (2016) *Key Methods in Geography*. Third Edition. London: Sage.
- Crane, N. (2016) The great age of geography: Presidential Address and record of the Royal Geographical Society (with IGB) AGM 2016. *The Geographical Journal*, 182, 294-299.
- Dyer, S., Walkington, H., Williams, R., Morton, K. & Wyse, S. (2016) Shifting landscapes: from coalface to quick sand? Teaching Geography, Earth and Environmental Sciences in Higher Education. *Area*, 48, 308-316.

Erikson, R.A. (2012) Geography and the changing landscape of higher education. *Journal of Geography in Higher Education*, 36, 9-24.

Felten, P., Bagg, J., Bumbry, M., Hill, J., Hornsby, K., Pratt, M. & Weller, S. (2013) A call for expanding inclusive student engagement in SoTL. *Teaching and Learning Inquiry*, 1, 63-74.

Gold, L. (2002) Positionality, worldview and geographical research: a personal account of a research journey. *Ethics, Place & Environment*, 5, 223-237.

Healey, M. (2005) Linking research and teaching to benefit student learning. *Journal of Geography in Higher Education*, 29, 183-201.

Healey, M., Flint, A. & Harrington, K. (2014) *Engagement through partnership: students as partners in learning and teaching in higher education*. York: HEA.

Healey, M., Kneale, P. & Bradbeer, J. with other members of the INLT Learning Styles and Concepts Group (2005) Learning styles among geography undergraduates: an international comparison. *Area*, 37, 30-42.

Hill, J. & Walkington, H. (2016) Developing graduate attributes through participation in undergraduate research conferences. *Journal of Geography in Higher Education*, 40, 222-237.

Hill, J., Thomas, G., Diaz, A. & Simm, D. (2016) Borderland spaces for learning partnership: opportunities, benefits and challenges. *Journal of Geography in Higher Education*, 40, 375-393.

Hill, J. & Maddrell, A. (with Gascgoine, J., Hammond, D., Treacy, S. & Parfitt, A.) (2014) Educating. In R. Lee et al. (Eds) *The Sage Handbook of Human Geography*. London: Sage, pp. 381-403.

Jackson, P. (2006) Thinking geographically. *Geography*, 91, 199-204.

Johansson C. & Felten P. (2014) *Transforming Students: Fulfilling the Promise of Higher Education*. Baltimore, MD: Johns Hopkins Press.

- Johnston, R. (2003) Geography: a different sort of discipline? *Transactions of the institute of British Geographers*, 28, 133-141.
- Kolb, D.A. (1985) *Learning Style Inventory*. Revised Edition. Boston, MA: Hay Group.
- Komoto, C. (2008) Moving towards a signature pedagogy in geography. In R.A.R. Gurung, N.L. Chick and A. Haynie (Eds) *Exploring Signature Pedagogies: Approaches to Teaching Disciplinary Habits of Mind*. Sterling, VA: Stylus, pp. 121-138.
- Moore-Cherry, N., Healey, R., Nicholson, D.T. & Andrews, W. (2016) Inclusive partnership: enhancing student engagement in geography. *Journal of Geography in Higher Education*, 40, 84-103.
- Pace, D. & Middendorf, J. (Eds) (2004) Decoding the disciplines: helping students learning disciplinary ways of thinking. *New Directions for Teaching and Learning*, 98. San Francisco: Jossey Bass.
- Phillips, R. (2015) Playful and multi-sensory fieldwork: seeing, hearing and touching New York. *Journal of Geography in Higher Education*, 39, 617-629.
- Rose, G. (1997) Situating knowledges: positionality, reflexivities and other tactics. *Progress in Human Geography*, 21, 305-320.
- Shulman, L. (2005) Signature pedagogies in the professions. *Daedalus*, 134, 52-59.
- Sidaway, J.D. & Johnston, R.J. (2007) Geography in Higher Education in the UK. *Journal of Geography in Higher Education*, 31, 57-80.
- Skole, D.L. (2004) Geography as a great intellectual melting pot and the preeminent interdisciplinary environmental discipline. *Annals of the Association of American Geographers*, 94, 739-743.
- Walkington, H. (2012) Developing dialogic learning space: the case of online undergraduate research journals. *Journal of Geography in Higher Education*, 36, 547-562.

Walkington, H., Hill, J. & Kneale, P. (2016) Reciprocal elucidation Reciprocal elucidation: a student-led pedagogy in multidisciplinary undergraduate research conferences. *Higher Education Research and Development*, 36, 416-429.

Walkington, H., Griffin, A.L., Keys-Mathews, L., Metoyer, S.K., Miller, W.E., Baker, R. & France, D. (2011) Embedding research-based learning early in the undergraduate geography curriculum. *Journal of Geography in Higher Education*, 35, 315-330.