LEARNING BY DOING: INTRODUCING RESEARCH SKILLS TO GEOGRAPHY UNDERGRADUATES

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Biographical Note

Niamh Moore is a lecturer in geography and a Senior Fellow in Teaching and Academic Development at University College Dublin. Her research interests are in the processes and outcomes of urban transformations in Western cities, and in geographic education. Recently, she has led an inter-disciplinary team of university fellows assessing the expectations and experiences of first year students and piloted innovative ways of engaging first year geography students. She is presently working on how the lessons of this research may be extended throughout the undergraduate curriculum and in particular through skills acquisition.

KEYWORDS

Skills; teaching-research nexus; autonomous learning; student expectations.

ABSTRACT

In an increasingly competitive economy, the capacity for self-motivation, problem-solving skills and an ability to think critically are core graduate attributes. However, the capacity to create an educational environment that develops and harnesses such skills is a distinct challenge as resources become increasingly restricted. Geographical Skills and Techniques was a new module introduced in January 2009 in the second year undergraduate geography curriculum at University College Dublin (UCD), Ireland, to introduce students to a range of skills and techniques relevant to their training as geographers, drawing on the recommended skills and attributes identified by the Quality Assurnace Agency (QAA) Subject Benchmark statement in the UK (QAA, 2007). The aim was to develop an awareness of, and ability to use, the range of material and approaches necessary to undertake successful geographical research in line with the strategic importance in the university of developing closer research-teaching linkages. The module was evaluated at the end of the semester through an online anonymous survey delivered using Zoomerang (http://www.zoomerang.com). The survey examined student's learning experiences generally as well as in each specific component: library skills, cartography, quantitative techniques, qualitative methods and fieldwork.

This paper assesses the effectiveness of this module in developing the research capacity of the undergraduate students. It highlights the key challenges of effectively embedding this module in the geography programme both from an institutional and from a learner perspective. It concludes that for the module to be successfully continued in future years, student behaviour and expectations must be managed more effectively and greater institutional support should be provided to enhance student learning.

INTRODUCTION

> *"All undergraduate students … should experience learning through, and about, research and inquiry"* (Healey and Jenkins, 2009, p. 3).

Moving away from the *"tired old teaching versus research debate"* (Boyer, 1990, p. 16) that has dominated the academic agenda for a substantial length of time, recent international experience has demonstrated the necessity of better integrating these two core activities in the contemporary university (Jenkins and Healey, 2005; Gunn, 2008). While research has traditionally been viewed

as a function of academics or graduate students, the value of embedding research at each stage throughout the academic cycle has been the subject of increasing recent attention. Linking the teaching and research functions in individual departments is crucial both from an academic and for a broader societal perspective (Jenkins *et al*, 2007) and this should begin with undergraduate students. The *"teaching-research nexus"* (Neumann, 1992) is what distinguishes higher education but it is argued that, left to chance, it very often fails to develop productively. This paper outlines the development of *GEOG 20030: Geographical Skills and Technique*, a new core module, at University College Dublin (UCD). It assesses the effectiveness of this module in developing the research capacity of the undergraduate students and identifies the key challenges of effectively embedding this module in the geography programme both from a learner and an institutional perspective.

THE 'TEACHING-RESEARCH' NEXUS AT UCD

In common with most other third level institutions across the island and internationally, UCD as an institution faces growing competition, scarcity of resources and increased monitoring and performance review. The *UCD Strategic Plan 2005-2008* addressed these challenges through a sharp focus on the development and potential for better relationships between the teaching and research functions. Part of the aim is to introduce research-driven modules/activities at all levels of study and to provide graduate students with opportunities to facilitate undergraduate learning in a structured manner. The plan argues that in a research-intensive university, undergraduate students *"cannot but internalise the very process by which new knowledge is generated, and are thus uniquely placed to contribute, to critique and to apply"* (UCD, 2004, p. 9). While students may be well placed, observations of student behaviour as well as evidence from submitted assessments would suggest that some undergraduate students do not have the necessary skills, experience or confidence to successfully become research active and that explicit intervention in the curriculum is required.

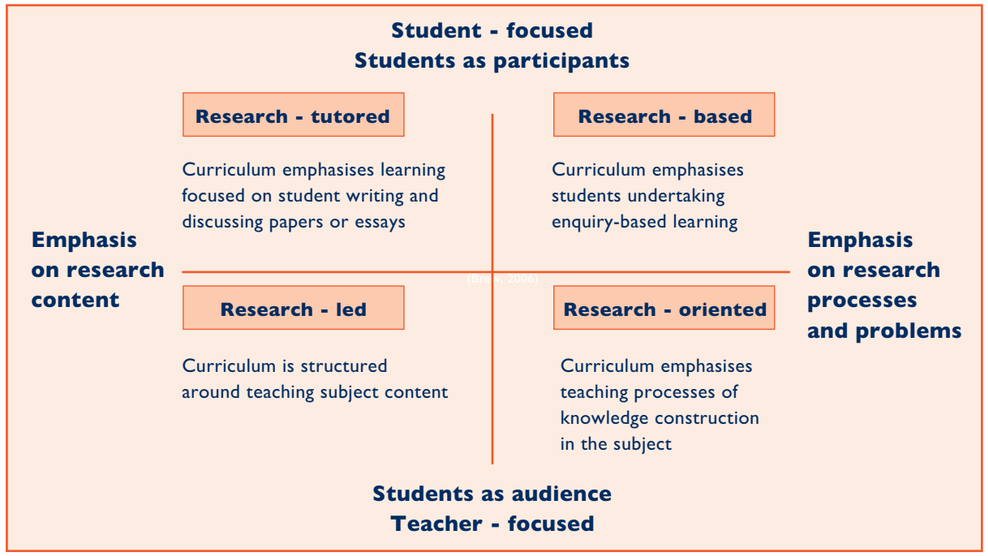
DESIGNING AND EVALUATING THE GEOGRAPHICAL SKILLS AND TECHNIQUES

The aim of the new core module was to develop an awareness of, and capacity to undertake, independent geographical research in line with the strategic institutional priority of developing closer research-teaching linkages. By the end of the module, it was anticipated that students would have a clear understanding of the skills available to geographers and would have gained experience in applying specific techniques. In the vocabulary of Healey (2005), through a range of exercises and other assignments the goal by the end of the semester was to move students from research-led learning through research-oriented to research-based learning (see Figure 1). The success of student progression along this continuum was measured through a final project requiring students to design, undertake and write an original independent research report using and combining their newly developed skills.

Given the limitations of the large class size (c. 250 students) and timetable constraints, the module was structured through one large group session per week attended by all students at which particular skills were introduced and one small group (c. thirty-five students) practical per student per week run by graduate students. One academic coordinated and taught a large number of the lecture classes, but three other staff members led the sessions on specific skills. These were complemented by one Saturday fieldwork session and by office/consultation hours held by both staff and graduate students.

A blended learning approach was adopted with face-to-face contact supplemented by a virtual learning environment within which preparatory work was assigned, additional resources

Figure 1: Curriculum design and the research-teaching nexus (Gunn, 2008, modified from Jenkins and Healy, 2005).



provided, assignments set and submitted, feedback returned and other module administration undertaken such as practical class and fieldwork enrolment. Peer discussion boards were established to facilitate student discussion and collaborative problem-solving. The site was structured around the five key skills being developed - library skills, cartography, quantitative techniques, qualitative methods and fieldwork - and had additional functionality including message boards and assignment reminders to facilitate the management of such a large enrolment and complex module structure. An end-of-semester online anonymous survey created through Zoomerang.com was also delivered via the Moodle interface allowing easy data collection and analysis. This survey assessed student learning experiences and behaviour generally as well as in each specific component of the module. The majority of questions used a Likert scale but some open-ended questions were also included to gain a deeper understanding of how the module had been received and its relative success. The online survey elicited a 69% response rate (166 responses) and the results are examined and analysed below.

LEARNER PERCEPTIONS

One of the central aspirations of the module coordinator was to highlight the importance and relevance of research skills and geographical approaches to understanding real-world problems. The results of the survey would suggest that this was successfully achieved with 68% of respondents considering the skills gained as useful or very useful to their current and future undergraduate study and 59% citing it useful or very useful to their future career or advanced study. An element of surprise characterised many of the student responses: *"researching be it maps or journals and fieldwork was actually enjoyable and educational"*; *"learning interview techniques and identifying the right questions to ask is very useful"*; *"[I] didn't realise the range of electronic sources out there that we could use e.g. databases"*.

The response of students to the module coordinator's expectation that they would become responsible for and direct their own learning, albeit in a supportive environment, was of significant interest. In general, students interpreted more independent learning as constituting a heavier workload; 91% considered it more or significantly more than other modules. Students experienced difficulty with the transition to more autonomous learning with 30% disagreeing that there was support available if they experienced difficulties. Given the level of support made available in practice, this perception may be explained by the divergent interpretations of staff and students related to support versus spoon-feeding. These issues aside, students seemed to respond enthusiastically to the research challenge and the general principle of self-directed learning; students articulated their learning experiences in various ways, realising: *"the value of doing independent research";* that *"a final project was an interesting new experience";* the value of *"motivating myself to work and complete the projects was important";* and that *"you really have to get your act together because no-one is going to do the work for you".*

One of the most surprising student perceptions from a teacher's point of view was that this module appeared to build confidence and engagement with the subject but also with university learning more generally. Representative comments in the open-ended questions included the realisation that students *"have to do independent study in college"; "can do important assessments on my own"; "were trusted to work on our own".* The importance of the module in developing lifelong learning and transferable skills was also noted with students citing the development of stronger organisational skills. For many, the module made students "*more focused";* taught them *"not [to] do … work an hour before the deadline"'* and developed *"skills to present … work in a more professional manner".*

LEARNING BEHAVIOUR

In a detailed question on student motivation, a clear set of performance-related rather than intrinsic, interest-driven motivations emerged. 32% of students stated that their most important motivation for attending classes was because they needed information for assignments; 30% attended because it was mandatory; and only 18% stated that their motivation was driven by an interest in learning new skills. While 94% of respondents agreed or strongly agreed that they "*understood the need to work independently outside of class to prepare and complete assignments",* this directly contrasts with observed student behaviour particularly during the early part of the semester. Students were highly resistant to spending time outside of dedicated classes working on and completing assignments. As the semester progressed, an increasing awareness and acceptance of the importance of autonomous learning to succeed in this module became more apparent. It would seem that this realisation links directly to the perception of a heavy workload and greater time demand on this module. When the students were asked specifically about the weekly time demands of this module, the mode was three to five hours. Far from being an excessive workload, this kind of time demand would be considered appropriate, even a little low, by staff for a five-credit module. There is thus a significant disjuncture in terms of the time that staff expect students to spend on each module per week and that which the students consider necessary, a finding borne out in a previous study with first year students (Gibney *et al,* 2008).

CHALLENGES IN ENHANCING THE 'TEACHING-RESEARCH' NEXUS

The evaluation suggests that this module successfully achieved the acquisition of discipline-specific skills but also generic graduate attributes, such as better organisational and time management ability as well as the capacity to work independently. The results of the evaluation raise interesting questions about student expectations of university life. It became apparent that even in second year, and at the midpoint of their course, students did not understand the requirement for significant autonomous learning or respond well to what was perceived as an 'intensive' workload. For future years, it will be important to clearly outline from the beginning of the semester the expected workload and time commitment required for this module. This will partly be achieved through a review of the sequencing of components, as the module began with a very undemanding introduction to library resources that may have shaped the idea that this was going to be an easy module.

While they had been exposed to research-led teaching in other modules, students were initially resistant to the concept of research-based learning and the need to work steadily over the course of the semester to build on experience rather than cram at the end. They had significant difficulty with mandatory practical attendance and this proved perhaps the most difficult aspect of the module from an administrative perspective. However, it was our firm belief that unless students attended the practical classes, they could not complete the associated assignments independently. This approach was based on the fact that these classes served as platforms where students had the opportunity to learn the skills in a hands-on manner. The policy was also aimed at transforming learning behaviour among the student body. One of the positive outcomes of mandatory attendance was that students welcomed the opportunity to get to know others in their class; in addition 50% of them suggested that it helped develop their sense of identity as geography students. The development of social networks of learning was thus an unexpected positive outcome of designing the module in this way.

However, there are a number of institutional challenges to the successful continuation and development of this module. One of the key issues for staff and a significant complaint from students was the demonstrator-student ratio in practical classes (35-40: 1). This was primarily a resource issue. If the university is committed, as the institutional strategic plan would suggest, to providing graduate students with opportunities to facilitate undergraduate learning in a structured manner then these types of activities need to be better supported and facilitated. The workload involved in delivering and administering an intensive module, such as this, is significant. The university might consider providing some additional administrative support to module coordinators who engage in innovative and intensive modules with large classes. One of the other mechanisms by which the institution could support research-based learning is to establish a better framework for challenging students from their introduction to university. Clear expectations regarding time commitment and the importance of independent learning, a hallmark of a university education, need to be more forcefully articulated. Learning as a collaborative process also needs to be more fully understood by students and the university may have a key role to play in establishing this norm from the beginning of first year. Without high-level support, individual schools and module coordinators will have an increasingly difficult job in encouraging and sustaining active and autonomous modes of learning.

CONCLUSION

The experience of delivering and evaluating *Geographical Skills and Techniques* has generated useful insights into how the 'teaching-research' nexus can be, and is, experienced by undergraduate students. The results of the module evaluation suggest that research has been successfully foregrounded among this cohort as a participatory process and that enthusiasm was generated within the undergraduate body for the research challenge. However for the module to be successfully delivered in future years, learning behaviour and expectations must be managed more effectively. Successfully meeting the university aspiration of developing "*further the research elements of undergraduate programmes, including specific research-based modules*" (UCD, 2004, p. 13) will depend on the emergence of a better understanding among students of the demands of third level study as well as a commitment from the university to supporting these modules through resourcing and the promotion of a challenging culture of learning.

ACKNOWLEDGEMENTS

The development and evaluation of this module was supported and facilitated by the University College Dublin Fellowships in Teaching and Learning Scheme. The author would also like to thank Dr Veronica Crossa and Ms Ruth Comerford, School of Geography, Planning and Environmental Policy, UCD, for their contributions to this module.

REFERENCES

Boyer, E.L. (1990). *Scholarship reconsidered: priorities of the professoriate*. New Jersey: The Carnegie Foundation for the Advancement of Teaching.

Gibney, A., Moore, N., Murphy, F. and O'Sullivan, S. (2008). "'Won't someone tell me all I need to know?': First Year Expectations of University Life", paper presented at *Universitas 21 Teaching and Learning Conference: Does Teaching and Learning Translate?*, Glasgow, 21-22 February 2008.

Gunn, V. (2008). *Research-teaching linkages: Enhancing Graduate Attributes*. Glasgow: Quality Assurance Agency Scotland.

Healey, M. and Jenkins, A. (2009). *Developing undergraduate research and inquiry*. York: Higher Education Academy.

Jenkins, A. and Healey, M. (2005). *Institutional Strategies to link teaching and research*. York: Higher Education Academy.

Jenkins, A., Healey, M., and Zetter, R. (2007). *Linking teaching and research in disciplines and departments*. York: Higher Education Academy.

Neumann, R. (1992). "Perceptions of the teaching–research nexus: A framework for analysis", *Higher Education,* vol. 23, no. 2, pp. 159–171.

Quality Assurance Agency (2007). *Geography 2007*. Gloucester: Quality Assurance Agency.

University College Dublin (2004). *Strategic Plan 2005-2008: Creating the Future*. Dublin: UCD.