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Title Examining the contribution research methods can make to the learning gain debate

Session Merits and challenges of measuring learning gains for learning, teaching and assessment: Lived experiences of 78,531 students at 16 universities. (Rogaten)

Submitter Dr. Jekaterina Rogaten, Dr. Rebecca Turner, Dr. Claire Gray, Dr. Carole Sutton, Reema Muneer, Mrs Julie Swain, Nadine Schaefer

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Introduction

Learning gain is a complex and context dependant construct, influenced by a range of factors (e.g. student attitudes and entry profiles) (Kandio-Howson, 2016). Attempts to capture learning gain have been shaped by a variety of definitions and methodological approaches (e.g. Corlu & Aydin, 2016; Cox & Lemons, 2016; Lim et al., 2012; Varsavsky et al., 2014), which make comparative work in this area challenging to undertake (McGrath et al., 2015). McGrath et al. (2015: xi) define it as the “distance travelled” by a student, or “the difference between the skills, competencies, content knowledge and personal development demonstrated by students at two points in time.” This broad definition, centred on student performance, has been widely applied in contemporary work on learning gain (e.g. Arico, 2016) and has shaped the current study to examine the potential of using research methods to develop a generic and cross-context measure of learning gain.

Research methods describes the general principles of science, research paradigms, research approaches and methods, as well as addressing issues relating to the theoretical framing and philosophical underpinnings of knowledge (Murtonen, 2015). Often the term ‘research methods’ is taken to narrowly represent methods of data collection or analysis (Murtonen, 2015), however, as this definition indicates, it a complex domain of knowledge for which students need to develop an understanding of, as well as gain proficiency in specific skills, in order to conduct research (Earley, 2014). Developing the research capacity of undergraduates provides them with the abilities to generate, apply and adapt new knowledge; these are skills that are integral not only their success as undergraduates but also to the knowledge economy (Davis et al., 2006).

Students need to gain a comprehensive understanding of research methods in order to be able to rigorously and effectively function as researchers, reflect on their strengths and articulate

these to future employers (Davies et al., 2006). Students' development as researchers is framed by credit level descriptors used by higher education providers to "define the level of complexity, relative demand and autonomy expected of a learner" (SEEC, 2010: 3). Credit level descriptors, such as those of the Southern England Education Consortium for Credit Accumulation and Transfer (SEEC), provide a generic overview of the knowledge and understanding students should develop as they progress through their studies, as well as indicating the cognitive, intellectual, practical and transferable skills they should gain (SEEC, 2010). These descriptors increase in complexity over the duration of an undergraduates' study, and are used to inform curriculum and assessment design, as well as communicating expectations of learners (SEEC, 2010). In the context of learning gain, these provide a framework on which to identify the skills, knowledge and experiences students will gain in research through their studies.

Methods

To develop and test a measure of learning gain a longitudinal research design was adopted that captured students' knowledge, skills and experience of research methods as they progressed through their undergraduate studies. This would overcome limitations to many studies of learning gain that are cross sectional at a single time point (Varsavsky et al., 2014).

Purposeful sampling of Arts and Humanities, Business & Social Science, and Science programmes across the study University and Partner Colleges was undertaken, with 16 programmes. To date, over 200 students and 12 academic staff have participated with further data collection scheduled for the coming months. This has allowed a measure of learning gain to be tested across disciplines and HE delivery contexts. Based upon previous pedagogic studies of research methods education in these two contexts (Gray et al., 2015; Williams et al., 2008) a revised self-reporting survey measurement tool captured students' knowledge of research concepts, practices and skills, and how students learn about research methods. Data capture at three time points over the duration of the degree programme, enabled cross-sectional and matched case analysis of student learning and development. Recognising the challenges of self-reporting surveys for learning gain (McGrath et al., 2015), the study case matched student performance data on research methods, alongside qualitative data gathered from student reflective posts, student focus groups and programme staff interviews. This has enabled the project to explore in greater contextual detail student learning gain in relation to research methods.

Findings

In this paper we will examine students developing knowledge of research methods, and how this varies across disciplinary and educational contexts. Provisional data, show disciplinary variation in students' progress in research methods education, which can be connected to the curriculum profile of research methods in the discipline, pedagogic practice and perceived relevance of the knowledge, skills and application of aspects of research methods to students current learning. We will also consider the use of the self-reported survey tool, reflecting on how effectively this performed as a mechanism to capture learning gain, and more widely its future application in shaping learning gain. In particular we will consider how the self-reporting survey could be used to provide feedback on current performance and support students in directing their future learning. This is a cited, but often unrealised goal of previous learning gain studies (e.g. Douglass et al., 2012; Varvowksy et al., 2014). It also resonates with the core principles of self-efficacy, and a recognised area that students from widening participation backgrounds can struggle to engage with (Hsieh et al., 2007). This would involve the explicit integration of students into a discourse around their learning, development and the wider curriculum, which in the long term many enhance a sense of autonomy and ownership over their research methods education – a subject for which student engagement remains an on-going issue (e.g. Murtonen, 2015; Shaw et al., 2013).

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