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Are Students of Some Disciplines more Involved than Others? Disciplinary Differences in Experienced Research Integration in Higher Education

Abstract

Overall the research integration in higher education is considered meaningful. It has also been argued that the inclusion of students in research through the curriculum differs between disciplines. Students of 'hard' disciplines are supposed to gain more seniority before the research discipline includes them, while students in 'soft' disciplines are invited sooner. While previous studies do confirm this trend line, also contradictory results have been found. Furthermore, the Biglan Framework (1973) provides more disciplinary differences than the often studied hard/soft divide. Moreover, the notion of involvement in research is more diverse than 'doing research'. Through an online survey this study systematically investigates undergraduate students' experienced research integration for all study years of seven different faculties (N=2192). The findings indicate confirmation of the claim that students of different disciplines are included in research at different moments in their educational track. However, this difference is not always based on the hard/soft divide.

Introduction

This paper investigates whether undergraduate students of various disciplines experience research integration in their study differently between study years. Research competences and experience in research are important for all students in higher education (Brew, 2006), and provide an important base for the handling of knowledge in the current supercomplex society (Barnett, 2012). Whilst the research integration in higher education in general is considered meaningful, it has been argued that the frequency and style of integration of research in the curriculum differs between disciplines (Verburgh & Elen, 2011). Often students are kept out of their future disciplinary community for the longest time: 'they learn how knowledge is generated [..] but they are outside it, spectators, not players on the research stage' (Brew, 2006, pp 57).

If these differences in research integration between the study years of different disciplines exist, students should be able to experience them in their educational programme. The current article considers undergraduate students' experienced research integration of multiple disciplines and all study years.

Disciplinary differences

In his classic study, Anthony Biglans (1973) survey of academic practice resulted in the now familiar distinction between hard versus soft, pure versus applied, and life versus nonlife disciplines. A fourth distinction was found between empirical and creative disciplines but later disregarded. Over time the Biglan Framework (1973) has been applied to many studies, of which some education and/or teaching related (Lindblom-Ylänne, Trigwell, Nevgi, & Ashwin, 2006; Rijst, visser-Wijnveen, Verstelle, & Van Driel, 2009; Verburgh & Elen, 2011).

Disciplines and higher education curricula

Building on the Biglan Framework (1973) Neumann, Parry, and Becher (2010, pp 408), mainly focussing on Hard-Soft differences, suggested that also the way of educating students in higher education is expected to be related to the nature or structure of the disciplinary knowledge. These concepts seem to be lacking on the difference between life/nonlife disciplines, or on the differences between applied/pure (see also Nelson Laird, Shoup, Kuh, & Schwarz, 2008).

Experienced research integration

The wider field of research-teaching-nexus considers multiple possible meanings of the connection between research and teaching (Trowler & Wareham, 2008). In line with the work of Visser-Wijnveen, Van der Rijst, and Van Driel (2016), the learning environment is here considered from the perspective of student, in the sense of the experienced curriculum (Van den Akker, 2003). The current study further builds on previous quantitative studies following the conceptual model on the integration of research and teaching by Healey (2005). Since most students experience research integration in three of the four ways mentioned in Healey's conceptual model (Turner, Wuetherick, & Healey, 2008), a questionnaire was developed by Healey, Jordan, Pell, and Short (2010) to investigate whether students: 1) are aware of staff research (also called 'passive involvement'); 2) experience engagement with research (also called 'active involvement'); and 3) to what amount staff research impact their learning environment.

The central question in this study is: Is there a difference on students' experienced research integration between different study years within disciplines?

Method

This study is based on an online survey among the students of all seven faculties in a single applied university in The Netherlands (N=2151).

Measurements

The quantitative measurements were based on previously applied and validated questionnaires, which were adapted to the current Dutch situation. This study investigates the three ways of research integration as found by (Turner et al., 2008). The measurement instruments of the first two ways of research integration are based on the Flemish questionnaire of Verburgh and Elen (2011), which was in turn based on the questionnaire by Healey et al. (2010).

The first way concerns students' passive involvement in research, and consists of a single scale of six items (Chrohnbach's α=.90) which is based on students' knowing about the research activities of their lecturers.

The second way focusses on students' active involvement in research, and consists of three scales: a) To read and discuss research (2 items, Chrohnbach's α=.61), b) To interact with researchers (4 items, Chrohnbach's α=.74) and c) The student as researcher (2 items, Chrohnbach's α=.86).

The third way concerns the impact of research in the wider university on students' learning. This level consists of a single scale (3 items, Chrohnbach's α=.82) which was more freely inspired on the combined questionnaires by Verburgh and Elen (2011), and by Visser-Wijnveen et al. (2016).

All afore mentioned items were measured by applying a Likert-6 scale (1=not applicable at all – 6=is fully applicable). Based on Principal Components Analyses (PCA) and Reliability Analyses (RA) the final scales were constructed.

To define disciplinary diversity each of the seven faculties included was positioned in the Biglan Framework (1973), which was defined as a binominal framework. The categorisation of the seven faculties was based on a qualitative interpretation, also informed by previous research (Biglan, 1973; Stoeker, 1993; Verburgh & Elen, 2011; Visser-Wijnveen, 2013). All educational programs in this study were defined as 'applied' due to being part of an applied university. So the Biglan distinction pure/applied was disregarded. Each faculty was scored as part of one disciplinary cluster: hard-life, soft-life, hard-nonlife, or soft-nonlife.

To be able to investigate the differences between study years, all students were asked to list their current study year. All undergraduate programmes in this university have a duration of four years, and classes are constructed per cohort. All students studying longer than 4 years were combined in the group 5+ years.

Analysis

The differences in experienced research integration between students of different study years within each faculty was analysed using a one way ANOVA. If a significant difference between study years within a faculty was found, a Tukey post hoc test was applied to further examine the differences between specific study years. If more than one faculty resulted in significant differences between study years, the disciplinary clusters were qualitatively compared and described.

Findings

The findings show among other how lower year students of faculties that can be categorized as 'Life' (while differing on Hard / Soft) are less involved as active researchers than students of higher study years. Especially first year students scored lower in these faculties. Furthermore, fifth+ year students in four faculties scored significant lower on the impact of research on their learning. Three of the four faculties are labelled as 'Soft'. One can conclude that all students in the last phase of their studies are less pleased with the impact of research on their learning, especially in the soft disciplines.

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Discussion

The findings show that it is important to distinguish between three types of research integration when considering claims on student involvement in research. Passive research involvement, active research involvement, and the impact of research on student learning resulted in differences in student involvement. But as it is, this study has showed that students in different study years have a different research integration between disciplines. Or at least sometimes they have. Implications and limitations will be discussed.

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