The stability of undergraduate student trajectories across cohorts and programmes of study: evidence of excessive policy constraints in academic practices? (0076)

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This paper uses a mixed-methods approach:

1) to evaluate the variability of student learning trends across programmes of study and cohorts in one higher education institution; and

2) to investigate the plausible role of university policies in determining this effect.

Motivation

This paper originates from a three-year longitudinal project to evaluate the accuracy, reliability and scalability of a selection of measures to track student learning over time. Student marks were one of the measures that were evaluated.

Previous research (e.g., Stegers-Jager, Themmen, Cohen-Schotanus, & Steyerberg, 2015; Thiele, Singleton, Pope, & Stanistreet, 2016) and internal university reports had shown the predictive validity of initial student performance and background factors on final degree classification. We decided to expand on previous findings by looking for patterns in the actual trajectories traced by student marks, rather than focusing on the odds that students with certain characteristics would graduate in a given category.

Our approach enabled us to compare student- and programme-level trajectories within the same cohort and also over time. We found that they were remarkably stable. This spurred us to investigate whether they had been systematically affected by institutional factors and, likewise, whether the few outlying trends we observed had been facilitated by university policies. In other words, we decided to for policy constraints and policy enablers of achievement variability.

This paper will present findings from this ongoing research and discuss the implications of the predictability of programme-level and student-level achievement for future policy.

Research questions

1) What changes in the student- and programme-level achievement trajectories have taken place in the last 10 years in this higher education institution?

2) What university policies might have enabled or constrained the achievement variability on an institutional level or at the level of specific programmes?

Data

Historic data are being extracted from the university database on successive cohorts from 2005–6 to 2015–6. Each of these cohorts includes a total of 1700–2000 undergraduate full-time students who graduated on time from a 3-year course. This sample represents about 75% of all undergraduate full-time students graduating on time in a given year and just over half of the total population of graduates. Both UK and overseas students are included in the analysis.

To account for the students' different educational experiences, the programme of studies from which the students graduated are also being extracted and mapped onto the corresponding JACS 3.0 codes. This is done to

allow other institutions to replicate our analysis in their contexts and compare findings whilst keeping student and departmental-level data anonymous. Fifty comparable programmes of studies have been identified.

Student-level variables such as gender, fee status, socio-economic status and course transfers are also included in the dataset and used as controls.

To collect data on university policy and programme-level changes, we are consulting publicly-available policy and strategy documents and we will interview senior managers.

Analytical methods

To model student and programme trajectories we fit three-level growth models.

Multilevel models (Goldstein, 2011) are type of regression analysis which takes into consideration, to estimate coefficients, not just the data but also the grouping structure of the data. Our modelling approach enables us to capture not only the global achievement and improvement of the university, but also the relative differences in the intercepts and rates of change of students and programmes. Moreover, we carry out residual analyses to compare between- and within-programme differences within the same cohort, as well as between-cohort differences.

University policies are analysed through theory-based stakeholder evaluation (Hansen & Vedung, 2010). The purpose of this approach is to use the stakeholders' knowledge of university policies to identify those that could directly or indirectly affect student marks, make their programme theories explicit (i.e., the set of assumptions and mechanisms through which policies could impact on scores, see Chen, 2005), and evaluate the likelihood that they did.

Findings from the quantitative and qualitative strands of the research will be linked, so that score trajectories are mapped to specific policy influences. This way, we will be able to detect and separate policy enablers from policy constraints.

Findings and implications

At the time of writing, the analysis is still ongoing and covers 4 out of 10 cohorts. We can confirm the stability of programme-level trajectories and the low inter-cohort variability of student achievement levels and rates of change. We also did not find evidence of score inflation, which is often claimed to be one of the consequences of high-stakes accountability in both the US (Kostal, Kuncel, & Sackett, 2016; Rojstaczer & Healy, 2012) and the UK (Bachan, 2015).

Some academics, who were preliminarily approached to evaluate our methodology, claimed that one factor behind the predictable reproduction of achievement trends might be some accountability demands introduced in recent years and thought to have resulted in a low-risk approach to performance delivery across programmes. They also suggested that a few outlying patterns in the programme-level trajectories might have been due to changes in marking criteria and intake requirements.

We currently have no evidence whether this may or may not be the case, but it is a compelling point worth exploring further, though other hypotheses will also be explored.

This study has research and, potentially, policy implications. From a research perspective, it advances current methodologies for measuring achievement at the student and programme level. It introduces a mark-based approach that could be easily adopted by other higher education institutions and lays the bases for replicating its findings.

From a policy perspective, if findings showed that recent policy constraints had indeed fostered more stability than variability in student and programme outcomes, this would suggest that future policy development should consider supporting teaching and learning with flexible policies that are able to ensure standardisation without

suppressing naturally-occurring performance fluctuations. Otherwise, there would be a risk that accountability outcomes become increasingly detached from actual student learning, and that examination results progressively lose their validity as measures of (and for) learning.

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