Serial number 0271

Title Assessing Student Self-Assessment: An Additional Argument for Blended Learning

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Outline

Introduction

This paper, by comparing and contrasting between two different formative assessment protocols used in a first year undergraduate module, investigates the formation of student self-assessment skills. We operationalise the concept of self-assessment skills by measuring the relationship between student attainment and student confidence in their own performance. We find that, whilst this understanding of student confidence is related to attainment levels, there is a significant asymmetry across the two protocols adopted. Independent of the formative assessment type, high-attainment students display a consistent positive association between confidence and attainment. In contrast, low-attainment students display a relationship between confidence and attainment in only one of the two formative assessment set-ups. We conclude that self-assessment skills are tied to the assessment format.

Background

Good academic practice regularly highlights the importance of developing student ability to self-assess. McMillan and Hearn (2008), for instance, emphasise that self-assessment is a critical skill that enhances student motivation and achievement. This is supported by the empirical research, with Guzman et al. (2007) demonstrating a positive correlation with student success and final exam performance. Recent research has led to a prolific psychological debate (see Zell and Krizan, 2014 for a recent survey) and an extensive literature specific to Higher Education (Evans, 2013; Mok *et al.*, 2006; Boud and Falchikov, 1989). One aspect in this literature is the role of learning technologies in developing self-assessment strategies (Edwards, 1989). Our research takes inspiration from the analysis by Dunning *et. al.* (2003); a paper which argues that low-performing individuals tend to overestimate their abilities. In particular, we exploit the opportunity of testing students' self-assessment skills across a varied Blended Learning environment composed of different assessment protocols. Our investigation confirms the results presented by Dunning *et al.* (2003) in only one of the two assessment protocols employed in our analysis. This finding contributes to the debate on the relationship between attainment and self-assessment skills by arguing that such a relationship is intrinsically linked to the typology of assessment employed.

Methodology

Our data, to enable testing of self-assessment skills in different contexts, takes advantage of a rich Blended Learning environment composed of lectures, seminars, workshops and support sessions. In particular, we focus on formative assessment administered at the beginning of each seminar and workshop session (giving a total of seven sessions each) across a single academic year. At the beginning of each seminar session, students were presented with a paper-based quiz composed of three or four multiple-choice formative assessment questions, and one self-assessment question asking them to rank their confidence about having answered correctly to the majority of questions. Students would have approximately five minutes to complete the test. In workshops students would interact with the session facilitator through Student Response Systems. In particular, students would answer a range of multiple-choice questions according the following algorithm: (1) formative assessment question (first round), (2) self-assessment question on having provided the right answer, (3) time for peer-instructed discussion, (4) re-iterated polling of the formative assessment question (second round).

The construction of attainment and confidence indicators was based on a standard protocol applied to both seminars and workshops. Self-assessment statements for both seminars and workshops were collected using a four-level Likert-scale, and collapsed in a binary variable (confident/not-

confident). Subsequently, attainment/confidence binary indicators were constructed to flag whether each student displayed a level of attainment/confidence above or below the session's average. For each seminar and workshop session, attainment and confidence indicators were summarised in a contingency-table organised on two levels ('high' and 'low'). Statistical analysis of the association between attainment and confidence levels was performed through a Fisher's Exact Test, with positive association denoting the presence of good self-assessment skills.

Findings

The results of our analysis show that the levels of attainment and confidence, in both seminars and workshops, are significantly related in five out of seven sessions. However, there is an interesting and consistent asymmetry. In workshops we observe a strong positive association between attainment and confidence levels, denoting that students performing well are aware of their good performance, as much as students performing below average are aware of their poorer performance. In contrast, in seminar sessions, the positive association between attainment and confidence is only driven by the group of high performers. In other words, while high-performers display relatively higher confidence levels, the group of low-performers displays an equal split of low and high confidence levels. Therefore, students underperforming in seminars' assessment seem to struggle not only with the learning material, but also with their ability to self-assess their knowledge. The construction of binary indicators that are relative to the average per session allows us to control for increasing difficulty of the material taught, and to compare student self-assessment skills across the whole academic year.

We conclude that the group of high-attainment students displays good self-assessment skills irrespectively of the type of assessment administered to them. In contrast, the assessment protocol appears to affect the self-assessment performance in the group of low-attainment students. Therefore, given the differences in the protocol adopted to administer formative assessment in seminars and workshops, we observe that low-attainment students encounter more difficulties in self-assessing their performance in a learning environment where: (i) they self-assess their 'overall' performance on a composite task; (ii) they operate under stronger time-pressure; (iii) they are exposed to a smaller number of questions; (iv) their performance is evaluated in a non-anonymous way.

According to our findings, we argue that a Blended Learning environment facilitates the development of complementary skills: the workshop assessment set-up allows all students to receive validation in their learning experience and to develop self-assessment skills that correctly identify problem areas. Nevertheless, the seminar assessment set-up still represents an important milestone as students are often expected to be able to develop problem-solving skills in a time-pressured environment. Further items on our research agenda will tackle: (i) strategies to improve self-assessment skills in a seminar set-up, and (ii) a deeper analysis on the role of learning technologies (such as Student Response Systems) in affecting the relationship between attainment and self-assessment skills: a field still largely unexplored in the Higher Education literature.

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