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Virtual Learning Environments: Linking participation to evaluation



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ABSTRACT

This paper considers the role of online multiple choice revision quizzes within the Virtual Learning Environment as a means of improving learning outcomes. A quiz was offered to 1st year undergraduates. Results were analysed to consider whether student participation improved performance. The analysis reveals little or no direct association between exam performance and participation, both at the mean and throughout the performance distribution, suggesting that the benefits from participation in on-line revision aids are not large. The use of such material needs to be made available judiciously since it may encourage displacement activity and provide little material benefit to the student.

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1. Introduction

Engaging with students on large undergraduate modules is a perennial problem. The lecture format, for all its strengths, can be perceived to be an impersonal and anonymous environment which does not encourage active participation in the teaching and learning process (Trowler, 2010). However, it remains a convenient way of imparting information and explaining key concepts within

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the higher education sector and is unlikely to be replaced as the main form of contact between lecturer and student any time soon (Biggs, 2006).² The purpose of this paper is to explore additional ways to engage with students to complement large lectures.

Improving student engagement is essential if we are to encourage a more active learning approach within the undergraduate community. In order to evaluate the usefulness of both multiple choice quizzes as a revision aid and the effectiveness of VLEs (Virtual Learning Environments) as a means of engagement, this paper provides an evaluation of the impact of an online revision quiz on the final exam marks of a large, first year undergraduate module. The course was generalist in nature, split between two lecturers (the two authors) and covered two broad economic policy topics.

As a large first year core module with two hourly lectures per week, it was difficult to engage with the students on a small group basis. This was particularly frustrating given that the nature of the material delivered lent itself to in-class discussions. Moreover, because of regular changes to the material covered, past papers were of limited use for revision. The aim of the multiple choice quiz was therefore to improve student performance through:

1. Engaging with the students outside the lecture environment
2. Assisting with their revision

By collecting information on quiz uptake and marrying this up with information on subsequent exam performance, the pedagogic question this research is able to consider is whether engagement in multiple choice quizzes delivered via the VLE improves student performance. Existing evidence on the impact of additional online resources in economics is relatively thin on the ground despite their proliferation as add-ons to core text books. This paper goes some way in addressing the evidence gap. The paper is organised as follows: the following section discusses the recent literature in relation to student engagement and interactive learning environments. Section 3 outlines the data and Section 4 discusses the nature of the intervention, the estimation strategy and ways of controlling for student heterogeneity for evaluation purposes. Section 5 presents the results and in Section 6 we conclude and discuss the limitations and possible extensions for this research.

2. Student engagement and revision aids in Virtual Learning Environments

There are two elements of pedagogic concern in this paper: firstly, the value of multiple-choice testing as a means of formative assessment and secondly, the impact of engagement (defined in terms of attendance at lectures and use of VLEs) on performance.

2.1. *The value of multiple-choice testing for formative assessment*

Dunn and Mulvenon (2009) offer a broad review of the available evidence on “formative assessments”. They are unhappy with the vagueness of the term and are critical of the lack of empirical evidence. In a study by Sly (1999), the use of practice tests as a means of exam preparation was assessed. Her findings indicate that the weaker students who undertook the tests outperformed higher ranked students. However, her study does not appear to control for any other student characteristics beyond whether they undertook the test. Clearly there are likely to be factors that determine both whether students engage in the test and performance in tests and this study is able to control for a range of these factors.

Multiple choice questions within the context of lectures have been seen to be useful in reviewing material covered in class (Salemi, 2009) but concerns exist about their usefulness as a source of assessment at a time when they have become more abundant as teaching staff look for efficient ways to manage their workloads. Whilst they are viewed as a less subjective form of assessment (Becker and

² Notwithstanding the increasing popularity of flexible teaching or classroom ‘flipping’ (Berrett, 2012), lectures still dominate.

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