# *Do the teachers share the greater 'burden' of Blended Learning?* : An evaluation of innovative approaches to economics teaching

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**Abstract**

Teachers are increasingly expected by university management to teach using flexible, blended and online teaching practices. Some teachers are intrinsically motivated to innovative, while others widespread resistance. In this paper we use the Cost-Benefit Analysis (CBA) framework to evaluate the adoption of innovative approaches for teaching two economics courses at Lincoln University. Although it is difficult to estimate the costs and benefit in dollar value, as is done in a traditional economic analysis, we argue that the CBA framework provides a rationale for adoption for individual teachers, and more importantly, a very clear policy direction for those who are tasked with shifting teaching practice across an entire faculty or institution.

***Keywords:*** Blended Learning; Cost Benefit Analysis; Innovation; Teaching Economics

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# I. Introduction

Recently there has been a significant shift in the way teachers are expected to teach resulting from a drive for academic institutions to use flexible, blended and online teaching practices. Some of this drive has been self-motivated by a bottom-up pull from innovative teachers wishing to incorporate educational technology into their practice in an effort to improve learning outcomes. A more significant part of this drive, however, has been a top-down push from administrators wishing to increase student access and capture new markets. In the absence of very carefully crafted implementation and staff development plans, the top-down approach seems to have led to widespread resistance from teachers who are reluctant to change the way they teach.

In this paper we use the Cost-Benefit Analysis (CBA) framework to evaluate the adoption of innovative approaches for teaching two economics courses at Lincoln University. Although it is difficult to estimate the costs and benefit in dollar value, as is done in a traditional economic analysis, we argue that the CBA framework provides a rationale for adoption for individual teachers, and more importantly, a very clear policy direction for those who are tasked with shifting teaching practice across an entire faculty or institution.

The paper is organized as follows: Section II contains a brief literature review examining the issues of change management and the adoption of innovations as they relate to teaching practice. In section III we look at both the theoretical drivers of staff resistance and openness to the adoption of new technologies and at a number of studies that empirically test the theory as it relates to teaching practice. Section III compares the online learning tools for two courses, as case studies. In section IV we evaluate the courses by applying a CBA framework. Cost is measured as the lecturer's personal reflection on time allocation of developing online tools, and the benefits are assessed on two aspects: one, lecturer's evaluation on perceived improvement in learning outcomes, and two, students' perception on new learning space. Section V concludes.

# II. Drivers of adoption of teaching innovations

## A. General organisational theory

Standard 'textbook' theory, such as that found in Bartol et. al. (2008) suggests that resistance to change can come from both individuals within an organisation and from the organisation itself. Individual barriers to change include concerns about economic insecurity, fear of the unknown, threats to social relationships, habit, and the failure to recognise the need for change. Organisational barriers to change include structural inertia, work group inertia, threats to the existing balance of power, and a fear of repeating previously unsuccessful change efforts.

Rogers (originally 1962, see 2003 p282) argues that the most important factor determining the rate of adoption of an innovation is the degree of interpersonal communication within an organisation. Rogers classifies individuals within an organisation according to their willingness to adopt new technologies: innovators, early adopters, early majority, late majority, and laggards. Innovators and early adopters are typically younger, highly educated and self-confident risk-takers who feel secure in their opinion leadership roles. The early majority adopt technologies at a slower rate, usually after close contact with early adopters. The late majority approach innovations with a high degree of scepticism and adopt only after a critical mass of people have adopted before them. Laggards are typically older, isolated 'traditionalists' that show little or no respect for leadership and have an aversion to change.

Rogers identifies four other important factors for diffusion of innovation: the degree to which a new technology is seen as being better than the status quo; the compatibility of the innovation with existing skills and values; the complexity of the new technology; the ability to test and observe the innovation working.

## B. Factors influencing the adoption of technology in teaching

Maguire (2005) collates the finding of thirteen papers on barriers and motivators of faculty participation in eLearning innovations. Maguire finds that uptake of online technologies is more likely when intrinsic factors such as personal motivation to use technology, job satisfaction and a feeling of self-gratification from teaching online are present. Also important are extrinsic factors such as improved tenure and promotion outcomes, recognition of efforts from administrators and peers, and opportunities to collaborate with colleagues. Inhibitors to teaching innovation include resistance to change, intimidation of technology, fears about career and job security associated with loss of intellectual property, workload, lack of technical support, and a belief that technology is not aligned with pedagogical goals.

In this paper, we look more closely at three empirical studies, those by Finley and Hartman (2004), Birch and Burnett (2009) and Orr et. al. (2009). Finlay and Hartman (2004) report on an empirical analysis of the efforts to implement an institutional change at Western Michigan University (WMU) requiring teacher-preparatory faculty to use eLearning technologies while teaching future teachers. Via interviews of key change agents within the institution, the authors find that there are three key barriers to the adoption of technology by teachers were discussed. The first identified, and empirically supported, area of concern for teachers relates to a concern about whether eLearning technologies are appropriate tools for achieving their educational goals. Finlay and Hartman comment that "there is indeed a concern about the bells and whistles approach to technology integration… while not always looking for ways to better address pedagogical concerns". A second key finding was in regards to the level of skill teachers have in the use of technologies. The key theme of respondents was that on-going and one-on-one professional development was critical for teacher to feel comfortable about integrating technology into their courses. Finally, the authors found that a culture of innovation supported by close networks of communication amongst faculty was very important in encouraging uptake. Even casual conversation in the hallways was seen to be extremely useful in diffusing innovations.

Birch and Burnett (2009) interviewed academics and educational designers at the University of Southern Queensland (USQ) in order to identify pedagogical, individual and institutional factors related to the adoption of eLearning technologies. The authors find that the key pedagogical factors that motivate academics to use technology are a need to cater to diverse learning needs of students, and a desire to improve learning outcomes particularly those associated self-motivation and active learning. Interestingly, pedagogical concerns are not identified as significant inhibitors to adoption. Birch and Burnett find that concerns about workload and a lack of time are the key individual inhibitors to adoption followed by lack of reward and recognition. From an institutional perspective, Birch and Burnett find that at USQ the main barriers are the absence of a clear, program-wide strategic plan and specialised training.

Orr et. al. (2009) examine faculty perceptions concerning compensation and time, organisational change, and technical support and infrastructure at two different institutions in the University of North Carolina system (five highly experienced faculty members from each institution were interviewed). One interesting finding of the paper is that the availability of compensation for staff who attempt online teaching is not seen as a necessary motivator. Instead what is required is a strategy to ensure that academic staff members do not have to dedicate a lot of time towards course development.

Our reading of the literature suggests that, perhaps not surprisingly, there is near universal agreement with respect to the influences on uptake. However, one thing that we think, is lacking in the literature is an overarching unifying framework for the various studies. We suggest that the literature be couched in terms of costs and benefits. Simply, resistance to innovation is driven by teachers attempting to avoid incurring additional costs and adoption is driven by teachers trying to capture the benefits of innovations. Costs differ depending on an individual teacher's skills and characteristics, the timing of adoption, the administrative infrastructure, availability of support, etc. Benefits are largely driven by pedagogical improvement but also can include reduced time spent administrating the process of teaching. Only when the benefits outweigh the costs for an individual teacher or academic programmes, adoption is likely to take place. In this paper, we provide a qualitative estimate of costs and benefits of adopting innovative approaches for two economics courses.

## III. Case Studies on Adoption of Blended Learning: A Qualitative Measure for Cost

In this section we compare two hybrid courses: one, *Managerial Economics*, an intermediate microeconomics course, and two, *Development Economics*, a post-graduate course. The comparison is crucial as the courses differ not only in terms of level of study and course materials, but also on aspects such as class size and students' academic background. In each section, the rationale for adoption is followed by a discussion on major online tools developed as part of blended curriculum design.

### A. Case Study 1: Managerial Economics

For both the courses, the main motivation of the lecturer aligns strongly with the findings of Birch and Burnett (2009), discussed in the previous section. The analysis of student engagement by (Holley & Dobson, 2008) reports that inclusion of multimedia learning objects has contributed increased student participation. The case

study covers a student group of more than 1000 students studying Marketing and/or Business under London Metropolitan University. The more relevant for our analysis is the authors' interpretation of 'non-traditional' students. The authors argue that as "two-thirds of the students are mature learners, often with English as their second language", the effectiveness of activities adopted in a traditional campus-based universities is limited for the studied student group. The student presence in Lincoln University campus has declined over the years due to the perceived distance from the city life and students' involvement in off campus jobs. Reflecting wider trends (Farley, Jain, & Thomson, 2011), the lack of participation and engagement of students for a undergraduate microeconomics course was no exception and hence provided motivation for the lecturer to opt for blended learning. The principal aim of the lecturer was to develop a learning space that combines traditional lectures and a set of carefully designed online tasks intended to create a self-paced learning process. In this section we will discuss two learning tools adopted in the Managerial Economics course.

*1. Blending face-to-face and online learning*

The judicious and intentional blending of learning resources and student interactions in synchronous and asynchronous setting is increasingly evidenced by the literature as a highly successful pedagogical strategy (Dowling, Godfrey and Gyles 2003, Bryant, Kahle, & B.A. 2005, Akhras, C. 2012, Ward, De Silva, & Weil, in print). For Managerial Economics course, the blending was executed through redesigning each of the modules. Figure 1 illustrates a standard module for ECON 215, with a range of activities under blended learning framework.

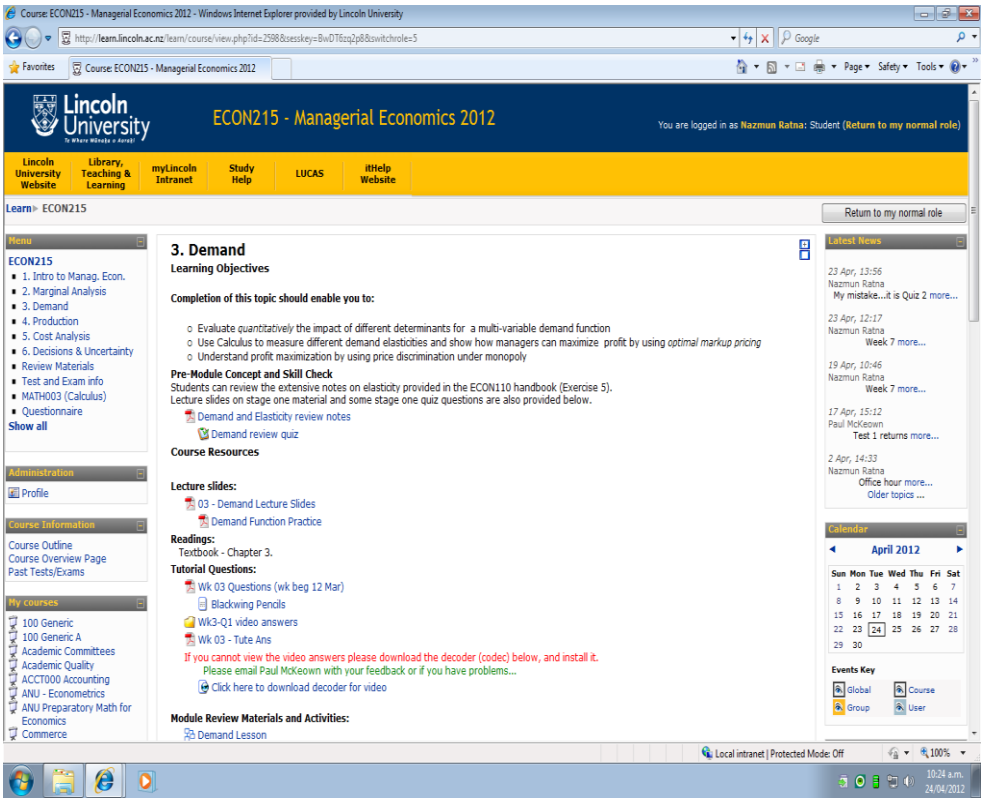

Figure 1: A standard module in ECON 215: *Demand*

In Figure 1, the first item under module for *Demand* outlines the learning objectives. These objectives describe the concepts and tools of analysis the students are able to understand and use at the completion of the module. These learning objectives also provide clear guidelines for the course assessments. The next section, termed as *Pre-module concept and skill check*, includes two 'self-study' activities. It deals with the concepts taught in the previous courses, followed by a quiz that measures competence in these. These pre-lecture activities also help the lecturer to focus the entire lecture time on new topics rather than revision work. The next section includes post-lecture activities like tutorials, '*lectorials' (*i.e. video of tutorial questions with a voiceover) and practice quizzes. The last section is an online interactive lesson, which offers content review opportunities with formative assessment of the student's on-going grasp of the learning objectives of the module. All of these online activities cater for the student's individual learning styles, provide them with formative feedback throughout the semester and consequently prepare them for final assessments.

*2. Personalised Learning Space*

The second tool was a set of online mathematics resources to encouraged self-directed activities. Previous iterations of the course showed a paucity in the required level of mathematical rigour among a large number of the enrolled students. In 2010, in consultation with education designers from Flexible Learning Initiative (FLI) and Teaching and Learning Services (TLS), Lincoln University, two online mathematics courses were developed: *MATH001 Mathematics Refresher* and *MATH 003 Calculus*. The students enrolled in Managerial Economics can access all the resources available in these two online courses.

Figure 2 illustrates a standard module in MATH 003, containing concept notes, interactive lessons, self-assessment quizzes and videos on *Derivative of Logarithmic Function*. Our aims were:

a. to introduce the basic rules of differential calculus, and
b. to enable students to apply those rules to solve problems in microeconomics.

MATH 003 has two branches of lessons to address these objectives: mathematical application and economic application. Instead of giving them zero marks for wrong answer, the lesson enables us to provide constructive feedback with links to the relevant concepts or worked examples. The question may then be represented in a different format to allow the learner to address the concept from another angle. Algebraic concepts, for instance, can be reframed as economic narratives. Students are also able to seek help from the 'Step-by-step' video developed by Khan Academy. These third-party resources are enhanced with suggestions on how to integrate them with other learning activities.

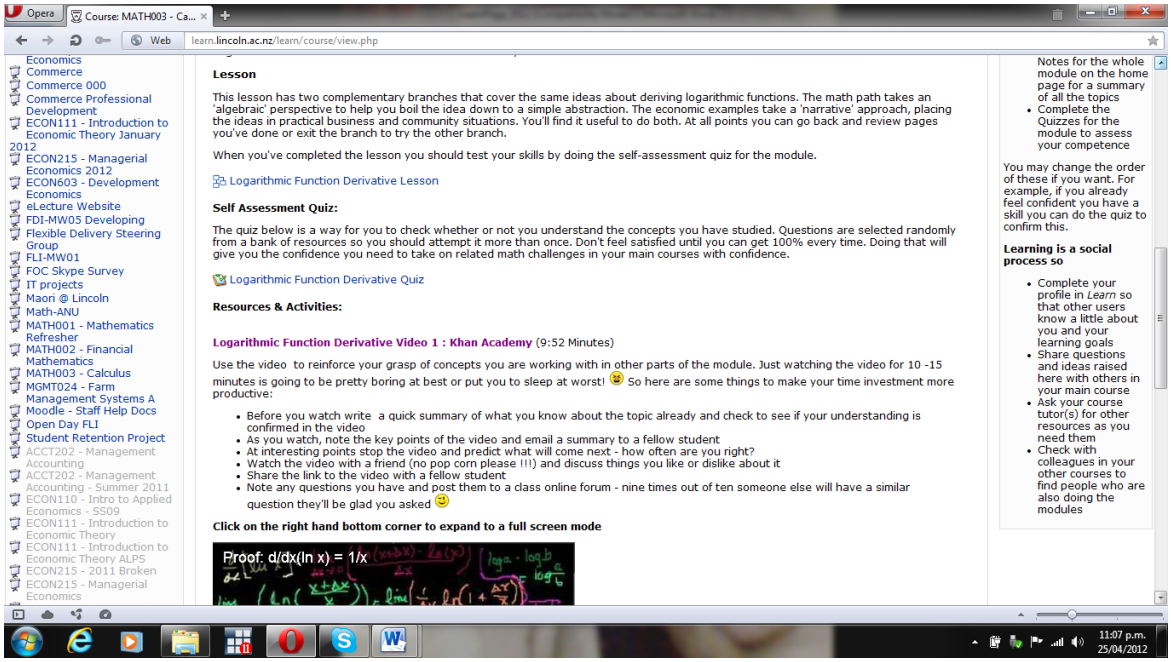


Figure 2: A standard module in MATH003: Logarithmic function derivative

**B. Case Study 2: Development Economics**

In this section we focus on an online discussion forum for the postgraduate course. The discussion forum primarily aimed at addressing the varied academic backgrounds of the enrolled students. The students enrolled for ECON 603 are from a range of social science disciplines. Given the breadth of the content, it was essential to deliver the core economic concepts to the students who did not have formal training in economics, but are well informed about the development issues such as poverty alleviation or income inequality.

Our rationale for constructing an online discussion forum, although driven by the needs analysis, also includes the following advantages:

1. collaborative process of knowledge-building process (Akhras 2012);
2. deeper reflections (Hara 2000 in Kaur 2011, Elvis and Calvo 2006);
3. immediate application of new information (Smith 2001, in Kaur 2011)

Figure 3 shows part of a discussion forum on the topics of " challenges and prospects of rural people." It depicts a trail of comments from two students, one from Denmark and the other from Venezuela. The lecturer has used this forum to provide constructive feedback aiming to evoke more debates/discussions. More importantly it enables the students to actively participate in group discussions, and verify their arguments outside the lecture time.

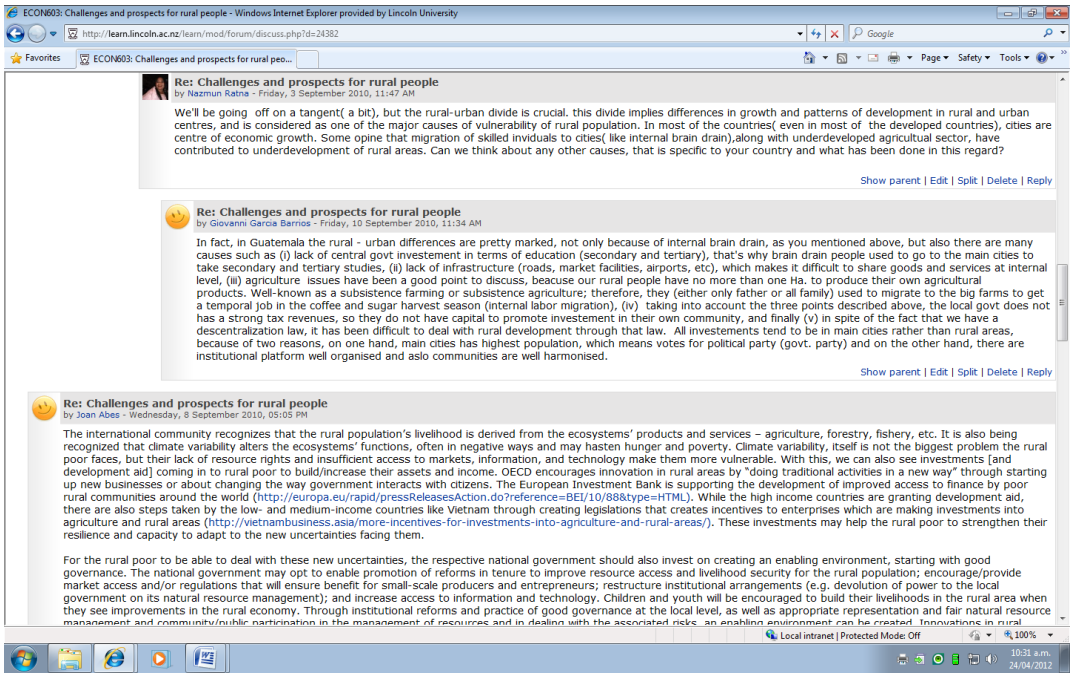


Figure 3: Discussion forum for ECON 603

## IV. Cost Benefit Analysis: Work in Progress

At this stage we are gathering qualitative data for measuring cost and benefit for three stakeholders:

a. the lecturer who offered both the courses
b. the students enrolled to the two courses for the period of 2011-2012
c. the other courses in the Faculty of Commerce and Lincoln University.

We acknowledge that the costs and benefits differ across people and over time, depending on what stage of adoption one is at. These are also dependent on the nature and extent of professional help from education designers, programmers and others for redesigning the course and developing online resources. Although limited to two case studies, our estimation of costs and benefits discussed in this paper will provide evidence for formulating effective teaching policies for Lincoln University and beyond.

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