



## Improving Learning Outcomes by Seeing “Vision”: Teaching Economics to Resource Students

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This paper describes an innovative approach to teaching introductory economics to students enrolled in resource degrees. A new course was designed to help these students engage with the subject by incorporating their “vision” into the study of economic principles. Quantitative evidence supported the hypothesis that first-year resource students have a different vision of economics than commerce students, and suggested that the new course improved learning outcomes for this group of students.



### Introduction

In 2005, the Ministry of Education published a review of international research on tertiary student outcomes. One of its findings was that ‘general studies suggest the emphasis should be on independent learners who prefer self-directed problem-solving’ (Rivers, 2005, p. 9). This presents a challenge for teachers of courses studied by students from diverse academic programmes: how can we encourage everyone in such a class to be a self-directed problem-solver if our tradition is to lecture on material from a specific conceptual perspective?

The question is particularly relevant in economics. All around the world, universities offer first-year courses on Principles of Economics that are taken by students from across the whole campus. The Principles course has a standard curriculum which studies the theory of how markets coordinate the individual choices of consumers and producers, followed by study of how in some instances it may be possible to improve on free markets. This approach seems to suit most commerce students (who typically represent the class majority), but is not always as appropriate for students from other degrees.

Prior to 2005, Lincoln University students who were enrolled in environmental management, landscape architecture, resource studies, social science or tourism management were obliged to study ECON 101 – a standard Principles of Economics course. In 2004, the mean mark for these resource students was 9 percentage points below the mean for commerce students in the same course. Consequently, a new course, ECON 105, was introduced to replace ECON 101 in the above five degrees. This course was designed to be at the same level as ECON 101, but was specifically aimed at improving the learning outcomes of the resource students.

## A Framework for Improving Learning Outcomes

The starting point for designing ECON 105 was a hypothesis that resource students typically come to their study of economics with a “vision” that is different from that of commerce students. The word “vision” comes from the Presidential Address to the American Economics Association given by Joseph Schumpeter (1949), in which he argued that different scientists come to their research with different visions of the world and their place in it (see McGraw, 2007, pp. 476–84). This is also true of students coming to their study of economics.

The typical commerce student takes for granted that the market system is a suitable mechanism for allocating resources and is likely to arrive in class with some curiosity about principles of economics. In contrast, students enrolled in resource programmes are typically passionate about issues such as environmental pollution, global climate change and resource depletion, and may be suspicious about market mechanisms. Their vision is often influenced by concerns about threats to eco-system sustainability, which may have inspired them to enrol in a degree they hope will equip them to play leadership roles in addressing those threats.

For students with this vision, a standard Principles of Economics course presents two barriers to learning. First, it does not address until late in the course their motivation for study coming from a desire to understand environmental issues. Second, it requires students to learn theoretical concepts in a business context that appears to have no obvious relevance to solving pressing environmental problems.

## Design for Learning

A number of educators have written about the value of engaging with students’ life experience in introductory economics courses; see, for example, Siegfried et al. (1991, p. 213), Bartlett (1996, p. 150), Caviglia-Harris (2003), Leet and Houser (2003) and Brewer and Jozefowicz (2006, p. 202). These authors suggest that students should be given opportunities to apply learned principles of economics to relevant examples. The design of ECON 105 took this advice one step further, by inviting students to learn the principles themselves in the context of addressing environmental issues.

Thus, each learning module in ECON 105 began with a real -world problem familiar to students from their own environmental concerns. The first module of lectures, for example, began with the class watching a documentary on ocean fisheries depletion (Empty Oceans, Empty Nets, distributed by Video Education Australasia, Bendigo, Australia, 2002). The documentary shows that sustainable growth in an unregulated fishery is generally followed by sequential periods of over-exploitation, collapse and slow recovery (see also Hilborn and Walters, 2001, Figure 1.1, p. 7).

Leet and Houser (2003) explain the power of a shared film in providing context for a class learning economics. This was exactly the role performed by this documentary. New Zealand is a small island nation, and so management of ocean fisheries is an important issue for the country’s resource students. The shared documentary was able to motivate students to engage with the ECON 105 course by reassuring them that their concerns for the environment were being taken seriously and by promising that the material they were studying would be relevant to those concerns.

The students were then told that the next block of lectures would develop an economic model to help answer four questions:

1. Why do fishing stocks get over-fished in an uncontrolled fishery?
2. Is this a case of market failure, or will markets fix the problem themselves?
3. In either case, what is the best way for policymakers to help recovery?
4. What is best for people's well-being?

Thus, the class learned the economic theory of competitive markets within a strongly relevant context of understanding an important environmental problem. The theory was then applied to illustrate the wide range of policy responses students had seen in the documentary. The module ended with the theoretical model being used to explain the policy adopted in New Zealand – issuing individual transferable quota permits, with a total allowable catch no greater than the maximum sustainable catch estimated by scientists (Lock and Leslie, 2007).

Thus, by the end of their third week, the resource students in ECON 105 found they had come a long way. In contrast with the more abstract approach of ECON 101, they had been exposed to material they could see was directly relevant to their interests. The module finished with students thinking about how a market-based policy (establishing transferable property rights) might address an important market failure (the tragedy of the commons). For some students this discovery that markets might be used to address an environmental problem challenged their original vision of economics in a way that helped their further study of the subject.

## Quantitative Evidence

In 2008, two exercises were undertaken to gather quantitative evidence about the changes associated with the introduction of ECON 105. The first exercise sought to test the hypothesis that resource students have a different vision from commerce students. There was already overseas evidence for such a difference, presented by Caviglia-Harris (2003). In 2008, the lecturers of ECON 101 and ECON 105 undertook a first-day survey of their respective classes to test if the same is true of students at Lincoln University.

For this exercise we used the Economic Attitude Sophistication (EAS) survey designed by Soper and Walstad (1983), comprised of 14 statements for which there is a strong consensus in the economics profession. Students were asked to indicate for each statement whether they strongly agreed, agreed, were undecided, disagreed or strongly disagreed.

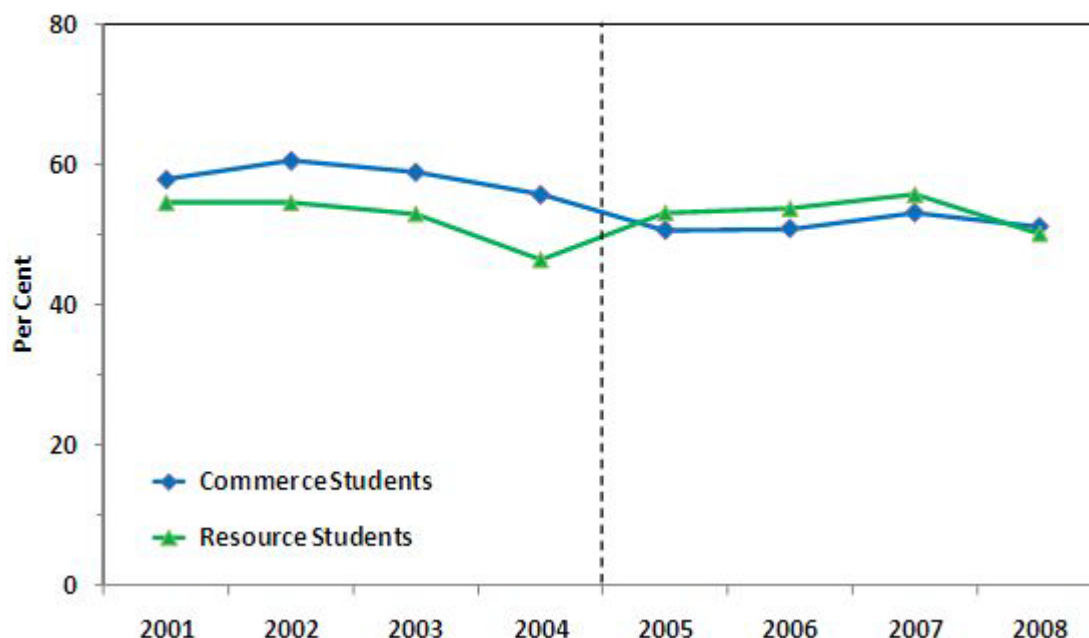
Full results are presented in Dalziel (2009a and 2009b). Overall, the commerce students were closer to the economics consensus position than the resource students, and this difference was statistically significant at the 1 per cent level (using the Student t-statistic to test the difference between two means). Further, the three questions where the significance was strongest were those focusing on business: the resource students were significantly less likely to disagree that business makes too much profit or to object to the government regulating profits or controlling big business.

These results are consistent with the hypothesis that resource students at Lincoln University enter the Principles of Economics course with a different vision than their commerce peers, particularly about the role of business.

The second exercise to gather evidence tested whether the resource students had better learning

outcomes in ECON 105 than they had in ECON 101. Figure 1 shows the mean marks for the resource students for the four years before, and the four years after, the introduction of ECON 105.

**Figure 1. Mean Marks of Resource and Commerce Students, 2001-2008**



It should be noted that a tragic death of a popular ECON 105 student in a mountaineering accident in 2008 undoubtedly affected the performance of the class that year. Nevertheless, the mean mark for the resource students between 2005 and 2008 was 53.1 compared to 51.4 between 2001 and 2004.

Although positive, large standard deviations in the data mean this improvement is not statistically significant. To explore whether the improvement might be due to cohort effects, Figure 1 also plots the mean marks for the commerce students between 2001 and 2008. This reveals a downward trend after 2002 with some improvement from 2006. The sharp and sustained improvement in the performance of the resource students from 2005 clearly runs counter to this trend.

## Conclusion

This paper has described an innovative course taught at Lincoln University between 2005 and 2008, designed to improve the learning outcomes of resource students by recognising that these students generally have a different vision of economics compared to commerce students. Previous evidence in the international literature had suggested this difference, which was supported by our own survey of the two groups.

The design incorporated relevant problem-solving as the core mechanism for learning the conceptual Principles of Economics, in line with internationally recognised good practice. Empirical analysis of the mean marks of the two groups of students measured a positive improvement for the resource students. This last result was suggestive only, however, and not definitive. It is possible that the improvement came about from statistical chance, or was perhaps due to other associated impacts such as the smaller

class sizes of ECON 105 or a higher than usual enthusiasm of a teacher and class involved in a deliberate pedagogical innovation.

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