Case Study
Applying Economics Threshold Concepts

Introduction and Objectives

Experience from teaching introductory economics courses designed for business students, most of whom with little or no prior contact with economics, shows that such students frequently find key economics concepts relatively difficult to comprehend, including such critical concepts of opportunity cost, marginal analysis, and the multiplier. Major concerns, particularly with regard to the non-specialists, are poor lecture and seminar attendance, weak grasp of key concepts and the ability to apply these, and poor performance leading to high fail rates and low grades. To a lesser degree such concerns apply to students on specialist economics degrees, but even here attendance can be a serious issue.

Given these concerns, we decided to address this problem by applying the Economics Threshold Concepts with the aim to develop first year undergraduates’ understanding of economics. Defined by Meyer and Land (2003) as transformative, integrative, bounded, and ideally irreversible, threshold concepts provide students with the opportunity to acquire transforming perspectives of the discipline, and their classroom application can form an important tool in promoting student learning.

Threshold concepts aim to integrate and define the scope of the academic subject with which a student is engaging (Myers and Land, 2005). One desirable learning outcome for students using threshold concepts is to enable the acquisition and competent use of a coherently structured body of ideas and procedures to analyse problems, promoting integration with and reinterpretation of prior learning. Threshold concepts can thus support the acquisition of the ways of thinking of a particular discipline and form a valuable aspect in supporting deep learning by students.

Designed to support an active learning strategy applied to a first year undergraduate economics course, the trial was aimed at improving module delivery for students, provide motivation to acquire and internalize key economic principles and enhance the development of student learning skills. Delivery of the trial supported and ran along a range of other teaching and learning techniques aimed at supporting the effectiveness of lectures, promote deep learning, maintain student interest in the topic, and encourage a positive attitude towards learning.

It was anticipated that the use of threshold concepts would assist in promoting the critical analysis of new ideas, the linking of ideas with known concepts and principles, and result in greater understanding and long term retention of the concepts to use in application and problem solving. A further aim of using threshold concept exercises was to encourage lecture and seminar attendance by engaging students in topical exercises.
In summary form, the trial's main aims were to:

- Introduce threshold concepts to the School of Management and Business of Aberystwyth University
- Investigate the feasibility of embedding selected threshold concepts of first year undergraduate business school teaching
- Develop relevant teaching materials and adapt existing materials
- Assess students' understanding of these concepts as a result of their use, and
- Investigate the feasibility of developing and using threshold concepts across related modules

**Implementation**

The ‘Embedding Threshold Concepts in Undergraduate Economics’ project has developed several types of activity including ‘reflective exercises’, ‘problem-focused exercises’ and ‘threshold network exercises’, available for free download and use, aimed at the introductory level economics syllabus.[1] Grouped under main divisions of the curriculum (microeconomics, macroeconomics, international economics), the exercises are aimed at translating the theory of threshold concepts to guide teaching and ultimately to improve students' performance.

A key objective of the trial was to overcome the often encountered problem of students leaving introductory courses without having grasped the essence of the subject, unable to think like economists, and for the most part incapable of applying the taught concepts, principles and ideas in a coherent way to make sense of economic relationships and analyse problems.

The downloadable exercises provide a number of set tasks for students to complete, provide feedback at the end of each task, and include notes for lecturers on objectives and prerequisites, sequencing and timing. Students complete one task and read the provided feedback relevant to the task before continuing on to the next task of the particular exercise. Once they have finished the tasks, students are encouraged and given the opportunity to reflect on their answers through written comments. The seminar leader then provides summary feedback on the exercise and highlights key insights and learning outcomes of the particular exercise. Students’ comments can be collected at the end of the seminar to allow analysis and, where deemed necessary, adaptation of the exercise.

There were four research groups of some 25 students each, both consisting of first year undergraduates taking core introductory economics principles modules over one full semester (22 lectures and 10 seminars). The class consisted approximately of 20 percent specialist economics students and 80 percent non-specialist business students. These students attended the same lectures but were separated into different seminar groups to reflect the different credit weight given to the respective modules they were enrolled in. The material used and discussed during seminars, and the teaching and learning techniques were the same, the main difference between the specialists and the non-specialists consisting in the number of seminar sessions to be attended and in the summative assessment requirements.
During the trial, each threshold concept was addressed in multiple stages. The first stage involved the introduction of a threshold concept during lectures, following the presentation of standard material. The general format of the exercises had been explained early on (i.e. 20-25 minutes formative exercises, given in the seminar, work as individuals or in groups, with prepared written feedback provided at the end of each task), and students are made aware of the types of activity to expect. The exercises were selected to match lecture material presented one or two weeks prior to the seminars.

Subsequent to this introduction, threshold concept exercises were conducted in seminars which began by posing an applied question in economics (issued in hardcover from resources available at the ETC website, adapted to particular sessions as appropriate). This allows seminar leaders to relatively quickly assess students' initial understanding and application of the concept. The questions are concise and topical so as not to lose students' interest, and allow completion in workshop time, including discussion and summary feedback provided at the end. Students were asked to complete the exercises in class rather than in their own time to ensure completion, to promote, where appropriate, team work, and to allow summary feedback to students immediately after the end of the exercise.

To reinforce the learning process, particular threshold concepts were also incorporated in other student tasks and exercises during the course, including both formative and summative evaluation, coursework, and group presentations. At a later stage (2-3 weeks after the exercise), a question similar to that of a particular threshold concept exercise was posed in seminars to gauge students' acquisition and understanding of the threshold concept. Threshold concepts were then presented once more in a final seminar and in a rehearsal lecture, tying these concepts to the material presented in class and required reading, and making further links with prior exercises, coursework and past exam questions.

There were minor implementation issues relating mostly to the absorption of the material and perceived usefulness of the exercises between the specialists and the non-specialists. Minor adaptation of the pace and sequencing of individual elements of particular threshold exercises also took place. On the whole, the specialists were more easily motivated, regarding results and attendance. However, the differences between the specialists and the non-specialists, who as noted earlier made up the bulk of students on the introductory economics modules of the School of Management and Business, narrowed as the seminars proceeded.

The latter result is perhaps a reflection of a gradual increase in appreciation of the value of these exercises and the insights to be gathered from the study of economics by the non-specialist business students. It is also worth reflecting whether student motivation, and the results in terms of student performance, may have been further enhanced if the threshold exercises were part of summative assessment. This ties in closely with general concerns with regards to student attendance and gives rise to considerations of additional means and practices to promote attendance (for an excellent summary of this problem and an innovative means of encouraging attendance see Paul Latreille's case study on the use of VLE technology available on the Economics Network).

The upshot
As this was a first implementation of an application of threshold concepts to the undergraduate curriculum at Aberystwyth University, students' understanding and application of threshold concepts was uncertain and anticipated to benefit from improvements to future adoption. However, although this conclusion is based on relatively low student numbers, it can be gathered from the student feedback that the threshold concept exercises did motivate students and allowed them to better grasp the key concepts that the lectures tried to convey.

Students particularly appreciated the feedback sections which immediately followed their attempts at a particular task. This either confirmed and reinforced their understanding of the important elements of the analysis that economics provided to the task at hand, or where they had been uncertain about an answer or their grasp had been superficial, this provided them with the thoughtful reasoning needed to improve their understanding of the concepts. Without a doubt, the exercises provided a further means of learning reinforcement.

A strong majority of students noted in reflection that the exercises were well structured, topical (and attracting their attention), relevant to the material being taught, and that their understanding of the threshold concepts improved as a result of the reinforcement the exercise provided and the feedback that was given. Students quickly also improved in completing the tasks successfully and their appreciation of the feedback and its value to their understanding gained strength with increasing familiarity with the exercises.

A second observation related to student performance. Again, the validity of these results is tempered by the relatively small number of students, but it was noted that the non-specialists appeared to have particularly benefitted from the exercise. The specialists maintained a high level of task performance, motivation, and appreciation throughout the trial. In terms of summary assessment during and post trial, the material produced by students, again particularly noticeable with the non-specialists, benefitted from the reinforcement of the learning process provided by the threshold exercises.

In conclusion, although the results of students' understanding are not necessarily representative after a one-time application, we feel that embedding threshold concepts exercises in undergraduate teaching significantly benefits student learning and yields positive performance results. Noticeable as the trial progressed, was a significant increase in the use and quality of applied economic analysis and a more consistent use of the economic toolset, evident in the quality of student answers to threshold exercises, seminar discussions, coursework, student presentations, and exam assessment.

Of course not all students showed such improvements, and in some cases the improvements might be considered marginal, but the non-specialists in particular appear to have benefitted from the use of the thoughtfully prepared material available from the ETC. These results also encourage the adoption of threshold concepts exercises in related economics modules. It is further intended to make these exercises a regular element of seminar teaching of undergraduate economics modules and to develop task examples to continuously reflect topical issues.

References


[1] The ‘Embedding Threshold Concepts project’ of the Institute for Education Policy Research at Staffordshire University was funded by the Higher Education Funding Council for England (HEFCE) and the Department for Employment and Learning (DEL) under the Fund for the Development of Teaching and Learning (FDTL5).