How would you contribute to scholarship in Economics at the University of Glasgow and Learning and Teaching: How to Improve the Students' Experience at the University of Glasgow

Rodney Beard

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Contributing to Scholarship at the University of Glasgow

- Scholarship of discovery
  - keep up to date with new knowledge
  - active participation in seminars
  - active participation in workshops and conferences
  - read and conduct research
- Current research focus:
  - Theory
    - Demand theory
    - Dynamic games
  - Applied game theory
    - Resource and environmental problems
    - Economic epidemiology
  - Empirical
    - Resource and energy

Scholarship of Integration

- As an applied theorist I sit between theory and application integrating both
- As someone with interdisciplinary background and interests I integrate different approaches into my work in economics
- Collaborations with other staff possibly in other schools
- Build collaboration with IBAHCM (logical for anyone in resource economics)

Scholarship of Application

- Engagement with the wider university
- Engagement with outside initiatives, e.g. EPIC project (Scottish Government Initiative approx. 4 economists) that I have been working on

Scholarship of Teaching

- Keep up to date on teaching, take courses where necessary
- Continue to develop and assess new ways of teaching
- Particularly continue to work on new ways of integrating technology into a traditional curriculum

Learning and Teaching: How to Improve the Students' Experience at the University of Glasgow

- Traditional lecture

"A course of pure philosophical study may start either from Modern and prevailing forms of thought, or from the long revered record of Ancient speculation. The former plan invites the student to work backwards into the past; the latter to work onwards into the present. Each has its advantages. The one is perhaps, best adapted to the professorial system, and a comprehensive course of doctrine; the other to the tutorial method, and a course of exact study. . . . The former plan is adopted by the Scottish Universities, and the latter by Oxford; and if Scotland has been deficient in philosophical learning, Oxford has not yet produced and independent school of philosophy"
- Alexander Campbell Fraser 1858.

Lectures need more interactivity

- Classroom experiments (suited for some courses, e.g. Microeconomics)
- Lecture materials need interactivity
  - Powerpoint is insufficiently interactive (students become passive learners)
  - Students could complete simple exercises during lectures (will show how)
  - Students need to be able to interact with lecture notes with each-other and the teacher
- JustinTimeTeaching
  - Short preparatory questions to be discussed in lectures
  - Available in advance
  - Combine with use of Tufte Handouts (short lecture summaries)
  - Useful for injecting more realism into the class

Using technology in a blended learning setting

- Economics involves manipulating graphs, data and equations to gain insight into the economy
- Technology can assist with this
- New tools need to be learned we cannot assume that students know them
- Cooperative learning enables the learning of new tools
- Teaching with tablets - allows a record of whiteboard notes (see Steve Myers' Blog on using tablets to teach economics)

Interactive exercises using technology

- Not just Moodle!
- Moodle may be used as a core of a learning ecosystem
- A computational system is needed
- symbolic computation
- data manipulation
- A graphing system is needed
- An algebra capable discussion board is needed
- These need to be integrated with Moodle (hyperlink to external pages), e.g. a library e-book Microeconomic theory and computation : applying the maxima open-source computer algebra system / Michael R. Hammock, J. Wilson Mixon

Some technology - IPythonNotebooks

- IPythonNotebooks (`http://ipython.org/notebook.html`)
  - Examples: Sargent and Stachurski, QuantEconNet
  - Interactive web-capable notebooks
  - Combine multimedia content with graphs, data and symbolic algebra
  - Disadvantages: Require learning something new
  - Cooperative in-class learning to overcome this with simple exercises
- May be used in any quantitative oriented classes
  - Particularly useful for core micro-and macroeconomics
  - Also for quantitative methods classes
  - Increased real world exercises - Data Journalism
- Maybe be viewed simply as notes or for more engaged students used interactively
- Free software

Some technology - Piazza (https://piazza.com/)

- Example: Haverford college, combines use of Moodle and Piazza via LTI tool in Moodle
- Piazza is an interactive equation capable Q&A system
- Anonymous discussion lowers student inhibition increasing participation
- Free Sign-up (No resource implications for the University)

Some technology - Nb (MIT) a collaborative learning tool for working with texts (pdf) (http://nb.mit.edu/)

- Students may annotate texts and ask clarifying questions (anonymous)
- Teacher responds
- Lecture notes become a dialogue between students and teacher
- Free sign-up (No resource implications for the University)

Teaching strategies

- Cooperative learning (Introductory)
  - Collaborative classroom culture students learn from each-other as well as the teacher
  - Students learn how to work both in groups and individually
  - Continuous feedback on progress
  - They learn how to work (workflow)
- Problem based learning (Intermediate)
  - Transition to research-led teaching
  - Interactive in-class exercises
- Inquiry based learning for more advanced classes
  - Research-led teaching
  - Extends JiTT into a flipped classroom setting.
  - Student focussed

Learning workflow

- Students need to learn how to work
- This needs to be taught
- Reading, note-taking, doing exercises managing references and report writing need to be integrated
- Need to build 'Reproducible Research' and 'Literate Programming' principles into the student learning experience (Peter Wittek discusses how this works)
- Education for the future use of new technology