Active or passive or both? Looking inside the ‘black box’ of lectures.

Anna Wood, Ross Galloway, Craig Young

Judy Hardy, Christine Sinclair

Anna.wood@ed.ac.uk
@Annakwood
Content

- What is Active Learning?
- The Framework for Interactive Learning in Lectures (FILL)
- Results from applying FILL to Physics Lectures in Edinburgh
Lectures

‘Traditional’

‘Active Learning’
Evidence for Active Learning


Compared learning gains for over 6000 traditional and active learning physics courses

Deslauriers (2011) Science
Directly compared traditional and active learning class

Freeman et al. (2014) PNAS
Active learning increases student performance in science, engineering, and mathematics
What is Active Learning (Interactive Engagement)?

..heads-on (always) and hands-on (usually) activities which yield immediate feedback through discussion with peers and/or instructors...

Framework for Interactive Learning in Lectures

Data Collection

- Lecture Capture Videos.
- 16 lectures, 8 from each course (1A and 1B).

Coding

- Constructivist grounded theory approach.
- Activities coded on a continuous (per second) basis.
Framework for Interactive Learning in Lectures

- Continuous temporal coding
- 1-second resolution
- Minimal training
Part 1: Quantitative Analysis

Average Time on Lecturer Talking = 55%
All interactive lectures are not the same
All interactive lectures are not the same
Implications for Practice

- FILL framework useful for characterising interactions in lectures.
- Gives insights that can inform teaching
- Easy to implement - analysis via lecture recordings
Conclusions

- Active learning is evidence based…
- …but classes vary considerably
- …and depends on implementation
- Lecturer talking can be used effectively with student-centred activities
For more details:

E-mail: anna wood@ed.ac.uk
Twitter: @annakwood

Theoretical Approach

Peer-Instruction

1. Pose question
2. Students think and vote
3. Students discuss amongst themselves
4. Students re-vote
5. Whole class discussion
6. Confirm and summarise
Context

- Large lectures: 200-300 students
- ‘Flipped’ Approach
  - Pre-readings and Quiz
- Active Learning Approach (Peer Instruction)