Large Group Teaching

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Session Plan

- Why large group teaching
- What has changed?
- The role of lectures in the Learning Journey
- PowerPoint Pitfalls
- Lecture Capture
- Flipped Classroom and hybrid delivery modes

What does typically happen in a lecture?

- Main vehicle to convey material
- Mostly done by the lecturer presenting
- Extra reading and tutorials to supplement that material
- Coursework to deepen knowledge (often on a particular aspect of the material)

Is the lecture outdated?

YES

Students and Staff put too much importance on lectures

Large lectures often don't utilise any staff/student or student/student interaction

and

NO

It is a regular opportunity to meet students

Opportunity to engage students in active learning

They are a cheap way to give students contact hours

What has changed?

- Technology
  - In-class voting systems
  - Video recording facilities
  - Lecture Podcasts
- Competition (e.g. MOOCS)
- Material (demand for more application focus)
- Understanding of Learning

Technology

- Ease at which content can be presented outside the lecture
- Reading (textbooks, blogs, newspapers, any other internet sources)
- Podcasts (audio recording)
- Lecture Capture
- Videos published online (e.g. Khan Academy)

Understanding of Learning

- (Deep) knowledge is constructed not passed on
- Students aim to integrate new material with existing knowledge and real life experiences
- May have to overcome existing mental models which is likely to require:
  - some element of active learning
  - student's motivation to learn
- Our aim:
  Engage more students into this type of learning

Lit: good summary by Steve Draper (Glasgow)

Active Learning

- Students actively engage with material / challenge their preconceived understanding
- Motivated students will typically do this by fully engaging with extra reading/tutorial questions/coursework and reading beyond the expected
- Can happen in different settings (but typically doesn't happen in a traditional lecture)
- Why not?

Aim: **By moving elements of active learning into the classroom we can perhaps engage more students into activities that facilitate deep learning**

Lit: Meta analysis of active learning in STEM, Freeman et al., PNAS, 2014

Challenges

- How can we create space in the lecture?
- What should we do in the lecture?

What do we want to achieve with a course unit?

- Facilitate student's (independent) learning
- Memorise information
- Extract principles and underlying meaning
- Integrate new with previously acquired knowledge
- Enable students to apply their knowledge in a new context

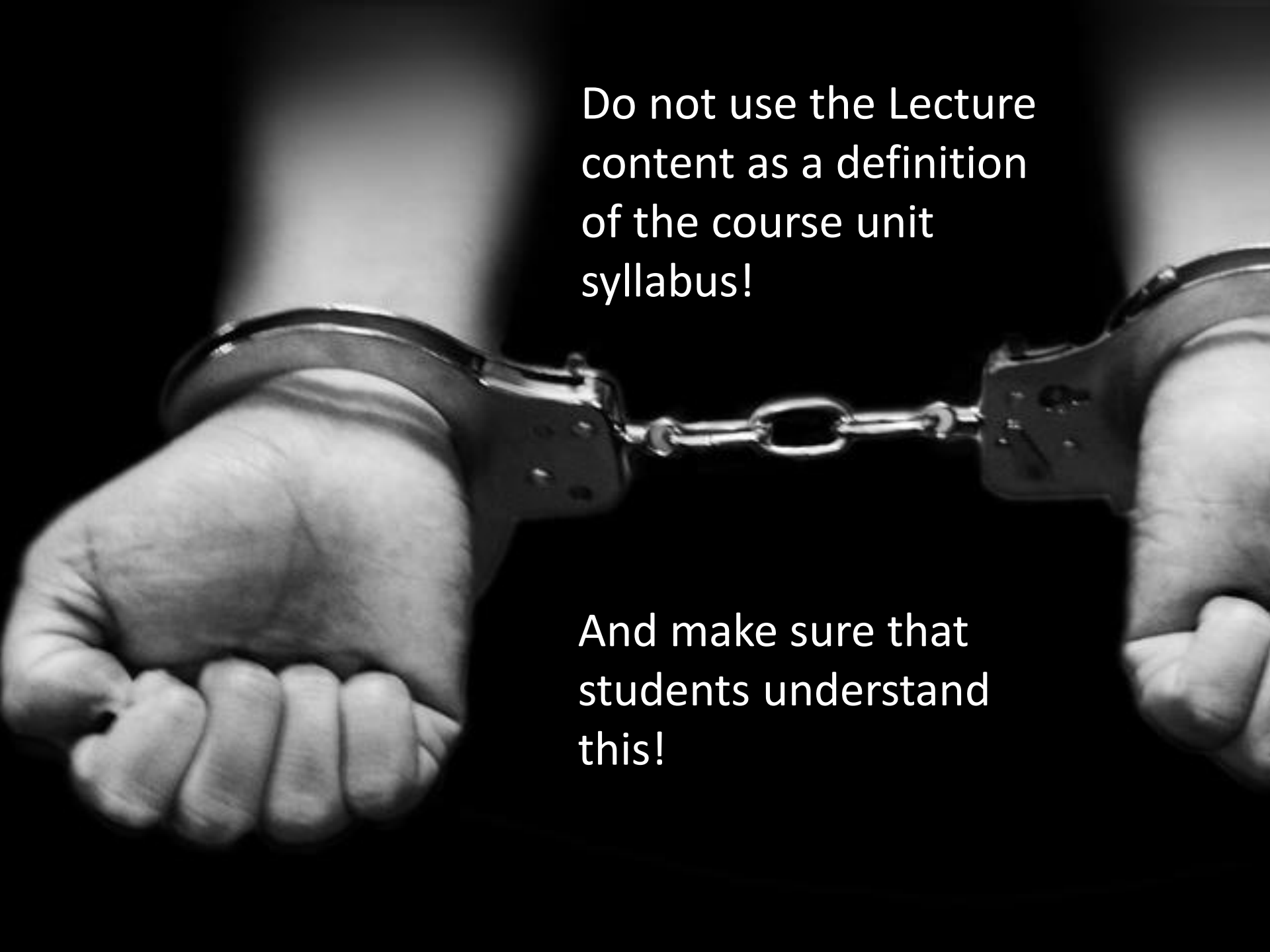
Source: University of Manchester, Manual of Academic Procedures

What tools do we have?

- Lectures
- Tutorials/Seminars
- Reading
- Coursework/Groupwork
- Online quizzes
- Podcasts
- Online Clips
- Peer Assisted Study Schemes

Tech enabled

BUT, all rely on students engaging with these!


Do not use the Lecture content as a definition of the course unit syllabus!
And make sure that students understand this!

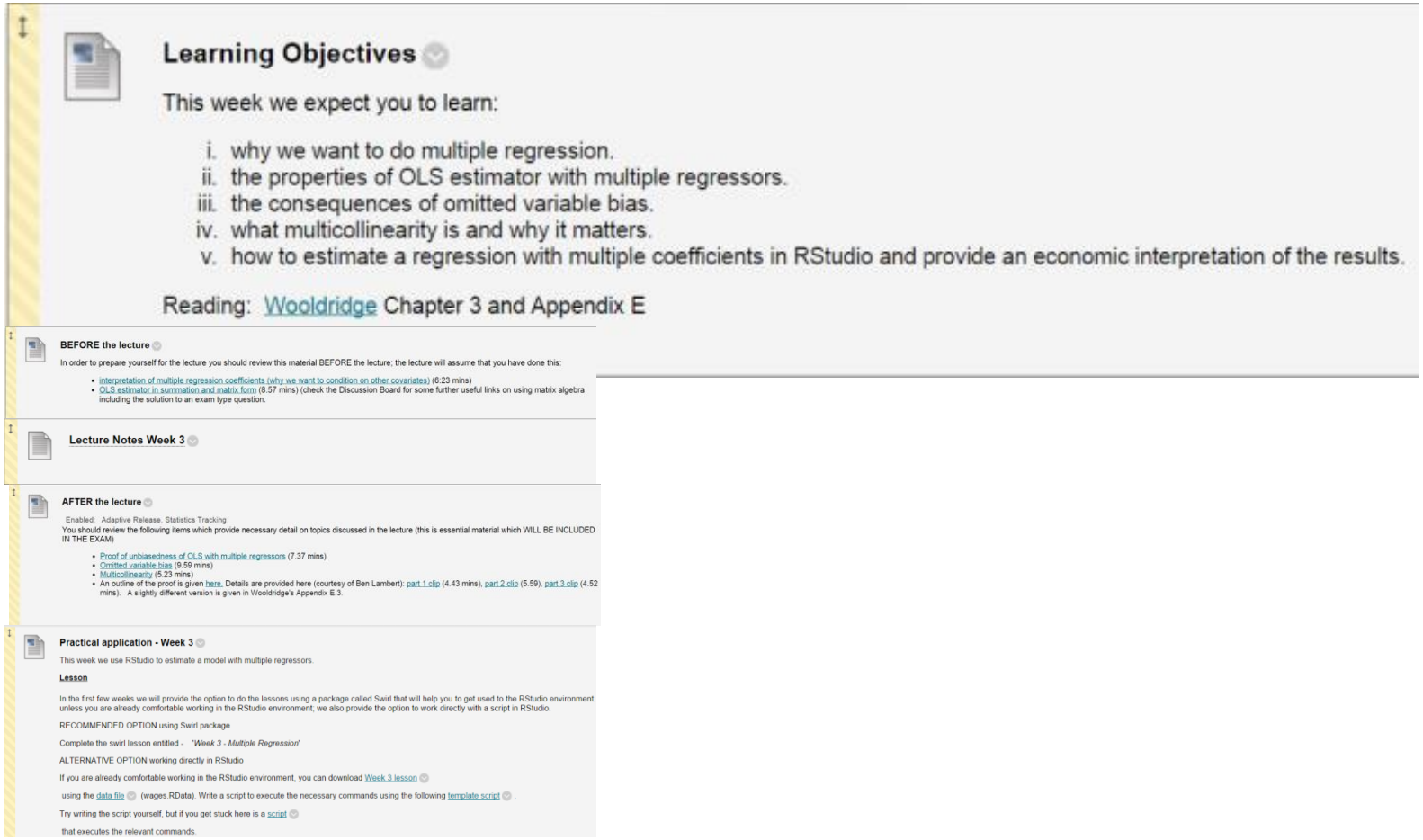
Think about the entire learning process not only the lecture!

- What is best achieved by lectures?
- What best by other tools?

Restrictions:

- School guidelines on how many lectures and tutorials you should put up
- Convention/Student expectation and work pattern
- Your workload

The Learning Journey - an example week



Learning Objectives

This week we expect you to learn:

i. why we want to do multiple regression.
ii. the properties of OLS estimator with multiple regressors.
iii. the consequences of omitted variable bias.
iv. what multicollinearity is and why it matters.
v. how to estimate a regression with multiple coefficients in RStudio and provide an economic interpretation of the results.

Reading: Wooldridge Chapter 3 and Appendix E

BEFORE the lecture

In order to prepare yourself for the lecture you should review this material BEFORE the lecture; the lecture will assume that you have done this:

- interpretation of multiple regression coefficients (why we want to condition on other covariates) (6:23 mins)
- OLS estimator in summation and matrix form (8.57 mins) (check the Discussion Board for some further useful links on using matrix algebra including the solution to an exam type question.

Lecture Notes Week 3

AFTER the lecture

Enabled: Adaptive Release, Statistics Tracking

You should review the following items which provide necessary detail on topics discussed in the lecture (this is essential material which WILL BE INCLUDED IN THE EXAM)

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Practical application - Week 3

This week we use RStudio to estimate a model with multiple regressors.

Lesson

In the first few weeks we will provide the option to do the lessons using a package called Swirl that will help you to get used to the RStudio environment. unless you are already comfortable working in the RStudio environment, we also provide the option to work directly with a script in RStudio.

RECOMMENDED OPTION using Swirl package

Complete the swirl lesson entitled - *'Week 3 - Multiple Regression'*

ALTERNATIVE OPTION working directly in RStudio

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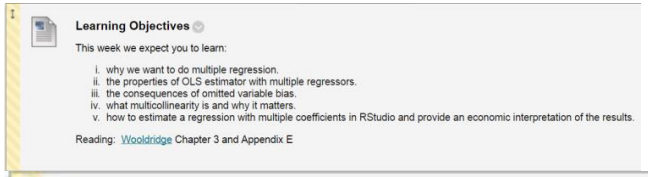

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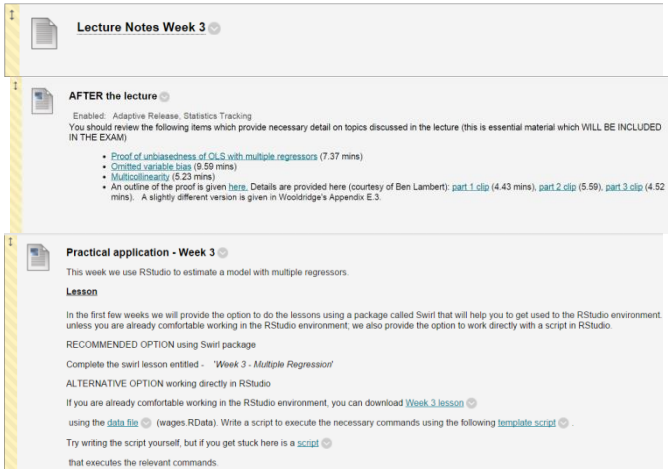

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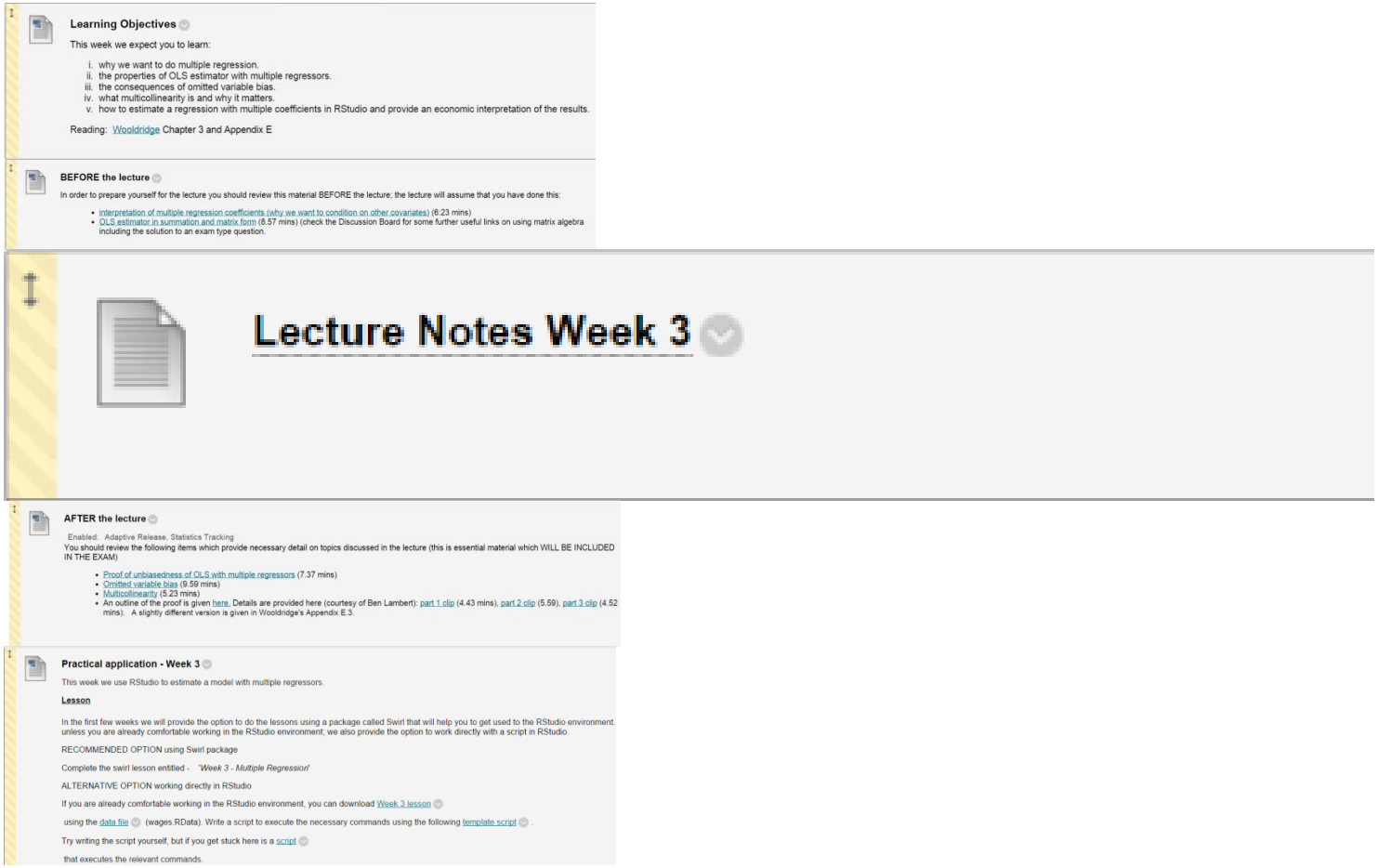

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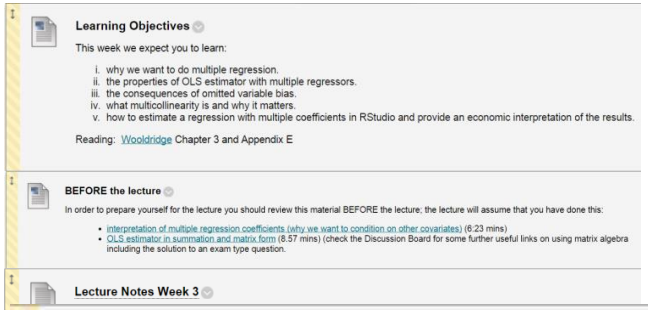

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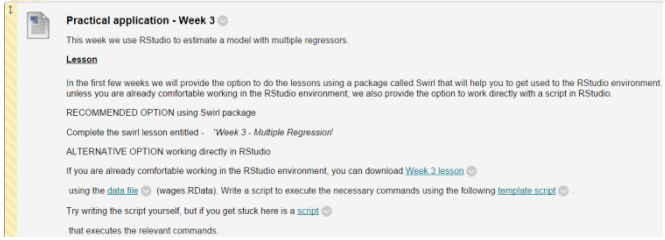

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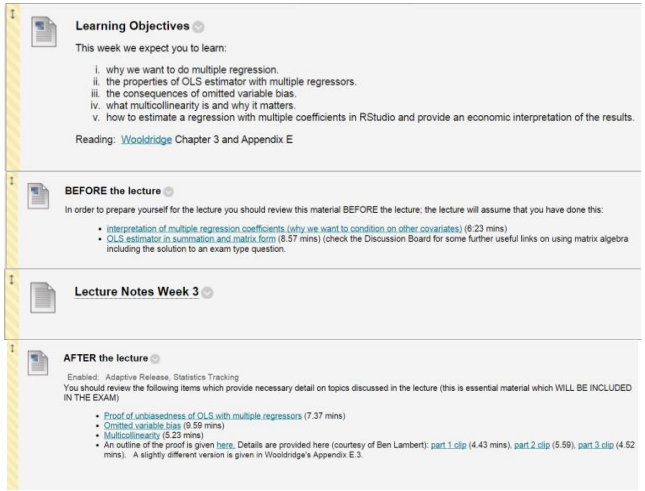

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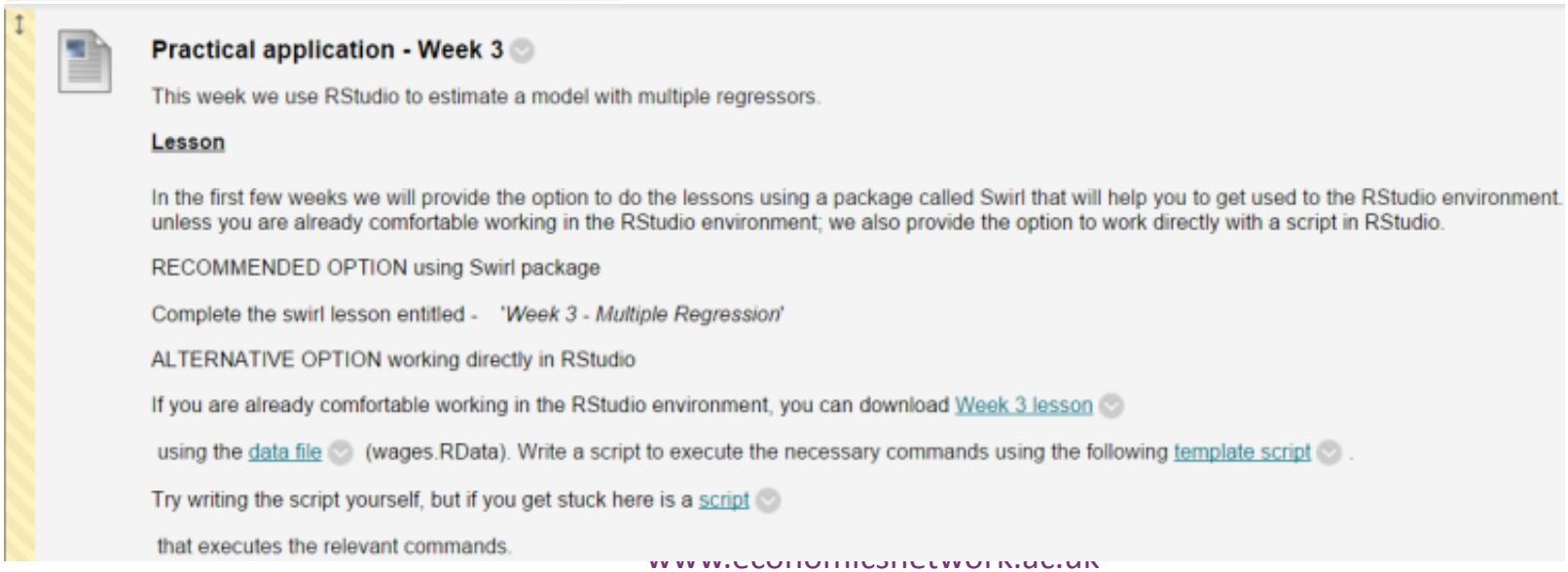

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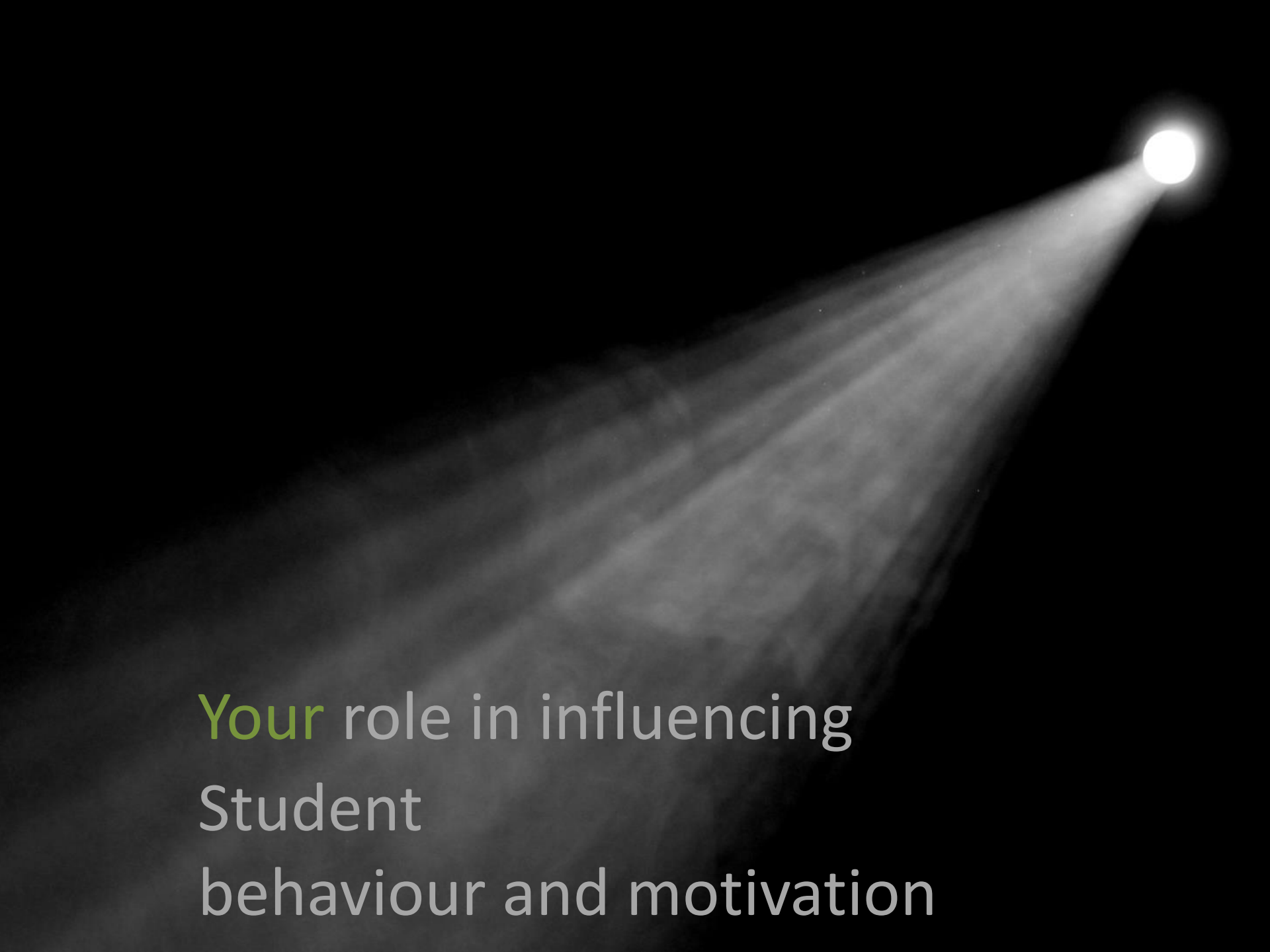
"Outsource" part of the (**examinable!!!!**) material away from lectures (either before or after)

- personally often to online clips, but could be reading or podcasts or other delivery means as well
- Very introductory exposition
- Long and tedious (but important) arguments
- Proofs

This gives **more time in lectures for**:

- More complex/subtle material
- Extended Examples
- Discussion
- Staff/Student and Student/Student interaction (e.g. quizzes, small practice questions)


Your role in influencing
Student
behaviour and motivation

Death by PowerPoint

Research Question 1

Random effects (GLS) regression with bootstrapped SEs to identify determinants of school efficiency score

$$\theta_{jt} = \beta C'_{jt} + \partial A'_{jt} + \gamma R'_{jt} + \rho E'_{jt} + \varphi M'_{jt} + \omega L'_{jt} + \tau T'_{jt} + (\alpha_0 + u_j) + \varepsilon_{jt}$$

C'_{jt} = vector of competition variables

A'_{jt} = set of dummies indicating the school's affiliation to a coalition

R'_{jt} = vector of reputation variables

E'_{jt} = vector of school characteristics

M'_{jt} = vector of variables about the county in which the school is located

L'_{jt} = set of location dummies

T'_{jt} = set of time dummies.

Research Question 2

How to produce a blockbuster

PowerPoint Hints

- Avoid too much text

  Definitions; Equations; Diagrams; Short Lists

- Avoid having too many slides
- Do not recite
- Avoid multiple types of animations
- Opportunities for pictures and hyperlinks

Why not go a little basic?

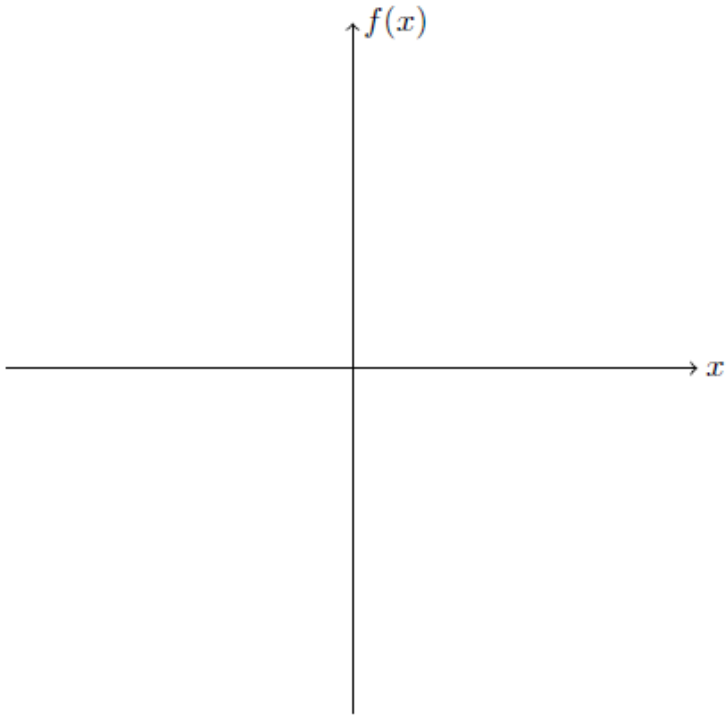
Example 1

Find stationary points and determine whether they are minima or maxima?

$f(x) = x^3 - 3x$
$f'(x) =$

$f'(x) = 0$ if:

$f''(x) =$



Lecture Capture versus Screencasting

Screencasting: recordings of presentations or computer screen content with audio

Lecture Capture: recordings of computer screen content, audio and the presenter.

Lecture capture systems include Panopto; Echo360; eStream

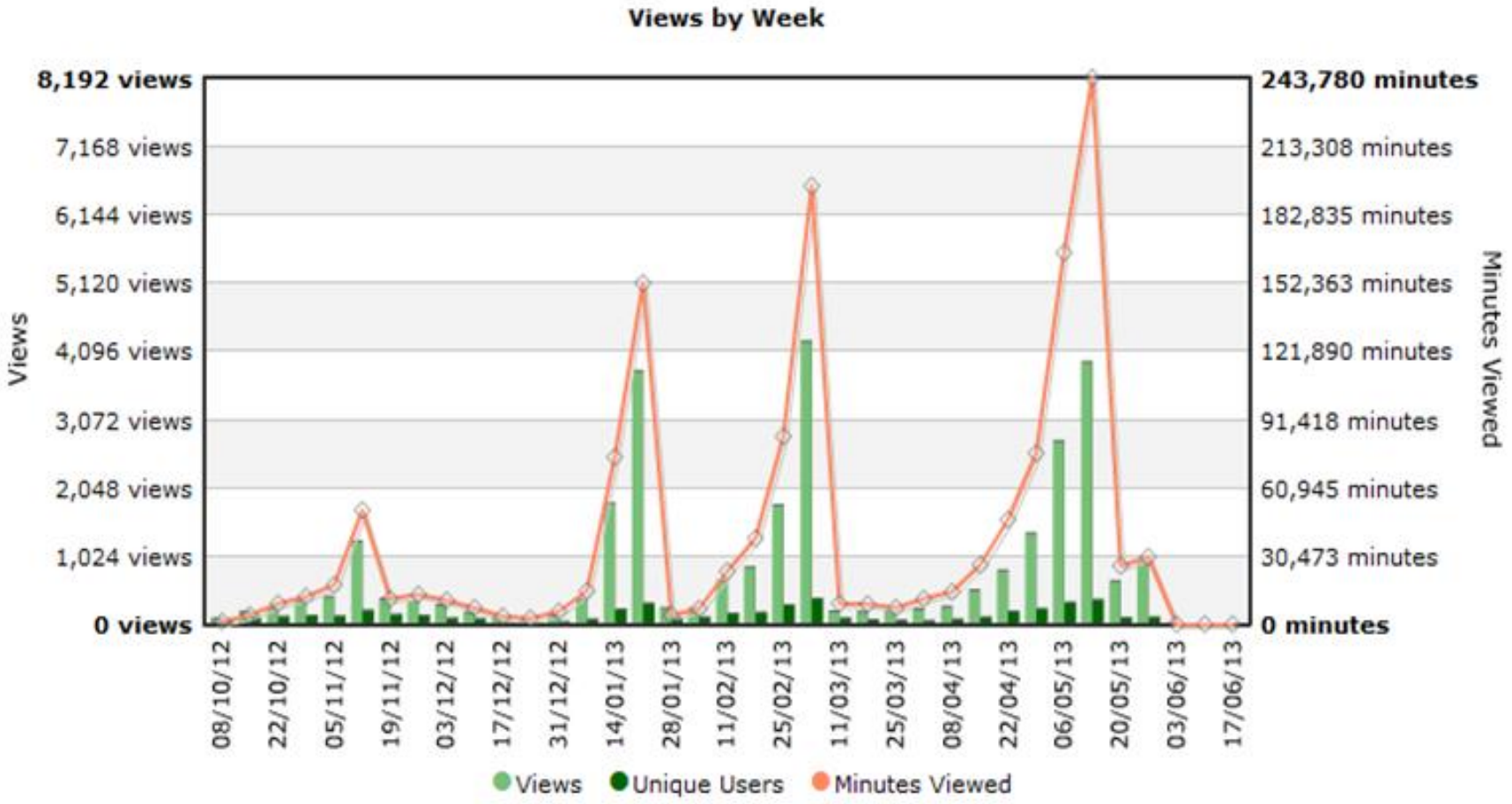
Lecture Capture Advantages

- Great for revision (pause and repeat)
- Additional support for students with additional needs
- For international students
- If distracted in class
- Lecturer can speed up
- You do not have to watch yourself
- You can watch yourself

Lecture Capture Tips

- Familiarise yourself with the technology in advance
  - Get used to using the pause button and the microphone in advance
- Repeat student questions and comments
- Don’t point at the whiteboard, you may not be seen
- Use the visualiser
- Don’t stray too far from the microphone - unless you have a lapel mic
- Use your hands to convey a message – do not jingle keys and loose change
- Give students reasons to come to lectures

Possible Usage Patterns



Lecture Capture Research

- Students do watch lecture recordings
  - but only view parts of lectures
  - Usage increases around successive tests

- No negative impact on lecture attendance or participation
  - Reduced demand for office hours

- Recordings supplemented rather than replaced lectures
  - Recordings encouraged independent learning

- If the lecture is delivered more than once, record the 2nd session

- Lecture Capture time saving compared to screencasting

Elliott, Caroline and Neal, David (2015). Evaluating the use of lecture capture using a revealed preference approach. *Active Learning in Higher Education*. http://eprints.hud.ac.uk/24540/


enjoy!