Learning from the Nerds
(Or, 'How I learnt to *survive* enjoy large class teaching')

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(Shh!) The secret to good teaching is ...

- Employing Good People
- Treating Students as on a path to the UN (or equiv.)
- Teaching things YOU find interesting
- Be Reasonable, Nice
- Teach the Truth
... and making technology work for you?

**Lecturing in Large Classes**

- Tablet PC
- Beamer-LaTeX
- Wikis

**Assessment in Large Classes**

- Damocles
- Discuss Logs
- Online Quizzes

**Administration in Large Classes**

- Discuss FAQs
- Feedback via SPAM
- Telling the World about it

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MONASH University
Business and Economics
Tablet PC

Lecturing in Large Classes

When to use:
- Always ... (?)

Why it is so good:
- DYNAMIC!!!
- Can have pre-prepared materials, but then dynamically edit them, scribble on them, create new materials -- all are saved
- Easy to use, easy to put on the web
- Students love it (so far) (survey results to come)

On the other hand:
- ? (a little more admin?)
In Pictures: the Classical case

Rate of Capital widening (reduction in capital/labour ratio) 

Rate of Capital accumulation (through savings of total output)

Source: adapted from (p.124) [Sachs2004]
'whiteboard' mode

Importance of using >yrs of data to capture period where most change occurred in health var.

**Avora's study** — how does growth rate in GDP/cap respond to shock in health variable (e.g. life expectancy).
Then using the first-order conditions (\( \lambda = \text{Lagrange multiplier} \)):

\[ \alpha_i \bar{x}_i \prod_{j \neq i} x_j^{\alpha_j - 1} \bar{x}_j - \lambda \bar{p}_i = 0, \quad i = 1, \ldots, m. \]

Multiplying \( x_i \) leads to:

\[ x_i \alpha_i \prod_{j=1}^{m} x_j^{\alpha_j} - \lambda \bar{p}_i x_i = 0, \quad i = 1, \ldots, m. \]

Summing these equations over \( i \) and letting \( \alpha = \sum \alpha_i \), we get:

\[ \alpha \prod_{j=1}^{m} x_j^{\alpha_j} - \lambda \bar{p} \bar{x} = 0 \quad \Rightarrow \lambda = \frac{\alpha}{y} \prod_{j=1}^{m} x_j^{\alpha_j} \]

which leads to:

\[ x_i = \frac{\alpha_i y}{\alpha p_i}. \]
'whiteboard' mode

\[ f(x^t) \geq \min \{ f(x^0), f(x^1) \} \]

Quasi-concavity.
When to use:
- Large class, teaching it more than twice, maths

Why it is so good:
- Great maths rendering, consistent typography, index, contents, references all work, large documents
- Write once, output multiple times!

On the other hand:
- Learning curve ...
- Drag and don't drop ...
Alesina: summing up

From the point of view of efficient aid, each of the “big three” donors – U.S., Japan, and France – has a different distortion:

1. The U.S. has targeted about one-third of its total assistance to Egypt and Israel;

2. France has given overwhelmingly to its former colonies; and

3. Japan's aid is highly correlated with UN voting patterns (countries that vote in tandem with Japan receive more assistance).

These countries' aid allocations may be very effective at promoting strategic interests, but the result is that bilateral aid has only a weak association with poverty, democracy, and good policy. (p.55) [AlesinaJEG2000]
Alesina: summing up

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3 Aid Accountability

Monitoring Aid Agencies

Easterly & Pfuße (JEP, 2008) Approach:

Selectivity: fraction of aid going to ‘worthy’ recipients (low corruption, very poor etc.)

Ineffective channels: is aid tied to goods from the donor, or food brought in unnecessarily, etc.?

Fragmentation: number of countries/organisations that work in a given recipient country, or program

Overheads: overheads in aid provision

Transparency: willingness/ability to report on administrative details (number of employees, admin costs, consultants, total aid spend etc.)
When to use:
- Short lead-time, lots of hyper-links, web-content, (e.g. you're only teaching it once)

Why it is so good:
- Super fast ('wiki-wiki!'), hyper-links to pics very easy
- Dynamic updating (in-class updating?!

On the other hand:
- Pretty bad handouts (not specific format), not that nice to look at
- Most students don't have laptops, so `all-in' edit not there yet ...
Reflections

**When to use:**
- Whenever you have in-session referenced essay work

**Why it is so good:**
- Takes out all the leg-work! (references, highlighting etc.)
- Very, very good at what it does
- All online -- mark the essays anywhere (no paper submission)

**On the other hand:**
- ... student education re: plagiarism!
### Damocles

**CSE3323: Reports for "Essay", Semester 2, 2007**

- 59 reports available from 58 students
- Report for 1 student is still being generated
- 30 students have not submitted
- Upload Class List

#### Single Student Operations
- Student ID: 
- Show Report(s)
- Upload Assessment

#### Sort by:
- Last Name
- Show runs longer than: 10
- Show matches against: web
- Reports per page: 20
- Regenerate

#### Reports:
- 1-20 21-40 41-60 61-80 81-90

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Assessment submitted. Report still being generated.
Damocles

Damocles Report for 2008/1/Research Essay/

1. ECC2810 Globalisation and economic system
2. Research Essay
3. 
4. [12 words] 2. "In China the struggle to consolidate the socialist system, the struggle

5. [12 words] to decide whether socialism or capitalism will prevail, will still take a long historical period. However, we should all realize that the new system of socialism will unquestionably be consolidated. We can "assuredly build a socialist state with modern industry, modern agriculture, and modern science and culture." [11 words] (Mao Tse Tung, [11 words] Speech at the Chinese Communist Party's National Conference on Propaganda Work, 1957). Is this statement true? Investigate the recent history of China with reference to the effects of economic institutional reform and globalisation on China's economy to support your answer.

6. Abstract:

7. This paper is focusing on investigating whether now China is now under socialism or capitalism, and whether it will build a new system of socialism under the modern industry, modern agriculture, and modern science and culture by analyzing the effects of economic institutional reforms and globalisation.

8. Introduction:

9. In order to demonstrate whether this statement is true or not, it is important to firstly look at the definitions of socialism, capitalism and how valid they are under Chinese situations. And then it is important to discuss whether China will take a long period to decide and consolidate the socialist system. Finally, discuss about whether the new system of socialism will be realize and built with modern industry, modern agriculture, and modern science and culture.

10. From 1980 till 1991, Deng Xiaoping, who as the late leader of the Communist Party of China (CPC), developed Socialism with Chinese characteristics and Chinese economic reform, also known as the market socialism, and opened China to the global market, has asked the question of "what is socialism" for at least 20 times. He systematically expatiated on why we need to raise this question. The realization of socialism and communism was the lofty ideal we Marxists set for ourselves during the revolutionary years. Now that we are trying to reform the economy, we shall continue to keep to the socialist road and to uphold the ideal of communism. This is something our younger generation in particular must understand. But the problem is: what is socialism and how is it to be built? The most important lesson we have learned, among a great many others, is that we must be clear about those questions.

12. (Deng, 1985)

As we all know, it is very hard to define the socialism and capitalism in just simple terms, or their definition will be mixed up with the politics and economy.
In 1957, the Soviet Union, in the context of the Central Asian economic institutional reforms that took place in the Central Asian republics, decided to delegate decision-making power and relinquish control over enterprises, the power of centralized administrative control over enterprises, and the power of central planning. This reform, similar to Nikita Khrushchev's sovarkhoz reforms, was emphasized on transferring from the central to local governments the planning power, the power of material resources allocation, the control over enterprises, the power of tax-collection, the labor management. However, Mao did not realize that the highly controlled decision-making power is the essence of central-planned economy. Simply decentralizing planned system without a planned economy and administrative resource allocation led to several serious problems such as macroeconomic instability, rising inequality, widening shortages in supplies of daily necessities, and huge chaos in the Chinese economy in 1958. This then led to regaining the central power, which in turn caused another round of reform. In 1978, Chinese leaders realized the weaknesses of Soviet-style planning and the need for reform but still did not have a blueprint. As early as in 1986, Chinese government, the State Council, conceived a coordinated reform that focused on taxation, price, and fiscal policy systems. Economic System Reform Program Design Office drew up plans for proposed reforms with a focus on taxation, price, banking, finance, and foreign trade in the early stages of the Seventh Five-Year Plan. However, the leader of the State Council changed his mind in October that year.

Instead of implementing the coordinated reforms in taxation, price, government banking, finance, and foreign trade, he changed direction and focused on the reform of SOEs, which took reform back to the traditional way of maintaining both a market economy and a planned economy simultaneously.

Secondly, Chinese economic institutional reforms are not based on the mature and stable reform theories. The key idea of Marxism and Leninist is that "if there is no theory of revolution, then there is no practice of revolution." However, Chinese economic reforms are not based on this kind of mature and stable reform theories. "Cross the river by feeling the stones underneath the water with our feet" is the main idea of Chinese economic reforms. Nevertheless, the leaders of China still need to give the directions of where the economic institutional reforms are going to ahead and give the logical and reasonable explanations. That's why they have the National People's Congress held every several years as the main feature of China. In the... gotcha!
**Reflections**

**When to use:**
- When you have readings as part of your unit
- Instead of tutorial/small-group discussions

**Why it is so good:**
- Students READ THE READINGS!
- Small-groups (2-5 ppl is best), high social cost of not contributing
- Mark individually, however (and stress positive externalities)
- Can get in and engage with them, give prizes etc. (Post of the week)

**On the other hand:**
- Admin to set them up at the beginning
- Can become time-consuming: needs wise management
### The Big Four

*(Conditional)*

**Description (click to collapse)**

- Topic Type: Threaded
- Graded: No
- Peer Review: No
- Posting Restrictions: Allow post and reply
- User Identification: User Name

#### Create Message

**Display:**
- Threaded
- Unthreaded
- All
- Unread

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When to use:
- Low-cost, periodic testing mechanism
- Doesn't have to be just maths (though maths is better)

Why it is so good:
- It helps students to learn! (Angus & Watson, 2009)
- It is automatically marked
- Students get a lot out of it, increasing feedback scores

On the other hand:
- Costly one-off setup
- Need to master the software
- (Question banks?)

\[ A = \begin{bmatrix} 6 & a \\ -1 & 2 \end{bmatrix}, \quad B = \begin{bmatrix} 3 & -7 \\ 6 & b \end{bmatrix}, \quad C = \begin{bmatrix} c & -3 \\ 4 & 5 \end{bmatrix}. \]

It is stated that \( A^{-1}XB = C \).

When \( a = -2, b = 1 \) and \( c = -2 \), what is the value of \( X_{11} \) correct to two decimal places?

(Show decimal places even if your answer is an integer)

**Answer:**

The correct answer is 3.29.

When \( \alpha = [a], \beta = [b] \) and \( \gamma = [c] \) what is the value of \( \chi_{11} \) correct to two decimal places?
(Show decimal places even if your answer is an integer)

### Question List

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... behind the scenes
Does regular online testing enhance student learning in the numerical sciences? Robust evidence from a large data set

Simon D. Angus and Judith Watson

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Reflections

When to use:
- Low-cost, **personalised** feedback

Why it is so good:
- Students really love it (see quotes)

On the other hand:
- Everyone gets a 'do more of' and a 'do less of' comment .. novelty?!
- Setup? (easy when you've done it once)

Thank you so much for this feedback. I can honestly say it is the most in-depth analysis I have ever received for an assignment and will likely help me greatly improve on my form and structure for future assignments. The flaws you pointed out about my report are things that I have noticed as well, but now that you have brought them to my attention I have more of an incentive to work on them in order to improve the general quality of my work.

Thank you for in-depth response to our essays. I must admit that I was surprised to have such good feedback as I have rarely had lecturers provide feedback at the level you have, from either Monash or Melbourne.
Reflections

When to use:
- New Unit introduction .. New staff, new content
- Starting a viral marketing campaign ...

Why it is so good:
- Uses the media they use
- Could be big impacting
- Easy if you have Mac

On the other hand:
- Needs to be done early enough ...
- Technical/software support? (Media students)
Summing up

Be willing to experiment
Work at one thing a session
Seek ideas from colleagues
As Simon for help

Use ITS (not TSG)
Look for free solutions on the Web
Make TSG compete

Use a Mac
.or Linux
So ... You CAN DO like Nerds do