你好 Encouraging the inquiring learner, from passive to active

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TEF Gold Teaching Excellence Framework

Context

The problem with ‘student engagement’

Have you ever considered what a lecture is good for?

What are lectures good for? Talbert, R (2012)

Exemplifying ways experts think—that is, thought processes.

Providing ways to simplify complex ideas—that is, cognitive structures.

Providing context and relationships of ideas being presented.

Telling stories to not only promote analogical thinking (as he describes), but also, humanize our disciplines.

However…

“lecture is not a particularly good vehicle for transferring understanding”

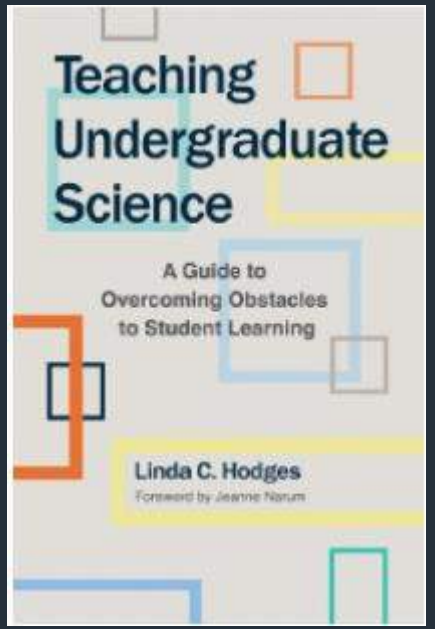
Talbert (2012)

Helping students learn during class

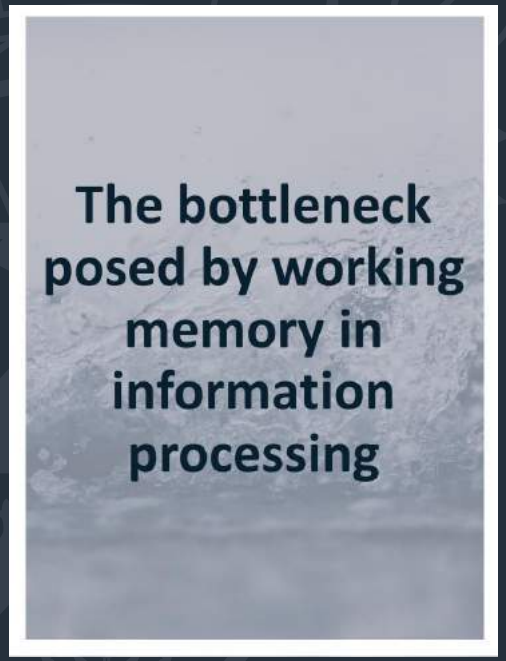
Teaching undergraduate science: A guide to overcoming obstacles to student learning

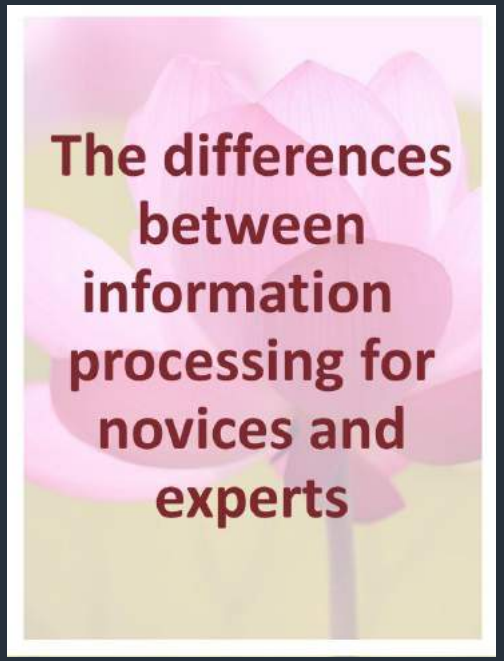
Chapter 2: Helping students learn during class

https://paperpile.com/shared/B25FH7



Cognitive challenges of lecture





“...can we use class time to engage them in deliberate practice?”

thinking time, discussion time, practice time

What follows

An experience of being a ‘novice’.

The challenge of holding new concepts in your head and trying to solve problems with them.

The experience of having **thinking time**, **discussion time** and **practice time**.

How these experiences tie in with the cognitive science.

Let’s play

Hands on
with Game theory

Game theory

HOW PEOPLE INTERACT

Acknowledgment
figures from Coreecon

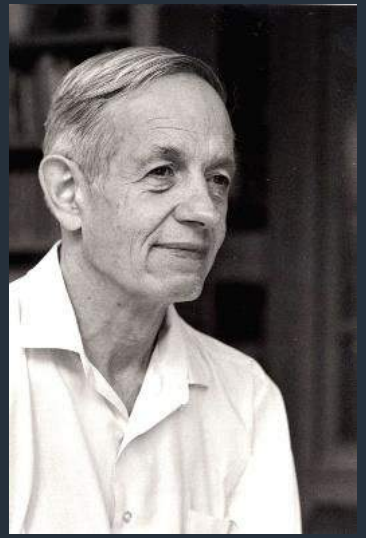
Credits Photos
Unsplash

Self-interest…is that all?

Individuals motivated by self-interest can produce outcomes that are beneficial for society e.g. entrepreneurship, innovation.

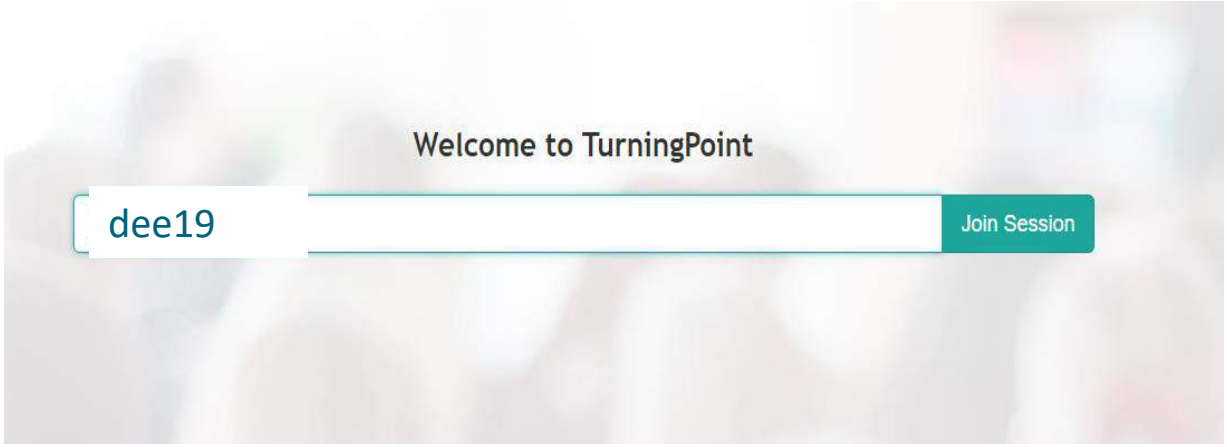
However, self-interest can also be harmful to society.

Social dilemma = a situation in which actions taken independently by self-interested individuals result in a socially suboptimal outcome e.g. traffic jams, climate change.



John NASH
(1928-2015)

www.responseware.eu Session ID: dee19



Are you familiar with Game theory?

A. Yes, absolutely

B. Yes…but I’m a bit rusty

C. Nope. Never heard of it

Modelling social interactions

A GAME describes a social interaction

- Players: Anil and Bala.
- Feasible strategies: IPC or Terminator.
- Information: no cooperation.
- Payoffs: +ve effect of protection –ve effect of pollution.

Outcome of a game: Nash equilibrium
no player has an incentive to deviate.

		Bala: IPC	Bala: Terminator
Anil: IPC		3, 3	4, 1
Anil: Terminator		1, 4	2, 2

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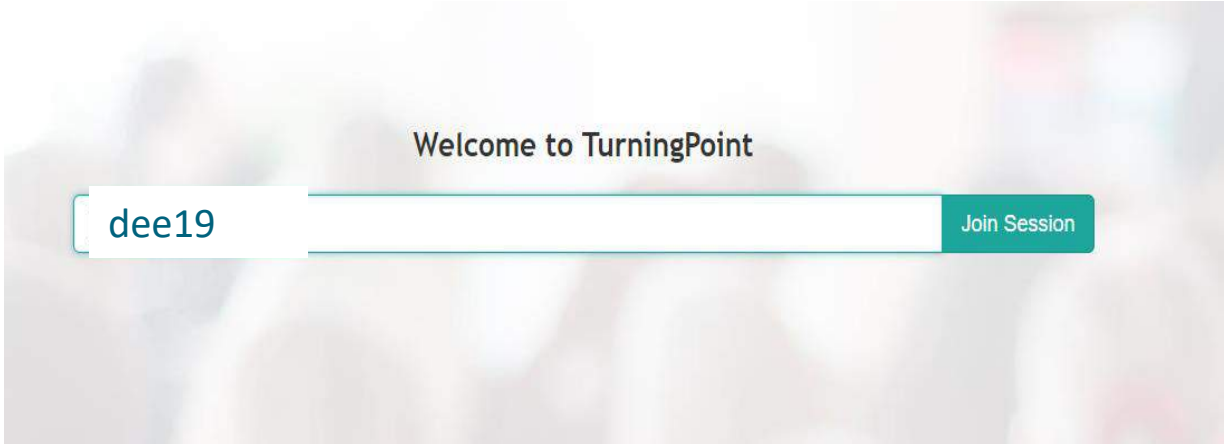
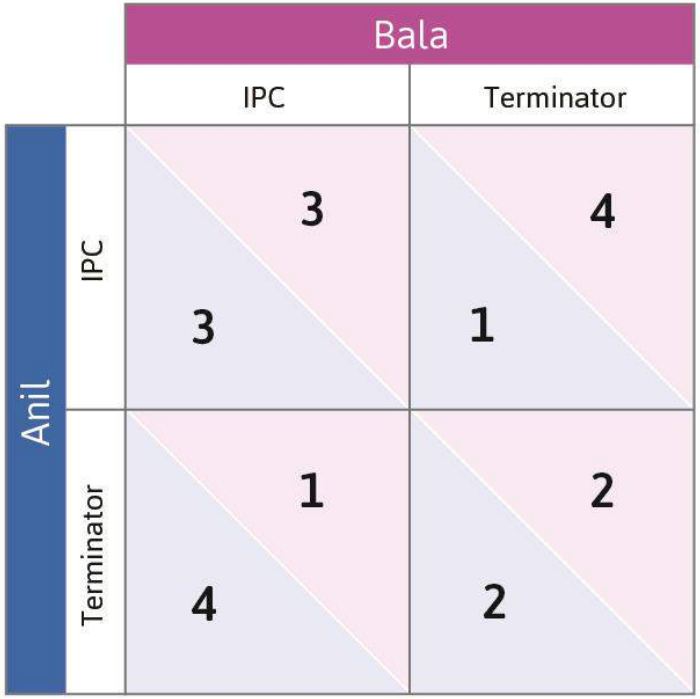


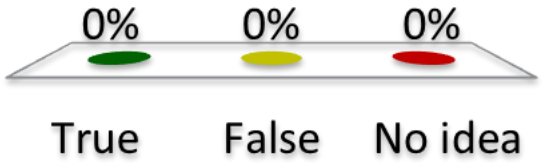
Bala's payoff when he uses IPC and Anil uses Terminator is 1

A. ✓ True

B. False

C. No idea





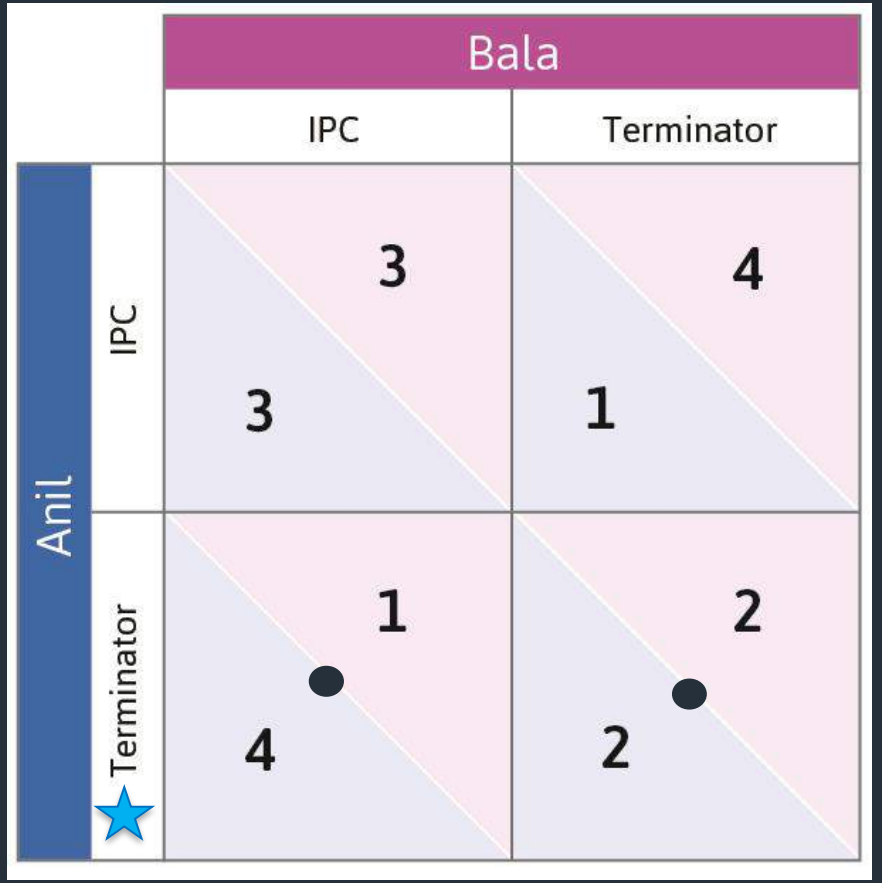
Looking for a NASH equilibrium

- Best response: strategy with the highest payoff given the other player's strategy
- Dominant strategy: a best response to all possible strategies

Anil's best response when Bala uses IPC, is to use Terminator.

Anil's best response when Bala uses Terminator, is to use Terminator

Anil's dominant strategy is to use Terminator



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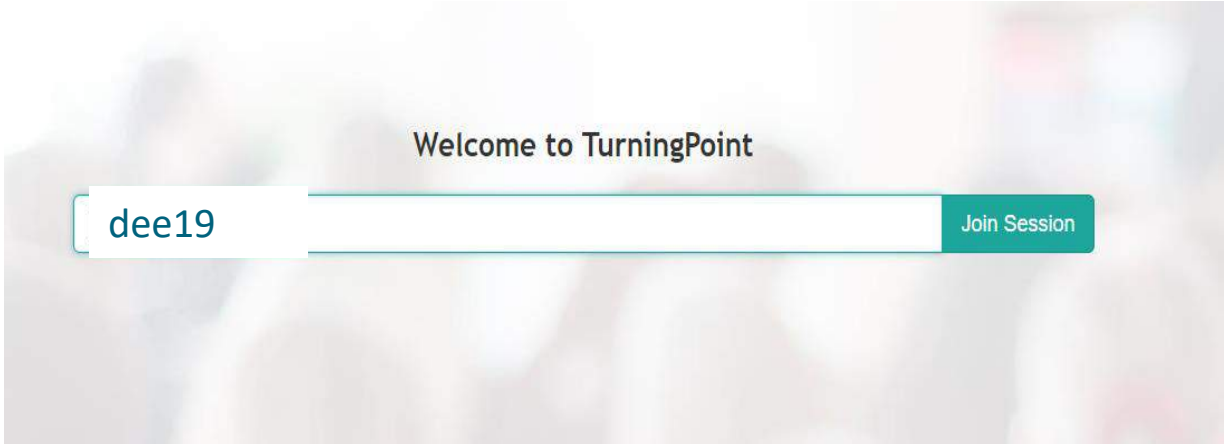


Which of the following statements is/are correct?

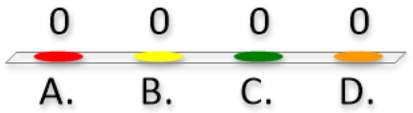
A. ✓ Bala's dominant strategy is to use Terminator

B. Anil and Bala using IPC is the Nash equilibrium of the game

C. ✓ Anil and Bala using Terminator is the Nash equilibrium of the game

D. The Nash equilibrium of this game is socially optimal

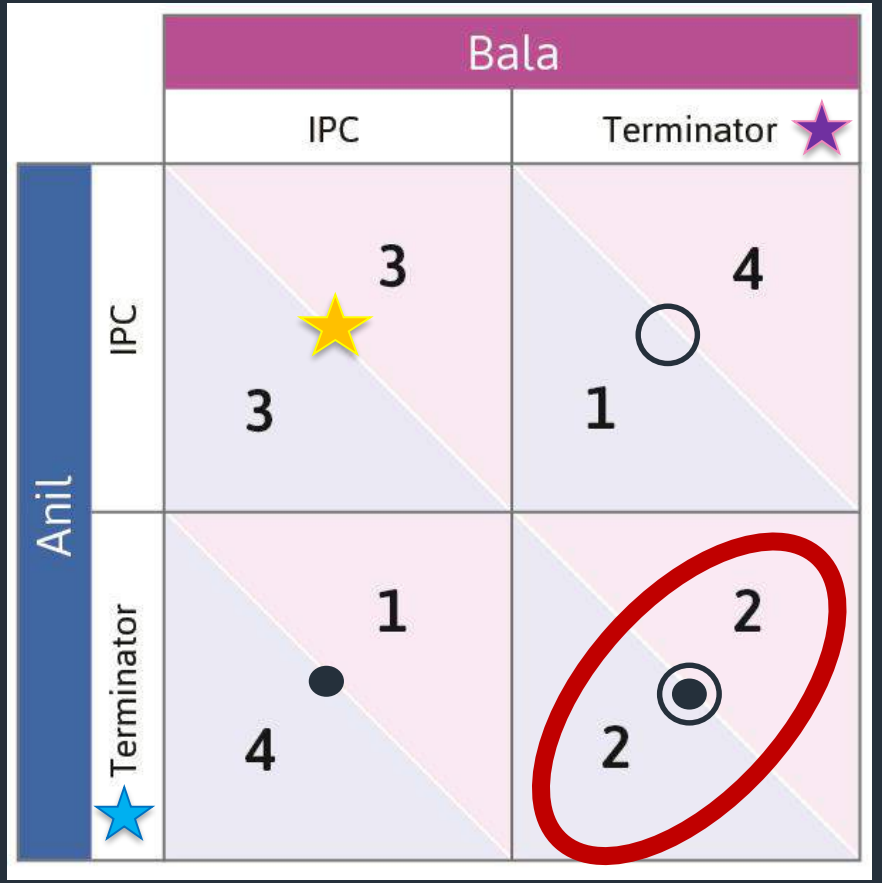
		Bala: IPC	Bala: Terminator
Anil	IPC	3, 3	4, 1
Anil	Terminator	1, 4	2, 2



Social dilemma

- Bala's dominant strategy is also Terminator
- Outcome of the game (Nash equilibrium): both Anil and Bala use Terminator
- Although they would be better off if both were using IPC

The Nash equilibrium is not socially optimal



Reflections

Strategies,
tips and pitfalls

Reflections

An experience of being a ‘novice’.

The challenge of holding new concepts in your head and trying to solve problems with them.

The experience of having **thinking time**, **discussion time** and **practice time**.

How these experiences tie in with the cognitive science.

Break

2 OR 3 MINUTES

What are your ideas for active learning?

Please write down two strategies you (could) implement in class

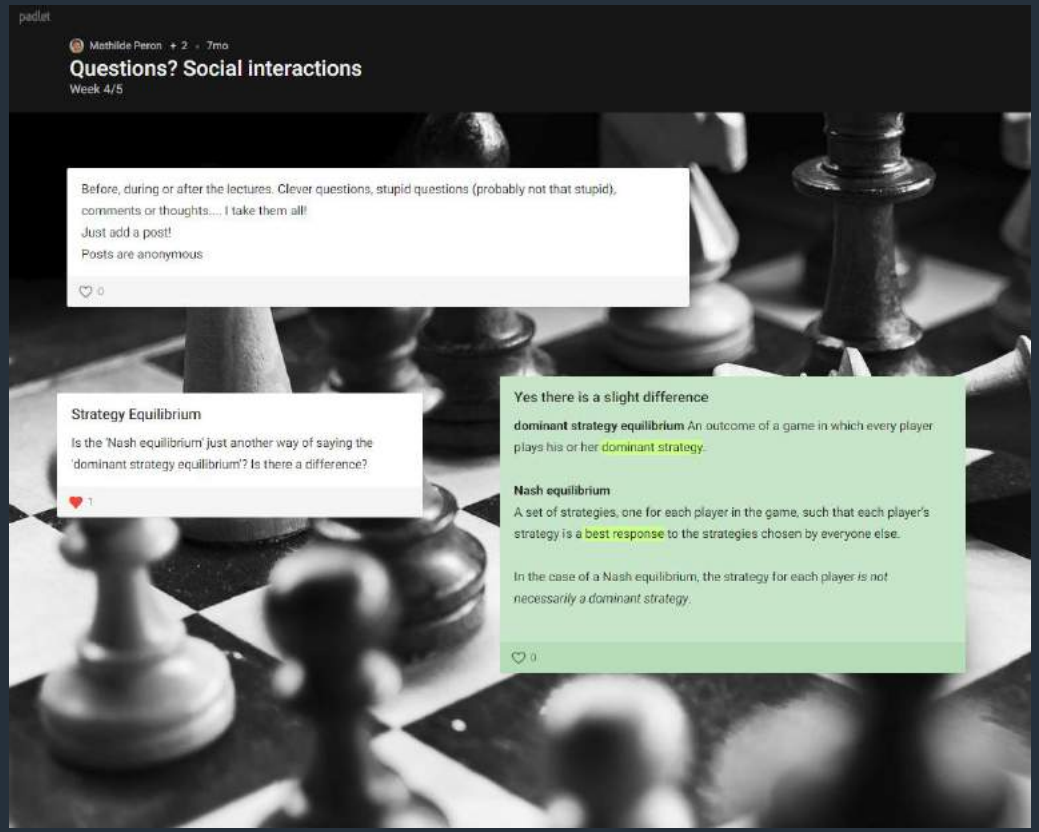
https://uniofyork.padlet.org/lilian_soon/activelearningdee

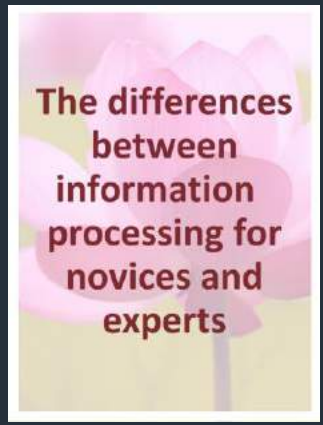
Some strategies I've just used

- Interrupt lectures frequently
- Test student understanding or collect student opinion via discussion or a classroom response system.
- Ask students to explain a concept or answer a question in pairs (think-pair-share).
- Have students work in groups on answering challenging questions, solving problems, interpreting data…
- Pause in class and ask students to catch up on their notes, write a brief summary of an idea, or define terms.

Padlet – for questions

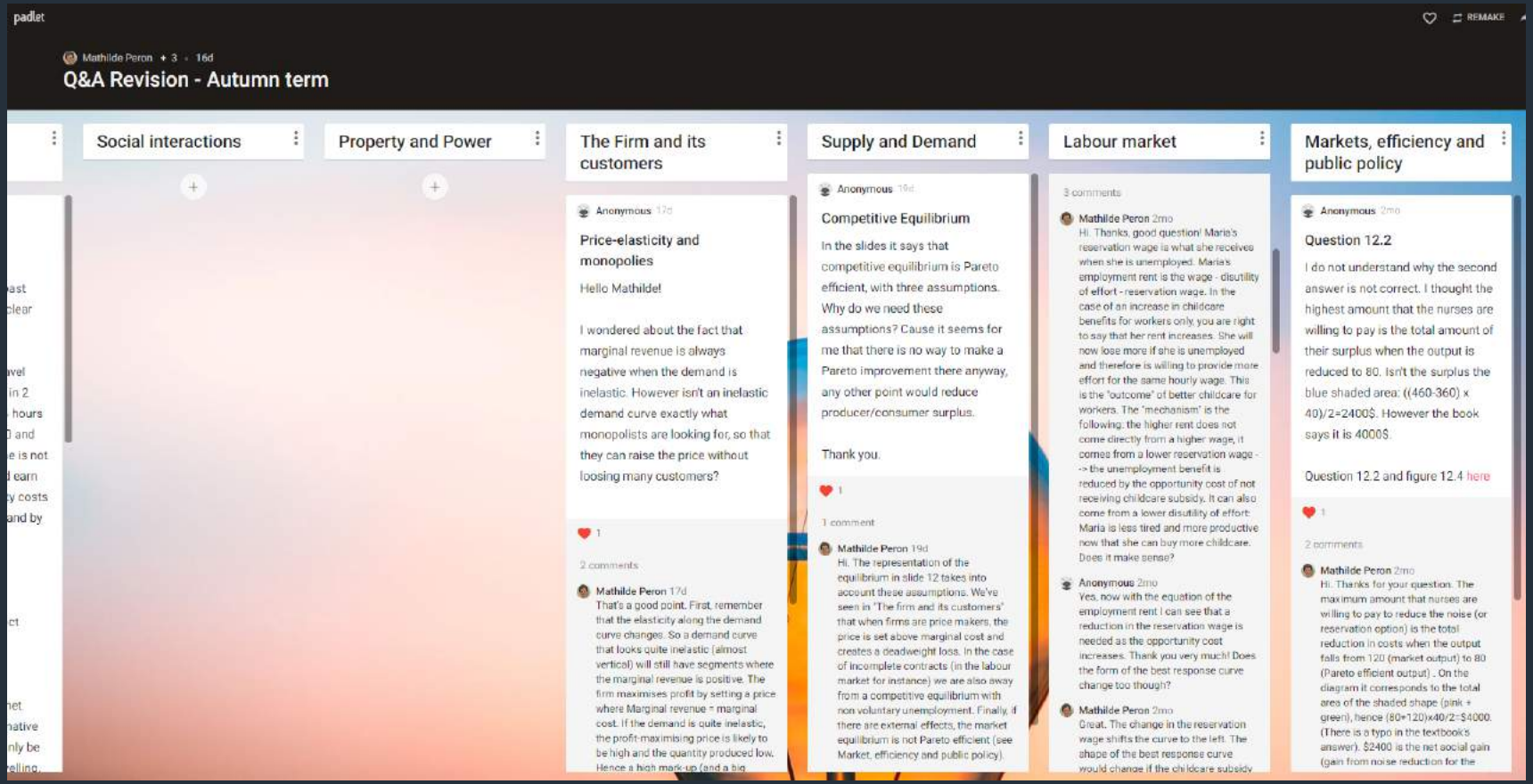
https://uniofyork.padlet.org/mathilde_peron/6a9jwgkuytff





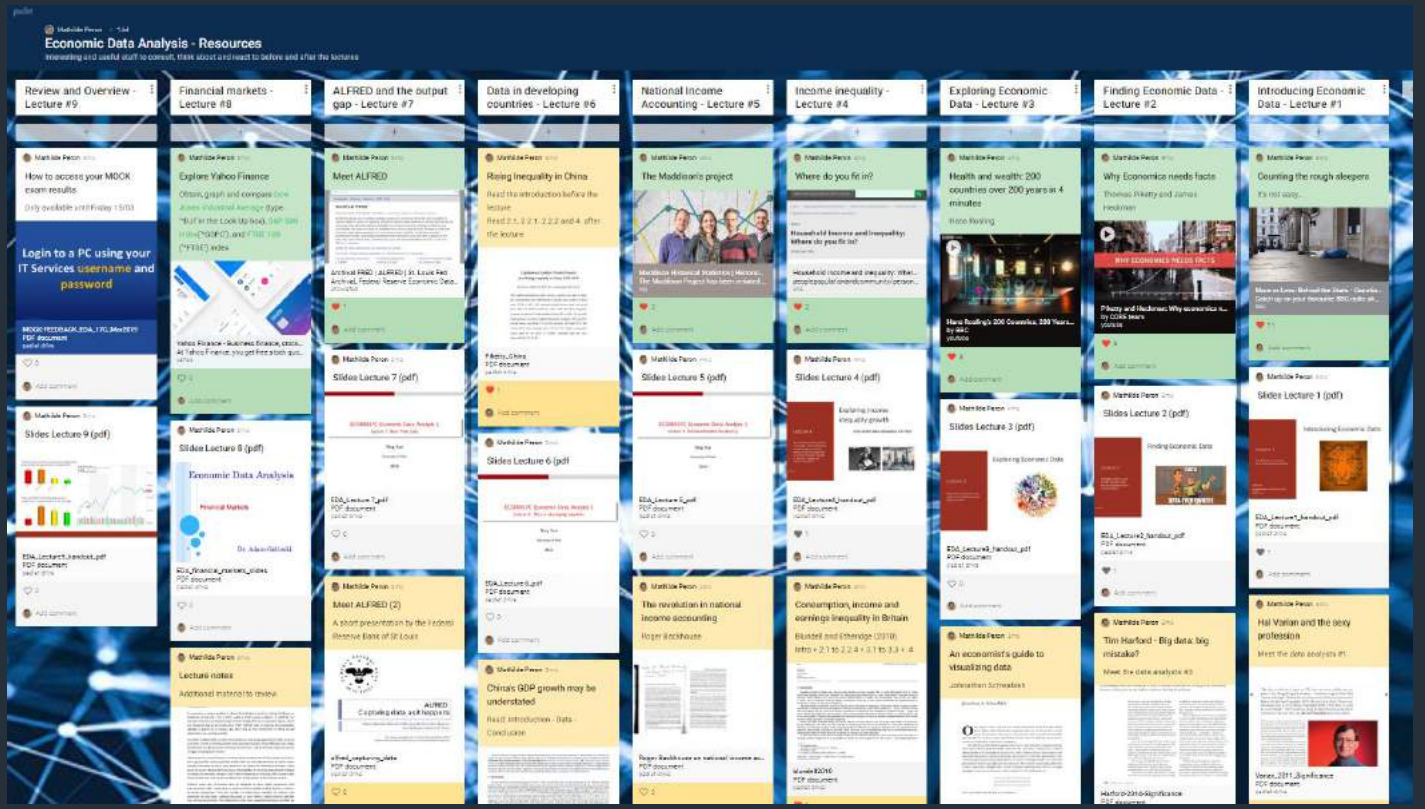
Padlet – for questions (2.0)

https://uniofyork.padlet.org/mathilde_peron/QArevision



Padlet – for interactive resources

https://uniofyork.padlet.org/mathilde_peron/EDA_resources



Thanks!

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Some useful links and references

- Soon, L (2018), Building capacities to help students learn
- Hodges & Narum (2015) – Teaching undergraduate science: a guide to overcoming obstacles of student learning. See Chap 2 Helping students learn during class.
- Talbert, R (2012) – Four things lecture is good for
- Brown, P. C., Roediger (III), H. L. & McDaniel, M. A. (2014). *Make It Stick*. USA: Harvard University Press.
- CORE – The Economy
- Turning point: Responseware
- Padlets
- QR codes