Learning journeys with video ….

and what it may mean for pedagogy

Karl Luke

Learning Technologist | Cardiff University

@karl_luke | lukek1@Cardiff.ac.uk

Exercise

1. Have you ever created a Panopto recording to teach someone something?
2. Have you ever shared a recording with someone, with the aim they learn something?
3. Have you ever given your learner some instructions on how to access and review the recording?
4. Have you ever given your learner instructions on how to use the enhanced features of the Panopto recordings (i.e. search, VSP, discussion/notes)?
5. Have you ever given your learner some support or guidance on how to effectively learn with video?

Outline

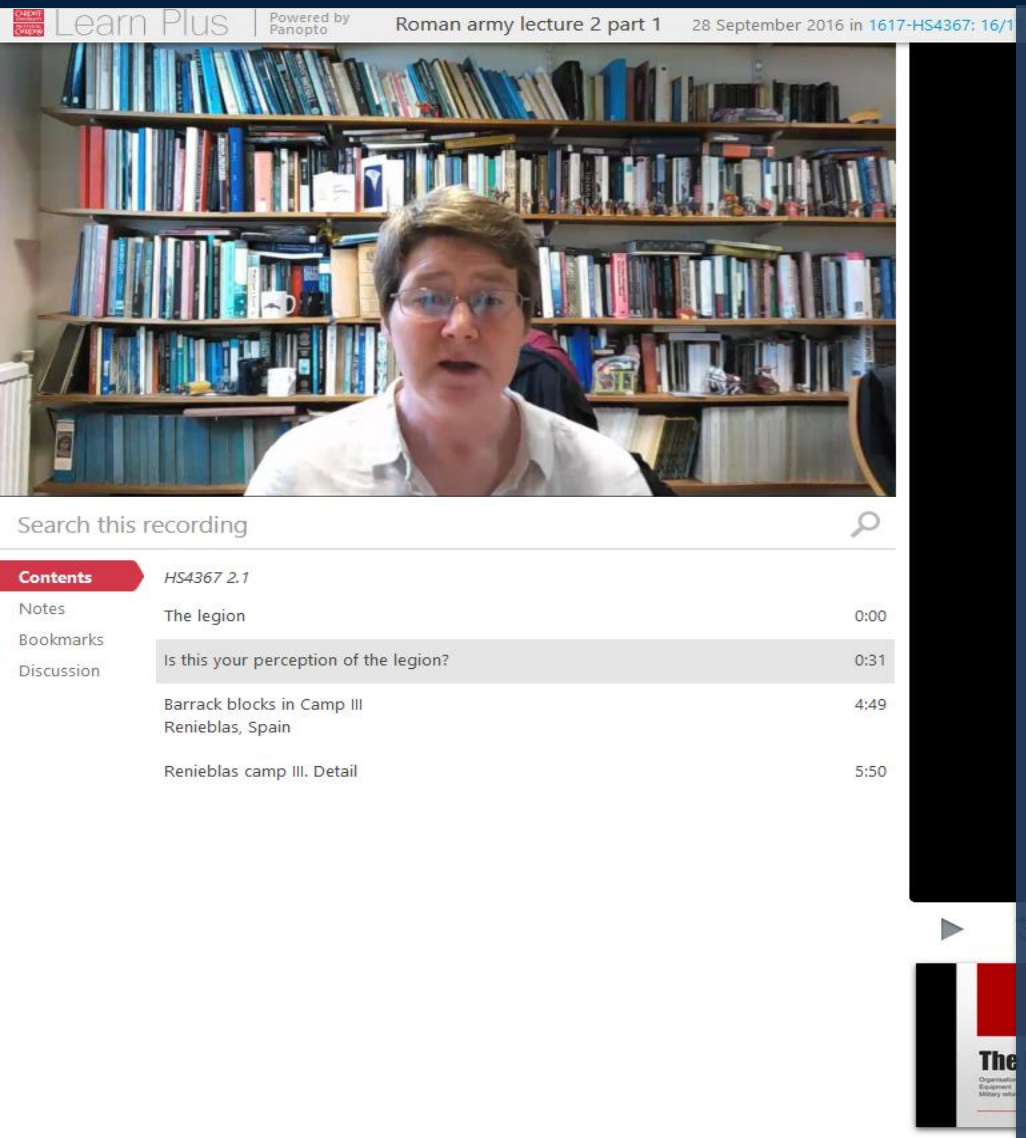
- Explore student use of capture recordings
  - Existing research
  - Research conducted at Cardiff University
- Student partnerships
- Implications for teaching and learning

Background

Event Capture

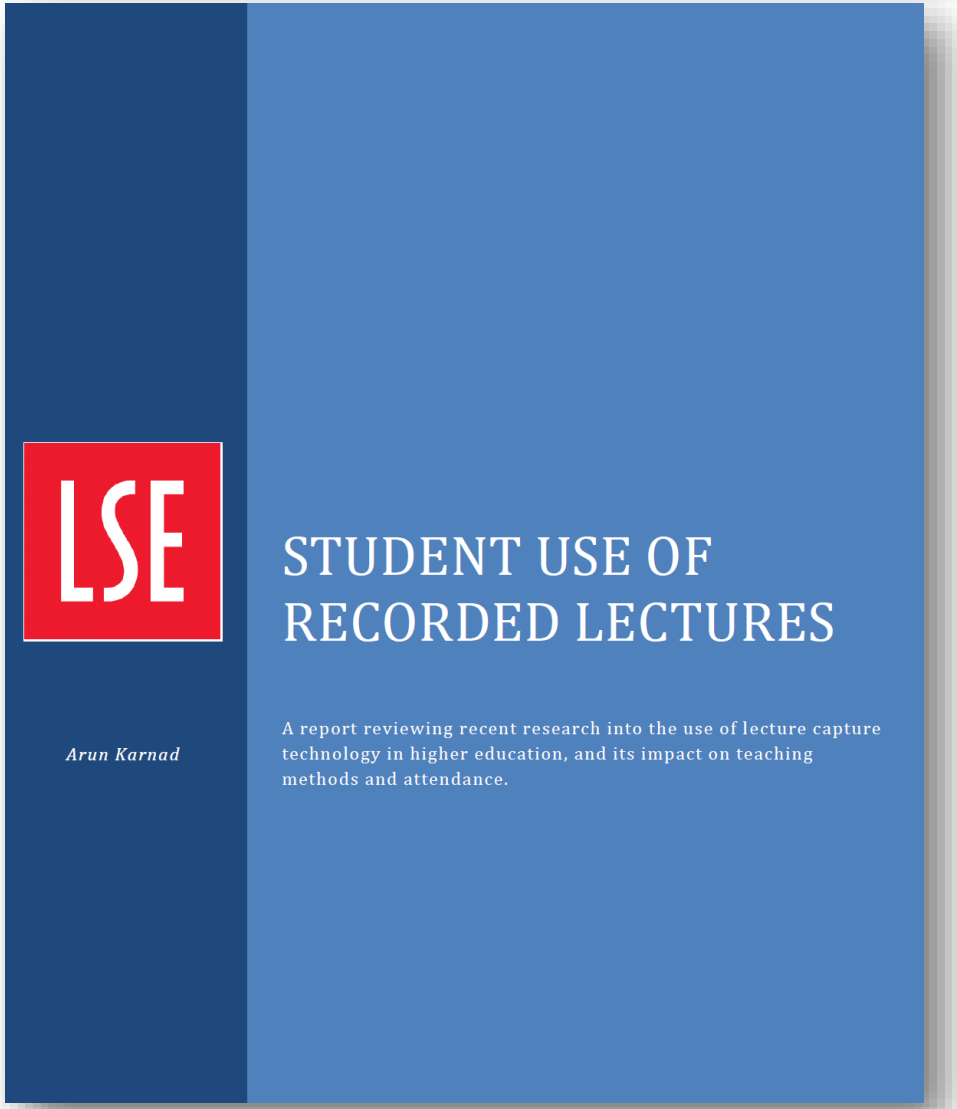
- Remote Recorder deployment
- Timetable integration via Scheduling Tool GUI
- LTI via Blackboard VLE
- Available in ~380 teaching spaces
  - https://kuula.co/profile/PhysicalLearningSpaces
- School-level policies
- Over half our staff and students engaging with Panopto

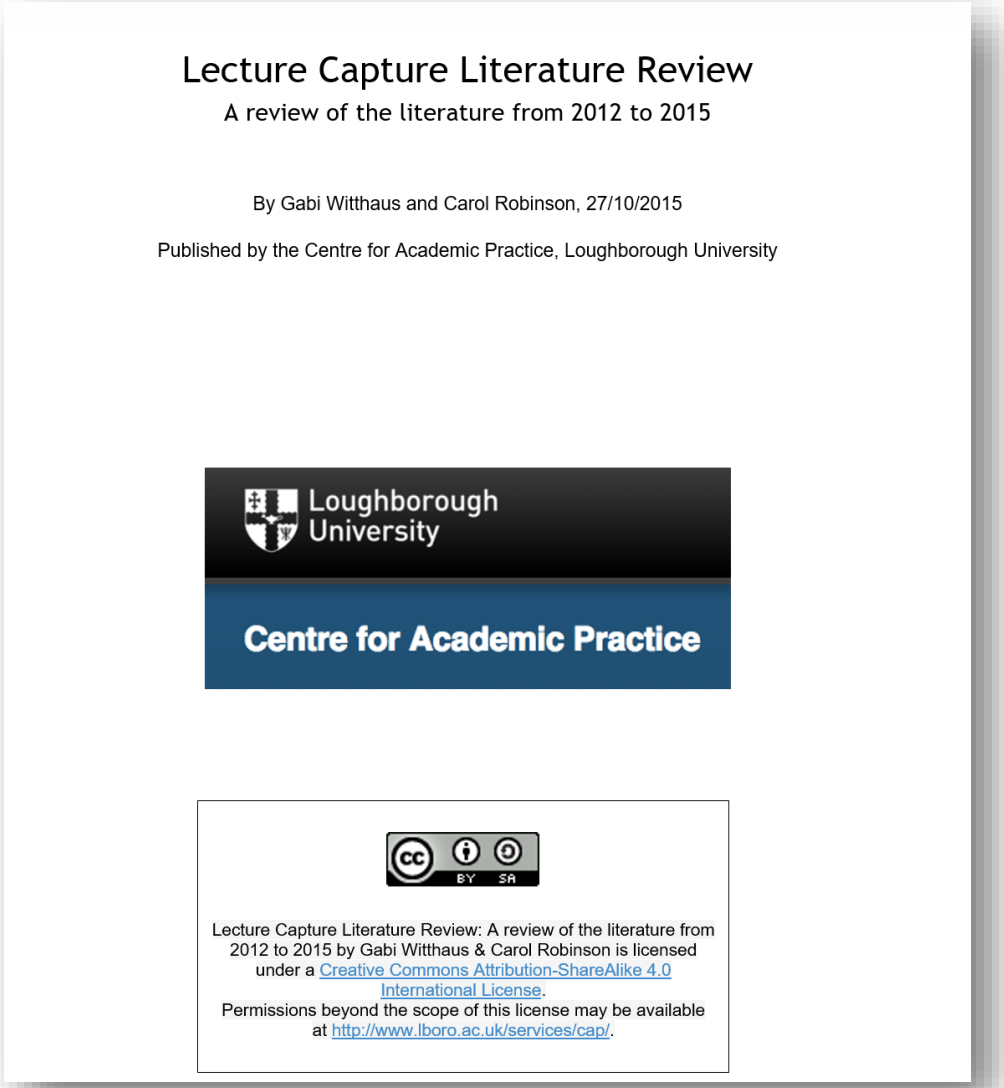
Supporting Innovative Teaching



- Over 2000 (20%) Panopto recordings have been recorded to support teaching activities using Personal Capture
  - Flipped learning, video feedback, field-based activities, screencasts, demonstrations
  - Witton (2017)

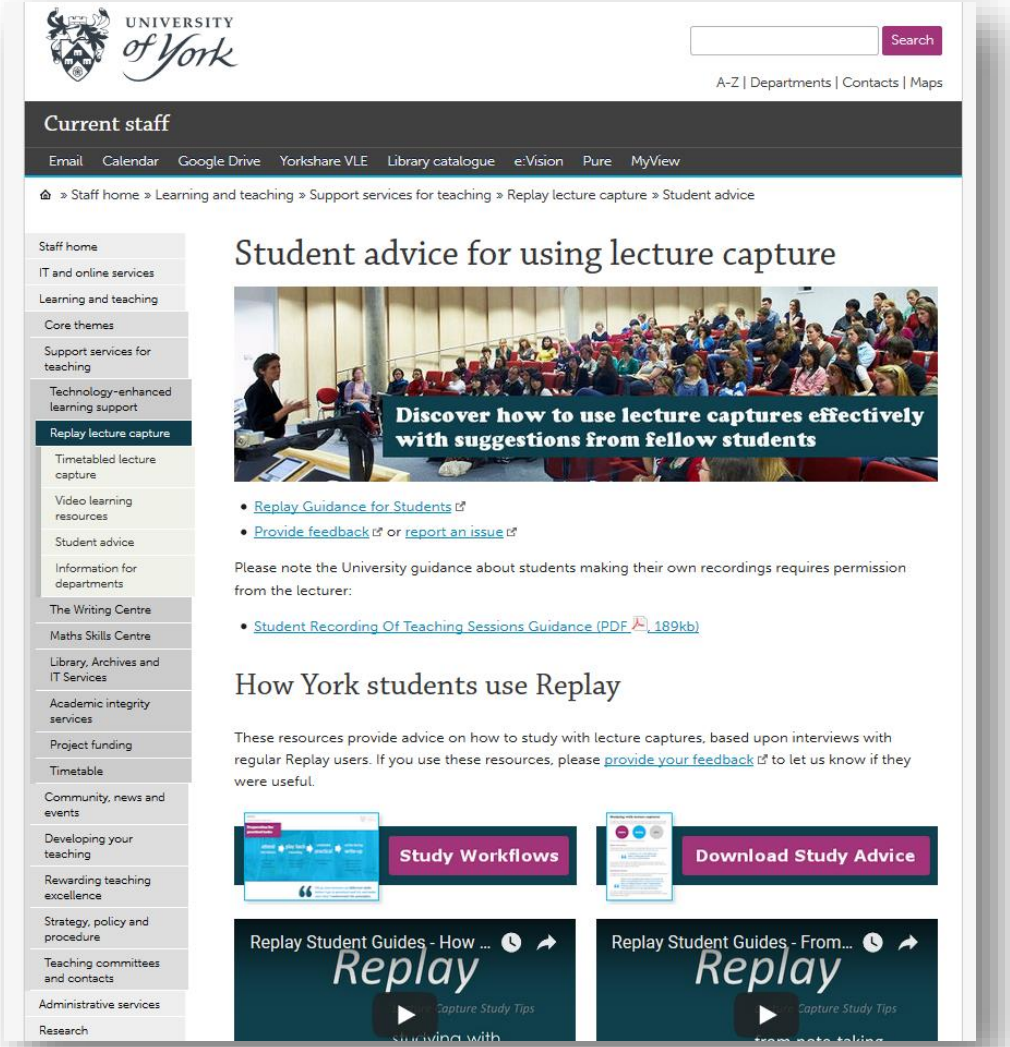
Existing Reviews





Student Support [York]

Cornock (2015)



UNIVERSITY of York

Search

A-Z | Departments | Contacts | Maps

Current staff

Email | Calendar | Google Drive | Yorkshare VLE | Library catalogue | e:Vision | Pure | MyView

» Staff home » Learning and teaching » Support services for teaching » Replay lecture capture » Student advice

- Staff home
- IT and online services
- Learning and teaching
- Core themes
- Support services for teaching
- Technology-enhanced learning support
- Replay lecture capture
- Timetabled lecture capture
- Video learning resources
- Student advice
- Information for departments
- The Writing Centre
- Maths Skills Centre
- Library, Archives and IT Services
- Academic integrity services
- Project funding
- Timetable
- Community, news and events
- Developing your teaching
- Rewarding teaching excellence
- Strategy, policy and procedure
- Teaching committees and contacts
- Administrative services
- Research

Student advice for using lecture capture

- Replay Guidance for Students
- Provide feedback or report an issue

Please note the University guidance about students making their own recordings requires permission from the lecturer:

- Student Recording Of Teaching Sessions Guidance (PDF, 189kb)

How York students use Replay

These resources provide advice on how to study with lecture captures, based upon interviews with regular Replay users. If you use these resources, please provide your feedback to let us know if they were useful.

Study Workflows

Download Study Advice

Replay Student Guides - How ...

Replay Student Guides - From...

Studying with lecture captures

You might have considered how lecture capture can support your revision. But have you thought about the way you can use lecture capture to support your independent study during term time?

before | during | after

Here we consider studying before, during and after lectures.

Before the lecture

Thinking about before you attend a lecture, coming prepared allows you to focus your attention in class on the points that you need to learn and the ideas that mean the most to you.

> "I would preview the slides and make a mind map of the whole structure of the lecture

If you look at the slides in advance, you might find you need to draw upon concepts from the previous lecture. If you're notes are incomplete, popping back to the lecture capture before your next lecture or seminar can get you back on track.

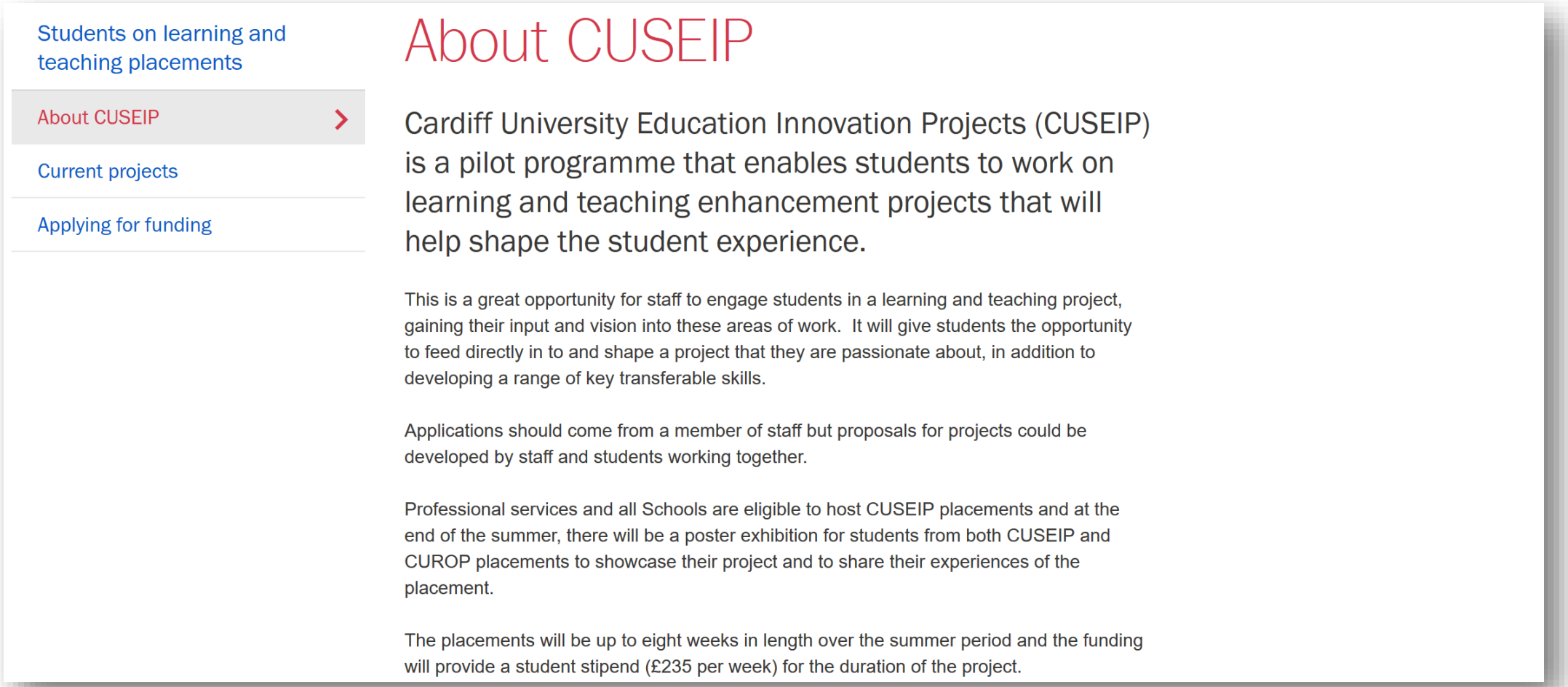
During the lecture

During the lecture itself, you rarely need to copy word for word what the lecturer is saying, however the capture can act as a safety net in case you miss something important.

> "when I am watching the lecturer in person, if there is something I have completely missed or there is nothing about it that I understand I will just make a mark on the printed lecture slide and how far we are into the lecture

As a result, you might find that you become more engaged with the lecture, following the development of ideas and arguments, perhaps even being inspired by what the lecturer is saying to look beyond the lecture content.

Cardiff University Student Education Innovation Projects (CUSEIP)



Students on learning and teaching placements

About CUSEIP

Current projects

Applying for funding

About CUSEIP

Cardiff University Education Innovation Projects (CUSEIP) is a pilot programme that enables students to work on learning and teaching enhancement projects that will help shape the student experience.

This is a great opportunity for staff to engage students in a learning and teaching project, gaining their input and vision into these areas of work. It will give students the opportunity to feed directly in to and shape a project that they are passionate about, in addition to developing a range of key transferable skills.

Applications should come from a member of staff but proposals for projects could be developed by staff and students working together.

Professional services and all Schools are eligible to host CUSEIP placements and at the end of the summer, there will be a poster exhibition for students from both CUSEIP and CUROP placements to showcase their project and to share their experiences of the placement.

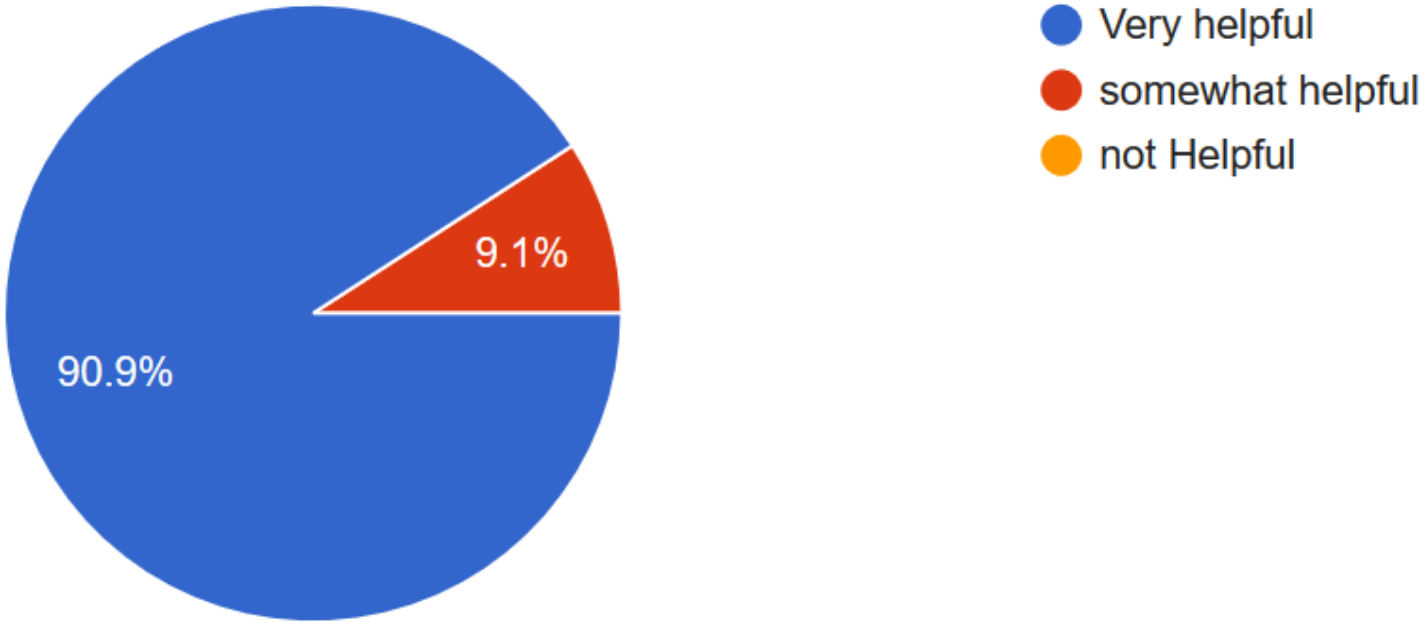
The placements will be up to eight weeks in length over the summer period and the funding will provide a student stipend (£235 per week) for the duration of the project.

Student Use of Capture Recordings

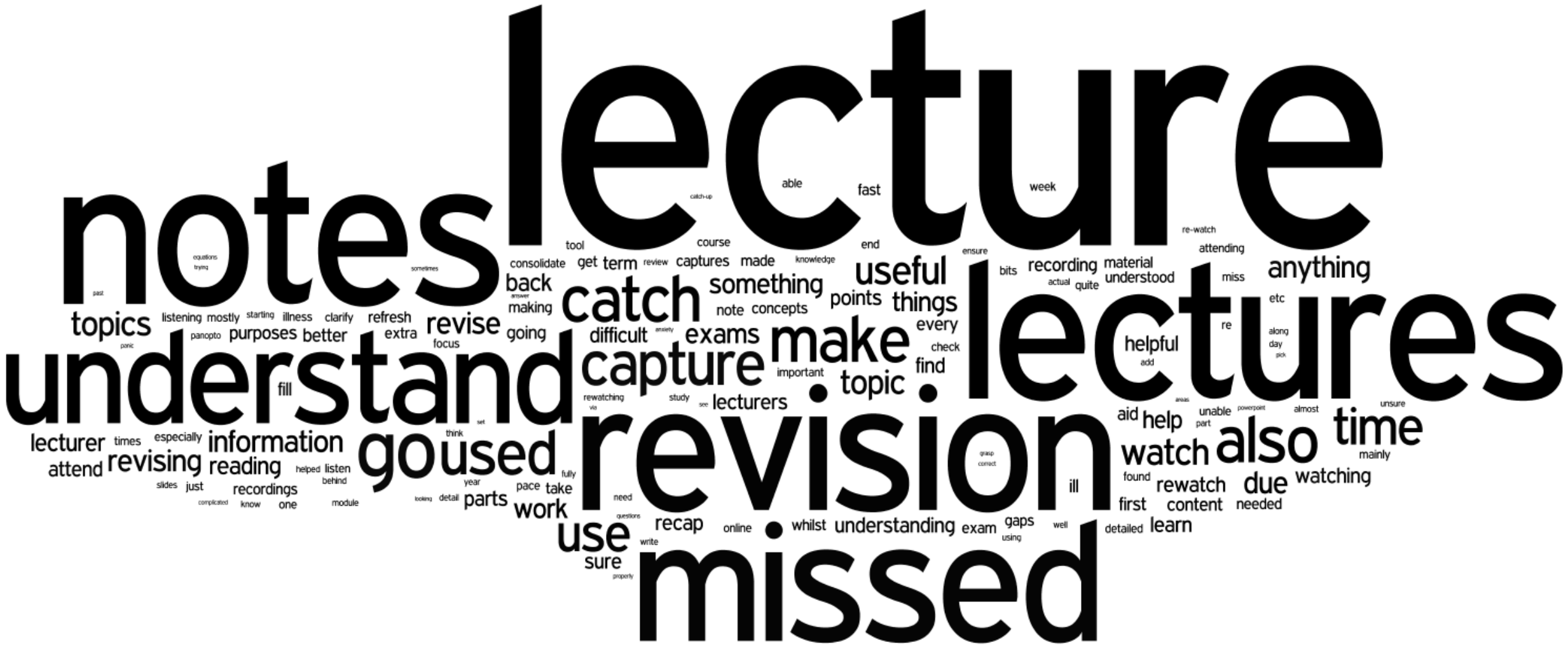
Student Benefits

How helpful did you find Lecture Capture?

230 responses

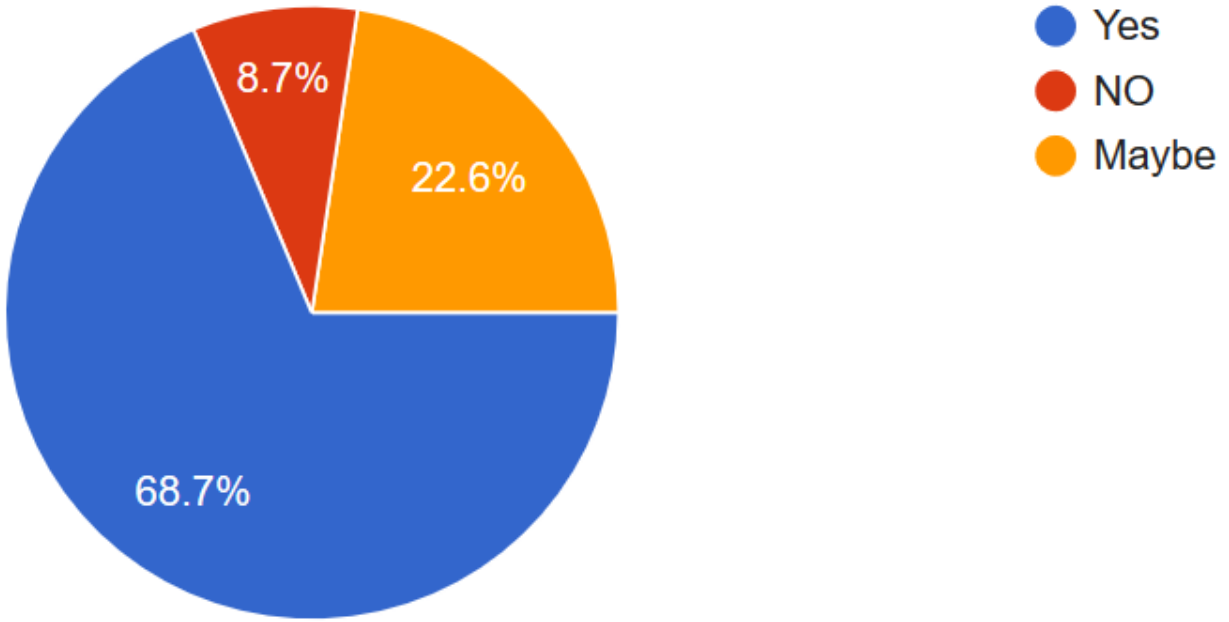


Describe how you used Lecture Capture in your studies

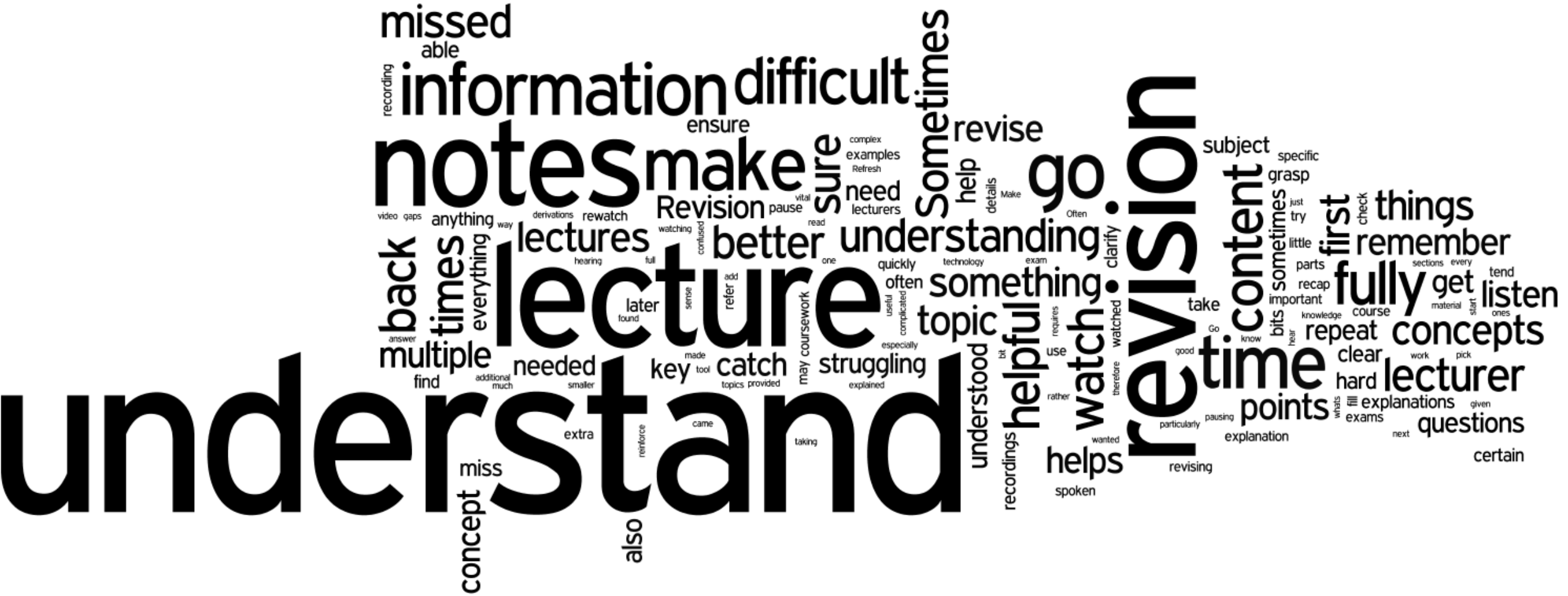


Do you watch the same Lecture Capture multiple times?

230 responses



Why you watch the same Lecture Capture multiple times?



Student Benefits

*As a **vital learning tool**, incredibly important during revision. Allows harder content to be learned via **re-watching** parts of lectures multiple times.*

*Sometimes lecturers go through **a lot of content quite fast** and it can be easy to fall behind. Watching the lecture capture you have the option to **slow it down**, and **pause** it so I can make sure I **understand** one concept before moving onto the next.*

*After a lecture if I never had enough time to make my notes alongside the lecture or I missed out some things I could go back and watch them to **help complete my notes**. Also during **exam** season if I needed a **recap** and didn't understand my notes properly I could re-watch the lectures which I found helpful.*

Inclusivity and Accessibility

"

*I have **numbness in my fingers** on my right hand. I **cannot write very fast or very legible** and having a recording helps me.*

*It was beneficial to use the lecture captures to catch up on what I had missed if I was **unable to attend** or had **a panic attack** half way through and couldn't focus.*

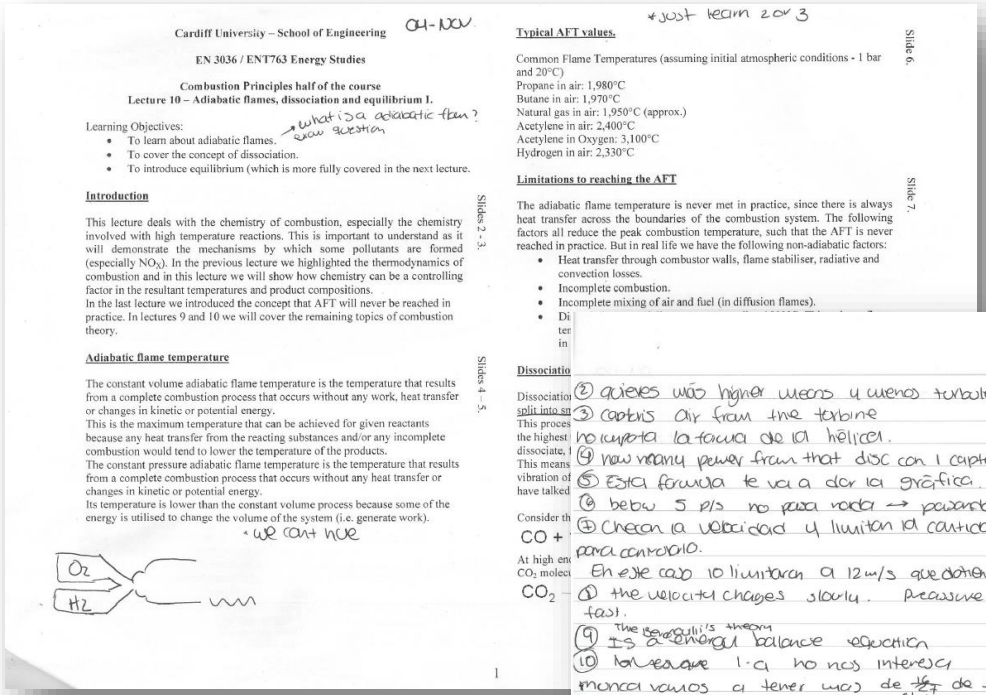
*I suffer from **anxiety and depression** and as such sometimes cannot maintain focus throughout 2hour lectures so benefit from being able to go back to look at the material in **small chunks.***

***Sleep paralysis** if that counts so sometimes I'm tired and struggle in lectures to focus/cant attend because I'm falling asleep . I need to be **selective** as to where I expend energy during the day following an episode.*

"

Activities you engage in while watching Lecture Capture?

Note-Taking >> Note-Making



Cardiff University – School of Engineering

EN 3036 / ENT763 Energy Studies

Combustion Principles half of the course
Lecture 10 – Adiabatic flames, dissociation and equilibrium I.

Learning Objectives:
- To learn about adiabatic flames.
- To cover the concept of dissociation.
- To introduce equilibrium (which is more fully covered in the next lecture.

Introduction

This lecture deals with the chemistry of combustion, especially the chemistry involved with high temperature reactions. This is important to understand as it will demonstrate the mechanisms by which some pollutants are formed (especially NO_x). In the previous lecture we highlighted the thermodynamics of combustion and in this lecture we will show how chemistry can be a controlling factor in the resultant temperatures and product compositions.
In the last lecture we introduced the concept that AFT will never be reached in practice. In lectures 9 and 10 we will cover the remaining topics of combustion theory.

Adiabatic flame temperature

The constant volume adiabatic flame temperature is the temperature that results from a complete combustion process that occurs without any work, heat transfer or changes in kinetic or potential energy.
This is the maximum temperature that can be achieved for given reactants because any heat transfer from the reacting substances and/or any incomplete combustion would tend to lower the temperature of the products.
The constant pressure adiabatic flame temperature is the temperature that results from a complete combustion process that occurs without any heat transfer or changes in kinetic or potential energy.
Its temperature is lower than the constant volume process because some of the energy is utilised to change the volume of the system (i.e. generate work).

Typical AFT values.

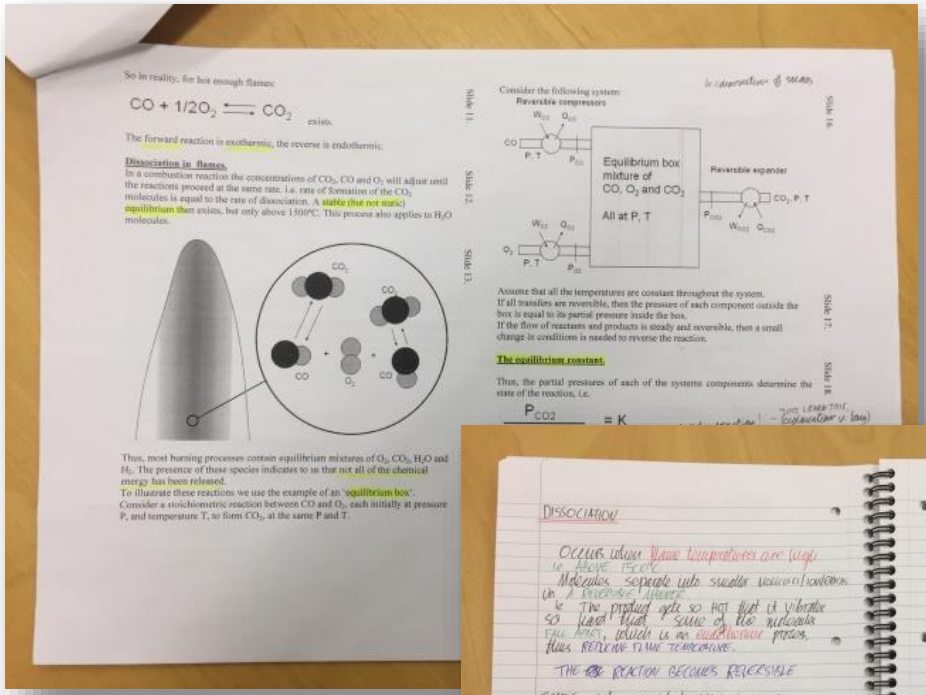
Common Flame Temperatures (assuming initial atmospheric conditions - 1 bar and 20°C)
Propane in air: 1,980°C
Butane in air: 1,970°C
Natural gas in air: 1,950°C (approx.)
Acetylene in air: 2,400°C
Acetylene in Oxygen: 3,100°C
Hydrogen in air: 2,330°C

Limitations to reaching the AFT

The adiabatic flame temperature is never met in practice, since there is always heat transfer across the boundaries of the combustion system. The following factors all reduce the peak combustion temperature, such that the AFT is never reached in practice. But in real life we have the following non-adiabatic factors:
- Heat transfer through combustor walls, flame stabiliser, radiative and convection losses.
- Incomplete combustion.
- Incomplete mixing of air and fuel (in diffusion flames).

(2) quieres más higher means y menos turbulencia
(3) captris air from the turbine
hacerla la forma de la hélice.
(4) how many power from that disc can I capture
(5) Esta formula te va a dar la gráfica.
(6) bebe 5 p/s no para nada → pasando este caudal
(7) Checar la velocidad y limitar la cantidad de power para controlarlo.
En este caso lo limitaran a 12 m/s que daremos 1000 kw
(8) the velocity changes slowly. Pressure changes fast.
(9) The Bernoulli's theorem is a energy balance equation
(10) balance 1:a no nos interesa
manera varios a tener más de 16/27 de the power of that wind
Betz limit
maximum velocity rate is 1:3a
(11) real.
you will always wanna to operate your wind power in this section

(1) the wind is full of turbulence, you get dif. force 4-NOV
allow the turbine change speed very small by that gases → pero todas las turbinas de ahora son turbines with variable speed.
(2) físicamente cambiar la orientación de los blades y así disminuir el reaction force
- Pitch regulation: cambiar el blade para disminuir la fuerza de reacción
(3) you start with a low speed y va incrementando
(4) así se ve el modelo final



So in reality, for hot enough flames:

$CO + 1/2O_2 \rightleftharpoons CO_2$ exists.

The forward reaction is exothermic, the reverse is endothermic.

Dissociation in flames.
In a combustion reaction the concentrations of CO_2, CO and O_2 will adjust until the reactions proceed at the same rate. i.e. rate of formation of the CO_2 molecules is equal to the rate of dissociation. A stable (but not static) equilibrium then exists, but only above 1500°C. This process also applies to H_2O molecules.

Thus, most burning processes contain equilibrium mixtures of O_2, CO_2, H_2O and H_2. The presence of these species indicates to us that not all of the chemical energy has been released.
To illustrate these reactions we use the example of an 'equilibrium box'.
Consider a stoichiometric reaction between CO and O_2, each initially at pressure P_i and temperature T, to form CO_2, at the same P and T.

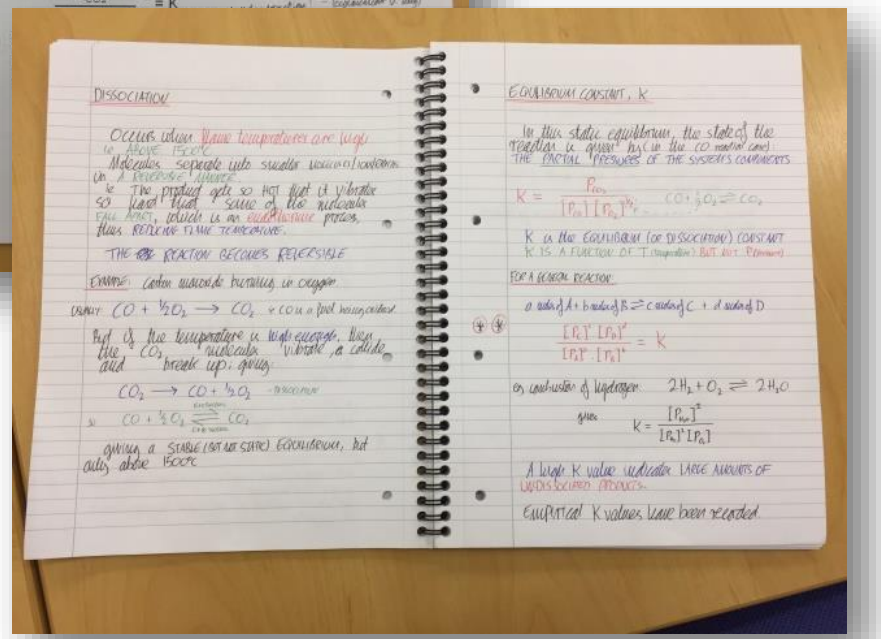
Consider the following system:
Reversible compressors
Equilibrium box mixture of CO, O_2 and CO_2 All at P, T
Reversible expander

Assume that all the temperatures are constant throughout the system.
If all transfers are reversible, then the pressure of each component outside the box is equal to its partial pressure inside the box.
If the flow of reactants and products is steady and reversible, then a small change in conditions is needed to reverse the reaction.

The equilibrium constant.

Thus, the partial pressures of each of the systems components determine the state of the reaction, i.e.

$\frac{P_{CO2}}{\quad} = K$



DISSOCIATION

Occurs when flame temperatures are high (> ABOVE 1500°C)
Molecules separate into smaller molecules/radicals in a reversible manner.
ie The product gas so hot that it vibrates so hard that some of the molecules break apart, which is an endothermic process, thus REDUCING FLAME TEMPERATURE.
THE REACTION BECOMES REVERSIBLE
Example: carbon molecule burning in oxygen
normal $CO + \frac{1}{2}O_2 \rightarrow CO_2$ + CO is a fuel incomplete combustion
But if the temperature is high enough, then the CO_2 molecules vibrate, collide and break up: giving
$CO_2 \rightarrow CO + \frac{1}{2}O_2$ - endothermic
ie $CO + \frac{1}{2}O_2 \rightleftharpoons CO_2$
giving a STABLE (BUT NOT STATIC) EQUILIBRIUM, but only above 1500°C

EQUILIBRIUM CONSTANT, K

In this static equilibrium, the state of the reaction is given by/is in the (O reaction case) THE PARTIAL PRESSURES OF THE SYSTEM'S COMPONENTS

$K = \frac{P_{co_2}}{[P_{co}][P_{o_2}]^{\frac{1}{2}}}$ $CO + \frac{1}{2}O_2 \rightleftharpoons CO_2$

K is the EQUILIBRIUM (OR DISSOCIATION) CONSTANT
K IS A FUNCTION OF T (temperature) BUT NOT P (pressure)

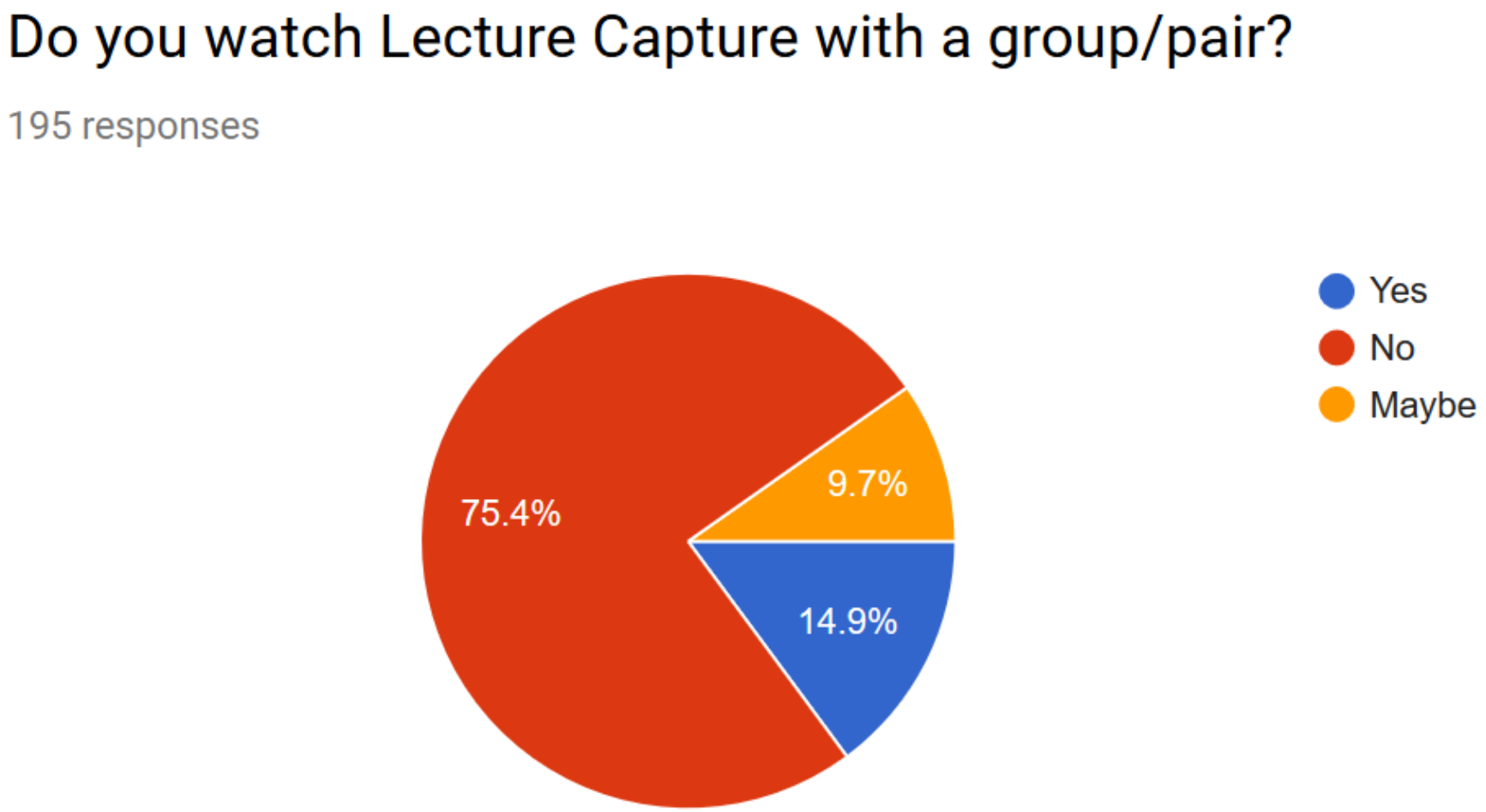
FOR A GENERAL REACTION:
a moles of A + b moles of B ⇌ c moles of C + d moles of D

$\frac{[P_C]^c[P_D]^d}{[P_A]^a[P_B]^b} = K$

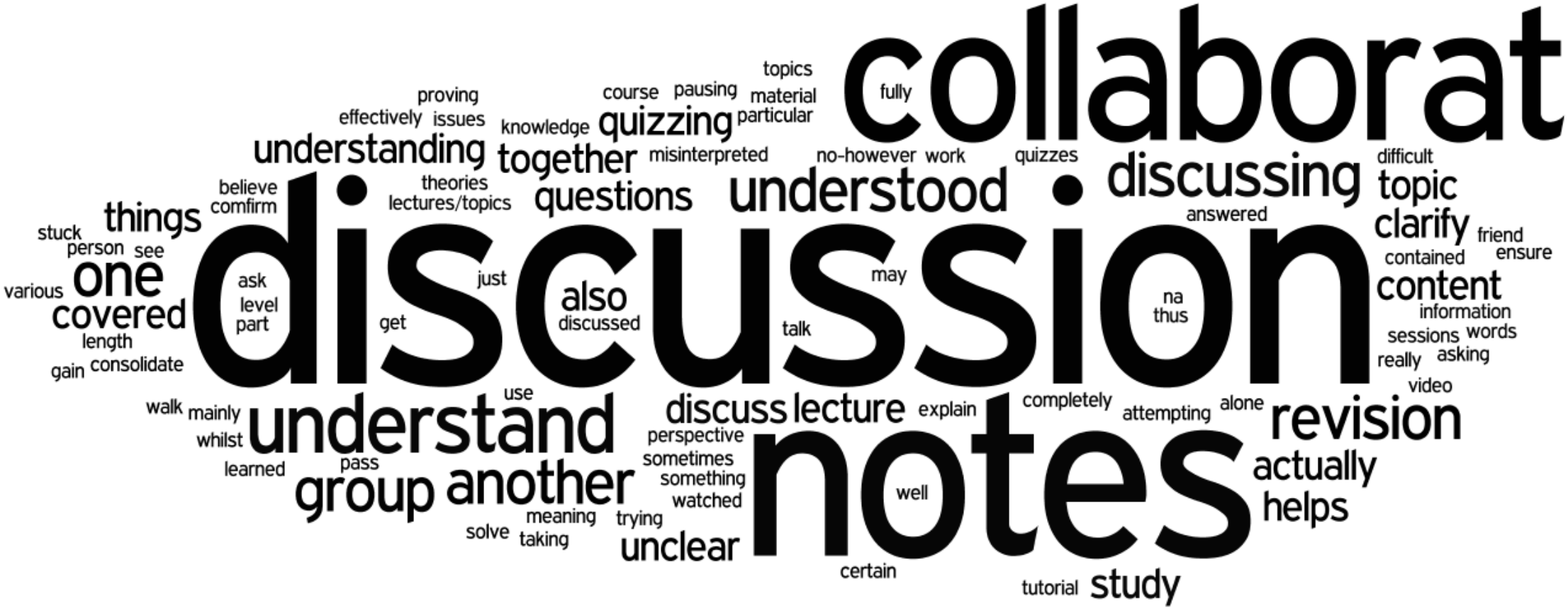
ex combustion of hydrogen: $2H_2 + O_2 \rightleftharpoons 2H_2O$
gives $K = \frac{[P_{H_2O}]^2}{[P_{H_2}]^2[P_{O_2}]}$

A large K value indicates LARGE AMOUNTS OF DISSOCIATED PRODUCTS.
Empirical K values have been recorded.

Collaborative / Social Viewing



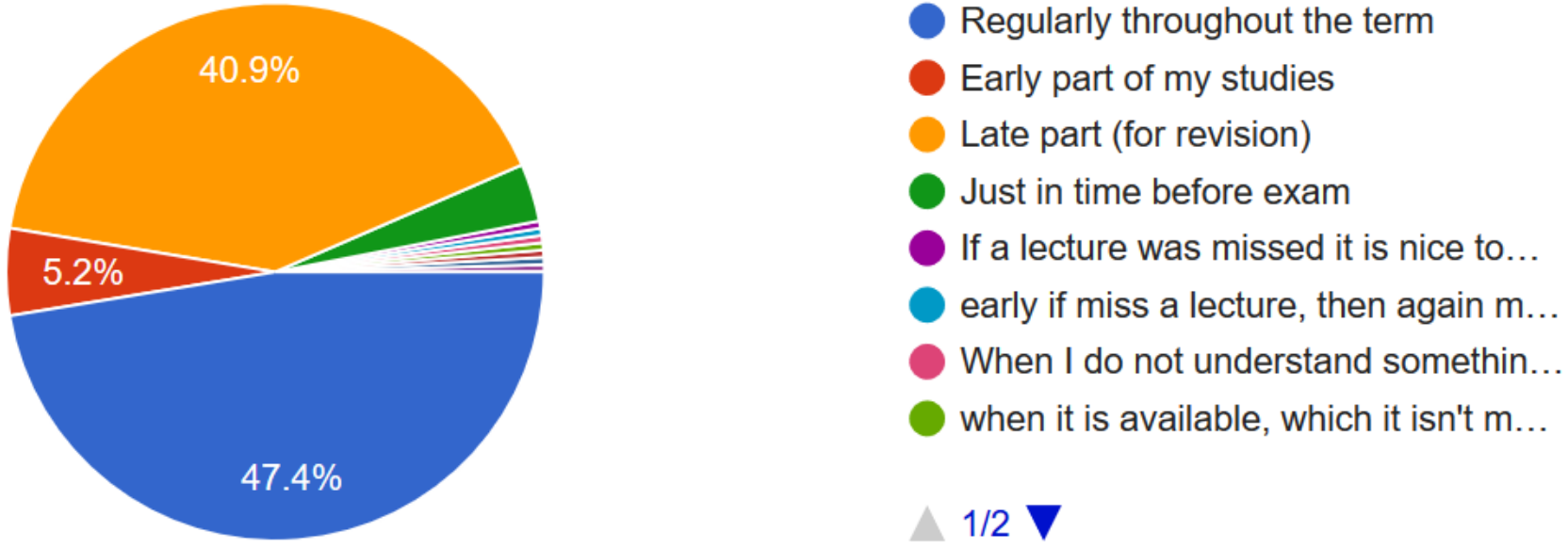
What kind of collaborative activities do you engage in?



Viewing Habits

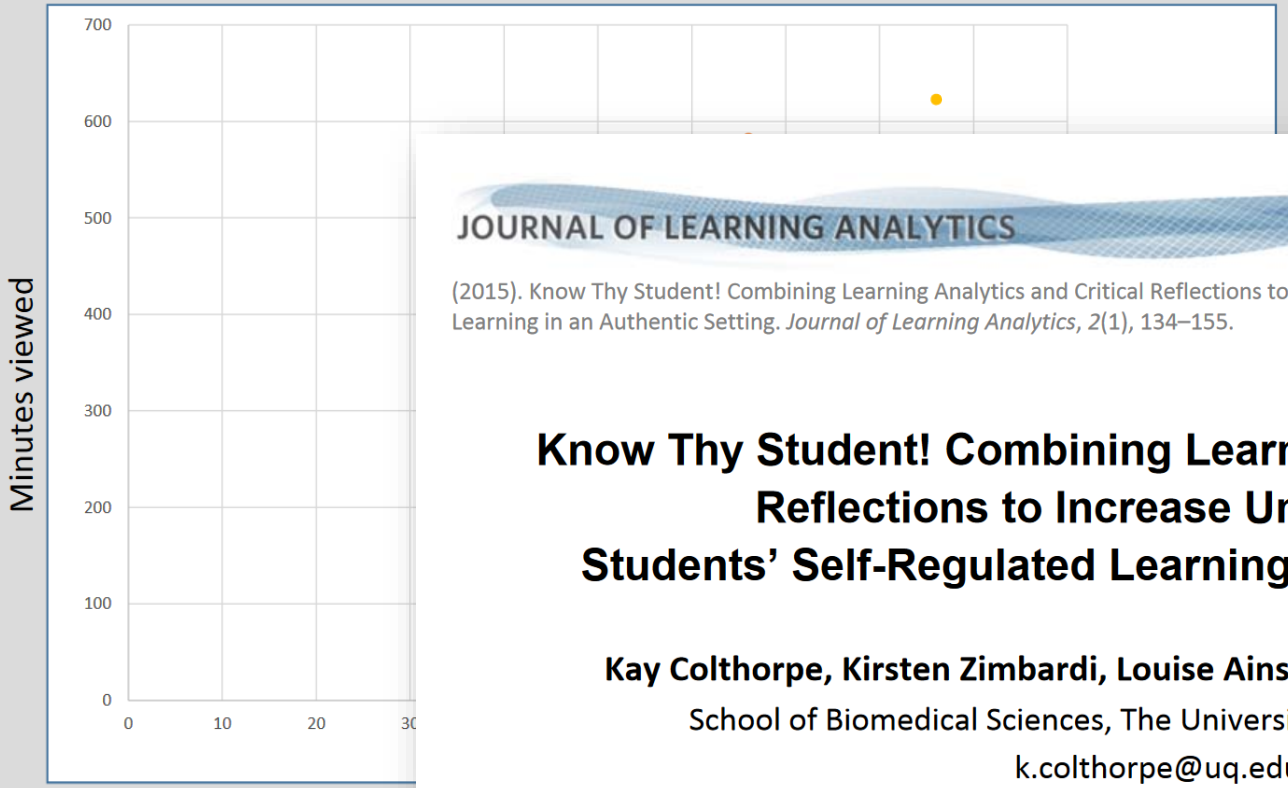
When do you use Lecture Captures the most?

230 responses



Closing the Knowledge Gap

Used most by the students with weaker A levels.



JOURNAL OF LEARNING ANALYTICS

SOLAR SOCIETY for LEARNING ANALYTICS RESEARCH

(2015). Know Thy Student! Combining Learning Analytics and Critical Reflections to Increase Understanding of Students' Self-Regulated Learning in an Authentic Setting. *Journal of Learning Analytics*, *2*(1), 134–155.

Know Thy Student! Combining Learning Analytics and Critical Reflections to Increase Understanding of Students' Self-Regulated Learning in an Authentic Setting

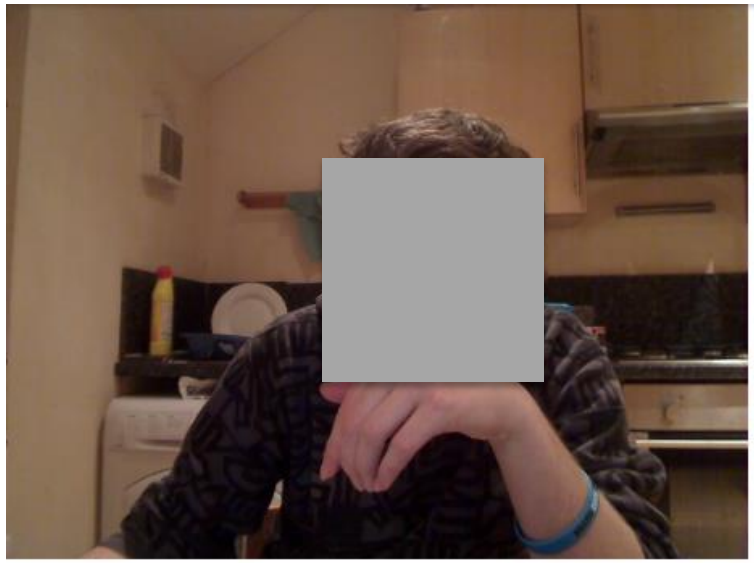
Kay Colthorpe, Kirsten Zimbardi, Louise Ainscough, and Stephen Anderson

School of Biomedical Sciences, The University of Queensland, Australia

k.colthorpe@uq.edu.au

Study Practices

Ethnographic Research



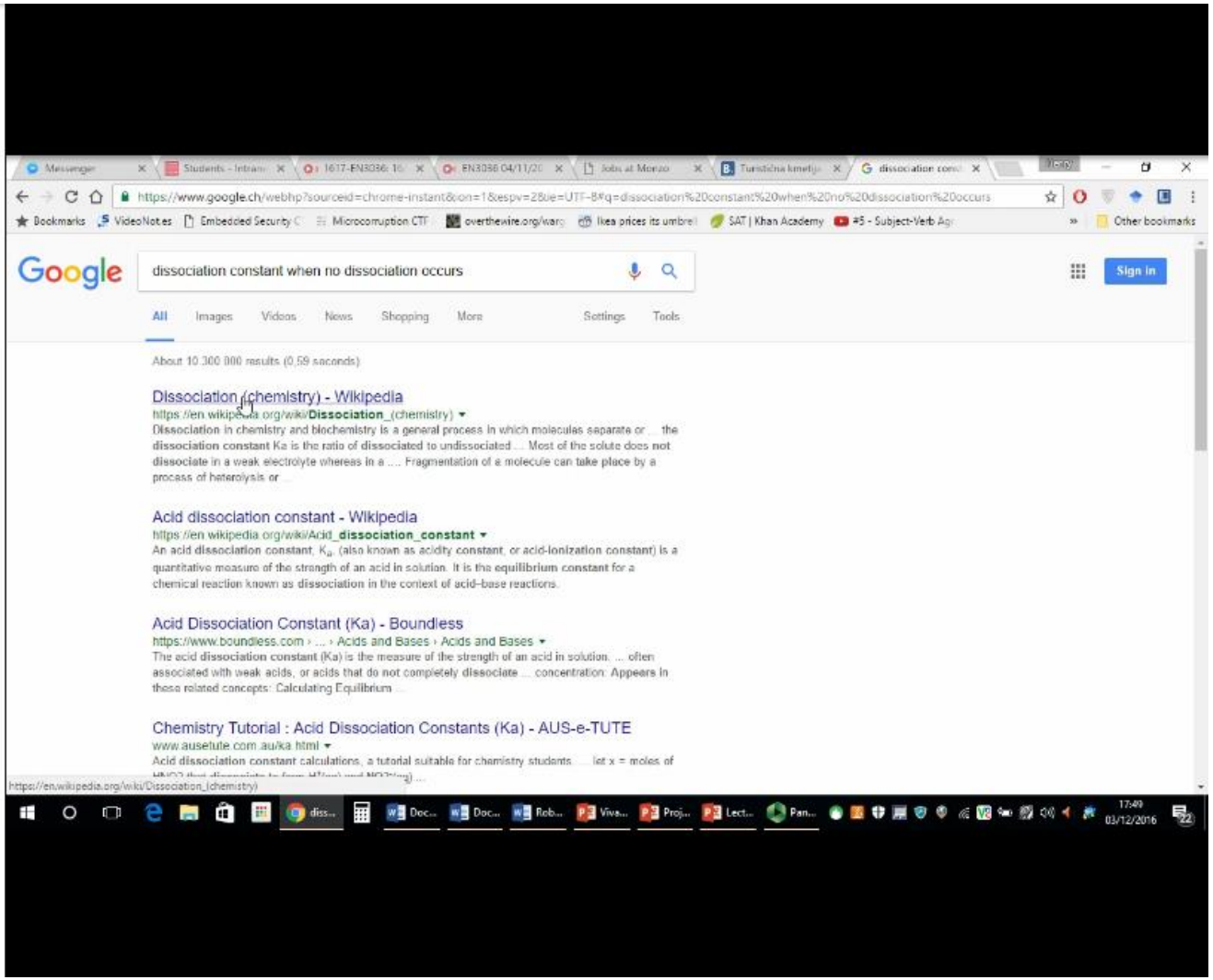
Search this recording

Notes | Your notes (lukek1@cardiff.ac.uk) | Make public | Help

Bookmarks

Discussion

Notes are synchronized to what you're watching when you type them. Type and hit Enter to add one.



Places of Study

Table 17. The location in which online learners most commonly study

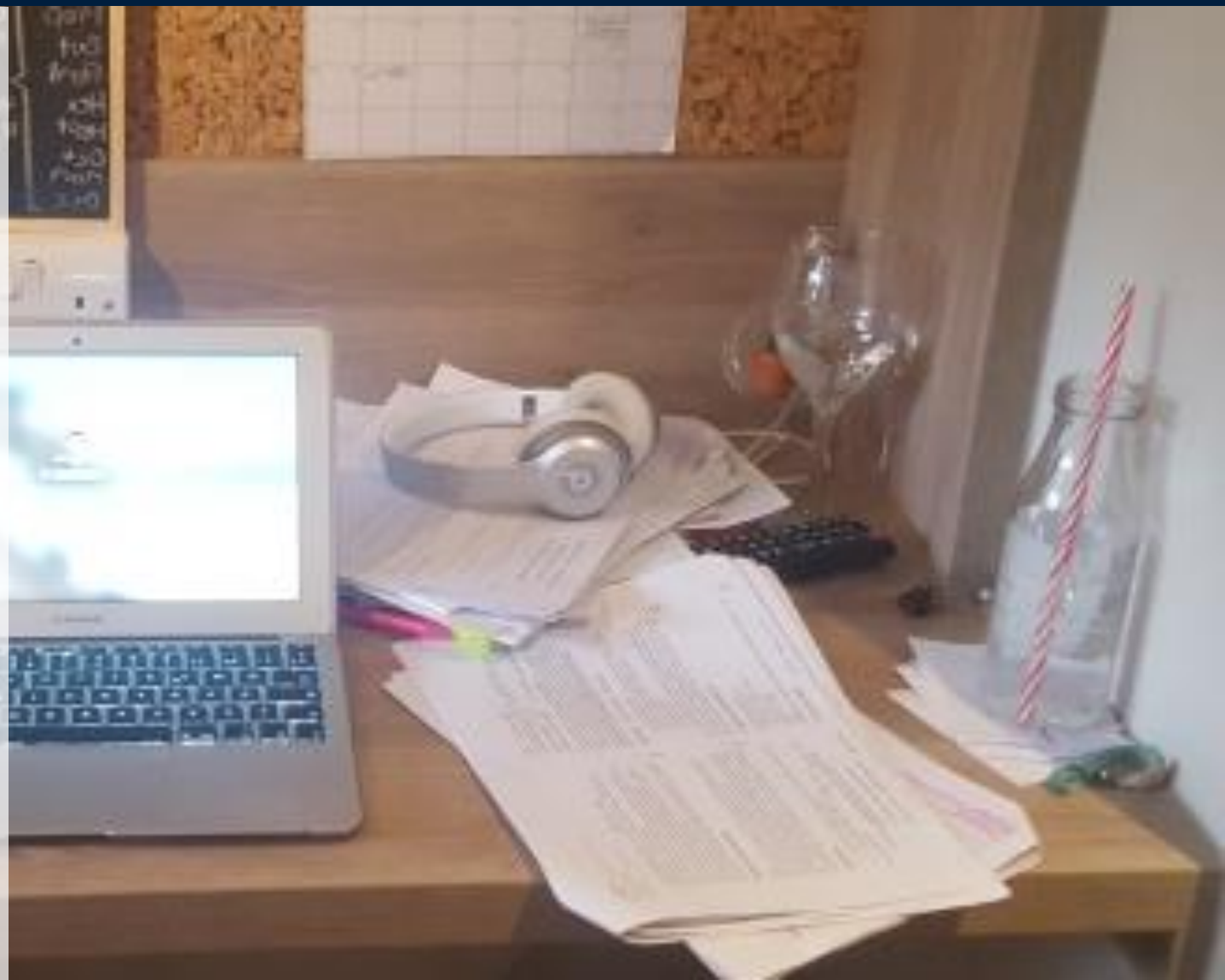
Places of study	% online learners
At home	85.1%
At work	8.1%
In a library or learning centre	3.5%
In a café or social space	1.1%
Other	2.3%

Pre-constructed study routines

*I had the **printed notes** from the lectures with me and some **question sheets**. I had **other notes** which, like in this **book** here, are my written notes. I had some **old past papers** as well…I've got a **big desk** … I've got a nice **office chair**. And I also had my **rulers** and **coloured pens** and **pencil** and stuff like that which I just keep sort of on the desk so when, well you can see the notes here, that helps me remember things.*

Multi-spatial practices and stability

- Participants negotiated study practices within the spatiality of **familiar environments**
- This practice of note-taking can be viewed in terms of a complex arrangement involving **hybrid spaces** and many **interacting artefacts**



Student Perspectives

https://www.cardiff.ac.uk/learning-hub/view/using-personal-capture-for-flipped-learning

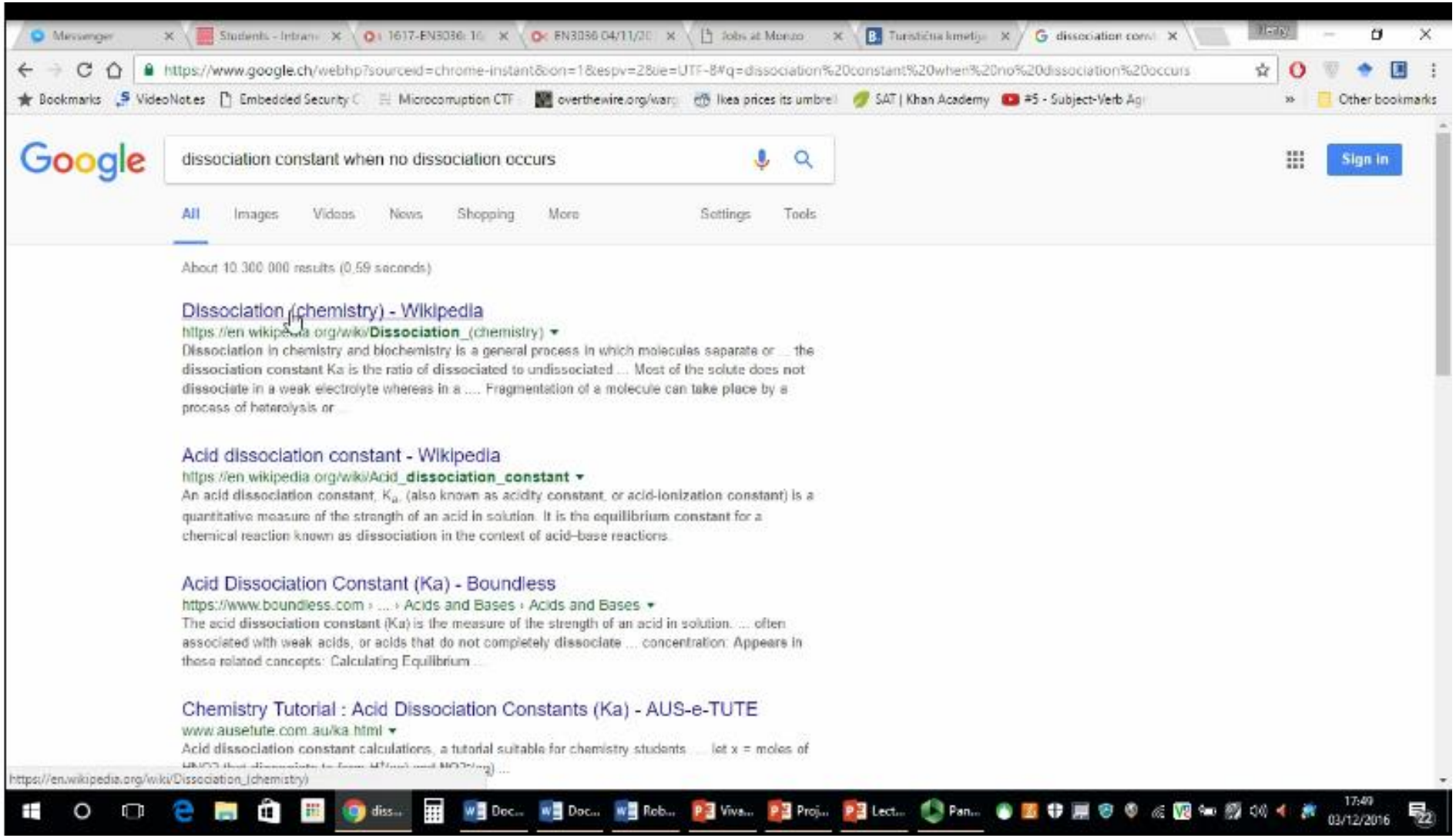
Negotiating multi-spatial practices

- The **play/pause button** functions as a *'valve'* and "*configures spaces for pedagogic purposes*" (Thompson 2012 p.101)
- Affords switching between different artefacts
  - i.e electronic documents, webpages, physical notebooks and handouts
- Prevents information overload / maintains attention

Negotiating multi-spatial practices

- Such practices would fall apart if the button itself was absent
- However…the pause button serves conflicting qualities
  - Not harmonious with study practices (i.e. social networking / checking mobile phone)

Negotiating multi-spatial practices



Suggested Enhancements [Students]

Have full screen with two views. Can ***watch visualiser and PowerPoint at the same time*** *for example.*

Would be good to have ***some sort of popout player*** *which shows just the slide and the voice behind it, instead of having to have the page opened up in full as then I could have it on the side of the screen to watch while I type up my notes rather than having* ***to flick back and forth from the lecture capture to my word doc****.*

Would like it to be easier to ***transfer the notes I make while watching to the actual powerpoint slide document****. Currently have to copy and paste each individual note.*

For me to be able to make ***private notes/timestamps*** *in the corner for future reference for exam revision.*

Learners and Digital Practices

“Digital Natives”

http://repository.jisc.ac.uk/6684/1/Jiscstudenttrackerbriefing17.pdf

Learners need to be advised and supported on how best to use digital tools and systems in their studies

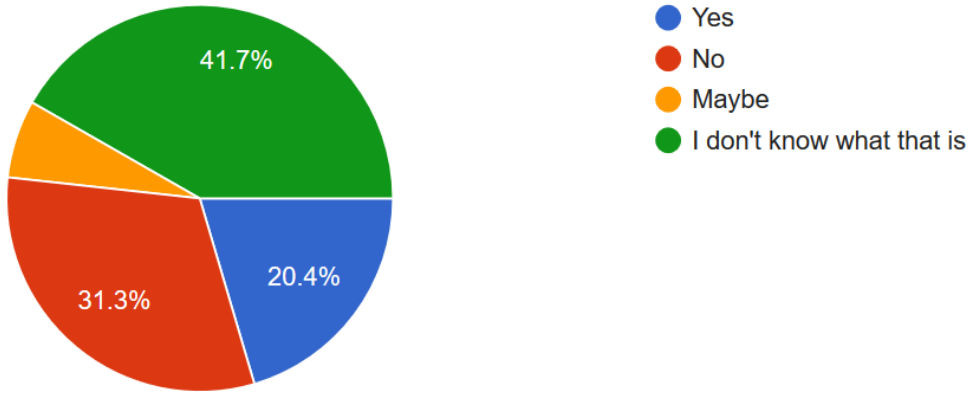
From learner responses it seems that course staff often assume that learners know how to use digital systems and tools or will quickly pick up those skills without explicit training. But many learners wanted help to use digital tools effectively.

“Don’t assume everyone understands the use of digital tools within learning, we all have different levels of access to digital tools and their uses.”
HE student

(Mis)Understanding the Affordances

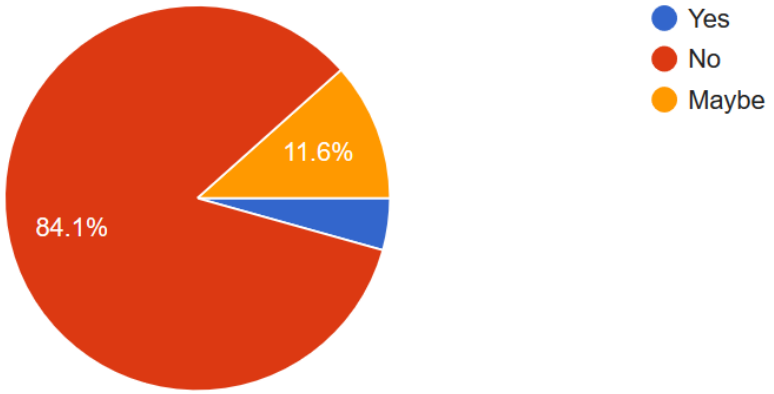
Do you use the notes/discussion features of the Panopto?

230 responses



Do you use the search feature within Panopto recordings?

69 responses



Mapping Digital Practices

Visitors and Residents

https://www.jisc.ac.uk/guides/evaluating-digital-services/visitors-and-residents

Visitor's and residents continuum
©White and Le Cornu 2011
http://firstmonday.org/ojs/index.php/fm/article/view/3171/3049

Student Partnerships

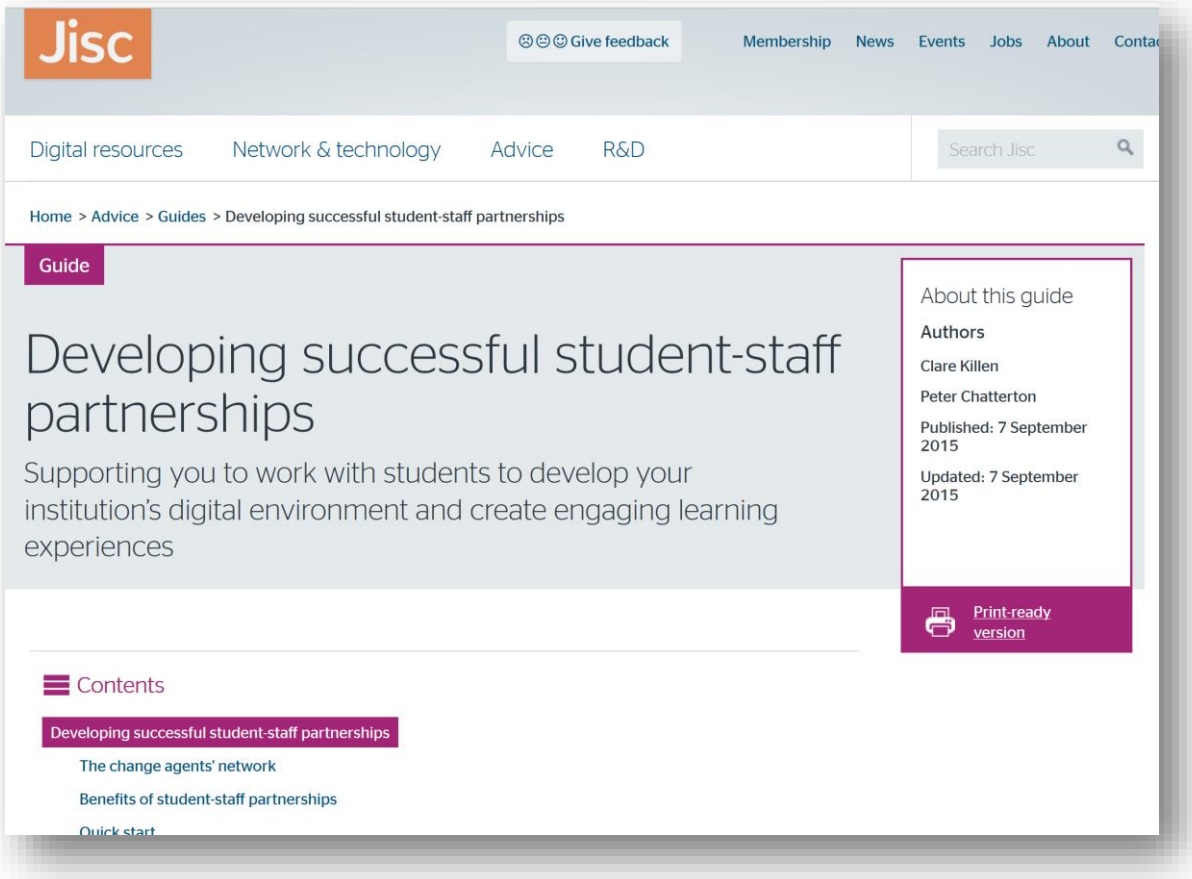
Student Partnerships

“ Partnership is essentially a process of engagement, not a product. It is a way of doing things, rather than an outcome in itself. ”

https://www.heacademy.ac.uk/engagement-through-partnership-students-partners-learning-and-teaching-higher-education

Student Partnerships

- Working together to a common **agreed purpose**, to achieve **enhancements** for **all** concerned.
- **Change agents:** working in partnership with students as a driver for change in implementing technology enhanced learning.



https://www.jisc.ac.uk/guides/developing-successful-student-staff-partnerships

NSS 2017 New Questions

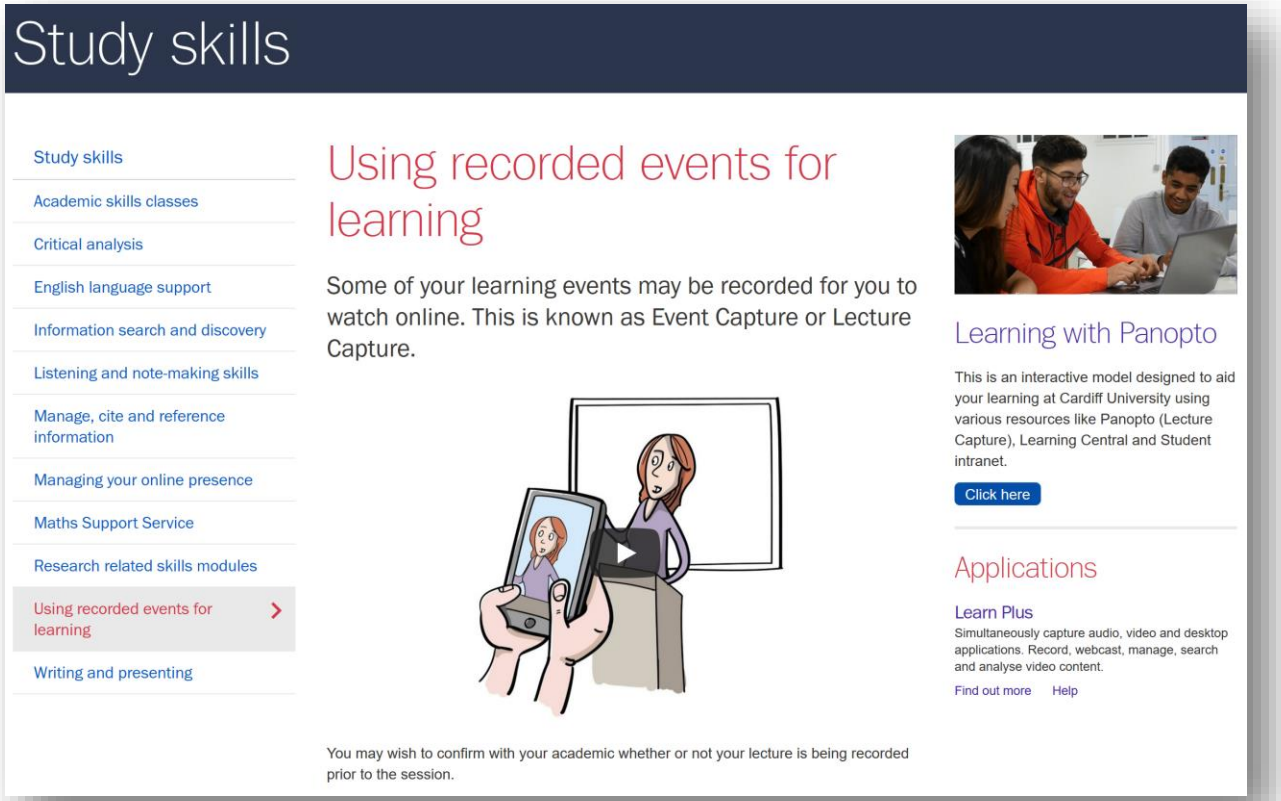
Learning community [new section]

21. I feel part of a community of staff and students
22. I have had the right opportunities to work with other students as part of my course

Student voice [new section]

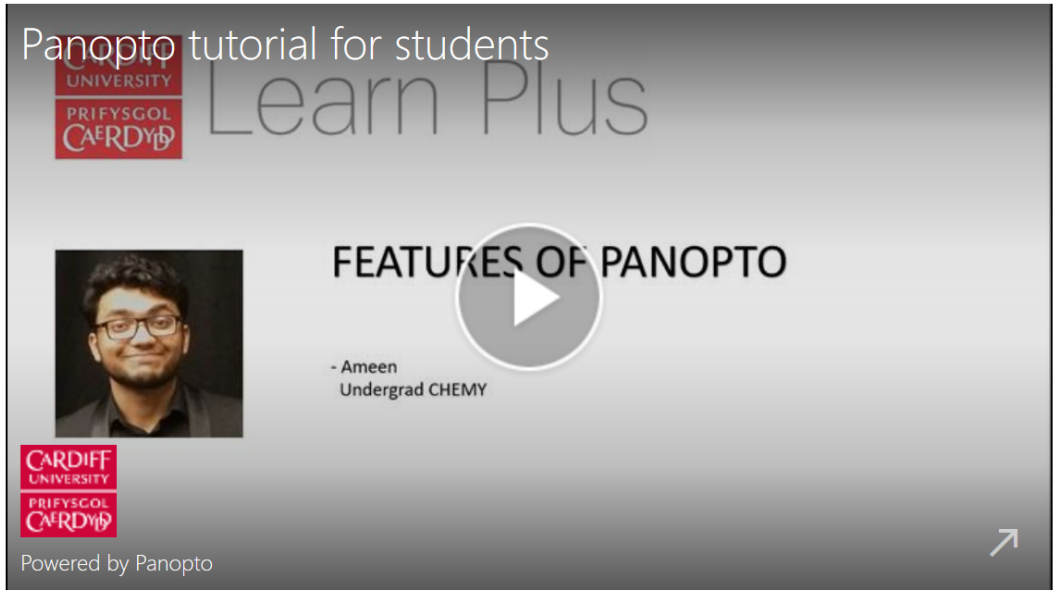
23. I have had the right opportunities to provide feedback on my course
24. Staff value students' views and opinions about the course
25. It is clear how students' feedback on the course has been acted on
26. The students' union (association or guild) effectively represents students' academic interests

Student Support Materials



Tutorial

You can use your Event Capture in various ways in your study once it's uploaded by your teacher.



Based on the usage of captured content by Cardiff University students, we have designed an 'Event Capture Learning Model', which gives you a step-by-step guide on all the ways you could utilise the captured content.

Student Tutorial

https://xerte.cardiff.ac.uk/play_6284

Recap

Using Lecture Capture to review and enhance your notes

> I find I can make much more detailed notes whilst using lecture captures, as sometimes lecturers go over things too quickly but with lecture captures I can easily go back and listen to it again
>
> - Psychology student

During this phase, review the notes you took in lecture and use them to make detailed notes. Note making may help you to understand and organize your ideas. You may find these notes useful throughout the rest of your study.

Use the Lecture Capture to complete and enhance the notes you have taken during the lecture and annotate the important points in the Panopto for future reference.

You can re-watch specific sections of the recording at your preferred speed. To get to even more specific sections, you may use the search engine in Panopto. Re-listening to the specific sections can help you improve your understanding. You may even mark the timestamps in your notes, so that you can revisit them during your revision period. Click here to watch a video tutorial explaining all the above features of Panopto.

Students also use online sources, textbooks and recommended reading materials to enhance their understanding. Clarifying the online sources, summarising and linking them together may help you attain a general overview. For more on critical thinking and analysis visit the academics skills page.

Implications for Teaching and Learning

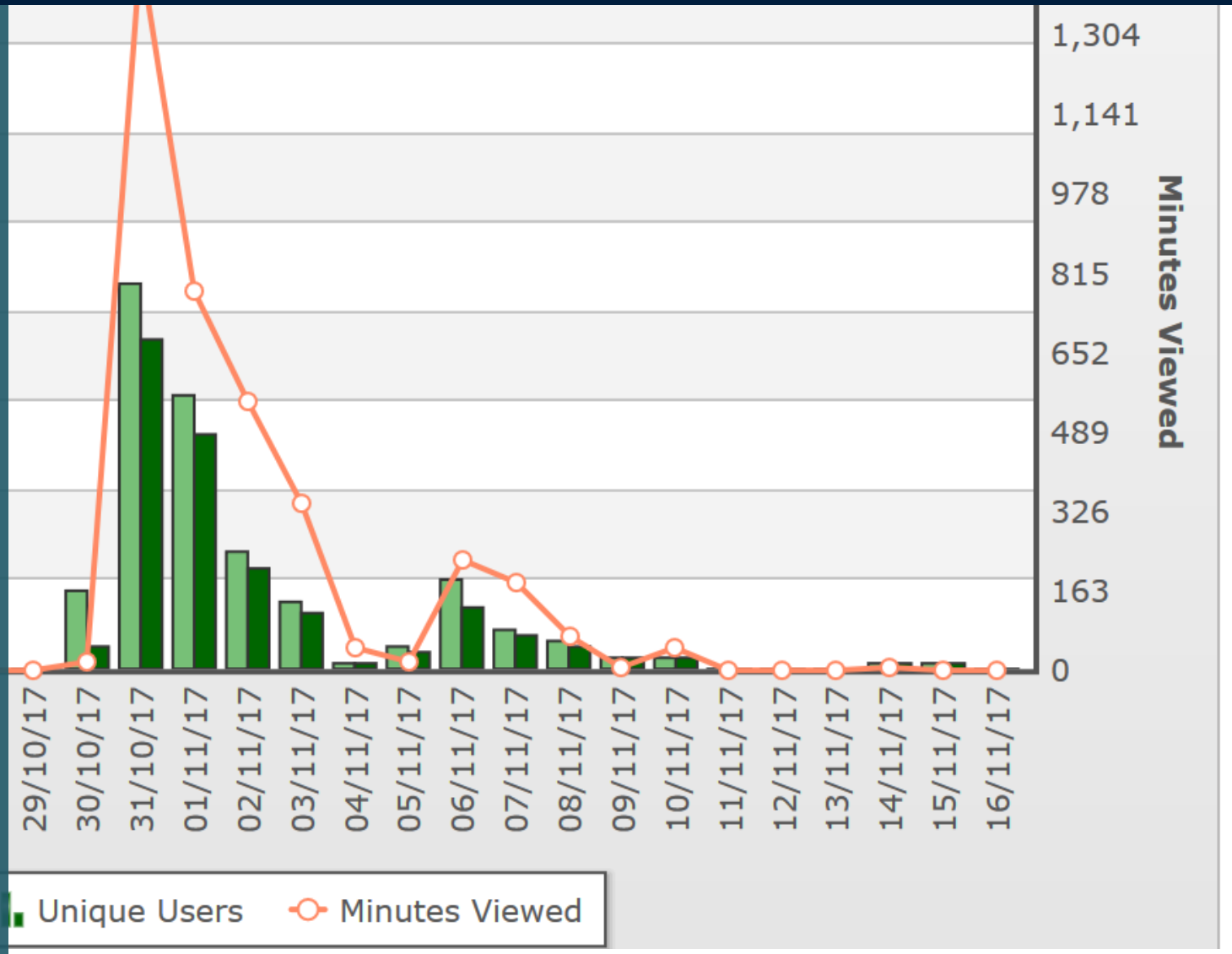
Implications for Learning Analytics

Collaborative / social viewing

High access to lecture recordings may be associated with poorer academic performance

- Measures and strategies to support students that might be at negatively impacted because of the availability of lecture capture is advocated

Digital capabilities / literacies



Implications for Learning

ELSEVIER

Teaching and Teacher Education

Volume 67, October 2017, Pages 135-142

The myths of the digital native and the multitasker

Paul A. Kirschner [a, b], Pedro De Bruyckere [c]

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Highlights

- Information-savvy digital natives do not exist.
- Learners cannot multitask; they task switch which negatively impacts learning.
- Educational design assuming these myths hinders rather than helps learning.

Abstract

Current discussions about educational policy and practice are often embedded in a mind-set that considers students who were born in an age of omnipresent digital media to be fundamentally different from previous generations of students. These students have been

- Issues with multitasking?
- Efficient learning requires (momentary) stability and predictability (Thompson 2012)

Implications for 'Hybrid' Teaching

- *'Designing for Learning'* (Goodyear & imitriadis 2013)
- *How do we design, develop and implement effective learning activities with video capture?*

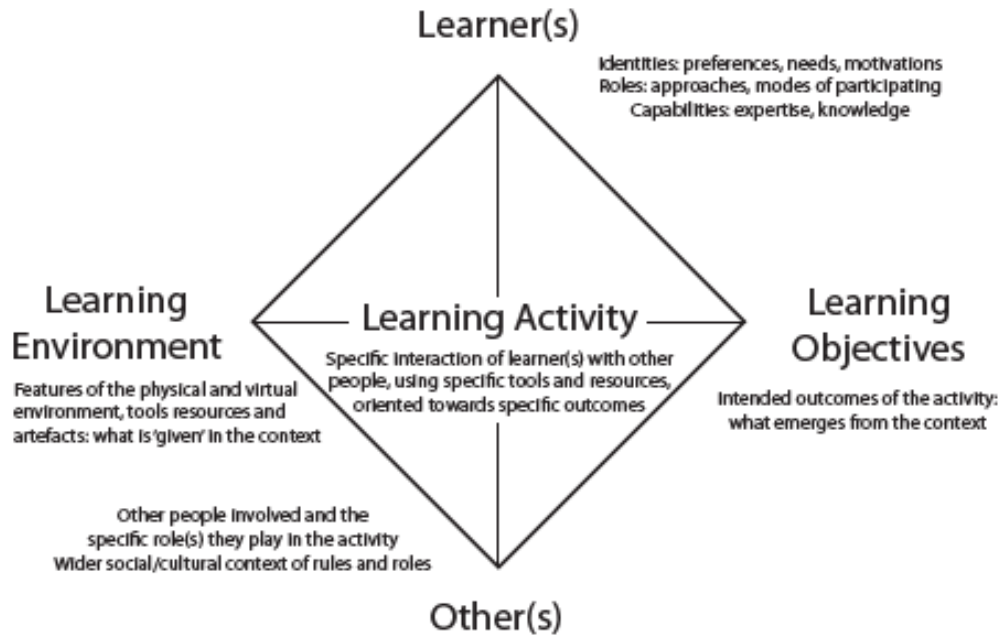

Figure 2.1 An outline for a learning activity

Beetham (2013) p. 34

Summary

- Information-savvy **digital natives do not exist**.
- Educational design assuming these **myths hinders learning.**
- Learning practices with video involve **assemblages of materials/tools** and reveals the complexity of education.
- **Designing for learning** to help foster effective independent (and social) learning with capture technologies.
- **Student partnerships** can help develop supportive digital environments, promote effective learning and advance engaging learning experiences.

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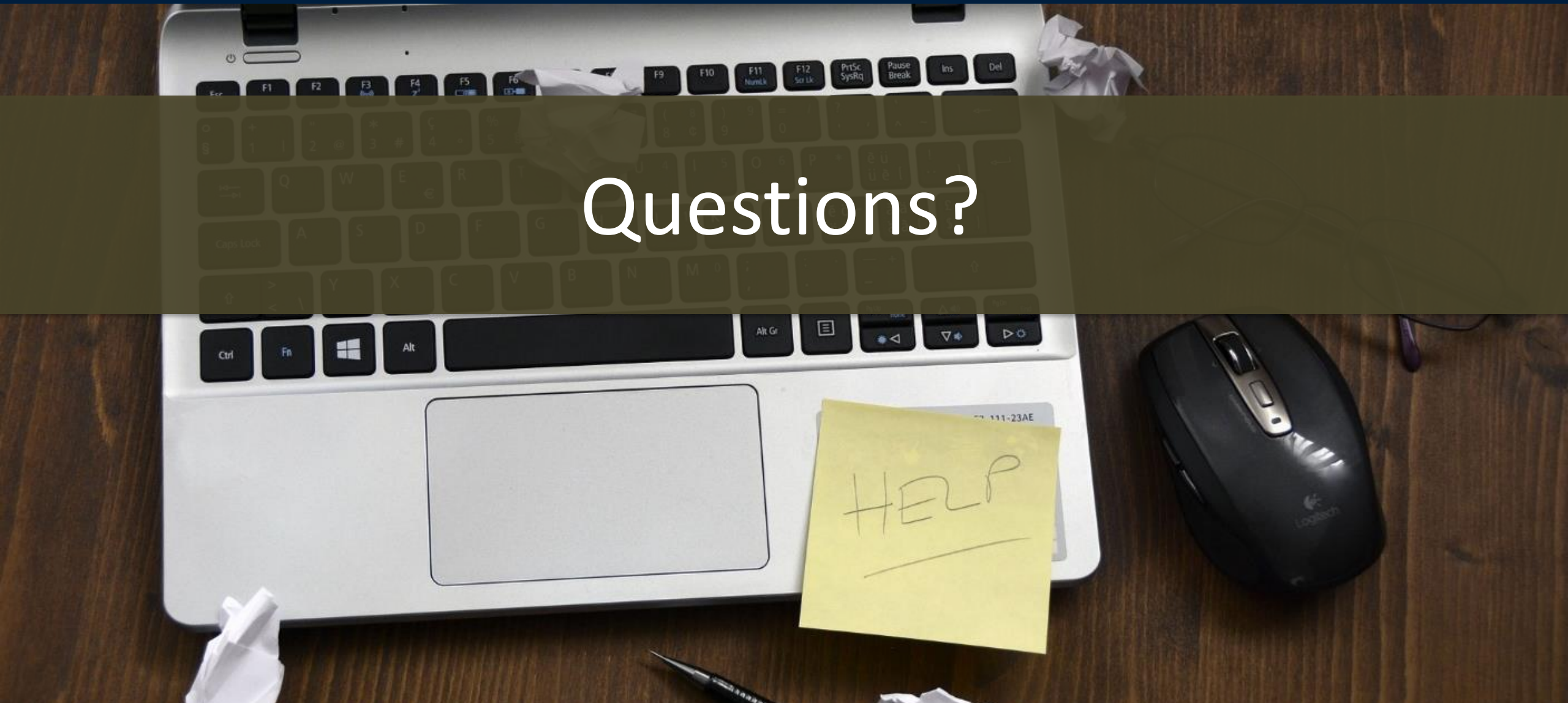

Questions?