

Change the landscape of teaching mathematics using technology – blended learning



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To Cover

- Changing landscape-blended learning
- Using blended learning
- Screencast
- What students say?
- Discussions & tips

Introduction



97% of secondary school learners have internet access at home

94% of primary school learners have internet access at home

30% of young people “find it difficult to find useful information online”

81% of Y10 secondary students know how to **upload** videos, pictures or recordings

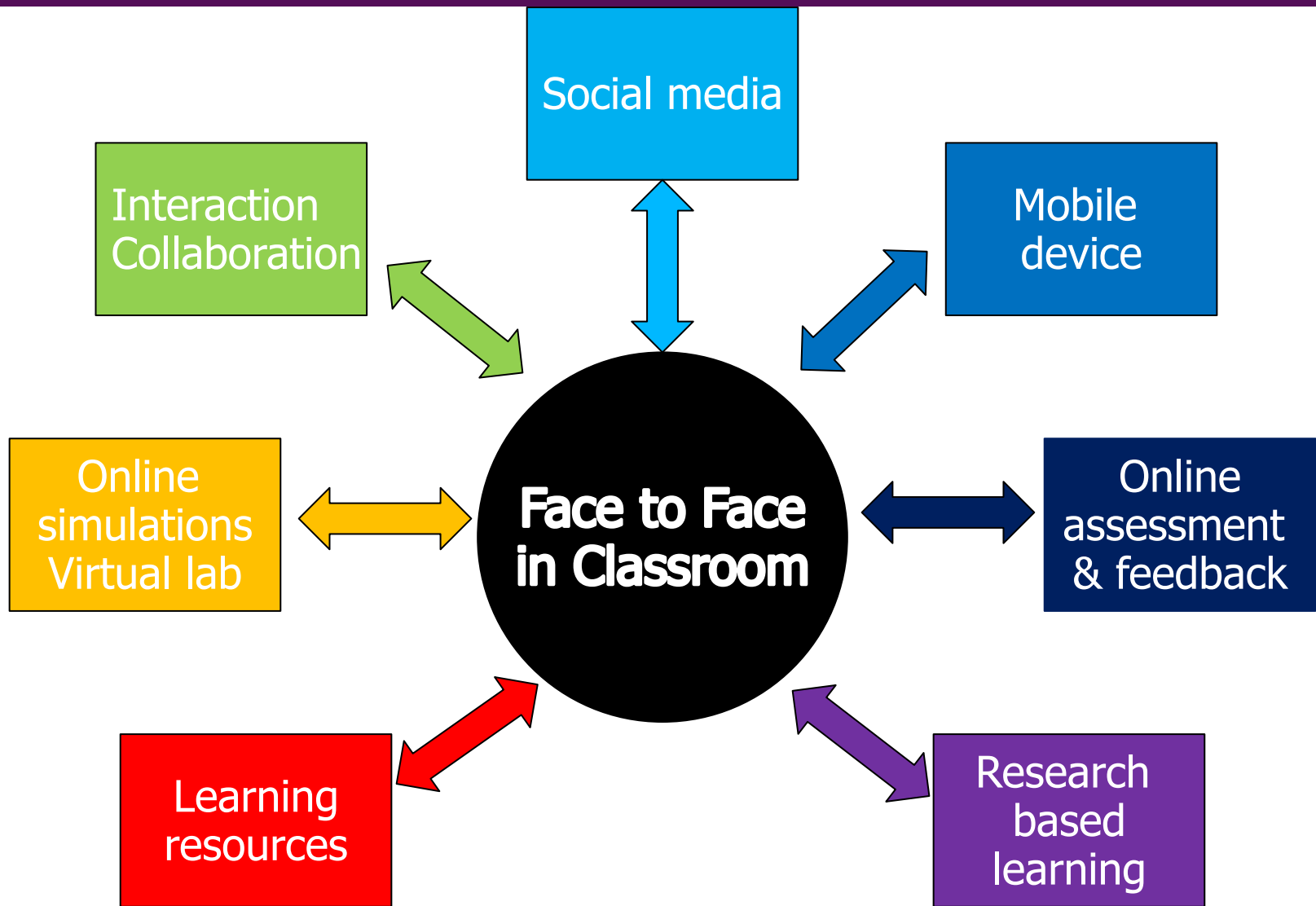
60% of Y10 secondary students know how to **edit** a wiki or a blog

25% believed they should “use all information they found”

What is blended learning?

- Not a distant learning.
- Blended learning is the learning that combine traditional face to face learning with technology-mediated instruction.
- A “new traditional model” or the “New Norm” in higher education.

Blended learning – the “New Norm”



- **Technology (YouTube, on line resources, on line simulation, screencasts) enhances students learning experience**
 - Flexible,
 - Stimulating/Engaging,
 - Interactive.
- **Challenges for institutions, lecturers and students**
 - IT competence,
 - Rapid pace of change,
 - Time,
 - Investment.
- **Mature learners and technology** (mix of pre and post 1983 (net generation))

Why blended learning in Maths?

- Students use free online resources
- Needed tutors' guidance
- Students wish to revisit a lesson to complete notes
- Not enough time to give students detailed feedback in class
- Need a solution!

Help students in finding useful free online resources

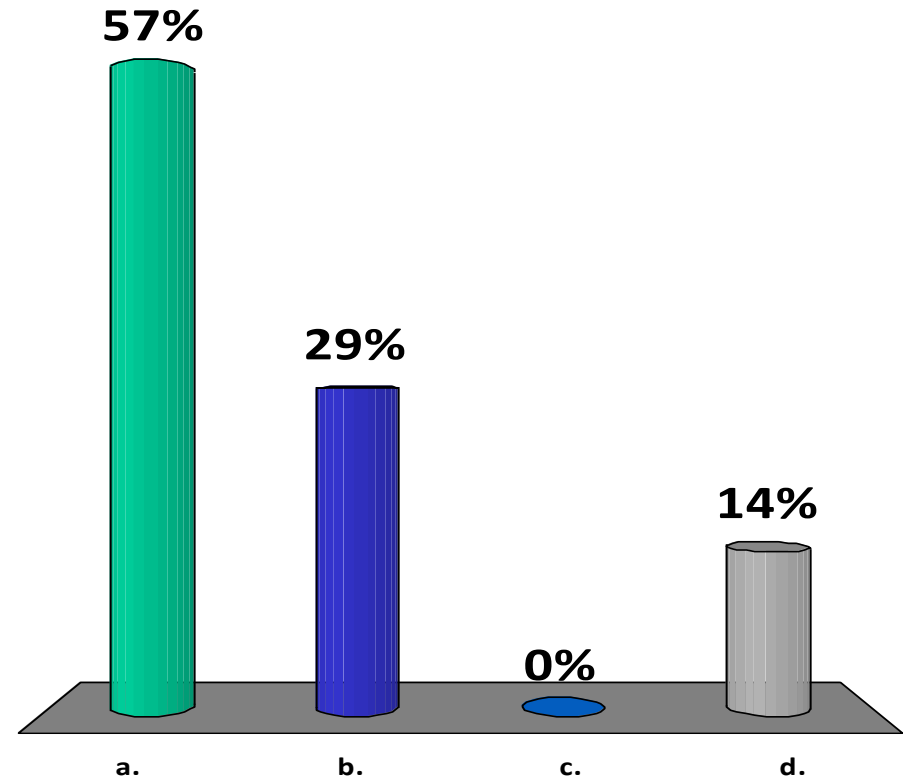
- ✓ <http://www.khanacademy.org/>
- ✓ <http://www.examsolutions.net/>
- ✓ <http://www.mathscentre.ac.uk/>

Videos and interactive online simulations with **compatible worksheet**

- ✓ <https://duo.dur.ac.uk/webapps/portal/frameset.jsp>
- ✓ http://phet.colorado.edu/sims/collision-lab/collision-lab_en.html
- ✓ http://phet.colorado.edu/sims/projectile-motion/projectile-motion_en.html

Whenever an object exerts a force on another object, the second object exerts a force of the same size, but in the opposite direction to that of the first object.

- a. always true
- b. sometimes true
- c. always false
- d. it would have been true if you had asked me on a Tuesday



What is screencast?

Solve linear Equations (I)

Rule: What ever you do to one side of equation you do exactly same thing to the other side

Example 1

$$x + 6 = 14$$

$$x + 6 - 6 = 14 - 6$$

$$\underline{x = 8}$$

Example 2

$$2x = 12$$

$$\frac{2x}{2} = \frac{12}{2}$$

$$\underline{x = 6}$$

Example 3

$$\frac{2}{3}x = 7$$

$$\frac{3}{2} \times \frac{2}{3}x = 7 \times \frac{3}{2}$$

$$x = 7 \times \frac{3}{2}$$

$$= \frac{7}{1} \times \frac{3}{2}$$

$$\underline{= \frac{21}{2}}$$

- A digital recording (movie)
- Screen captures including audio narration.
- Uses a tablet PC
- Record hand written working solutions including mathematical notations and graphs.

Benefit and concern

- “listening to complex material multiple times will allow it to “sink in”” (von Kinsky et al 2009)
- “The soft information which is often printed material, i.e. the thinking about how to approach a problem” “ helped them to know what to look for” (Jordan 2012)
- “intentional use of recorded lectures as back up resources to go over something” was” weakly associated with higher grades” (Yoon & Sneddon 2011)
- 4% of respondents in a survey “intentionally missed some live lectures due to availability of recorded lectures” (Yoon & Sneddon 2011)

Screencasts for pre-arrival students

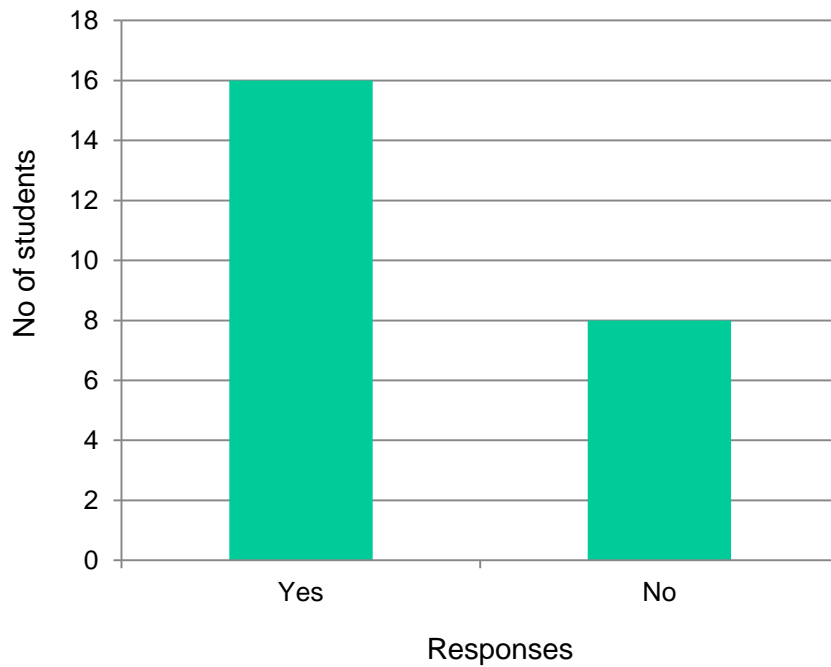
- ✓ To provide mature students a flavour of mathematical topics and an opportunity of head start
- ✓ In the form of screencasts - tablet PC + Camtasia studio
- ✓ Five screencast produced to cover three topics

Using screencasts in teaching mathematics *(currently on going)*

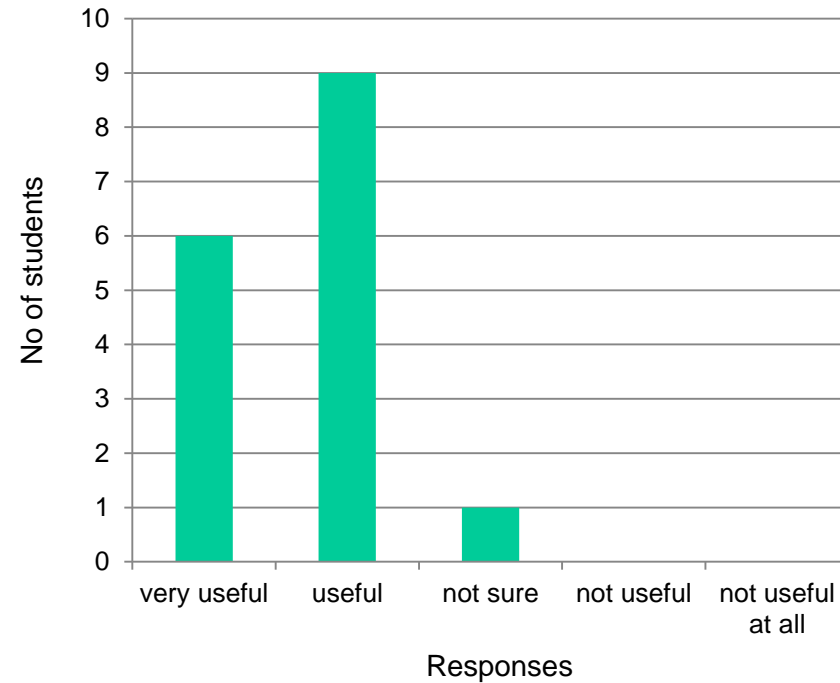
- ✓ Provide students feedback on assessments using screencasts
- ✓ Communicate with students during out of term time
- ✓ Record lectures for students to be able to catch up lessons (next term)

Students' feedback

Have you watched any of the screencasts provided during the course?

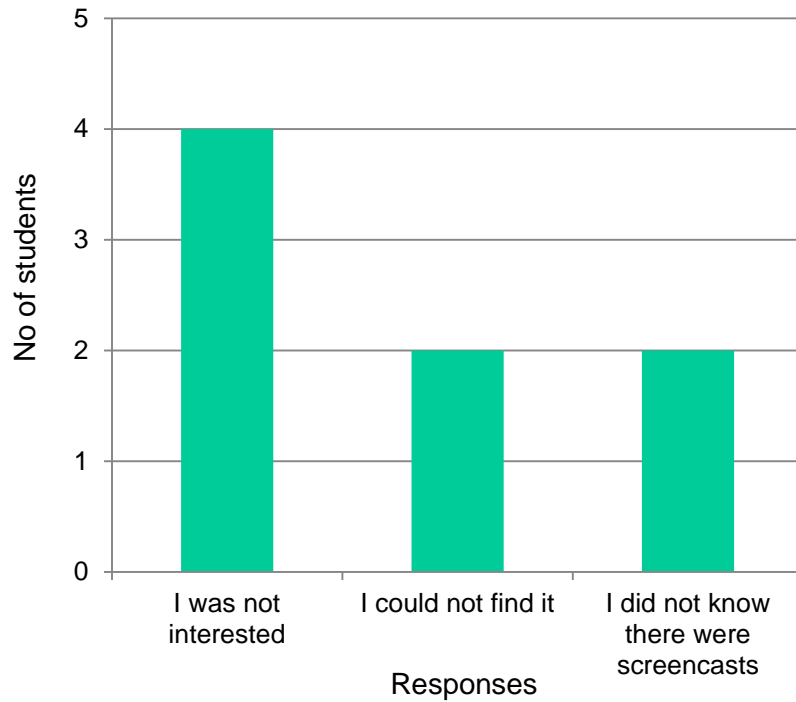


How useful the screencasts are for the module?

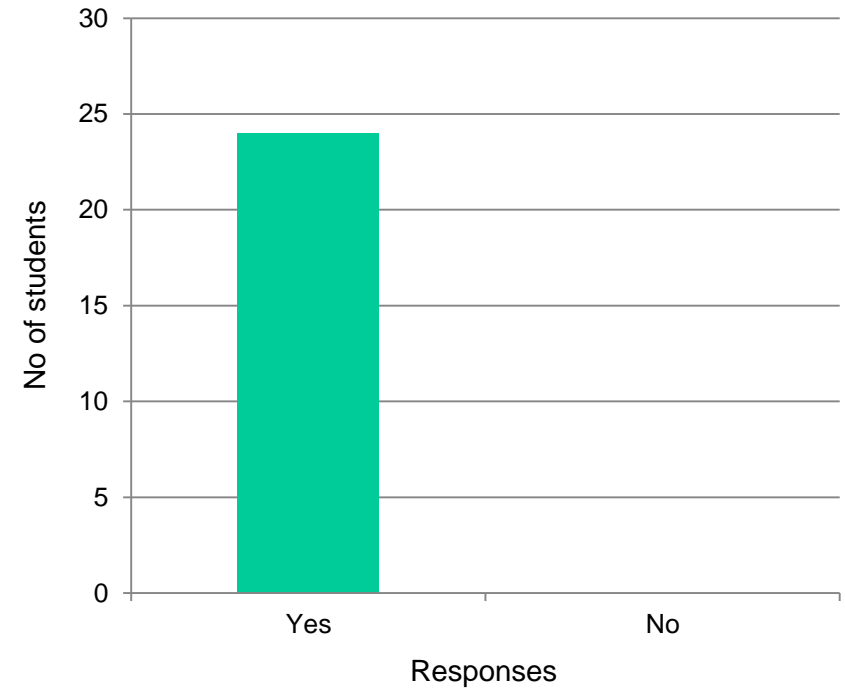


Students' feedback

I did not watch screencasts
because



Do you think there should be screencasts in
the future?



What did students say?

“I use either your screencasts or Khan academy which are both very beneficial to me, more screencasts would be great! 😊.”

“The benefit of a screencast is to follow the mathematical procedure for a solution first hand.”

“I would prefer to have live lecture but I the movies are very good- I think it is especially good for students who missed the lecture. I would like to have more (screencast) in the future.”

What did students say?

“It would be good if they were on YouTube in playlist, as it is easier to find them and subscribe to them. I would like to have videos throughout the module.”

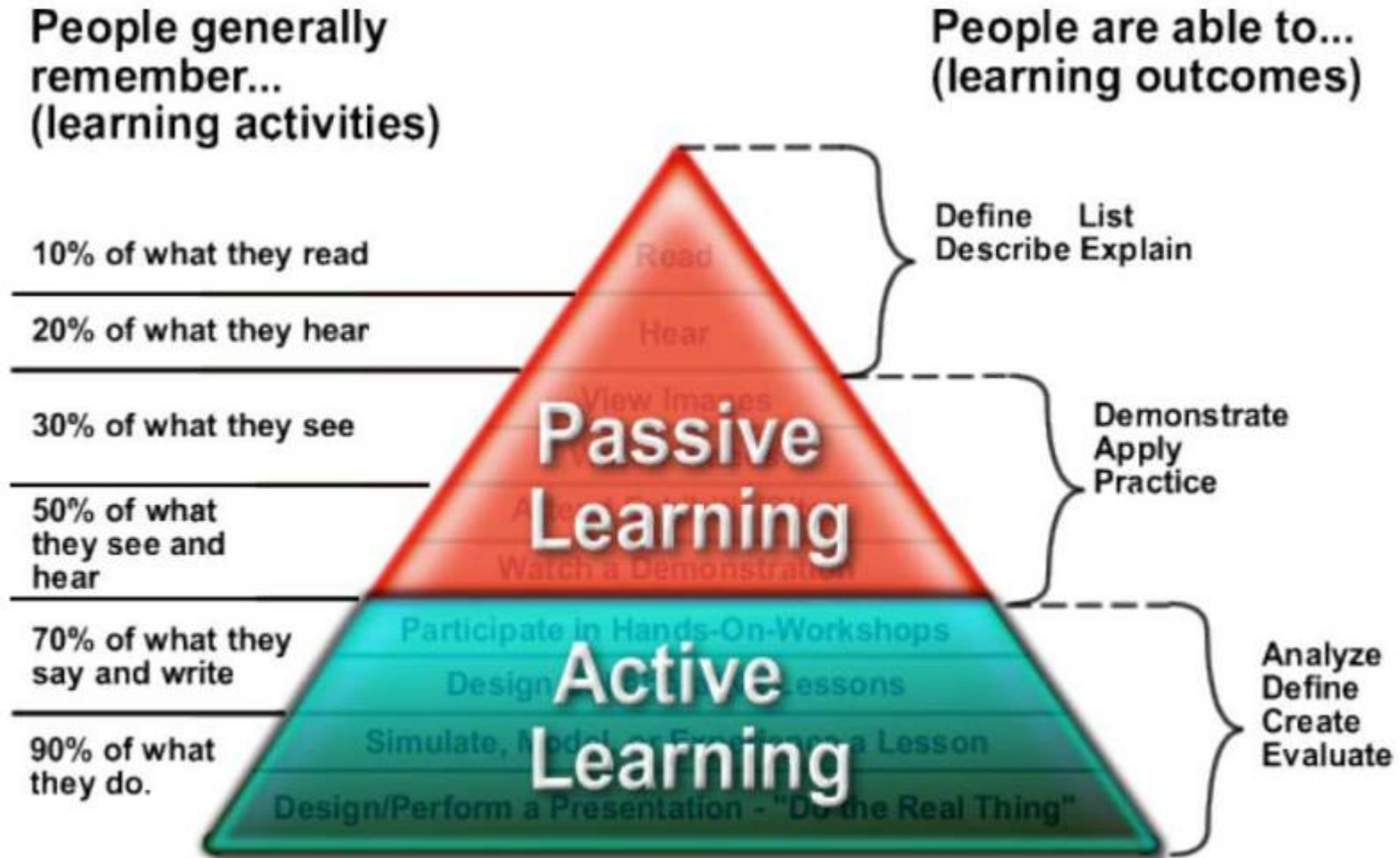
“I did not know there were screencasts but I think they are a great idea and would have been useful to me on several occasions during the term. Keep making them! I will use them now I know about them”

Discussion

-what did technology offer ?

What did technology offer?	Examples
Complemented face to face learning .	Open online learning resources. Such as Khan academy, Exam Solutions Maths centre
Allowed students manage their own learning pace.	All the online resources
Offered to meet individual of learning style (Multiple intelligent)	Youtube, videos, online simulations
Helped students to “see and feel” what they can’t see in classroom	Online simulations
Allowed students to revisit the topic they are struggling to understand.	screencasts
Freed lecturing time.	Using screencasts to give students feedback.

Discussions- Pedagogy advantage?



Tips on developing online resources

- Do not reinvent the wheel
- Put into the perspective of learners
- Plan what/how you intend to develop
- Make the screencasts simple and short
- Produce compatible worksheets
- Easy to access

Tips on developing online resources - technical side



- Buying hardware – ask experts and think what functions of the tablet are most important to you
- Be prepared to invest time learning software and hardware settings, it can be fun
- Be prepared to allow plenty of time when producing the first few screencasts
- Do not be too critical to the quality of screencasts, it will be get better
- Ask for help

What is your experience ?

Reference

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