Engaging Students in Practical Work Through New Technologies

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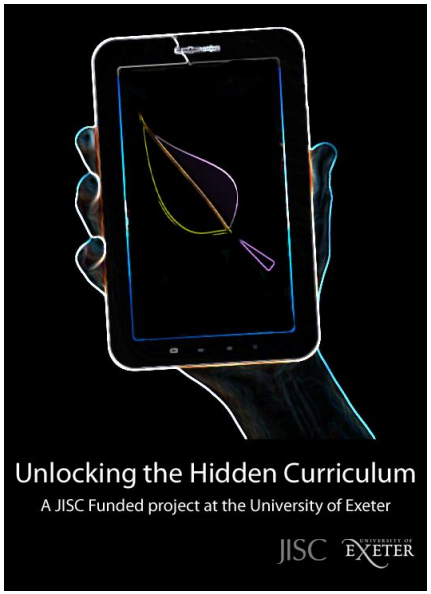
eBioLabs
Integrated tools for laboratory teaching

- eBioLabs at Exeter
  - UK Centre for Biosciences Departmental Teaching Enhancement Scheme



- Unlocking the Hidden Curriculum
  - JISC Learning and Teaching Innovation Grant

eBioLabs

- Created by Dr Gus Cameron at University of Bristol School of Biochemistry
- funded by JISC and University of Bristol
- “a set of integrated tools that help students prepare for laboratory classes and help staff track student achievement”
- interactive media
- formative and summative assessments
- increased understanding of the wider aims, rationale and science behind practical work

eBioLabs

Volumetric (Gilson) pipette

Useful information

Biochemists commonly use Gilson 'Pipetman' pipettes to measure and transport small volumes of liquids. These are continuously adjustable and provide a gold standard in accuracy, precision and robustness.

The diagram on the right highlights the important areas of a Gilson pipette - roll over each area for further information.

Make sure you understand all the steps involved in using a volumetric pipette accurately:

eBioLabs

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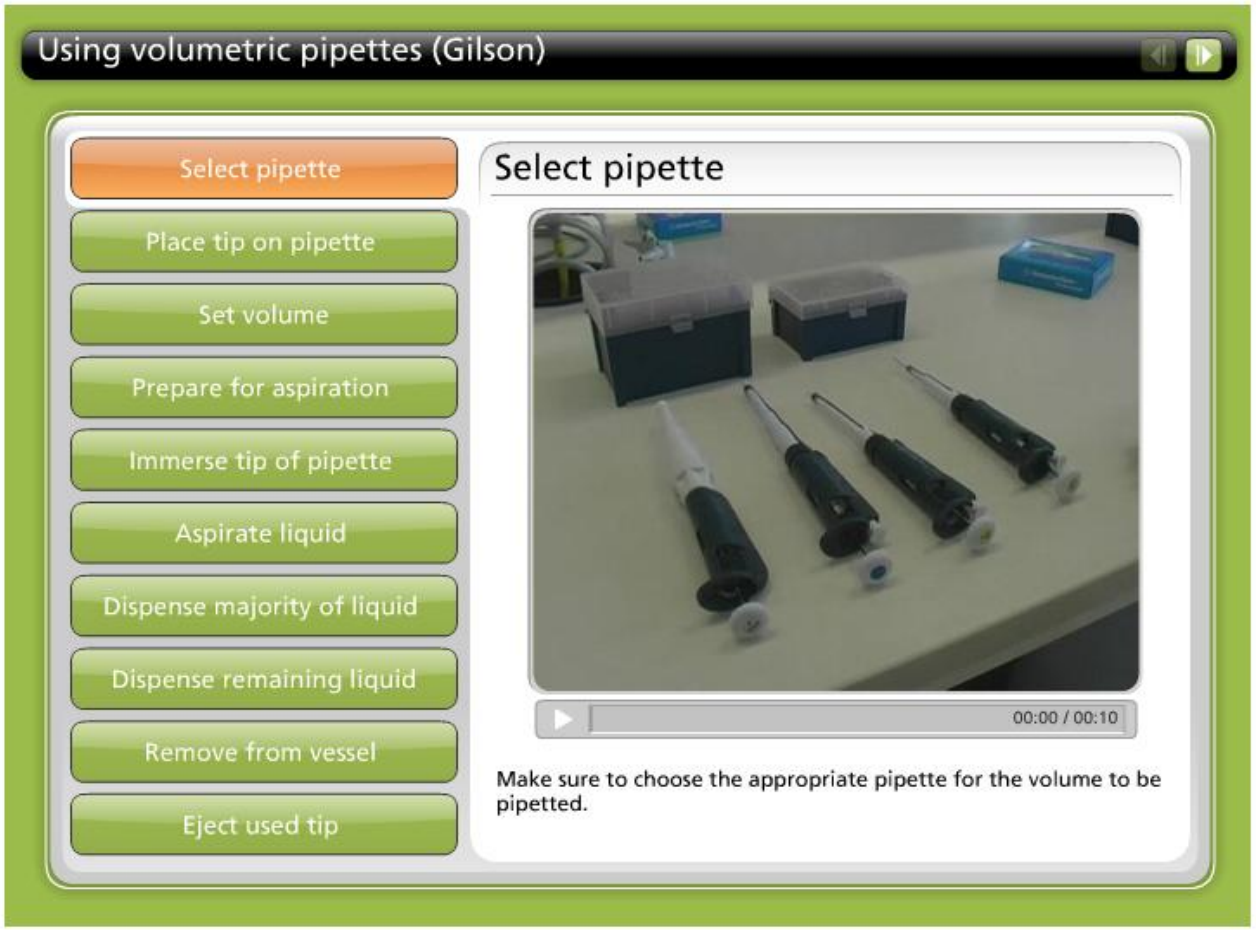


eBioLabs at Exeter

- Extension of eBioLabs to other areas of Biosciences
- Enhance preparation for, and engagement in, practical work at Exeter
- Enhance understanding of practical work

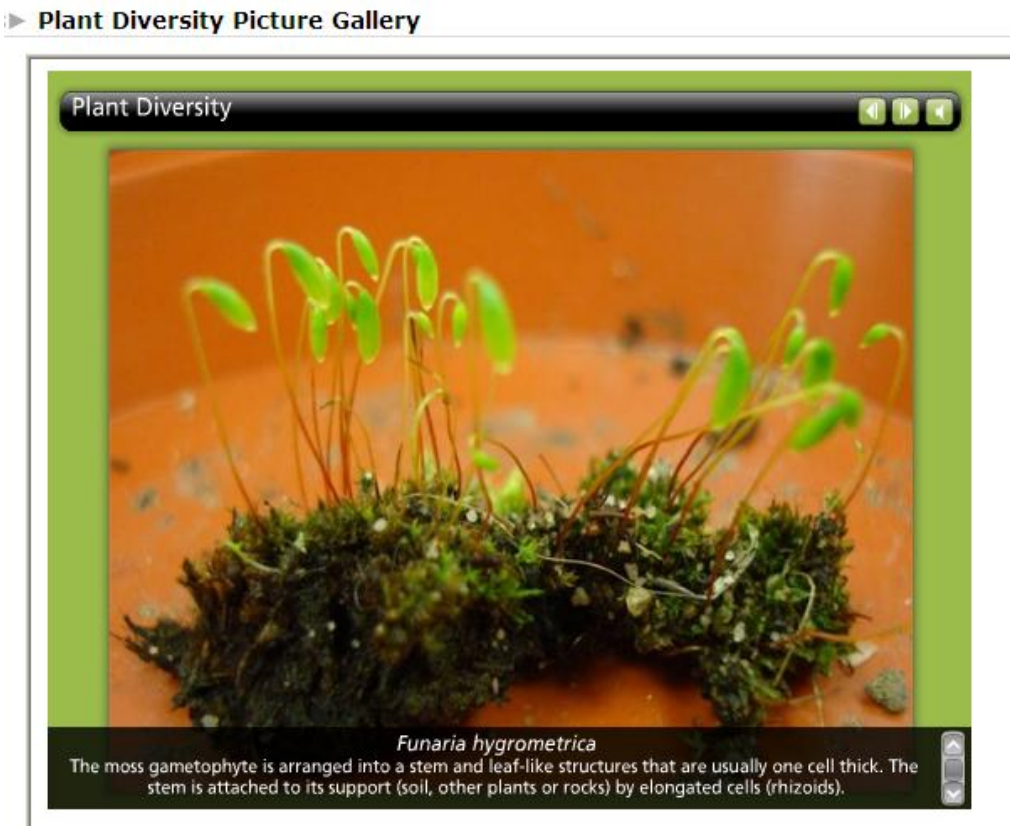
- Emphasis on plant and whole organism systems

eBioLabs at Exeter

- All L1 lab manuals on eBioLabs
- New techniques videos
- Information galleries
- ‘Get to know your specimen’
- Stats help
- New animations

eBioLabs at Exeter

- Plant Diversity and Physiology
  - http://vle.exeter.ac.uk/mod/resource/view.php?id=87898



eBioLabs at Exeter

- Plant Diversity and Physiology
  - http://vle.exeter.ac.uk/mod/resource/view.php?id=84372

eBioLabs at Exeter

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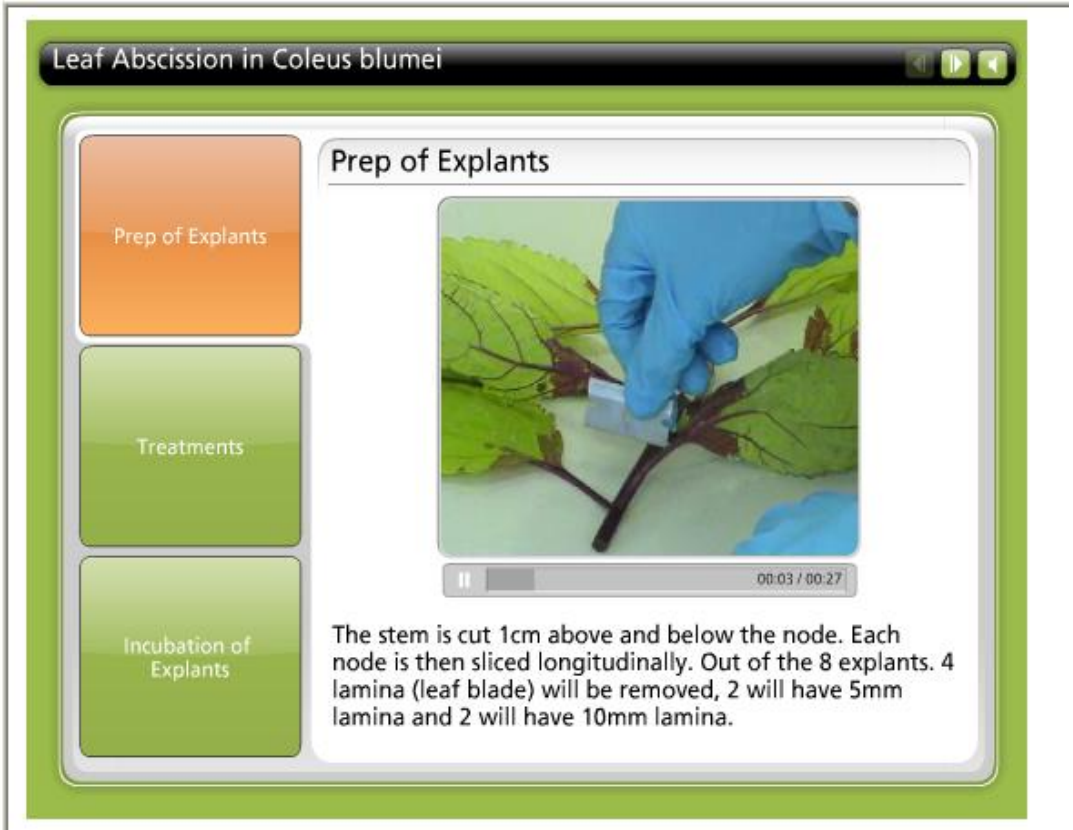

eBioLabs at Exeter

- Whole Organism Biology
  - http://vle.exeter.ac.uk/mod/resource/view.php?id=82962

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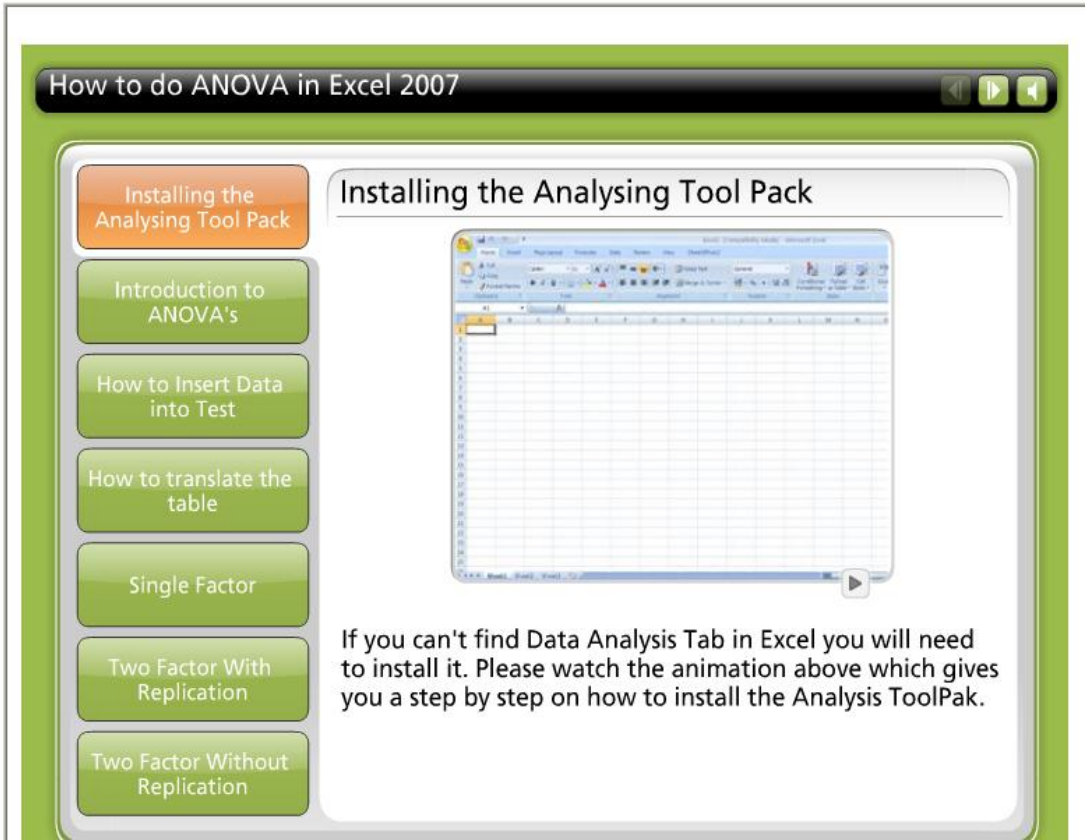
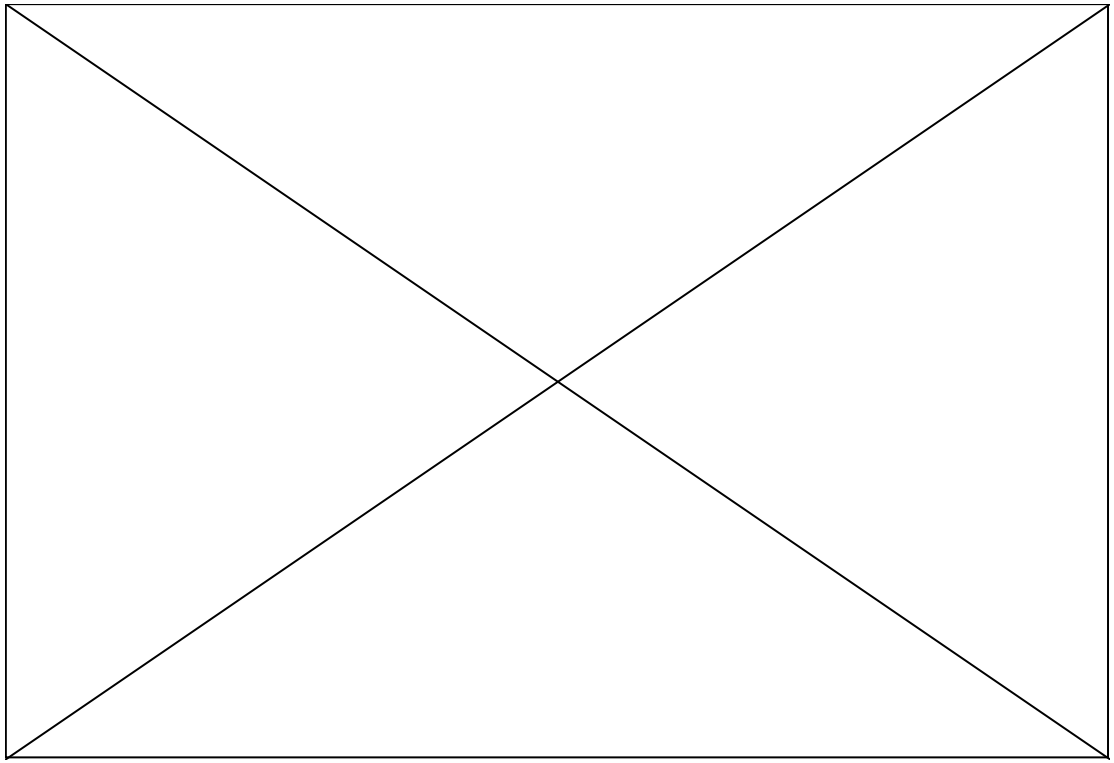
- Statistics
  - http://vle.exeter.ac.uk/mod/resource/view.php?id=96258



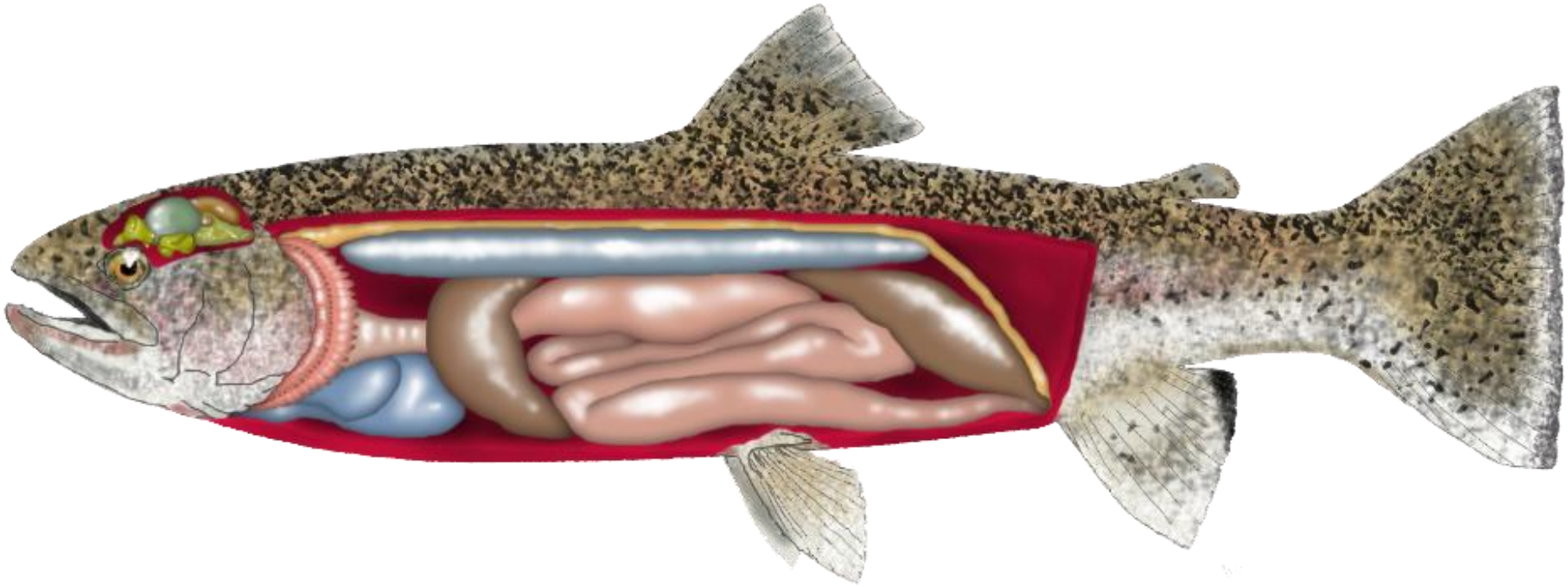
eBioLabs at Exeter

- Simulation of capture-mark-recapture



eBioLabs at Exeter

- Virtual Dissection

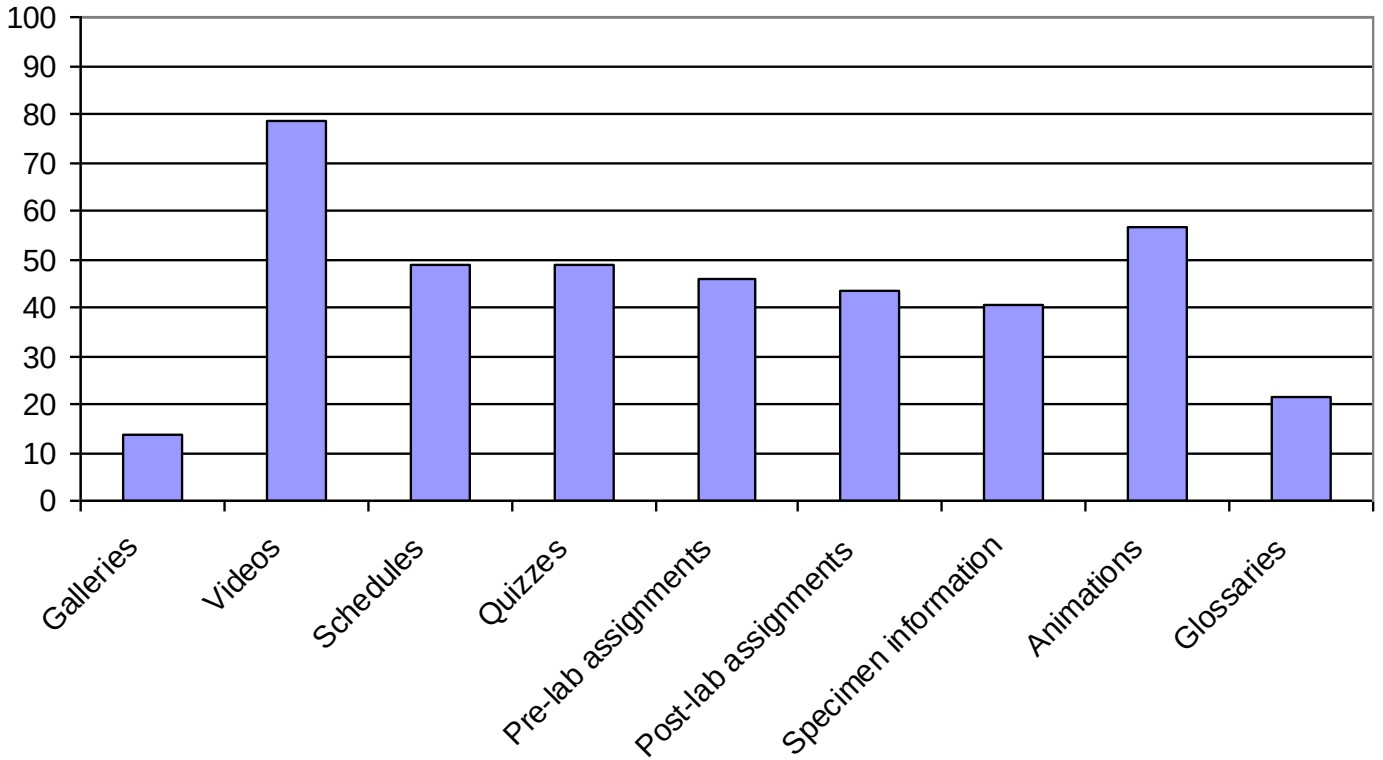


eBioLabs at Exeter

- Lab sessions help me understand the rest of the module
  - 68% 1st years agree vs 58% 2nd years
- Lab sessions are one of the most enjoyable aspects of the course
  - 57% 1st years agree vs 42% 2nd years
- I frequently feel that I don't understand how to use lab equipment
  - 13% 1st years agree vs 27% 2nd years
- I feel well prepared for lab sessions when I enter the lab
  - only 19% 1st years disagree vs 40% 2nd years

eBioLabs at Exeter

- eBioLabs is an important resource for my course
  - 60% agree



eBioLabs at Exeter

- Current Projects
  - Virtual Dissection
  - Interspecific competition simulation
  - Enhanced pre- and post- lab assignment provision
  - Embedding within teaching practice across Biosciences
  - Working with mobile technology

Unlocking the Hidden Curriculum

- Using Augmented Reality to unlock the biodiversity on campus as a learning resource
- Using GPS and camera within smart phone
- Two final year project students worked on design and content

Unlocking the Hidden Curriculum

- Enables students to explore previously unknown diversity
  - Night footage
  - Non-seasonal images/footage
  - Time lapse photography
  - Microscopic images
  - Video images

SAMSUNG
6 results found
Red Fox
(powered by www.hoppala-agency.com)
22m
More Information
Wikipedia Article
Fox video 1 (no vid)
Fox video 2

Unlocking the Hidden Curriculum

3 results found
Grass Snake
Natrix natrix
powered by www.hoppala-agency.com
86m
More Information
Take me there

22 results found
Little Egret (Egretta Garzetta)
(powered by www.hoppala-agency.com)
More Information
Wikipedia Article

View from camera

Species introduction box: appears at point of interest, user clicks on what information they wish to see

3D season 'wheel': spin to change seasonal display

Species text information:
Tabs linking to different layers, icons for other data forms and a 'back' icon. If another species is mentioned here the user can click on this and will be taken to that species introduction box

Species video:
Video of species in action

Season shot:
Overlaid onto current view through camera

Unlocking the Hidden Curriculum

- “Very intuitive”
- “It’s amazing how much wildlife is here”
- “Interactive, interesting and fun”
- “A good alternative way of learning”
- Less than half had visited area before
- All participants felt they had learnt something from the app

Unlocking the Hidden Curriculum

- Improve look and feel
- Students can input ‘sighting’ data
- ‘What species is this?’
- Interface with VLE
- Use on field trips

Thank you!

- eBioLabs
  - Gus Cameron and University of Bristol
  - Joanna Hall
  - Ollie Chanter
  - UK Centre for Biosciences and the HEA
- Unlocking the Hidden Curriculum
  - Education Enhancement
    - Dale Potter
    - Liz Dunne
  - Rich Maskey
  - Emma Barker
  - JISC