MICRO-LECTURES WITH EMBEDDED QUIZZES: AN INNOVATIVE USE OF LECTURE CAPTURE TECHNOLOGY

22ND JUNE 2018

Jean-Baptiste R. G. Souppez
Senior Lecturer in Yacht Design and Composite Engineering
jean-baptiste.souppez@solent.ac.uk

Lucía Vázquez Bonome
Research Assistant
3vazql68@solent.ac.uk
Contents

▪ Introduction
▪ Micro-Lectures with Embedded Quizzes
  ▪ Structure
  ▪ Example
▪ Lucía’s Experience and Student Feedback
  ▪ Research Assistant at Solent
  ▪ Focus Groups and Questionnaires
  ▪ Findings
▪ Results
  ▪ Student Perception
  ▪ Viewing Patterns
▪ Conclusions

▪ Acknowledgement: The support and SEED funding awarded by the Solent Learning and Teaching Institute (SLTI) is greatly appreciated, and made this investigation possible.
INTRODUCTION

- Promoting student engagement through technology enhanced learning

- Micro-Lectures
  - Short, sharp vodcasts covering the essential concepts

- Embedded Quizzes
  - Promote student engagement and a more active learning experience
  - But also provide feedback on student’s understanding of particular concepts

- Time-Line:
  - Spring 2017: Pilot study
  - Autumn 2017: Implementation on a 2 weeks short course
  - 2017/2018 Academic Year: Used weekly on a level 4 unit
**MICRO LECTURE WITH EMBEDDED QUIZZES**

- **Micro-Lecture Structure:**
  - 3 to 5 minutes long
  - Roughly one quiz per minute to promote active engagement
  - The rest of the video cannot be watched without answering the quiz!

- Results can be monitored
  - Allows to reflect on previous class, and influence the forth coming one

### Quiz Results Summary

<table>
<thead>
<tr>
<th>Section</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiz</td>
<td>01:07</td>
</tr>
<tr>
<td>Quiz</td>
<td>02:11</td>
</tr>
<tr>
<td>Quiz</td>
<td>02:54</td>
</tr>
<tr>
<td>Quiz</td>
<td>03:42</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/11 (100%)</td>
</tr>
<tr>
<td>11/11 (100%)</td>
</tr>
<tr>
<td>11/11 (100%)</td>
</tr>
<tr>
<td>4/10 (40%)</td>
</tr>
</tbody>
</table>

### Contents

<table>
<thead>
<tr>
<th>Topic</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>ML1 Basic Principles</td>
<td>0:05</td>
</tr>
<tr>
<td>Basics of Units</td>
<td>0:19</td>
</tr>
<tr>
<td>Basics of Units</td>
<td>0:23</td>
</tr>
<tr>
<td>In physics there are 7 fundamental units anything...</td>
<td>0:32</td>
</tr>
<tr>
<td>Mass (g)</td>
<td>0:46</td>
</tr>
<tr>
<td>Length (m)</td>
<td>0:50</td>
</tr>
<tr>
<td>Quiz</td>
<td>1:07</td>
</tr>
<tr>
<td>Density, Relative Density and Specific Gravity</td>
<td>1:09</td>
</tr>
<tr>
<td>Density, Relative Density and Specific Gravity</td>
<td>1:13</td>
</tr>
<tr>
<td>Density, Relative Density and Specific Gravity</td>
<td>1:28</td>
</tr>
<tr>
<td>Density, Relative Density and Specific Gravity</td>
<td>1:42</td>
</tr>
<tr>
<td>Quiz</td>
<td>2:11</td>
</tr>
<tr>
<td>Mass and Weight</td>
<td>2:12</td>
</tr>
<tr>
<td>Mass and Weight</td>
<td>2:15</td>
</tr>
<tr>
<td>Mass and Weight</td>
<td>2:35</td>
</tr>
<tr>
<td>Quiz</td>
<td>2:55</td>
</tr>
<tr>
<td>Newton's Laws of Motion</td>
<td>2:56</td>
</tr>
<tr>
<td>Newton's Laws of Motion</td>
<td>3:01</td>
</tr>
<tr>
<td>Newton's Laws of Motion</td>
<td>3:08</td>
</tr>
<tr>
<td>Newton's Laws of Motion</td>
<td>3:22</td>
</tr>
<tr>
<td>Quiz</td>
<td>3:42</td>
</tr>
</tbody>
</table>
ML4 Shear Stress and Strain
Direct Stresses and Shear Stresses

- Consider the diagram below where a pin is holding two blocks together, each subject to a shearing force. The pin will need to resist the shear force with the grey area, parallel to the direction of the loading.
Shear Stress

- The shear stress is labelled by the Greek letter tau, for which the symbol is $\tau$, and is defined as the ratio of the force over the area:

$$\tau = \frac{F}{A}$$

- Where:
  - $\tau$ is the shear stress (MPa).
  - $F$ is the force (N).
  - $A$ is the cross-sectional area parallel to the force (m$^2$).
MICRO LECTURE WITH EMBEDDED QUIZSES; EXAMPLE

When do we use the concept of 'double-shear'?

- To double the factor of safety
- To account for the materials behaviour in elastic mode
- To transition from the area perpendicular to the load to the area parallel
- To consider the area working in shear in two distinct position

Quiz 1 of 1
MICRO LECTURE WITH EMBEDDED QUIZZES; EXAMPLE

Quiz

When do you do a survey?

- To doubt
- To assess
- To train
- To cons

You answered 1 out of 1 questions correctly. What would you like to do now?
I found this job through Solent Graduate Jobs: https://graduatejobs.solent.ac.uk

It is a part-time job that will allow me to earn some extra money

I carried out a research under my supervisor’s guidance

I learnt some valuable skills:
  - Analytical Skills
  - Administrative Skills
  - Computer Skills
  - Research / Project Skills

All of them were really helpful for my Bachelor’s and gave me extra points when I applied to job positions

In the future I could find a job as a Research Assistant at a media company
We chose to do this using an informal setting.

The focus groups had two parts:
- A structured questionnaire
- An open debate where I could take some notes and make observations

Something that motivated students to participate in these focus groups was the possibility of earning a prize and get some free pizza.

I found that the students were more keen to discuss their thoughts and opinions in an informal chat, rather than writing everything on paper.

It was also a good opportunity for them to give some ideas and suggestions to improve the overall course.

Additionally, the students became aware of the role of a research assistant and some of them showed interest to work next year as researchers.
FINDINGS

▪ Professional
  ▪ The students liked the new method of learning through Micro-Lectures
  ▪ They gave good feedback on possible ways of improving the lectures
  ▪ They were keen to explore new techniques and are eager to work with educational technology
  ▪ They liked the research groups and enjoyed sharing their opinions with me

▪ Research
  ▪ This should be an ongoing research, since the students benefited from it and it’s a good way to promote the University resources
  ▪ The structure should be the same for the following years

▪ Personal
  ▪ I really enjoyed taking part of this project
  ▪ It was a valuable experience for my future
  ▪ I also learnt new things and skills
FINDINGS: STUDENT PERCEPTION

- One of the main findings of the focus group was the student perception of how they would use the resources.

- The majority of the students stated that:
  - They do not watch full lecture capture if they attended the lecture
  - They do watch the micro-lecture even if they attended the lectures
  - Their use of lecture capture is mostly for revision purposes

- This can then be contrasted with how they actually used it!
VIEWING PATTERN: SHORT COURSE (LEVEL 7)
VIEWING PATTERN: YEAR-LONG COURSE (LEVEL 4)
VIEWING PATTERN: YEAR-LONG COURSE (LEVEL 4)
VIEWING PATTERN: YEAR-LONG COURSE (LEVEL 4)

Percentage Resources Viewed

Full Lectures
Micro-Lectures
Assessment Brief
Formative exam
Summative exam
Assessment

21/09/2017 10/11/2017 30/12/2017 18/02/2018 09/04/2018 29/05/2018
Year-long implementation of Micro-Lectures with Embedded Quizzes
Use of questionnaire and focus groups to assess student perception and refine the Micro-Lectures
  - Very high student satisfaction
Viewing patterns revealed:
  - The critical under-use of full lecture capture (less than 5% viewed)
  - The much better alternative that micro-lecture represent
  - The greater use of micro-lectures to support exam revision and assessment

What’s next?
  - Get other academics involved (that’s you... yes, you!)
  - Co-create the micro-lectures with students for a faster and sustainable development
THANK YOU!

Jean-Baptiste R. G. Souppez
Senior Lecturer in Yacht Design and Composite Engineering
jean-baptiste.souppez@solent.ac.uk

Lucia Vazquez Bonome
Research Assistant
3vazql68@solent.ac.uk