Using Digital Badges in Monitoring and Students Engagement

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The Context: Engineering and the Law

The Problem: Engaging and monitoring 500+ Students

The Research: Digital Badges

The Design of a Solution: Digital Badges in Moodle

The Results: Student Feedback

Other Challenges and the future of this work
The Learning Outcomes: On completion of this course students will be able to:

**Ethics**
- describe ethical principles and analyse case studies from real engineers’ experiences, that reflect the relevance of ethics in engineering practice.

**Product Development and Entrepreneurship**
- appraise and apply product development lifecycle techniques to the specification of innovative sustainable engineering products and/or services.

**Business Law**
- understand and apply legal principles to resolve identified issues from contractual agreements and wrong doing resulting from the relationship between rights and responsibilities, presenting arguable conclusions.

**Branding & Marketing**
- recognise and apply strategies for business to business and business to consumer marketing market development using complex market channels.
Ethics
- Ethical Principles / Business Ethics / Engineering Ethics / Corporate Social Responsibility.

Product Development and Entrepreneurship
- Requirements Engineering / Product Lifecycle / Design for Sustainability / Innovations & Inventions / 5th Industrial Revolution.

Business Law

Branding & Marketing
Glasgow College UESTC Students

Year 3 of a 4 Year Scottish BEng (Hons) Degree in Electrical and Electronic Engineering with Communications Engineering / Information Engineering

Dual Award UESTC / University of Glasgow

IET Accredited qualification under AHEP v3.0
• 15 credits of study / 32 Hours of Tutor contact / Rt-Online Delivery via Zoom

• 2 Blocks of 45min per week of tutor contact.

• Student support via email and Moodle discussion groups
• 25% Coursework Assessment / 75 % End of Course Examination

• Each LO Delivered by Subject Specialist &/or Generalist Engineer.

• 504 Student Population

• 14 Teaching Assistants (Std/TA = 36)
The Problem: Engaging and monitoring 500+ Students

- Identify learning progress with 500+ students.

- Motivate learners to engage in positive learning behaviours.

- Time management.

- Learning pathways and perspective of achievement of learning outcomes.

- Learning in a focused and byte size manner.

- Reward learning and achievement.
The Research: Digital Badges

• Provide a clearer view of student learning in addition to traditional grades.

• Proving students have mastered a certain topic and are now ready for a more advanced topic.

• Representation of Achievement.
• Students may be exempt from other skill tests or requirements.

• Badges unlock privileges through a prerequisite.

• Badges give students credibility with employers.
• Portable learner records.

• Stackable learning Pathways.

• Skills aligned.

• World’s Growing Digital Credential Network (over 25000 Organisations / 160 countries)
Content dependencies ensure students complete their learning journey as pedagogically planned.

Formative Assessment

Lecture 12 - Formative Assessment

Restricted Not available unless:
- The activity Lesson 12 - Health and Safety is marked complete
- The activity Lecture 12 Recording is marked complete
- The activity Kinds of Accident is marked complete
- The activity Electrical Safety and You is marked complete
Content Locking and Success

- Success in Formative Assessment unlocks content and creates expectation and surprise.
• Weekly checklist guide and remind learner to engage with the study of engineering and the law course.
Timing as a criteria for badge award

- Timing is used to ensure continuous learning on a weekly basis and building knowledge foundations to advance through the learning outcomes.

Even driven criteria for the award of the badge.
• Where students are spending the most time on the course.

• What links they are clicking on and what interests them the most.

• How long they are staying on each lesson and where they lose interest and leave.
Weekly Monitoring and Engagement

- Badges linked with the **learning objectives** of a weekly lesson.

| Lecture 8 Badge | This badge is for those who complete lecture 8 formative assessment on time. | Users are awarded this badge when they complete the following requirement:
  - The following activity has to be completed:
    - "Quiz - Lecture 8 - Formative Assessment" by 21 November 2020 |
A Learning Outcomes associated badge links with a competency.

| Ethics Badge | This badge is for those who complete lecture 1-4 formative assessment on time. | Users are awarded this badge when they complete the following requirement:
|              |                                                                                  | • ALL of the following activities are completed:
|              |                                                                                  |   ○ "Quiz - Lecture 1 - Formative Assessment" by 2 October 2020
|              |                                                                                  |   ○ "Quiz - Lecture 2 - Formative Assessment" by 16 October 2020
|              |                                                                                  |   ○ "Quiz - Lecture 3 - Formative Assessment" by 23 October 2020
|              |                                                                                  |   ○ "Quiz - Lecture 4 - Formative Assessment" by 23 October 2020 |
• The external backpack that students can connect to from your institution website.

https://eu.badgr.com/backpack/badges
External Bagpacks for Portability (2)

- Students can connect to an external backpack and share their badges from your course. (Must be enabled on your institution Moodle settings)

- Students may also choose to display any public badge collections from their external backpack on their profile page.
Weekly Students Engagement (%)

Average: 73%
Min Engagement: 55%
Max Engagement: 83%

Week 1: 75%
Week 2: 83%
Week 3: 72%
Week 4: 55%
Week 5: 73%
Week 6: 75%
Week 7: 73%
Week 8: 78%
Week 9: 74%
Week 10: 58%
Week 11: 64%
Week 12: 76%
Week 13: 82%
Week 14: 72%
Week 15: 78%
Week 16: 72%

NDP 2nd round of Exams
Mid Term Exams

Learning Outcome 1
Learning Outcome 2
Learning Outcome 3
Learning Outcome 4
Number of Badges awarded every week out of a total student population of 504
Engagement with Learning Outcomes (# & %)

Badges Awarded per Learning Outcome

- Ethics: 246
- Entrepreneurship: 303
- Business Law: 261
- Branding and Marketing: 319
- Champions Badge: 151

% of Students Obtaining LO Badge

- Ethics: 49%
- Entrepreneurship: 60%
- Business Law: 52%
- Branding and Marketing: 63%
- Champions Badge: 30%
• “Enjoyable and easy to follow”

• “I can share my badges on the social networks”

• “I learnt how to be UpToDate with my studies”

• “I enjoyed the collection of badges and I have them all”

• “There is a lot to take in in this course but the learner task list allowed me to know exactly what I had to do every week”
• Designing Customised lesson Plans (Supported in Moodle)

• Linkages to Engineering Competencies.

• Currency and acceptance.
Thank you for Listening

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