European Federation of Chemical Engineering

SUPPORTING SUMMATIVE SUSTAINABILITY ANALYSIS USING ONLINE FORMATIVE TESTS

KEYWORDS

Assessment and Feedback

Technology Enhanced Learning

Online Assessment

Suitable for learners of level

L1 L2 L3 M1 M2 >M2

Investment time before session

<1h 1h 4h 1day 2days 1week >1week

Investment time post session

<1h 1h 4h 1day 2days 1week >1week

Suitable for managing large groups

1 2/3 5 10 20 50 100 >100

Duration of the act

<1h 1h 4h 1day 2days 1week >1week

DESCRIPTION

Online tests are used as formative assessment and feedback to scaffold learning of sustainability topics, prior to a summative case study analysis and report.

WHY IS IT INTERESTING ?

Design and analysis require a high level of cognitive skills, and particularly for year 1 students, this needs to be scaffolded by prior understanding of key concepts at a more fundamental level. In order to provide an opportunity for practice of concepts and break the learning process in smaller steps, before attempting a more comprehensive analysis, online tests were introduced in stage 1.

OUR ADVICES

- Ensure the online test questions cover the key concepts and Learning Outcomes;
- Chose good distractor answers that represent common misconceptions and provide feedback for mistakes.

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ONLINE FORMATIVE TESTS

HOW TO DO IT ?

Sustainability is taught as an embedded topic along larger engineering practice modules. In the first year students are assessed with a design project case study at the end of the semester, in which they have to carry out a sustainability analysis of their designs.
Prior to that, online tests are released as formative tests. The tests are released half way through the lecture period before Easter, and cover a wide range of topics taught, focusing on practising understanding of key concepts, or simple application examples. Students are given until Easter to complete the tests. The validated learning is then applied after Easter to develop their sustainability analysis for the summative case study.

EXAMPLES OF USEAGE

CME1025 – Principles of Chemical Engineering, Stage 1, All Chemical Engineering Degress, Newcastle University, UK.

WHAT TO BE CAREFUL OF ?

Setting a deadline for completion seems to help increasing the rate of completion, which leads to a better understanding of the sustainability concepts and to a higher number of students attempting a deeper analysis of their designs.

Fernando Russo Abegão
fernando.russo-abegao@ncl.ac.uk