WORKSHOP

Moodle might be marvellous: Using the formula-type question to improve student learning in engineering and maths calculations

Ken Louie[a]

Centre for Engineering and Industrial Design, Waikato Institute of Technology, Hamilton, N.Z.[a]
Corresponding Facilitator's Email: ken.louie@wintec.ac.nz

OVERVIEW OF WORKSHOP

Most Engineering educators will agree that an essential part of mastering new content is for students to have the opportunity to practise problems when learning the material. This is particularly important for courses involving some form of calculation, which would include most Engineering topics. However, providing out-of-class formative assignments or low-stakes summative assessments can be a time-consuming and arduous task for the teaching staff. This is mainly because of the following reasons

- if students are assigned the same questions (e.g. via hand-out sheets), there is no assurance that answers aren't just copied from their classmates
- marking of the assessments is labour-intensive, particularly if the ECF (error carried forward) marking procedure is used
- often students will submit answers using different rounding and units to that requested which may require manual checking

If you use Moodle quizzes as an assessment tool, you are probably aware that there are many types of questions you can use (multi-choice, cloze, drag and drop etc). For Engineering and Maths courses involving calculations and algebraic manipulation, one of the most useful is the Formula-type question because every student will have their own randomized problem with units and rounding being handled automatically. Moreover, algebraic expressions can also be manipulated and marked with relative ease.

ACTIVITIES

In this Workshop, you will learn how to create your own formula-type questions from scratch and also how to provide useful feedback. These questions should prove useful for both formative and summative assessment and will be particularly beneficial to those educators involved in teaching large classes. To participate fully, you will need a device capable of connecting to your Moodle site where the Formula-type question option has already been installed.

TARGET AUDIENCE

Engineering educators teaching courses involving calculations. Some knowledge of Moodle quizzes will be useful and experience with LaTex will help those interested in providing formative feedback.

OUTCOMES

Create randomized questions in Moodle involving calculations and algebraic expressions for formative and summative assessment which are automatically marked. Provide feedback to aid student understanding and learning.

KEYWORDS

Moodle, Formula-type questions, formative and summative assessments.

PRESENTERS' BACKGROUNDS

Ken has been working as a Mathematics tutor at Wintec since 2009. He teaches courses in both the Engineering and Science Centres from Level 3 (Certificate) to Level 6 (Bachelor in Engineering Technology). He has a special interest in providing formative feedback to students who have traditionally struggled with mathematics at secondary school.