MasteringEngineering

Delft University of Technology, The Netherlands

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LEARNING OUTCOME

In this course MasteringEngineering is used to **encourage regular practice** through weekly formative assessments and it has been noted that **student motivation to complete the exercises has increased**. The large bank of ready-made questions in the system **saves staff at Delft University of Technology a lot of time**.

Course
Statics

Textbook in use
Engineering Mechanics: Statics in SI Units
12th edition, Hibbeler

Type of data collected
Anecdotal

Data collection period
2010–11

Course design

Statics is the first mechanics course for all freshmen at Aerospace Engineering. Students come from all over Europe, as well as further afield, and all have different physics and mathematics backgrounds. Typically some 500 students start their BSc degree in Aerospace Engineering each year. The course is taught in 3 weekly lectures followed by homework tutorials and e-homework.

Prior to switching to MasteringEngineering, we used a domestic eLearning product that we had to fill with statics problems ourselves. This was a tedious, time-consuming and inefficient way of operating. Also, the programme was not accessible 24/7 which meant that students had to enter all their answers at the Aerospace Engineering department. We believed this practice no longer provided the best possible learning opportunities for our students. We were hoping to create a system that appealed to students, that would be accessible 24/7 and that would seriously decrease staff workload with a more efficient way of running the eHomework.

The ongoing curriculum review at Aerospace Engineering gave us the momentum for change. The fact that students would be able to study at any time and at any place, and would also be able to have access to the ebook and other tutorials, quickly swayed students, staff and administrators alike. With excellent support from the people at Pearson, we were able to implement MasteringEngineering in an environment fitting to the standard of practice at our department within one summer.

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Implementation

We use MasteringEngineering as an online formative assessment tool. Students must complete 10 questions from the database each week, which must be completed by midnight on Friday the week after they are handed out. Students are only allowed to take the final exam if they score an average of 40% over all 7 tests and 30% over every 4 consecutive weeks. Currently the number of attempts is set at 3 but we will make this unlimited next year to encourage practising. Where necessary we have added our own questions to the database to reflect our own practices. We also publish the PDF file of the assignments each week to facilitate students working on paper first before entering the answers on-line.

Course results

From a staff point of view, we have achieved a great work load reduction. Not having to develop all the material ourselves but instead choosing from a database of questions, has been really useful. The user-friendly login system and the excellent support from Pearson have greatly reduced our administrative load.

> Motivation to complete the exercises has definitely risen since MasteringEngineering was first implemented.

Students really appreciate the user-friendliness, the 24/7 access and the close relation to the book. Motivation to complete the exercises has definitely risen since MasteringEngineering was first implemented.

Conclusions

Students want to learn, but on their own terms. It is up to us lecturers to provide as many possible ways for students to gain knowledge and skills. I believe MasteringEngineering recognises this and has been a great tool for us to enable student learning. It provides good value for staff and students by saving time and providing a working eHomework platform.