

This one-page column will present practical teaching tips in sufficient detail that ChE educators can adopt the tip. The focus should be on the teaching method, not content. With no tables or figures the column should be approximately 450 words. If graphics are included, the length needs to be reduced. Tips that are too long will be edited to fit on one page. Please submit a Word file to Phil Wankat <wankat@ecn.purdue.edu>, subject: CEE Teaching Tip.

PROVIDING SEVERAL HUNDRED WORKED EXAMPLES TO UNDERGRADUATES

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With an increase in student numbers and a decline in the teaching assistant numbers, the contact time between students and staff has become more and more valuable. With this decline in contact time, the students requested that they could be given worked solutions to any problem assigned to them. Unfortunately, these did not exist for the material to be covered and the following solution was implemented:

- (1) Assign various tasks where students were required to provide their own exam questions together with the fully worked solutions (see similar exercise by Liberatore, et al.⁽¹⁾). These covered all topics (different topics for different students) across the second-year chemical engineering majors; and
- (2) Make all appropriate examples available to students online.

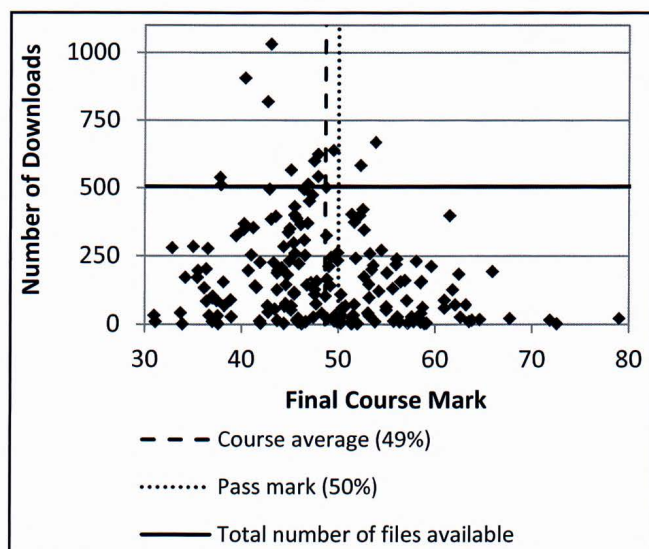


Figure 1. Distribution of number of files downloaded vs. final course mark

RESULTS

In total, 500 questions were deemed suitable by the course coordinator (based solely on suitability of content) and placed online for students to download. A breakdown of the student download frequency against their final course marks (Figure 1) shows that some students downloaded more often than the number of files available, while the majority downloaded less than half the examples. It appears that students who failed downloaded more often than those that passed. All three students who downloaded the most available files scored less than 45% for the course, while the three students who obtained marks above 70% only downloaded a combined total of 109 files.

DISCUSSION

Some suggestions have been put forward on possible trends:

- Some students saved the files and only needed to download them once;
- Some students worked in groups and could share files;
- Students with higher marks felt less pressure to work towards doing well in the exam and did not download as often;
- Once students with higher averages understood a topic, they moved to the next without downloading further examples in that topic; and
- Low downloads could exist from students with low year marks as students may have given up on the course/topic.

CONCLUSIONS

From the data presented, there is no obvious correlation between the number of downloads and student marks. Making worked solutions available did, however, free up staff time to concentrate on other aspects of the course/teaching.

REFERENCE

1. Liberatore, M.W., D.W.M. Marr, A.M. Herring, and J.D. Way, "Student-Created Homework Problems Based on YouTube Videos," *Chem. Eng. Ed.*, **47**(2), 122 (2013) □