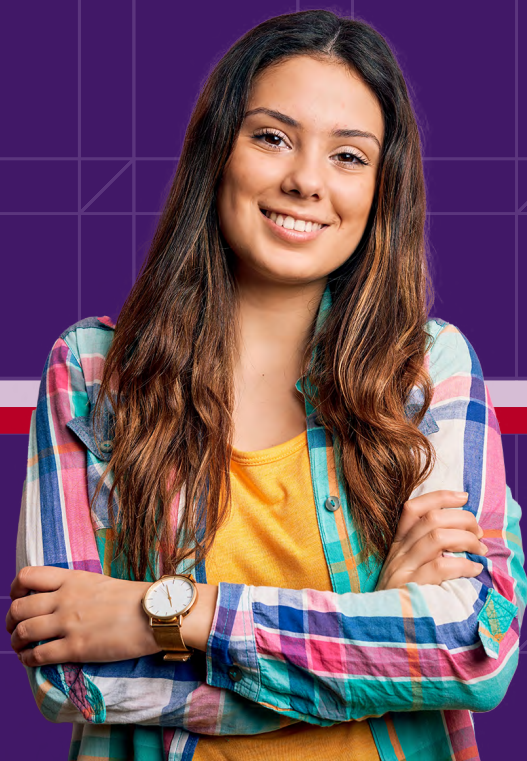# Not Just Practice Making Perfect: The Role of Feedback at Dundalk Institute of Technology

The proverb 'practice makes perfect' is believed to have its roots in the sixteenth century. Like other famous sayings that have withstood the test of time, the fact it speaks to a commonly accepted truth is likely why it is still so widely accepted.

Practice *is* an integral part of learning and yet, despite its centricity, to say that it is all you need for subject mastery is arguably too superficial. Indeed, it is commonly acknowledged that there are different types of practice, each with disparate outcomes. In the education space, many believe that it is *deliberate* practice—defined by Ericsson in 1993[1] —that offers the quickest path to mastery, especially when compared to rote or repetitive learning—"drill and kill" as it called by some. Ericsson's research, published now almost 30 years ago, is still prevalent, though inevitably it has been met by challenges since its inception. Despite those arguments, the idea defined by Ericsson around solitary practice carefully designed by a master teacher is of paramount importance to the subject of enhancing cognitive development.

Like deliberate practice, feedback is also central to the progression of students. Indeed, Rowntree calls feedback the "lifeblood of learning"[2] and other recent pieces focus their attention on the link between feedback and "supporting improvement and progress in student learning achievement."[3] One journal article explains it succinctly by saying, "When students enter higher education... the type of feedback they then receive, intentionally or unintentionally, will play an important part in shaping their learning futures."[4]

Despite it being a fundamental part of learning, there are issues surrounding it. As explained by Janice Orrell, "Students claim a lack of adequate, timely feedback and their teachers claim that students fail to heed the advice given."[5] Indeed, studies across the globe point to the fact that feedback is an area of dissatisfaction for learners.[6]

It is a significant issue for student experience. A recent study of over 10,000 students, carried out by Advance HE and HEPI highlighted feedback as a core area for improvement, with many citing it as deficient in terms of timeliness and quality[7].

Dr. Angela Short wanted to build the modules she teaches to fold in both practice and feedback. Angela Short is the Programme Director, Lecturer and Industry Placement Supervisor at Dundalk Institute of Technology.

Building her course, Angela was very aware of the fact that students want and need detailed and timely feedback, at individual level, rather than in an overarching capacity. She was also keen to ensure her learners had somewhere to apply their learning in a low-stakes environment; somewhere they could practise. A digital advocate, she was also aware of how technology offers a solution to these challenges.

We looked at Angela's setup to understand her approach—where "feedback opportunities are embedded throughout the module"—and the outcomes this has had.

Background

Angela teaches Operations Management, a 5-credit module taken by Level 7 and Level 8 students at Dundalk Institute of Technology. Angela's course utilises a simulation application, Practice Operations, and Connect, McGraw Hill's online and assessment platform.

Course Setup

Angela explained that on a week-by-week basis, her learners are expected to complete specific readings and activities set within Connect. These efforts are rewarded with the allocation of marks that contribute to students' final marks.

In class, Angela will spend time looking at how the content of the reading, the theory, can be applied. They will discuss operations management problems together.

Her learners are assessed through a structure of 50% continuous assessment and 50% final exam. The continuous assessment is made up of seven adaptive reading assignments and six modules of the Practice Operations Simulation game, all completed online.

The final exam is a combination of theory question banks (True/False, Multiple Choice Questions and more heavily weighted algorithmic calculation questions where each student gets the same question text but crucially each student gets different numbers, supporting the academic integrity of the online exam.

The role of feedback

Angela has feedback as an integral part of her module.

- **During weekly reading tasks**
  "The reading assignments drawn from SmartBook offer students a personalised, adaptive learning experience, presenting them with probes to test their understanding of the concepts as they work through the reading."

- **During simulations assignments**
  "Students play the Practice Operations Simulation game which places them in the role of an Operations Manager running a clothing firm. The game modules are set for 'unlimited' attempts with feedback on performance against the module goals provided after each attempt, feedback that students can then use to adjust their strategies in subsequent attempts."

- **During optional Practice Exams**
  Angela shared that she offered her students optional Practice Exams, structured to look like the final exam. Students were able to take two attempts at this exam, which each attempt featuring a different set of randomly assigned questions. The Practice Exam was available on Connect for ten days and was cut off two days before the final online exam.

Feedback was designed by Angela to be tiered during the practice exams. Angela explained, "The feedback provided after the first attempt was corrective as studies have shown that learners who have been exposed to incorrect answers should be shown correct answers," she said[8]. However, on completing a second Practice Exam attempt, students received detailed feedback on the solutions. Here, Angela explained that "the feedback increased in detail with elaborate commentary provided on the more heavily weighted algorithmic calculation questions."
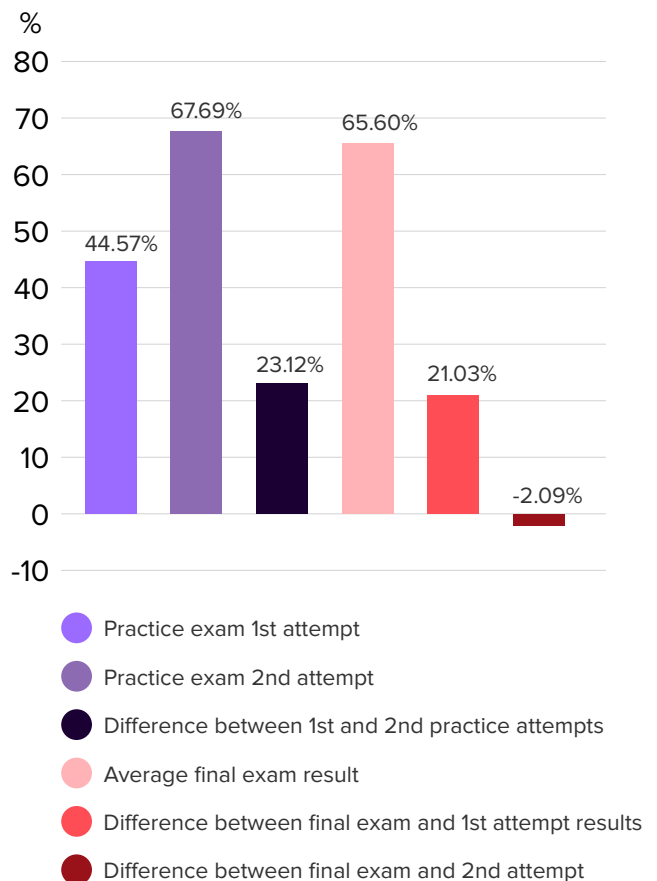
The Results

Part I: Engagement with Practice Exams

Angela explained that for her most recent student group, the Practice Exams were completed by 74 of her 119 students, representing 62% of the group. She was pleased that students who completed the second attempt did so several days after the first, "suggesting that they used that time to reflect on their performance and work on the areas of weakness highlighted in the first go."

Part II: Results

Student Average Mark on Practice Exams versus Final Exams

- ● Practice exam 1st attempt
- ● Practice exam 2nd attempt
- ● Difference between 1st and 2nd practice attempts
- ● Average final exam result
- ● Difference between final exam and 1st attempt results
- ● Difference between final exam and 2nd attempt

The graph shows that the average mark from the 1st to the 2nd attempt rose by 23.12%, showing that the feedback and reflection time was valuable for those learners who took the second practice exam.

Angela also highlighted the marked difference between student performance on their first attempt and subsequent performance on the final exam, something she sees as testament to the value of feedback and reflection time. She added, "**I have been doing this for a few years now and each year the results are the same: students who use the second (and sometimes third attempt) increase their scores incrementally and often dramatically.** What is also interesting is that because the Practice Exams are available for ten days before the final exam, there is often a gap of a day or two between students first and subsequent attempts indicating that they actually use the feedback and the time productively to improve their performance."

Musing further on the results, Angela shared that she was impressed to see that the average final exam mark being only 2% lower than the average second attempt result. "This is particularly encouraging given the reduced time available in the final exam and the inevitable stress students experience when completing summative assessments," she said.

Conclusion

Building modules that fold in a variety of learning methodologies, effective practice, alongside timely and useful feedback is by no means an easy feat. Bringing in weekly assignments and simulations, alongside practice assessment tools, and staggered feedback at the right level at the right time is harder still. "The use of computer-assisted automated feedback combined with the question bank in McGraw Hill's Connect makes it easy for teachers to adopt," Angela said. This way of setting up the module has supported students "to generate their own feedback and empower them to improve their performance," she said. Summing up, Angela commented that despite the prevalence of the rhetoric around students cheating, "if we give them the tools to both self-assess and self-regulate their own learning they will do so as they ultimately get more satisfaction from knowing that have stuck at the task until they achieve mastery."

This content has been borrowed kindly from a book written by Angela Short and colleagues at Dundalk Institute of Technology which can be found below.

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