CASE STUDY

A portfolio at the core of a distance learning programme

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THE CONTEXT

We were designing an on-line Masters in Drug Discovery, which was the first in our school, and wanted it to be "born digital" rather than just ape a campus class. This was a three-year, part-time programme, with six courses per year in the first two years, followed by a dissertation by research in the final year.

THE PROBLEM

Students on a distance programme need a sense of progress and a sense of context into which their studies fall so that they can keep motivated. Moreover, most would be holding down jobs and their time on task would be limited. Thus, we wanted to support these distance students by giving them a structure to their studies. We also wanted them to feel a sense of progress by capturing their skills and by seeing them accumulate.

Most students are taking the course to advance their employability, so we need to help them to sell themselves in interviews. Also, we were concerned that employers might have a bias against online courses, particularly in practical scientific subjects. We were keen that graduates would be able to defend themselves at interviews and do justice to what they had learned by having their skills and knowledge at their fingertips.

Use of an overarching portfolio in a programme had no precedent in our university's College of Science and Engineering, and so we had a challenge to get it accepted. We also wanted high weighting for the portfolio (50% of marks). By awarding such a high proportion we signalled how much we valued the students' engagement with the portfolio and that it appeared "core" to the programme rather than an addendum. Asking for such a high weighting might amplify any disquiet that colleagues would hold.

THE APPROACH

We designed an overarching portfolio with a blog and reflective pieces as its "engine". Posts then fed into evidence linked to the university's framework of Graduate Attributes (McCabe, 2018). These were sufficiently generic that some thought was required to relate specifics from coursework.

Figure 1. On-line Masters programme workbook.

Each course (13 in total) had three parts:

i. an introduction to set graduate attributes that were pertinent to the course (after the first year we judged that students should be able to choose their own);
ii. the blog that was meant to be a notebook for every session spent engaging on the course, incorporating capture of material and short reflections on progress and learning; and
iii. a more discursive reflective piece that should be evidenced by links to the blog on the current and past courses, or that analysed previous action plans and how they were progressing.

Along the way, we were pleased to incorporate on-line careers interviews into the portfolio and were grateful for engagement by the Careers Service advisors. The advisors provided a one-to-one Skype interview with each student. In turn students recorded their preparation for the meeting in their blog.

They were also asked to record their reactions to their interview and to make an action plan to carry out the recommendations. In this way we hoped that students would keep motivated by remembering why they had signed up to the course in the first place.

To promote deep reflection on their experience of the programme we asked that students make five "Propositions". This idea comes from the Dutch Ph.D. thesis. In Benelux countries, the candidate has to make a number of general propositions that transcend the details of their study and avoid triteness (de Kwant, 2005). Acceptable propositions should be able to be concisely formulated and be falsifiable. In this way the too obvious (or too saccharine) can be avoided. The writing of propositions goes back to the founding of the University of Leiden in 1575 (Prögler, 2015). In those days, the candidate publically defended their propositions in debate with the jury. It was only in the eighteenth century that the actual dissertation became more important. So our 21st century form in an electronic portfolio, evidenced with time-stamped posts, actually has its roots in Renaissance scholarship. Nevertheless, this old idea fits very well with what we call "reflection".

THE RESULTS

We had to argue hard at our College teaching committee to give 50% of the marks for each course to the portfolio. We wanted to signal to the students that the portfolio was core to the course and not just an "add-on". There is sometimes a perception by those who have not experienced blogging and portfolios that it is "woolly", not intellectually challenging, and easy to fake (until they try it!). Perhaps because the whole idea of a distance course was new, and because at Masters level students are more robust to pedagogical failures, we managed to have the principle accepted. As part of a strategic plan to get a portfolio accepted more widely in a school, starting at Masters level is perhaps best. Once the precedent has been established somewhere, just as in law, then it is so much easier to argue in subsequent cases.

The portfolio has now run for seven years in total, with a rolling three year programme. It is implemented in one workbook, from which the Graduate Attributes and each course (13 in total) appear as "Tabs" (Figure 1). An example Graduate Attribute, as it was evidenced by a student, is shown in Figure 2. Here there are eight linked assets collected over a period of time from different parts of the course. It is notable that the student has decided to downgrade their self-assessment. In the main, students were choosing their own graduate attributes appropriate to the course skills, once they were given this responsibility after their first year.

The students seemed to have few technical problems. The whole system transitioned successfully from PebblePad v3 to v5 during the programme's life. We heavily scaffolded their initial sessions and made bespoke help showing exactly the page views that they should see. We eschewed exemplars in the subject area in favour of other aspects of life. We were concerned that examples from the course would too easily be seen as templates and would stifle the students' creativity. Analogies to sport came very naturally. Since at the time the author was trying to swim a better front-crawl, experiences with feedback and cycles of improvement seemed to have natural correspondences with academic work.
The level of swimming did not need language that was overly technical and could be easily understood by most people even if they could not swim themselves. So, examples from the author's own experiences in improving a swimming stroke were used to construct exemplars that the students could interpret in forming their own reflections.

Figure 2. Example of a student's evidence for a graduate attribute

The propositions submitted were variable in quality. Some students did not seem to give them sufficient thought and found it easier to make factual, incontestable statements that were rooted in their subject rather than enter into the spirit of the idea. Others did give considerable thought and linked their evidence across many courses (Figure 3). In this example it is gratifying to see that the student was transferring reflective practices back into their professional life.

There was little evidence that the portfolio was an "easy ride". In fact, the students' average score was 1.6 % less for the portfolio compared to the rest of the assessed work, but the difference is not significant. The analysis was based on a sample of 100 course results where portfolio and non-portfolio marks were compared. A paired t-test showed a one in eight chance of the difference being due to chance. There was a moderate correlation between the portfolio marks and the rest of the assessment (Pearson correlation coefficient: 0.36), which is comparable to the correlation between in-course assessment and exam marks in an allied subject (Murdan S, 2005).

1. Reflective writing about your thought processes and activities provides valuable perspective and accelerates personal development.

I have often struggled with elements of this course, and have just as often used my blog to vent my frustrations. Several times when this has happened, I get a breakthrough, and my next (much more cheerful) post will be description of how that occurred. It's actually been very satisfying to be able to go back to those blog posts and see how I managed to figure things out. I also found it very helpful to think about my strengths and weaknesses and make action plans to address the latter. Graduate attributes have been a challenge, but they really forced me to think about my skills and how I can improve them. The positive impact of reflective writing has been very strong in my professional life, as I've transferred the improvements I made from my studies to my work. I will try to keep up a blog in future whenever I find myself needing a push forward.

Figure 3. Example of a student "proposition", showing links to blogs (Red highlighting added by the author).

Despite the portfolio being a considerable amount of work, and not an easy source of marks, some students singled it out as being the best experience on the programme.

> *"I was definitely a bit sceptical about the reflective aspect at the start, but... it probably has been the part of the programme that will give me the most benefit, long after I've forgotten everything about Unix and crystal structures! "*

> *"probably the most rewarding aspect of the entire program was how much I have developed the soft skills associated with academics."*

LESSONS LEARNT

Getting the idea of a 50% weighting for the portfolio accepted was more stressful in anticipation than in reality. It was useful to give some examples of implementation of PebblePad that we had trialled in other courses. In retrospect, these trials were less successful because the student rightly perceived that they had been "parachuted in" rather than designed as integral parts of the programme. Our belief is that portfolios have to be core to the programme and to be a wall-to-wall experience, not least so that the students see that their investment in learning how to use the technology will pay back in later courses. Nevertheless, the trials showed that we had gained some experience and could deliver what we were proposing. Looking back, we could have made a stronger case with reference to the pedagogic literature on efficacy that has been published since (such as Eynon & Gambino, 2017 for the Connect2Learn project or Watson et al, 2016 for the AACU).

In retrospect we regret that the format of the graduate attributes we used inadvertently created a long chain of clicking back and forth for the assessors. Graduate attributes were provided in a workbook by our central team and were not designed with assessment in mind. As the attributes were embedded in a workbook they could not be linked to individually. When a student wrote in their reflective piece for each course which three attributes they had chosen, the marker had to exit the reflection and go to the tab with the attributes (thereby closing any feedback that was open). The marker then had to navigate into the workbook to find the attribute, one of a list of 47 arranged under four tabs. A considerable amount of clicking was required to find all three and this was wearisome for the marker. We called this the "Advent Calendar" problem. If one is not careful, PebblePad can turn into a hunt to open "little doors" to find the information one needs. To easily collate this disparate information into coherent feedback requires a larger short-term memory than most of us have. If we had the time and energy, we would have made each of the 47 attributes as a separate resource and made links to these. The resultant attributes could have been captured in a collection were they suitably tagged.

Nevertheless, from the student point of view, it was useful that they had to hunt to find their attributes because each time they did so they were reminded of all the attributes and could see how many had been completed. Rather like looking at a paper dictionary, where it is easy to let another word that you did not start out to find catch your eye, and so learning is multiplied. To achieve this, PebblePad would need to be able to show linked resources fully in-line and not just as a title with a link.

This experience shows that the portfolio must be designed with ease of delivering feedback in mind right from the start. A pyramid approach is useful whereby the student must collate a large base of evidence from specific experiences, that link to a tip presented to the assessor. It should be for the student to do the sense-making, not the marker. In this respect, the propositions worked well with students who applied themselves, but in retrospect others required more scaffolding and feedback than we gave.

Given our experience with a programme-wide portfolio, we gained confidence to start to apply the ideas to undergraduate courses. For example, in a 1st year undergraduate course we created a workbook to link a pre-arrival questionnaire to following up feedback on writing across courses in different semesters. At the senior undergraduate level, we have been able to help colleagues produce portfolios to capture the rich experiences students have in their research projects. Similar to starting with the Masters programme, by creating small scale trials we hope to grow the confidence of colleagues. Eventually we would like to link all undergraduate courses into their own overarching portfolio.

IN BRIEF

- Masters level is a good place to start. Students are more robust and University approval committees are less averse to risk at this level.
- Be careful to design a synoptic assessment so that students do the work, making the assignment seamless for the marker and avoid creating a labyrinth of clicking.
- Graduate attributes are sufficiently generic that some thought is necessary by the student to evidence them appropriately.
- Scaffold heavily at the start but cede control more to students as their technical expertise increases.

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