

Case Study: Improving student performance across the ability range

Background

My institution, takes understandable pride in its ability to improve the life chances of students from a range of ethnic, cultural and academic backgrounds. This accords very well with my personal belief in the potential transformative effects of education on a person's life chances. Within the multi-faceted learning environment pertaining to my setting I believe that I have developed a personal teaching style and adopted context-dependent pedagogical strategies that help maximise the benefits *all* my students can derive from their time at Kingston University (KU). In this I have been greatly helped by my ongoing discussions with Bioscience colleagues across the UK and especially through my continuing participation in the HEA Biosciences PedR group.

Whilst always treating every student as a unique individual, I have been able to identify specific teaching interventions for different groups of students that have improved their learning in quantifiable ways. For example, KU's emphasis on Widening Participation (WP) has meant that much time and effort has been targeted at improving the learning opportunities and attainments of students from non-traditional backgrounds. On the other hand my involvement in the development, initiation and successful implementation of a Master of Pharmacy (MPharm) degree accredited by the General Pharmaceutical Council (GPhC) also means I teach students with relatively high levels of academic attainment.

Reasons for Introducing Different Teaching Methods

Method 1: Supporting and improving essay-writing skills

My teaching has had to develop to accommodate both, those groups of students who find the university an academically and culturally challenging setting, and those who exhibit relatively few problems in adjusting to the academic milieu. Being wedded to the principle of equity in provision and access to Higher Education (HE), I became concerned about the fairness inherent in assessment methods being employed at my institution. I was increasingly and uncomfortably aware that many exam papers asked for long, essay-type answers to be written despite the fact that essay-writing skills were not formally practised or assessed up to that point. This is undoubtedly due to the fact that marking essay submissions from large cohorts of students is a very labour and time-intensive task for academic staff. However, it has been repeatedly argued that essay writing gives students a chance to use and

develop a wide range of sources and allows time and opportunity for sustained reflection (eg. Hounsell, 1997). Essays also test “deep” rather than “surface” learning (Scouller, 1998). Thus despite the onerous work-load implications I felt it was incumbent upon me to help students develop their essay-writing skills.

Teaching Methodology and Literature Evidence Underpinning Strategy

The essay assignment was initiated by a workshop which clearly outlined the assessment criteria for this task. Using workshops to introduce essay writing assignments has been shown to be highly valued by students (Elander, 2003). Additionally, a strategy of posing very specific questions whilst providing students with a choice of question to answer was adopted to allow the students to have a personal investment in the topic. Under these circumstances it has been found that students actively interested in a particular question do better at essay-writing tasks than students given no choice in what to write about (Hughes-Jones, 1980).

The initial workshop also involved the students doing a literature search to gather together primary research literature relevant to the question they had chosen. This I then promptly assessed to ensure that each student had made a meaningful start to finding material with which to begin constructing an essay. Assessing the relevance of literature sources in this way has previously been shown to be beneficial to student writing development (Harris, 2001). Students were next tasked to begin drafting their essays. I made the offer that I would correct every draft the students were prepared to give me and give iterative feedback to help them improve their work as the module progressed. The literature indicates that students who undertake “minimal drafting” obtain poor results whilst those students who undertake “detailed planning and drafting” perform better (Torrance *et al*, 2000). These interventions encouraged student engagement with the essay writing process in my module and conforms with previous findings in the pedagogical literature. For instance, Campbell *et al* (1998) showed that students who put more effort into finding appropriate references, wrote preliminary notes and constructed arguments within their work received higher grades.

Evidence of success

This supportive intervention, carried out over the period of a whole 12 week semester, led to better exam and module performance by the students over a number of years (Freestone, 2009). Data obtained from an analysis of student outcomes revealed, importantly, that improvements in students’ exam marks related

to their engagement with the process rather than a concentration on one particular topic from the syllabus.

Response of students

3rd Year Pharmaceutical Science Student

"i thought the whole process was beyond helpful. the fact that Dr Freestone took time out to actually correct all work word for word was just really good. because like, personally, after he marked my first draft, i realised that i still had so much to do and at least i knew i was on the right track, and normally we never get that with assignments, we just hand in what we hope is right and hope for the best. but with this essay, i knew i was on the right track and i was actually writing relevant stuff, kind of like having a marking scheme and just trying to find references to the answers, if that makes any sense. and plus, we really had more than enough time to get it done, so it didn't feel rushed at all. the time really helped with the research part because i felt no pressure at all...so like i actually had enough time to read a whole journal article and pick out the main points from it, instead of just reading the abstract, or the conclusion like i always do when i feel i got no time, so that was really helpful. The first draft with the references is also a good idea because it showed what articles were really relevant for my topic besides that, the whole process was really fun, i actually enjoyed doing an assignment for the very first time because i was just feeding off Dr Freestone's energy and enthusiasm in a way. so thanks to Dr.Freestone, for all the time he put in to help us better our grades. really do appreciate it."

3rd Year Pharmaceutical Science Student

"I have positive comments for all aspects of the essay assignment. The initial assessed workshop gave me the opportunity to practice my relevant article searching skills and I appreciated this. The marking criteria was clearly explained from the beginning and helped with writing the essay. The advice given to me on the relevance of the sources I found was very helpful. The feedback given on the draft essay was brilliant and I am very thankful for this. Also, I would like to thank Dr Freestone for the time he gave for the essay to be written and submitted."

3rd Year Pharmaceutical Science Student

"I found the assessed workshop very helpful in terms of improving and developing my essay writing skills and good practise for the exam. The marking criteria that was given at the beginning provided a very good outline for the essay and what was expected in the content of the essay and in how much depth. Feedback on the drafts was excellent as it gave me an opportunity to improve and research further

and to know what was expected from the essay content. Overall a helpful, well organised and relevant to the course assessed workshop.”

Method 2: Stretching the able

Whilst the previous intervention no doubt benefitted students across the ability range they were perhaps more targeted to those unfamiliar with the HE context, from Widening Participation-type backgrounds. Having successfully aided the learning of these students I was struck by the fact that much resource was being (commendably) targeted to “non-traditional” students. This is because universities have a financial and competitive imperative to look after these students due to payment for retaining WP students and the effects of successfully progressing them through the system on ranking in university league tables (Pugh *et al*, 2005). However, what of the higher-achieving students? Could they be similarly targeted to improve their learning?

That able students, paying the same fees as their peers, might not be having the same level of resource or attention applied to them presented an ethical dilemma to me which became more concrete after my participation in an HEA-sponsored event discussing how to improve the learning of higher achieving students across the sector. These discussions led to the publication of a report that I helped co-author (Assinder *et al*, 2007) and left me committed to finding resolutions to the identified problems at my own institution.

Teaching Methodology and Literature Evidence Underpinning Strategy

The beneficial effect of able peers on the academic achievements of individual students may be taken for granted but underlies much of the marketing and promotion of institutional cultures espoused by universities across the world. The Maclean’s Guide to Canadian Universities for example, explicitly states that “*students are enriched by the input of their peers*” and Hanushek *et al* (2002) have reported that peer achievement has a positive effect on achievement of individual students. Furthermore, Dill and Soo (2005) have suggested that the contribution of peers to student learning is greater than the contribution made by teaching staff!

Thus I embarked on an initiative that involved me developing an optional module containing more advanced theoretical knowledge and experimental techniques for students attaining the top ten percent of the marks among their cohort in the physiology/pharmacology parts of their MPharm degree at KU. Lectures were much more interactive in nature eschewing the use of powerpoint presentations but

encouraging student generation of knowledge through targeted literature searches, micro-essays and assembly of pharmacology “flash cards” (aligning with the importance of “time on task” as suggested by Chickering and Gamson, 1987) which was then disseminated collaboratively amongst the group. Videos and illustrations were also used to make the content more lively as well as constant individual dialogue with students to promote active learning and student engagement in each session.

Evidence of success

When comparing the learning outcomes for these students in the option module compared to their performance in a module undertaken by the whole cohort, I found that there were significant improvements in the attainment of these students which could not be explained by a smaller cohort effect. Here then, I think I demonstrated that high achieving students could be targeted to enable them to reach their full potential. This view conforms with the work of Martins and Walker (2006) who observed that student attainment can be linked, at least in part, to the achievements of their peers and Sarcedote (2011) who has shown that higher ability students benefit from the presence of other high ability peers. This work has been disseminated in various forms (e.g. Freestone, 2013a and b) and further work in this area is currently underway.

Response of students

3rd Year Pharmacy Student

“I am very glad to have taken this module ran by Dr Nick Freestone. I actually like the lecture structure of the module, purely because it is different to other modules that I have ever taken. The fact that we don't simply sit in the room and have slides read out to us, is refreshing to see. I enjoy the way Dr Freestone runs the lecture through student-lecturer interaction. It is rather like a two way communication and not just a lecturer rambling on. We are able to ask questions during the time when he is delivering the information to us, and he always has time to talk again to us individually after the lecture. This is brilliant because I think students all have different queries and also have different pace at grasping the information delivered.”

3rd Year Pharmacy Student

“Dr Freestone always like to point out 'learning in repeation' which I find very useful because it's like, the more we hear about it, the more it sticks in our heads. The ideas about having interactive videos and workshops are fantastic and helps the learning process be more exciting. We also get exposed to a lot of drawings by Dr Freestone in his lecture, and this is quite unique in lectures, and it helps because we tend to remember and understand images better.”

3rd Year Pharmacy Student

"I hope my email finds you good. This time yesterday we were doing something rather revolutionary - doing a Test and then getting extensive feedback on the answers on the same day. The psychological effect was tremendous as everyone tried their best and yet learned a considerable amount in the late afternoon 4 - 6pm slot and also from your time/energy input throughout the day.

As a formative assessment it will serve as a fantastic 'primer' and the year will really get to grips with your module. The momentum was created and this will serve to be the driving force for a great many of us through the remainder of this module into the exams.

Nick not all University lecturers are the same. I know you have invested a lot of time on teaching & the learning process and this is what makes the difference relative to the other PhD holding lecturers. I am regularly in contact with a number of student who graduated from the MPharm over the summer 2013 and the only lecturer they ask about is "How's Nick Freestone?" and then they follow up by saying they miss your lectures now that they are in Hospital or in Community Pharmacy."

Reflections

I hope then it is apparent that I have improved the learning of students across the whole range of abilities and have successfully incorporated my own research findings and the research of others into my teaching to the benefit of my students regardless of their prior attainments. I am confident that this evidence-led approach already has, and will, in the future, translate itself into positive improvements in the learning and teaching environment at KU as well as in other UK higher education institutions. Nevertheless, despite the success of these specific interventions I hold the view that what is most important for student learning is the cultivation of personal relationships by academic staff with each *individual* student. For me, education is a social process likely to be rendered most effective by the development of collegial, collaborative and mutually supportive processes between both learners and teachers.

Response of colleagues

What about wider recognition in my local setting? Equally as important as being valued by my peers and students is the recognition I have received from university colleagues not directly connected to my teaching. Thus I have included here a 360 degree assessment of my practices by a variety of university colleagues.

“I have known Dr Freestone for eleven years and his professional enthusiasm, care and attention for the overall welfare and student experience exceeds anyone else’s expectations. He always makes the point of knowing and remembering each student’s name which is not an easy task. Recently I witnessed what I would describe as an exemplary action above beyond the call of duty for a student who required a wheelchair he managed to magic it out of thin air through his own initiative and concern for the wellbeing of the student. I do feel that he is an exceptionally talented and gifted teacher but his professional conduct and the way he approaches each student is something I aspire to myself.”

(Dr Mariko Kishi, Student pastoral care lead)

“Any time that I have seen Nick with a student, the student always seems very at ease and positive. Nick definitely has a ‘way’ with young people that brings out the best in them. He is friendly and kind, attentive to all students, yet authoritative’ in his manner.”

(Mrs. Debbie Fry, Faculty Finance Officer)

“Dr Freestone is very keen for his students to do the best that they can in his modules. He can often be found with groups of them walking along the corridor, in his office or somewhere else having conversations about the things that have been taught in his lectures or describing or going over issues that arise in his practicals. Dr Freestone embodies the idea and practice of putting the students learning at the heart of his lessons and in ensuring that they have access to as much information as possible to help them attain the highest grades in their modules.”

(Mr. Nic Raue, Pharmacy Administrative Officer)

“Dr Freestone contributes to the teaching of Life Science students on several modules, and student feedback on his teaching has always been most positive. Dr Freestone takes great pride in his role as a lecturer and this shows through in positive comments received in our Staff Student Course Committees”

(Dr Alan Seddon, Head of School of Life Sciences)

“The four years that Dr Nick Freestone was my PhD Director of Studies presented many unique and interesting moments because not only did I expand my knowledge and experience in a scientific field, but I would hear so much about his pedagogical research and his views and aims on teaching in higher education and how he is keen on stretching the ability of every single one of his students. His contagious enthusiasm and passion for pedagogical research sparked an interest in me too so I persuaded him to let me get involved as well! I am currently doing postdoctoral research in the University of Oxford, but I still make time to undertake some pedagogical research as well!”

(Dr Cynthia Sam)

References

- Campbell, J. Smith, D., and Brooker, R. (1998) From conception to performance: how undergraduate students conceptualise and construct essays. *Higher Education* **36**, 449-469.
- Chickering, A.W. and Gamson, Z.F. (1987) "Seven principles for good practice in undergraduate education" *American Association of Higher Education Bulletin* **39**:3-7
- Dill, D.D. and Soo, M. (2005) Academic quality, league tables, and public policy: A cross-national analysis of university ranking systems. *Higher Education* **49**: 495–533
- Elander J. (2003) A discipline-based undergraduate skills module. *Psychology, Learning and Teaching*, **3**:48-55
- Hanushek, E.A., Kain, J.F., Markman, J.M. and Rivkin, S.G. (2002) Does peer ability affect student achievement? *Journal of Applied Econometrics*, **18**:527-544
- Harris, R. (2001) *The Plagiarism Handbook*. Los Angeles, Pycszak Publishing
- Hounsell, D. (1997) Contrasting Conceptions of Essay-Writing. *The Experience of Learning: Implications for Teaching and Studying in Higher Education*. eds. R. Marton; D. Hounsell; N. Entwistle. Scottish Academic Press, 106-125
- Hughes-Jones (1980) cited in Hounsell, D. (1997), Contrasting perceptions of essay writing. In *The experience of learning*, Chapter 7, pages 106-125
- Martins, P. and Walker, I. (2006) Student Achievement and University Classes: Effects of Attendance, Size, Peers, and Teachers. Institute for the Study of Labor, IZA DP No. 2490
- Pugh, G., Coates, G., Adnett, N. (2005) performance indicators and widening participation in UK higher education. *Higher Education Quarterly* **59**: 19-39
- Sarcedote, B. (2011) Peer Effects in Education: How Might They Work, How Big Are They and How Much Do We Know Thus Far? in *Handbook of the Economics of Education* edited by Erik Hanushek, E., Machin, S. and Woessmann, L. Elsevier, edition 1, volume 3, number 3
- Scouller, K. (1998) The influence of assessment method on students' learning approaches: Multiple choice question examination versus assignment essay. *Higher Education*, **35**:453-472

Torrance, M., Thomas, G.V., Robinson, E.J., Individual differences in undergraduate essay-writing strategies: A longitudinal study. *Higher Education*, **39**:181-200, 2000

Publications

1. Assinder, S. *et al* (2007) Differentiated learning (stretching the most able). Higher Education Academy Bioscience Centre Report.
<http://www.heacademy.ac.uk/assets/documents/subjects/bioscience/report-differentiated-learning.pdf>
2. Freestone, N. (2009) Drafting and acting on feedback supports student learning when writing essay assignments. *Advances in Physiology Education* **33**:98-102
3. Freestone, N. (2013a) Differentiated Learning: an update
<http://www.heacademy.ac.uk/assets/documents/disciplines/stem/conf-proceedings-2013/Biosciences/bio-131.pdf>
4. Freestone, N. (2013b) Equity in Higher Education Provision: stretching the able. *Proceedings of the 6th European Congress of Pharmacology*, pp. 189-192