

EMBEDDING THE DEVELOPMENT OF GRADUATE ATTRIBUTES INTO COURSE DESIGN WITHIN AN UNDERGRADUATE MEDICAL CURRICULUM



University
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Amanda Britten
University of Glasgow



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CONTRIBUTORS

DR AMANDA BRITTEN

Lecturer, School of
Medicine, Dentistry and
Nursing, College of
Medical, Veterinary and
Life Sciences, University
of Glasgow

Email:
amanda.britten@glasgow
.ac.uk

SUMMARY

In the UK, the General Medical Council (GMC) sets the standard for medical education and training. Undergraduate medical curricula delivered in UK Medical Schools must demonstrate how their students achieve proscribed 'Outcomes for Graduates'[i] to be an accredited provider. In parallel, the University of Glasgow has developed a set of 10 defined Graduate attributes. These are the academic abilities, personal qualities and transferable skills which all students should have the opportunity to develop as part of their university experience[ii].

It is well acknowledged that the medical curriculum is by necessity content heavy and that students typically focus on this medical content. This focus on content can be to the detriment of the broader transferable skills and Graduate attributes students are developing. To address this issue, a Year 2 medical course module - a Student Selected Component (SSC)[iii]- was designed to refocus student attention to the Graduate attributes and transferable skills required for a future medic. This 5-week module introduced students to Forensic Toxicology and the 10 University of Glasgow Graduate attributes. Formative assessment opportunities were built into the design of the module to ensure students were building their awareness of the Graduate attributes and were meeting supervisor expectations within this new form of reflection and assessment before the final summative assessment was submitted.

Overall, students appeared to engage well with the new form of assessment and produced high quality assignments in relation to their awareness of the Graduate attributes. It is still unclear if they fully understood the longer-term relevance of these Graduate attributes to their future careers in medicine. It is hoped that this approach to embedding Graduate attributes alongside medical curriculum content will be developed further and will increase students' awareness of the relevance of these attributes to the medical profession.

CONTEXT



The author of this case study has a strong academic practice philosophy which advocates student-centred learning as described by Cannon and Newble (2000). It has been shown that supporting students to engage in active approaches encourages deep learning and can lead to higher quality learning outcomes (Van Rossum and Schenck, 1984, Trigwell and Prosser, 1991, Trigwell, Prosser and Waterhouse, 1999 and Ramsden 2003). The author's experience of developing workplace-based learning in the NHS between 2005 and 2013 and returning to academia in 2015 increased their desire to support students to develop workplace relevant skills and attributes. These skills and attributes enable students to adapt to the changing work environment. At the same time, these skills and attributes must be balanced with subject-level, disciplinary expertise students need to progress through their programme of study, and which culminates in the award of a subject specific degree.

The 'Outcomes for Graduates' set by the GMC detail the knowledge, skills, and behaviours that medical graduates must be able to show by the end of their studies (GMC, 2018). Medical curricula delivered in UK Medical Schools must demonstrate how their students achieve these 'Outcomes for Graduates' to be an accredited provider. It is also recognised that 'medicine is a lifelong journey, immensely rich, scientifically complex and constantly developing...but also involves uncertainty and the emotional intensity of supporting colleagues and patients' (GMC, 2023a). Accordingly, 'The Reflective Practitioner – Guidance for Doctors and medical students' (GMC 2023b) has been developed jointly by the General Medical Council (GMC), the Medical Schools Council, the Academy of Medical Royal Colleges and the UK Conference of Postgraduate Medical Deans (COPMed) to support medical students, doctors in training and doctors engaging in revalidation on how to reflect as part of their practice.

The Medical Degree at the University of Glasgow has a 'core curriculum' where many of the 'Outcomes for Graduates' are covered and achieved, but there are elements of the curriculum that further complement the core. These elements deliver generic professional skills, are student-centred, and allow students to demonstrate a depth and breadth of understanding and skills beyond core competencies. They also allow students to explore potential career pathways. One such complementary element of the Medical Degree at Glasgow is the SSC programme.

The SSC programme at Glasgow consists of 3 x SSC blocks spread across the 5 years of the Medical Degree programme. This is currently delivered as a 5-week block in Years 2 and 4, and a 4-week block in Year 3. In Year 2 all the medical students undertake their SSC at the start of Semester 2. This timing of the SSC provides a natural break for the students from the core curriculum which they have studied for the three previous semesters - a total of 39 weeks.

The author of this case study designed an SSC for Year 2 Medical students where the University of Glasgow's graduate attributes were explicitly embedded into a 5-week package of learning and assessment. This learning included the gaining of basic subject knowledge in Forensic Toxicology. This course also aligns with the core aims of QAA Scotland's 'Focus on Graduate Skills' (QAA Scotland, 2018-19).

METHODOLOGY & IMPLEMENTATION

This new SSC entitled 'Forensic Toxicology and Graduate Attributes' was designed for Year 2 Medical students at the University of Glasgow in November and December 2020 using the principles of constructive alignment (Biggs, 1996).

The Medical Degree Year 2 students select their top six choices of SSCs from a menu of approximately 18 choices and then an algorithm is used to allocate students to an SSC in order of their preference.

The 5-week SSC has been delivered three times between January – February in 2021, 2022 and 2023. It was delivered to two groups of six and a group of seven Year 2 Medical students, respectively. Associated summative assessments are completed by the end of the module. All assessments for the SSC are summatively graded and written feedback provided. The students need to pass the SSC module they undertake in Year 2 of the Medical Degree at Glasgow along with written examinations and coursework assignments for Year 2 to progress to Year 3.

A basic introduction to some elements of Forensic Toxicology over a 5-week period is used as a vehicle to explore the 10 University of Glasgow graduate attributes and their academic, personal, and transferable dimensions (University of Glasgow, 2010). The learning outcomes aligned to the learning activities and assessment of the University of Glasgow graduate attributes are as follows:

- Determine your graduate attributes in relation to the Forensic Toxicology and graduate attributes' SSC.
- Reflect on your learning, development of graduate attributes and any other relevant experiences whilst undertaking the SSC.
- Generate a personal development plan for the remainder of your Medical Degree Year 2 and beyond.

The mapping of graduate attributes, the reflection on learning, and the personal development plan are all contained within a 1000-word assignment that contributes a 20% weighting to the overall assessment of the SSC. The students are given the summative Graduate Attribute task and submission guidelines at the start of the SSC (Appendix 1). They have 5 weeks to achieve the learning outcomes and submit the assessment.

At the beginning of the SSC, students were asked to indicate 'in class' if they were aware of the University of Glasgow graduate attributes. The University of Glasgow graduate attributes are an area with which Year 2 Medical Degree students are generally unaware and unfamiliar. Accordingly formative assessment opportunities were built into the design of the SSC to ensure students were supported to get to grips with the graduate attributes and to align their assessment outputs with supervisor expectations. Written drafts of some of the graduate attributes assessment elements (including, mapping/identification and some reflection) were submitted by the students at the end of week 2 of the SSC and written feedback was provided by the SSC supervisor a week later. Verbal feedback was given as part of an individual student check-in with the SSC supervisor during week 3 and then later to the group. This highlighted the common themes among the students in relation to the task which were observed from the individual formative assessments.

ANALYSIS AND EVALUATION

The deliberate planning of live and self-directed graduate attributes learning activities across the 5-week SSC enabled the students to engage with the graduate attributes and discuss the topic with their peers and SSC supervisor. The students worked independently and in a self-directed manner to identify activities within the SSC where they not only met the University of Glasgow graduate attributes and the relevant dimensions, but also where there may be gaps. The students were asked to tabulate this activity and give specific examples. Draft reflections on one or two graduate attributes were also written by the students.

The students participation and performance in both the formative and summative assessments is outlined below:



Formative assessment participation and performance:

- Formative assessment submissions were completed by the requested deadline for 15 out of 19 of the students across the 3 cohorts of the SSC. 3 students from the 2023 cohort submitted a formative assessment at least two weeks past the requested deadline and 1 student in this cohort chose not to submit any work for formative assessment.
- The students who submitted formative assessments were able to consider suggestions for improvement prior to the graduate attributes' summative assessment submission.
- Students who covered both elements of the graduate attributes' formative assessment (i.e., mapping/identification and reflection) on-time or late achieved a better summative assessment grade than those students who covered one element and/or submitted on time, late or not at all.
- All student personal development plans contained at least one achievable action to develop a specific graduate attribute(s) during the remainder of Year 2 of the Medical Degree (10 weeks).



Summative assessment performance:

Summative assessment grades for the graduate attribute assessment were as follows: 12 x A (excellent), 3 x B (very good) and 4 x C (good). This roughly equates to 12 x 1st, 3 x 2i, and 4 x 2ii degree classification assignments.

Student evaluation

Student evaluations of the SSC were conducted via Microsoft forms at the end of the 5 weeks of teaching. No specific questions about graduate attributes were asked in 2021, but in 2022 and 2023 a specific question about the value of developing graduate attributes at this point in the Medical Degree curriculum was included.

All students who completed the evaluation in 2022 gave a 'neutral' response to this question. Also, one student indicated that they were uninterested in the graduate attribute's aspect of the SSC (via their reflection), but did understand the importance of analysing academic, personal and transferable skills and how this could help them develop as a student and a professional.

In 2023, 1 student strongly agreed, and 2 students agreed that it was valuable to develop University of Glasgow graduate attributes at this point in the Year 2 of the medical degree; a further 2 students were neutral in response to this question. One student who gave a neutral response about the value of developing graduate attributes during the SSC commented 'I think it was a little hard to fill in the table with things I've done in the past 5 weeks, but I do think it was a good opportunity to reflect'.

REFLECTION AND CONCLUSIONS

Informal feedback from students during the delivery of the SSC and course evaluations show that there was clearly some uncertainty from students regarding the value of mapping activities from the SSC onto the 10 graduate attributes with their academic, personal, and transferable dimensions. Only 1 student out of 19 was aware of the University of Glasgow graduate attributes at the beginning of the SSC, so this could explain some of this uncertainty.

Staff reactions to the graduate attributes activity in the SSC have always been that students will not value this element of the course or see its relevance compared to learning new knowledge about Forensic Toxicology. However, there was a determination by the author to continue with this element of the SSC design to collect data to drive curricular development of the SSC in the future and hone learning and assessment activities for the students in relation to graduate attributes.

As indicated, students across all three cohorts engaged very well with the graduate attributes learning activities, and all apart from one submitted draft pieces of work for feedback. Their summative assessments were completed to a high standard, with over two thirds of summative assessments achieving excellent grades across the three cohorts. However, it is difficult to determine how much of this engagement and learning was driven by the summative assessment as opposed to the value the students placed on the graduate attributes themselves.

It would appear however, there was some uncertainty for the students regarding the mapping of SSC activities to the University of Glasgow graduate attributes due to a lack of awareness of the graduate attributes and their value. Some students also did not know what was meant by the term mapping, which led to the introduction of the term 'identification' for the 2023 cohort. To support this further, live learning sessions were used as an opportunity for students to discuss with their peers and SSC supervisor how activities from the SSC correlated with the relevant dimensions of the UoG graduate attributes. SSC supervisor feedback on a draft of their initial mapping and reflections of graduate attributes was purposely included to give the students confidence that they were on the right track with this assessment, with some suggestions for improvement being given prior to graduate attributes summative assessment submission.



The graduate attribute student assessments from the 2021 and 2022 cohorts also highlighted that students did not have much relevant experience that aligned with the 'effective collaborators' graduate attribute, and its academic, personal and transferable dimensions. As a result, it was decided by the SSC supervisor that one of the assessments – a podcast assessment on a toxicological topic - would be undertaken in pairs or a group of three for the 2023 cohort rather than individually. This was contrary to the findings of an SSC supervisor consultation with the 2021 and 2022 student cohorts, where students had indicated a preference to work individually on the podcast activity. This ambivalent attitude of undergraduate medical students to groupwork compares similarly with author's experience of post-graduate taught students and their negative attitudes to assessed team activities (Hamnett, McKie and Morrison, 2018). However, by resisting this negative attitude and providing a positive, supported small group learning experience (ie. working in pairs), the author believes we can incrementally improve students' attitude towards teamwork and enhance these essential collaborative skills – skills that were shown to be lacking in the previous two student cohorts.

Evaluations conducted so far indicate that Year 2 medical students are ambivalent as to the relevance of graduate attributes at this stage of their medical careers, although 3 students in the 2023 cohort did indicate the value of engaging with the graduate attributes. Despite this, the author still believes this is an important element which should be designed, supported, and assessed within Higher Education modules, courses or programmes.

Supporting students to reflect on the University of Glasgow attributes and their various dimensions over the course of the past three years through these graduate attribute mapping and reflection activities has confirmed the relevance of these attributes to Year 2 medical curriculum. It has also helped us to identify the gaps in student attribute acquisition and support subsequent curricular development of our SSCs to meet fill these gaps.

Having said this, in 2024 the author will take a more targeted approach to those University of Glasgow graduate attributes which align most closely with the SSC content and focus less on those attributes which are covered elsewhere in the curriculum. These attributes and their relative coverage within the SSCs has been well evidenced in student summative assessments submitted over the past three cohorts, but also through staff evaluation of the SSC over the past three years. In the future, for example, there will be more focus on supporting the development of Investigative, Independent and Critical Thinkers, Resourceful and Responsible and Experienced Collaborators attributes and less on Reflective Learners and Subject Specialist. Reflection is covered extensively throughout the medical curriculum and the subject specialism is impossible to achieve within an introductory 5-week Forensic Toxicology course.

In the longer term, we will need to explore an incremental development of graduate attributes across the entire curriculum for medical students. Some of this development may focus on transferable skills, which are more transferable outside the subject area of medicine, whereas others will be specifically occupational as determined by the GMC.

Scalability/adaptation to other HE contexts

The theme of raising awareness of the graduate attributes through mapping, reflection and PDPs could be applied to many other subjects and programmes in Higher Education by adapting the activities and assessment developed for this medical SSC. Introduction to the graduate attributes could be as discipline specific or generic within particular subject areas depending on need. Importantly, our experience shows that learning activities and assessment can be used to raise student awareness of the graduate attributes they are encountering and developing through their degree programmes, which in turn, builds confidence. Conversely, learning activities and assessment can also draw out gaps in graduate attributes and students can use this awareness to plan for future personal and professional development. The SSC in Forensic Toxicology and graduate attributes took this combined approach.

The author believes that the integration of learning outcomes and associated summative assessment, coupled with the allocation of time for formative feedback, is key to the success of student engagement with this aspect of the SSC. The formalisation of learning through assessment clearly still acts as a driver for student engagement (Medland 2016).



Where degrees are accredited by professional and regulatory bodies (e.g., Allied Health Professional degrees, Dentistry, Law, Nursing, Veterinary Medicine) it is likely that curricula are meeting the outcomes which enable the accreditation of the specific degree. However, achievement of key institutional graduate attributes may need to be made more explicit to students, especially in the early years of study. This raising of awareness of graduate attributes is essential regardless of discipline area and will help lay a foundation for more self-directed and student-centred activity in later years, which supports the development of skills relevant to the ever-changing world of employment in the 21st century.

Next steps

In relation to Medicine at Glasgow, an investigation and review of the personal and professional development (PPD) theme within the Vocational Studies (VS) element of the medical degree in years 1 and 2 could be usefully undertaken. This review could determine if there is an opportunity to make the University of Glasgow graduate attributes still more explicit to students and highlight their transferability into contexts outside of medicine and beyond Higher Education. As indicated all medical curricula have to be mapped to the GMC 'Outcomes for Graduates' to be accredited, but these outcomes could be made more explicit to students in the clinical phases of the medical degree at Glasgow and their relevance highlighted as they progress through their early clinical careers; this could include how these graduate attributes articulate into postgraduate medicine and future requirements for continuing professional development.

In terms of advice the author would give on the embedding of graduate attributes within HE degree programmes:

- Believe that the development of graduate attributes is a valid and important consideration in the Higher Education of students in the 21st century alongside subject specific knowledge.
- Consider where your students are in their course of study (e.g., early, or late undergraduate vs postgraduate) and their motivations for engaging with graduate attributes (i.e., assessment vs internal motivation for personal/career development beyond university).
- Consider the relationship between graduate attributes and the other 'occupational' outcomes for graduates that may be required for professional degree accreditation.
- Curriculum developments do not have to be perfect from the outset but can draw on student evaluations and your own reflection on learning activities and assessment outputs to make improvements to those areas of your curricula for the future.
- Some students may not see the immediate value of engaging with graduate attributes. The value and benefit for the student may come years later depending on their circumstances and the context in which they find themselves and that is OK.

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Supporting documents

Appendix 1: SSC Forensic Toxicology and graduate attributes. graduate attributes Task and Submission

[i] [\[iculture-change-through-graduate-l-d](#)

[ii] [\[iculture-change-through-graduate-l-d](#)

[iii] a complementary element of the medical degree at the University of Glasgow, whereby students demonstrate a depth and breadth of understanding of the core competencies required in medical degrees