



Measuring educational gain: Imperial College London case study

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At Imperial College London, our approach understanding educational gain is through a multifactor approach—capturing a broad view through analytics on all students; a deeper dive through longitudinal research projects using surveys and qualitative methods; and a bottom-up approach of students reflecting on their own curricular and extra-curricular experiences. This is all grounded in our Imperial Graduate Attributes. These are a set of core competencies that our graduates should possess on successful completion of their programmes. Our aim for our graduates is that they will:

- Demonstrate deep conceptual understanding of their chosen discipline;
- Work effectively in multi-cultural, international teams and across disciplinary boundaries;
- Approach challenges with curiosity, critical thinking and creativity;
- Innovatively apply their skills to tackling complex real-world problems;
- Understand and value different cultures and perspectives;
- Have developed into independent learners with high self-efficacy;
- Display a strong sense of personal and professional identity.

The mix of lectures, seminars, tutorials, labs, authentic learning experiences and project work through our core curricular offering is designed to enable students to develop these attributes. In many cases these are accredited by a professional, statutory and regulatory body, promoting not only *cognitive gain*, but also *soft skills development*, and *employability and career readiness* – a combination that is highly valued by our graduates and employers.

Analytics

One of the biggest challenges to measuring educational gain, as identified in the Higher Education Funding Council for England/Office for Students learning gain programme, was the challenge of student engagement. Students did not see the value, have the time or interest, or were sufficiently made aware of opportunities to complete additional tests and surveys. To be able to explore the educational gain of students, without additional burden upon them, we have explored over the past four years how to get the most out of the data we already have about students—primarily through their data trails across the institution and engagement with virtual learning platforms.

To enable measuring students' educational gain and progress in their learning across the institution, Imperial is investing in its institutional data infrastructure and analytical capability. As part of wider College data strategy, a sector-leading Unified Data Platform has been developed to link data across the institution and support the development of learning analytics to offer data-derived insights to enhance learning, teaching, assessment and the experience of staff and students. Most higher education learning analytics dashboard systems are predicated on predicting drop-out and creating early warning systems; to streamline services and minimise costs; or to support regulatory reporting. By contrast, Imperial has aimed to use learning analytics to offer an enhanced student experience, and to better know and support our students.

Imperial has a unique opportunity to develop and deliver on its strategic priorities for education: to empower students; to facilitate high quality staff-student interactions in order to maximise student success; and to offer a world-leading evidence-based educational experience. Similarly, our students have opportunities to reflect and gain insights into their own educational experience, as well as engage in opportunities to design research projects using learning analytics data for use in course projects. This initiative allows us to evidence student educational gain, engagement and progress and show the data in dashboards to both staff and students, allowing them to be active agents in their own learning. This initiative echoes our educational approach and integrates educational expertise, disciplinary research and methodological skills from our academic faculty in areas such as machine learning and AI, in partnership with students.

Longitudinal qualitative and quantitative studies

The Belonging, Engagement and Community Project (2023) started in 2018 and is an on-going institution-wide, longitudinal project that investigates how students understand and construct their own sense of belonging to, and engagement with, various potential communities within and beyond the College. It draws on multiple methodologies to explore students' belonging, including questionnaires and semi-structured, longitudinal interviews, as well as more innovative approaches to capture unique insights – such as walking interviews and vox pop interviews. Outputs from the project include exploring how students' sense of belonging is mediated through pedagogy and the curriculum (Cohen & Viola, 2022), as well as using civic scholarship as a lens into how students develop as global citizens in a multicultural institution. The latter challenges stereotypes and assumptions that STEM study is 'neutral' and shows how students are impacted by societal and political events (Viola, 2021).

Several projects explicitly focus on the experiences of disadvantaged students who are in receipt of an institutional bursary, including an annual survey. As well as enabling the institution to evaluate the bursary scheme, it also gives a further opportunity for students predominantly from widening participation backgrounds to express their views on their experience. Breaking down stereotypes, this research has highlighted the high resilience and self-efficacy of disadvantaged students, but also some of the financial and social challenges. This research helps us capture views from students on how they are experiencing their education and what they are gaining from it. These two targeted projects are complemented by an annual institution-wide Student Experience Survey which gathers feedback on a range of College services and the Imperial College Union. Questions on belonging show departmental differences, signifying the need to be sensitive to local cultures and structures when addressing institution-wide measures.

These research and evaluation projects provide huge insight into students' experiences, their sense of belonging and the communities they feel part of – or excluded from. Going

beyond a single data source, these findings can be triangulated to target specific pockets of concern. Such research also provides data to enable evidence-informed institutional decision making. This was recently seen in the development of an institution-wide mental health and well-being strategy, which targets how all staff and students can feel part of a wider community.

Imperial Award: Student reflection on graduate attributes

The *Imperial Award*, a joint initiative set up between the College and the Imperial College Union, is a programme encouraging personal development through students' reflection on their curricular, co-curricular, extra-curricular and personal experiences during their time at Imperial. Students record their activities in an on-line portfolio; reflect on how these activities have contributed to independent, open-minded thought, effective teamwork and self-awareness and active management; and produce written reflective statements on how their activities have contributed to their personal development in each area. The Award is intended to enable students to gain the maximum benefit from the wide range of experiences that are available to them during their time at the College, and to develop the habit of self-reflection which will continue to be important to them throughout their careers. 811 undergraduate students participated in the award between 2018-19 to 2020-21, indicating student interest but also challenges of scalability.

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