How can we measure interdisciplinary learning?

A benchmark of success for interdisciplinary learning is graduates who have the flexibility to examine their areas of interest and develop attributes that deliver practical value to future employers

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"I never understood interdisciplinarity. How do you measure the learning?"

This was the question that Daniel Seah's mentor raised in 2021, when Daniel shared a decision to join the new College of Integrative Studies (CIS) at our university. The mentor began to recount an experience, as an undergraduate in the late 1970s, of being penalised for underplaying macroeconomics in favour of sociology in an essay for an economics and society module.

This misgiving that interdisciplinary learning is hard to quantify is still common. It arises alongside an unmistakable professionalisation of interdisciplinarity (as it establishes foundations that involve specialised faculty and journals, for instance) at Singapore's universities; all six autonomous universities in Singapore use the word "interdisciplinary" to describe their courses. So, can we dismiss interdisciplinarity as lacking a quantifiable core when it offers choices that serve our students' professional interests in the long term?

In Singapore, we are entering a decisive phase in our professionalisation of interdisciplinary studies. Our debates must now move beyond what interdisciplinary studies mean and why the approach is necessary. The applied curricula at Singapore's universities are focused on real-world problems. Every Singapore university is committed to preparing its graduates for employment in a Web3 milieu.

Our focus now should be to explain how we will conduct – and measure – interdisciplinarity in its various forms for undergraduate learning. The goal is to convince employers that a graduate's interdisciplinary degree, through integration, gives a compounded advantage to an entry-level employee. To achieve this outcome, we recommend an individualised approach.

Set undergraduates a final-year project

Undergraduates at Singapore Management University are guaranteed a second major. For example, a student pursues a first major in business management with a second major in psychology, alongside pre-assigned core curriculum modules that apply to all undergraduates. This is a familiar form of multidisciplinarity within established assessment structures.

What if we allowed a student (let's call her Jane) at an early phase of the degree journey to decide on a final-year project instead? This project is the basis on which Jane selects modules, which coherently integrate Jane's core disciplinary expertise with at least one other discipline. These modules provide the academic rigour to support Jane's final-year project. The completed project is evidence of interdisciplinarity.

Let's say that Jane's core disciplinary expertise is sociology. The approved final-year project is a thesis on the cultural narratives of two photojournalists based in the Philippines and Spain, respectively. The project's academic focus represents Jane's intellectual interests. The thesis component of Jane's interdisciplinary journey requires her to enrol in a combination of modules such as arts, culture and management, and the politics of South-east Asia. Jane will also take modules unrelated to sociology or arts management, such as user experience and digital product design.

Faculty supervision of each student

This individualised approach, which receives careful supervision from at least one faculty member per student, is pioneered by the CIS at our university. A committee of faculty members oversees and approves every student's proposed combination of modules to ensure meaningful integration to the final-year project. The outcome would be graduates who develop an agency through lifelong learning, having practised self-directed learning from the first day of their undergraduate experience.

Students' project portfolios can evidence their learning

This extent of faculty oversight reflects a distinctive measurement of interdisciplinarity: demonstrating the practical skills of Jane's chosen trade to a potential employer. In this case, Jane's choice is a career as a UI/UX (user interface/user experience) designer. Apart from the thesis component, Jane must submit an individualised portfolio to show the practical value of the thesis' propositions for an employer of UI/UX designers.

This portfolio will be a website that chronicles the thesis' journey from start to finish. The website will demonstrate, for example, Jane's hard skills in Figma, Illustrator, JavaScript, CSS and HTML. The website also proves Jane's skills, by reframing the thesis' findings, through photography, user flow, user journey and wireframe. To a UI/UX employer, this portfolio demonstrates the graduate's hard and creative skills in narrative design. The portfolio, in turn, is derived from Jane's core academic interests in comparative sociology.

A litmus test for value of interdisciplinary learning

This interdisciplinary approach is time-consuming and only viable when student intake is kept low – at CIS, this is about 50 students per year. The supervising faculties are assigned based on their training in interdisciplinarity. This approach is only one contribution to the professionalisation of interdisciplinary studies in Singapore. A litmus test will be the employers' reception to this approach when our graduates enter the job market.

The misgivings about the evidence of interdisciplinary learning have a provenance that precedes Web1. In the early 1980s, William Newell famously debated Thomas Benson's polemic on the Five Arguments against Interdisciplinary Studies. This debate galvanised educators to validate their claims of interdisciplinarity through the professionalisation of curricula.

Recently, a graduating computer science student contacted us after the final seminar of a digital law and technological innovations module. "Though I might never see you again, I will remember the valuable lessons I learned in your class (and try my best not to be a negligent software engineer)," he said. We had actively explored how legal proximity arises between people involved in the machine-learning life cycle and a victim of negligence. One such person is the software engineer who creates artificial intelligence models as a purely technical and backend task without considering the impact on users.

How might we measure interdisciplinary learning? Here, the answer is clear: a student recognises how the law directly holds her accountable as a software engineer, and also protects her professional interests.

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