Integrating Interdisciplinary Teaching into British Higher Education

Jayden Bafoa, Fitzwilliam College

Supervised by Dr. Sam Lucy

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Abstract

Global challenges like mental health and renewable energy require interdisciplinary approaches that bring a variety of knowledge bases together to develop holistic solutions. Yet, UK higher education remains highly specialized, generally studying one to three subjects beyond A Levels, whereas the US has a broader, flexible approach. Perhaps this emphasis on specialization accounts for part of the disparity in graduate outcomes, particularly on income, since UK graduates lack the breadth of knowledge and problem solving skills required for today's multifaceted labor market.

This essay considers the use of interdisciplinary education as one possible solution to these disparities, using the example of a case study in the Cambridge Foundation Year. It examines the conceptual bases of interdisciplinarity, the advantages in terms of the development of critical and adaptive skills, and some of the logistical difficulties in attempting to embed these teaching models within the UK system. While there are many obstacles facing interdisciplinary programs, more effort should be exerted in finding a method to create better rounded graduates who are more capable of solving real world problems.

The essay underlines the need for UK universities to adopt interdisciplinary education on a larger scale, concluding how such an approach might improve student outcomes, social mobility, and preparedness in the complex modern workforce.

1. Introduction

Today's most urgent global challenges demand interdisciplinary approaches. Issues like mental health require more than just medical knowledge; they need input from psychology, sociology, and even economics to address root causes and system wide impacts. Likewise, advancements in renewable energy call for collaboration between engineering, environmental science, policy making, and even ethics to ensure sustainable and equitable solutions.

Despite this, many university courses in the UK remain heavily compartmentalised, leaving graduates with expertise in narrow fields but often without the broader perspective needed to address such multifaceted problems.

Higher education in the UK traditionally focuses on specialization after one has studied A Levels into one to three subjects. The clear advantage of this model is that students build deep expertise in the subjects they study in the years they are at university. This stands in stark contrast to the higher education model in the United States where students have a major, and sometimes a minor, and will commonly take classes outside their majors for the sake of rounding out general education requirements. An example of this might be that a student at Duke University might be majoring in Computer Science but will have the opportunity to take classes in history, sociology, and other disciplines to accrue enough credits for graduation.

This divergence could provide partial explanation for some of the radical differences in graduate income outcomes between the UK's model, which builds specialization early, and the US model, which keeps education general for longer. Comparing median hourly earnings in the UK to the US, Britons who left school at 18 earned roughly the same as their American counterparts: $18 versus $19 an hour, respectively. While for those with bachelor's degrees, the gap opens significantly: the average Britons earned $26 an hour while US graduates were gaining nearly $36 an hour, thus 40 percent

more.[1] The disparity in pay between the two groups of graduates raises the question of whether the UK higher education system creates graduates who have gained skills desiable in the labour market.

While universities should be able to produce candidates with high earning potential, another aim ought to create critical thinkers and problem solvers for. Another model which strives toward being more holistic in approach to education is the practice of interdisciplinary teaching that combines knowledge, methods, and perspectives from several fields so as to provide a more whole understanding of an issue. This essay will use the Cambridge Foundation Year launched in 2022 to show what the integration of interdisciplinary teaching might look and feel like within British higher education. It will reflect on the theoretical underpinnings of interdisciplinarity, the benefits and drawbacks of interdisciplinarity, and the wider implications of interdisciplinarity for the UK before concluding.

2. Definitions of Interdisciplinarity?

Determining one concrete definition of interdisciplinarity is a difficult task. Marylin Stember notes that Gordon W. Blackwell made an early attempt to define what interdisciplinarity involved. He developed a continuum (Figure 1) to describe the varying degrees of disciplinary collaboration, ranging from intradisciplinary work within a single field to interdisciplinary efforts that synthesize knowledge from multiple disciplines into coherent, holistic insights.[2] According to Blackwell, in interdisciplinary work, scholars should modify and integrate contributions from various fields, aiming to understand relationships, processes, and values in a more comprehensive manner than would be possible from a single discipline's perspective.[3]

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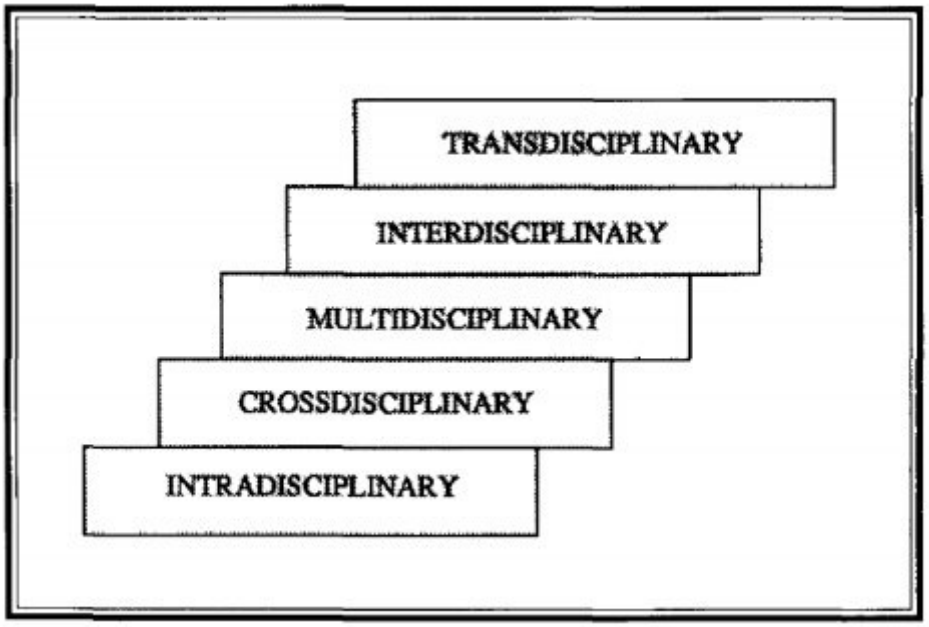
[1] John Burn-Murdoch, "Britain's Graduates Are Being Short-Changed While America's Are Rich," *Financial Times*, October 28, 2023, https://www.ft.com/content/570d23b3-d286-4cb9-a319-b49cc4056f52.

[2] Marilyn Stember, "Advancing the Social Sciences through the Interdisciplinary Enterprise," *The Social Science Journal* 28, no. 1 (March 1, 1991): 1–14, https://doi.org/10.1016/0362-3319(91)90040-b.

[3] G. W. Blackwell, "Multidisciplinary Team Research," *Social Forces* 33, no. 4 (May 1, 1955): 367–74, https://doi.org/10.2307/2573009.

Stephen H. Cutcliffe asserted that interdisciplinarity involves developing a deep understanding of values, how individuals and societies form and evolve them, and how they shape societal institutions in political, economic, and cultural contexts. It requires knowledge of both broad and specific instances of value formation . Furthermore, interdisciplinarity means grasping the core concepts and methodologies within the disciplines being studied, including design and modeling strategies, while also recognizing the complex interactions among these diverse components.[4]



Interdisciplinary study also calls for discussion of how such dynamics come into play through art, literature, philosophy, and history, taken together with state-of-the-art political, economic, and sociological analyses. This holistic approach underlines the place for observing societal issues from a number of different perspectives, thus allowing a deeper and more meaningful comprehension that cuts across disciplines. The very essence of the paradigm means that there cannot be one model or method of achieving interdisciplinarity in education. Graff stresses that to begin engaging with the concept of interdisciplinary education, one has to recognise that the diversity of "definitions, organization, scope, and scale across interdisciplinarity' have to be acknowledged.[5] While there is a

[4] Stephen H Cutchffe, "Science, Technology, and Society Studies as an Interdlsclplmary Academic Field," Technology m Soczety, 11 (1989) 424

[5] Harvey J. Graff, "The 'Problem' of Interdisciplinarity in Theory, Practice, and History," *Social Science History* 40, no. 4 (2016): 775–803, https://doi.org/10.1017/ssh.2016.31.

lack of uniformity within the a interdisciplinary pedagogy, there are examples of interdisciplinary courses in unniverisites in the UK.

3. Interdisciplinary in Practice

As aforementioned, interdisciplinary pedagogy is not a single model; its shape will depend on institutional goals and student needs. In practice, interdisciplinary teaching takes many forms, from courses which draw on multiple departments to degree programs explicitly designed around interdisciplinary study.

One current example in the United Kingdom is the Cambridge Foundation Year (FY). The Cambridge FY is a unique course that provides a pathway to Cambridge University for students who were prevented from being able to realise their potential due to educational disadvantage or disruption.[6] Once students are admitted onto the programme, they undertake a curriculum that allows them to study any social science or humanities subject at Cambridge University. To do this, the Cambridge FY has employed an interdisciplinary curriculum in order for the students to develop and bridge the gap to students who enter first year through the standard route, and for the students to be able to find their interests in the 18 subjects that they are able to progress onto. There is an argument to be made that the FY curriculum is multi-disciplinarity rather than interdisciplinary. Multi-disciplinarity refers to drawing on knowledge from different subjects, but doing that while remaining in the boundaries of those subjects. Interdisciplinarity on the other hand doesn't stay within the boundaries of the subjects, but to synthesise the insights from the different subjects to come to apt solutions.[7] The Cambridge FY have designed their curriculum to have four 'streams' through which the course content is taught. Students complete 8 papers across the textual sources, the material sources stream, the languages and the data stream. The papers within these streams are multi-disciplinary in their design, incorporating

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[6] Timea Walker, "Foundation Year in Arts, Humanities and Social Sciences (Pre-Degree Course)," www.undergraduate.study.cam.ac.uk, May 13, 2022, https://www.undergraduate.study.cam.ac.uk/courses/foundation-year.

[7] Bernard C. K. Choi and Anita W. P. Pak, "Multidisciplinarity, Interdisciplinarity and Transdisciplinarity in Health Research, Services, Education and Policy: 1. Definitions, Objectives, and Evidence of Effectiveness," *Clinical and Investigative Medicine. Medecine Clinique et Experimentale* 29, no. 6 (December 1, 2006): 351–64.

various subjects from English literature to archeology. However, students are able to tackle the multi-disciplinary papers in interdisciplinary ways by combining insights from different subjects in order to arrive at an appropriate answer. For example, in the textual stream there is a paper titled ‘Poetry and Generation Windrush’ where students can approach the paper by combining historiographical examnition of literature of the Windrush Generation, with sociological research and analysis of the poetry. Students are given free license to combine the different subjects and their respective methodologies to reach a more holistic answer, than if they were forced to focus on just one approaqch at one time. The Cambridge FY has only been running for three years, and thus detailed data about the progression and development as students overall is scarce. The fact that it has run for 3 years, and is likely to continue operating for the foreseeable future is partial evidence that there definitely is a place for interdisciplinary education in the United Kingdom.

4. What is the appeal of Interdisciplinary Education?

There are a number of benefits when engaging in interdisciplinary learning, which are mainly the development of critical thinking, flexibility, and problemsolving skills. One of the positive features of interdisciplinary learning is that it aids the student in addressing problems with a multi-dimensional perspective by taking into consideration wideranging viewpoints and techniques. The competence of the student in synthesizing information from other disciplines cements problemsolving skills since one can contextualize any complex problem and devise solutions that are innovative. Interdisciplinary education encourages critical thinking and renders students adaptable. Solutions for more complex global problems regarding climate change, health accrued outbreaks, or technological disruption will increasingly be sought in integrating knowledge across higher scales. Interdisciplinary teaching prepares students for such demands through a wide intellectual foundation parallel to specialized knowledge.

Research gives clear evidence that interdisciplinary learning enhances students' comprehension and deepens their engagement with complex subject matter. Studies by Cuervo, DiCamillo and Bailey, and Jolley and Ayala all identify that students across curricula develop a far better and deeper understanding of subjects since they would be able to look into an issue from multiple dimensions. You even further this in mentioning that the interdisciplinary approach widens the cognitive frameworks of the students and helps them have more flexibility and sophistication while approaching issues. Interdisciplinary education prepares students to cope not only with academic and professional challenges but equips them with all the survival skills for surviving in a rapidly changing world by developing such cognitive skills.[8]

5. The difficulties of integrating Interdisciplinary Education

While the benefits of interdisciplinary education are well documented, there remain obstacles in its integration into universities across the country. One of the primary concerns is that students may not acquire the depth of knowledge in any single field, as they are encouraged to engage with multiple disciplines. This objection is valid in those highly specialized areas where success often rests on deep subject specific competencies, such as medicine or engineering. Critics fear that interdisciplinary education would affect proficiency and the expertise a student is supposed to possess in their field of study.[9]

In addition, creating and instituting integrated interdisciplinary curricula requires serious planning concerning coordination and logistical problems that may be encountered. Interdepartmental collaboration is necessary for designing such programs, but disciplines are hard to align under one curriculum.[10] Interdisciplinary learning outcomes are difficult to measure adequately, as the breadth of

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[8] Carrie Hubert, "Interdisciplinary Learning and the Effects on Students Interdisciplinary Learning and the Effects on Students Part of the Curriculum and Instruction Commons, and the Educational Methods Commons," 2021, https://nwcommons.nwciowa.edu/cgi/viewcontent.cgi?article=1288&context=education_masters.

[9] Allen F Repko, *Interdisciplinary Research* (SAGE, 2008).

[10] William H. Newell, "The Road from Interdisciplinary Studies to Complexity," *World Futures* 67, no. 4-5 (May 2011): 330–42, https://doi.org/10.1080/02604027.2011.585907.

student learning developed through interdisciplinary study is hard to capture with traditional approaches to evaluation. Similarly, academic coherence is hard to achieve as faculty from different disciplines often are socialized into different styles of teaching and assessing students.

Institutional resistance further compounds these logistical challenges. Many faculty members accustomed to traditional disciplinary models may perceive interdisciplinary programs as weakening academic standards.[11] Moreover, universities tend to heavily invest in established discipline specific programs; this clearly makes curriculum reform far more difficult. In addition, the success of interdisciplinary programs depends upon investment in faculty development and encouragement of a more collaborative academic culture by offering incentives for crossdepartmental teaching and research.

While students may not reach the same level of specialization as they do in traditional programs, they acquire necessary qualities associated with problem solving, adaptability, and critical thinking skills, highly valuable to employers in the workforce today. Furthermore, interdisciplinary programs can be suitably designed to balance breadth with depth, hence allowing students to achieve a liberal intellectual foundation and also high levels of specialized knowledge in selected areas.

Interdisciplinary teaching does need resources, including specialized faculty, administrative support, and innovative teaching tools. Universities must invest in these areas for interdisciplinary education to be successful and scalable across institutions. Addressing these challenges will finally allow interdisciplinary education to offer a more holistic adaptive learning experience better preparing our students for modern complexities.

6. Wider Implications for UK Higher Education

[11] Allen F Repko, *Interdisciplinary Research* (SAGE, 2008).

The success of interdisciplinary programmes such as the Cambridge Foundation Year says something of significance about the likely shape of higher education in the UK. With finances continuing to be a big challenge for most universities, with potential increased tuition fees, interdisciplinary teaching offers one possible way to get around some of these problems. Interdisciplinary education intellectually prepares students for more flexibility, develops critical thinking in the understanding of a very interconnected world, hence academically and professionally competitive in life.

There is great potential for wider implementation of interdisciplinary programmes throughout the UK universities. While there is likely to be an ongoing role for traditional degree programmes, integration of interdisciplinary teaching into more curricula could provide a more rounded and inclusive educational experience. Approaches could include the provision of interdisciplinary modules as part of existing degree programmes through to the development of new interdisciplinary degrees that permit students to explore more than one field of study.

Most importantly, interdisciplinary education can help the UK higher education system to overcome some of its challenges, particularly with respect to social mobility and reducing educational inequality. Interdisciplinary programs open up more flexible routes into higher education and provide students with a broad portfolio of transferable skills that help bridge the gap for different types of students to enter.

7. Conclusion

In this respect, it does seem that the adoption of Interdisciplinary learning and teaching in British higher education could be one of the most powerful avenues through which many of the challenges currently besetting the sector might be resolved. With interdisciplinary study come critical thinking, adaptability, and problemsolving skills; these will make the students more prepared for modern real life challenges. In addition, interdisciplinary programs like the Cambridge Foundation Year play a

critical role in closing educational gaps for students from underrepresented backgrounds by bridging various divides to facilitate social mobility.

However, increasing the amount of interdisciplinary teaching that occurs at scale in UK universities will require significant institutional change and collaboration and investment. Universities need to deal with how to overcome resistance to curriculum reform and ensure that interdisciplinary programmes maintain high academic standards while embedding students within a broad based education. Resources also need to be correctly deployed, since developing and teaching interdisciplinary curricula is suitably resourceintensive.

Overall, the benefits of interdisciplinary education outnumber the negative sides. IDT has the potential to be transformative in UK higher education, breaking down traditional disciplinary silos and fostering collaboration between and across subjects. It could further make higher education more inclusive, flexible, and innovative, thus capable of meeting the rising complexities of the modern world. With the ever changing face of higher education in the UK, interdisciplinary teaching is set to play an increasingly crucial role in shaping the future of such a system where graduates turn out not only as specialists in their chosen fields but also as well brounded thinkers who are able to address many facets of 21st century challenges.

Bibliography

Blackwell, G. W. “Multidisciplinary Team Research.” *Social Forces* 33, no. 4 (May 1, 1955): 367–74. https://doi.org/10.2307/2573009.

Burn-Murdoch, John. “Britain’s Graduates Are Being Short-Changed While America’s Are Rich.” *Financial Times*, October 28, 2023.
https://www.ft.com/content/570d23b3-d286-4cb9-a319-b49cc4056f52.

Choi, Bernard C. K., and Anita W. P. Pak. “Multidisciplinarity, Interdisciplinarity and Transdisciplinarity in Health Research, Services, Education and Policy: 1. Definitions, Objectives, and Evidence of Effectiveness.” *Clinical and Investigative Medicine. Medecine Clinique et Experimentale* 29, no. 6 (December 1, 2006): 351–64.

Graff, Harvey J. “The ‘Problem’ of Interdisciplinarity in Theory, Practice, and History.” *Social Science History* 40, no. 4 (2016): 775–803. https://doi.org/10.1017/ssh.2016.31.

Hubert, Carrie. “Interdisciplinary Learning and the Effects on Students Interdisciplinary Learning and the Effects on Students Part of the Curriculum and Instruction Commons, and the Educational Methods Commons,” 2021. https://nwcommons.nwciowa.edu/cgi/viewcontent.cgi?article=1288&context=education_masters.

Newell, William H. “The Road from Interdisciplinary Studies to Complexity.” *World Futures* 67, no. 4-5 (May 2011): 330–42. https://doi.org/10.1080/02604027.2011.585907.

Repko, Allen F. *Interdisciplinary Research*. SAGE, 2008.

Stember, Marilyn. “Advancing the Social Sciences through the Interdisciplinary Enterprise.” *The Social Science Journal* 28, no. 1 (March 1, 1991): 1–14. https://doi.org/10.1016/0362-3319(91)90040-b.

Walker, Timea. “Foundation Year in Arts, Humanities and Social Sciences (Pre-Degree Course).” www.undergraduate.study.cam.ac.uk, May 13, 2022. https://www.undergraduate.study.cam.ac.uk/courses/foundation-year.