

Interdisciplinarity

Interdisciplinarity has recently grown to become a key part of the core of liberal arts education, with colleges scrambling to offer new interdisciplinary majors and classes, to create interdisciplinary curriculums, and to structurally and culturally encourage students to study and learn interdisciplinary material. An “interdisciplinary education” is now not just considered an important part of the liberal arts experience, but an educational necessity. Related, but independent from students receiving a broad education, students experiencing ways in which dissonant and isolated disciplines can converge, intertwine, relate, and diverge, is now considered by a great many faculty and administrators as the academic and intellectual pinnacle of the liberal arts education. They are not alone in this belief – as we have stated, many students consistently commented how, in choosing a liberal arts college, they were consciously seeking an interdisciplinary education.¹

But what exactly is an interdisciplinary education? What forms can it take? Under what circumstances can it be taught, if it can be *taught* at all? How do disciplines and academic content limit interdisciplinary teaching and learning? – What is interdisciplinarity *in practice*, aside from the current theory, rhetoric, and hype surrounding it? Does (and should) the term “interdisciplinary” apply just to academic content, such as the connections and divergences between history and economics, or is interdisciplinarity a skill or way of looking at material that allows you to see those

¹ To many incoming freshmen, the ideas of “academic freedom,” “an interdisciplinary education,” and “a broad education” were not independent, but part and parcel. These inseparable concepts form the largely idealized core of the “liberal arts education” for the majority of students, and no doubt also for many faculty and administrators.

connections and divergences? In this paper we will attempt to answer these questions, using, as we have, student accounts of their experiences, and supporting analysis of the curriculum they have experienced.

1) Forms of interdisciplinarity

Part of the lack of a practical definition of an interdisciplinary education emerges from the numerous forms it takes in a curriculum, and in students' experiences.

Interdisciplinary goals have been institutionalized at every level of the students' education, from individual class assignments, through cross-listed and/or team-taught classes, all the way up to course selection requirements that oblige students to take a variety of diverse classes. These various forms have had, expectedly, quite varied success, due in large part to simple misunderstandings of what kinds of interdisciplinary experiences students benefit from. We will now turn to look at some of the more common forms of institutionalized interdisciplinary that students will experience: a) interdisciplinarity within classes (especially team-taught classes, b) interdisciplinarity across course selection, and c) interdisciplinarity between academics and extracurricular activities.

a) Interdisciplinarity within individual classes

As we have stated in other papers, one of the major hurdles most students have to overcome during their first year is adapting to the teaching and work styles of their

professors. We have presented a good deal of testimony that this is one of the major ways students are forced to adapt to the college environment, and for many students, this is one of the most difficult tasks they will face. Overall, though, once students “get it” – once they understand generally what their professors expect of them, in terms of the quality and content of their work, and the amount of time they (the students) should spend on it – they no longer have problems. Despite having to take new professors and adapt to their styles, overall, students don’t face many more academic adaptation problems after their first year. The major exception to this, we have found, has been classes that are structured in radically different ways than normal – specifically, team-taught classes with interdisciplinary goals, which students found confusing, troubling, and often distressing.

At the college we studied, students were required to take, during their sophomore year, a “sophomore seminar” – one of a selection of about twenty interdisciplinary, almost always team-taught classes. The idea behind these classes was to give (force) students a “real” interdisciplinary experience by exposing them to a central academic focus, but from a variety (two, sometimes three) of academic fields, as presented through the fields’ respective professor. The specific structure of the classes was left open to the design of the professors, and ended up varying widely, though, no more widely than any class of a certain level varies from another.² Despite its goals, the sophomore seminar program has failed in a number of ways, one of them being that it rarely delivered the interdisciplinary experience central to the class, largely because of a fundamental

² The point is that sophomore seminars are supposed to give a relatively uniform, interdisciplinary experience, while there is no such implicit goal with normal classes – hence, this variety is often problematic.

misunderstanding about how students experience and gain from interdisciplinary material.

With a few exceptions, most students found their confusion and problems centered around either the academic content itself, or around how the professors (differently) assessed the students' work. Many students encountered both problems.

Students' confusion about academic content primarily originates from how students chose their class in the first place – assuming the student had a say in the matter (and didn't find themselves enrolled in the only available class), they typically select their interdisciplinary seminar because one of the disciplines in the class is also their major. In other words, students come into an interdisciplinary class typically from one of the two (or more) disciplines – they are looking for *their* discipline, or at best, to get an interdisciplinary experience starting from their established, mono-disciplinary perspective.

A large part of the problem came from many students' simple inexperience or lack of exposure to the class' "other" discipline. In this extreme case, even a student of Economics was confused by unfamiliar economic material presented to the class:

The first one was Economics that we had to talk on. I've taken Microeconomics and I'm halfway through Macroeconomics, but I didn't understand a lot of what they were talking about. And I've seen these

people that have never taken an Economics class in their life, and they're just sitting there completely zoning out... and they can't expect us to know all the stuff that they're lecturing about because half of the people there haven't taken the requirements to get into those classes... Like if they're throwing out Economic terms like the PPS or GDP people that have never taken an Econ are not going to know what that is. [Maudie Savran 02-03]

Another student commented on a similar seminar, also with excessive amounts of higher economics, as well as how the lectures were from a variety of fields, but were in no way integrated or synthesized – an econ lecture followed a separate, distinct history lecture, which followed from a government lecture:

[the professor] was just throwing all this Econ at us and it was not linking to the stuff that all of us were talking about in our class. And it's like all these professors have their own agenda. One of the professors wanted to teach about, global religion; one wants to talk about, you know, International Relations or European union, or whatever else. And it's like to be forced to take all this class time and put it towards, you know, Econ or, you know, something that you're not interested in, it's like that's ridiculous. Like I think we should trust our professors a little bit more than that, and like give them as much time as they need for curriculum because otherwise you're just getting like half a course and a bunch of random lectures, you know. [Hannah Morrill 03-04]

Commenting on another class within the “globalization” theme of many of the seminars,

John stated:

We’ll talk about the globalization from the cultural diversity perspective, and the other class will talk about the globalization from a media perspective. I just found it very confusing for her to talk about her class to the other section, when the other section [has] no idea what her class was about. [John 02-03]

While Hannah points out the disjointed nature of the class’ lectures, we might wonder, where the interdisciplinary experience is taking place. In some classes, lectures are given separately, perhaps in order to leave the interdisciplinary synthesis, comparison, and analysis to the students, but even the best students (and Hannah was easily one of the academically strongest students of our panel) do not make those connections in these cases. Alternately, in many cases where the interdisciplinary connections are created by the professors and taught directly, it is not the students who are making the connections – they are simply learning material which might have interdisciplinary content, but not improving their ability to see connections between content. To some extent, this was reflected in student’s comments that, as a consequence of having to, essentially, divide the analysis of a text in two (one professor lectured about their perspective, and then the other on theirs), some students found that they were only able to skim the surface of the material:

I didn't like [my seminar]. I thought it was really interesting subject matter, but instead of having a professor who was really on top of the subject, I had two of them who like kind of knew about it and done the same readings that we had, but nothing else really beyond that. So like, you know, it was kind of like swimming in the baby pool - you could only go so deep... We didn't really delve into anything too much, just kind of like touched on a lot of topics. [Harry 03-04]

In this case, professors seemed to be just teaching interdisciplinary content, and not requiring students to make interdisciplinary connections (which students openly describe as “deep,” and in complete opposition to the superficial experience described above.

Some students described how, in some cases, conflicts between disciplines would arise, often exacerbated by the differing disciplines of the professors. Economic evidence of an economic shift might conflict with historical interpretations, scientific evidence of global warming might be contrasted by philosophical understandings of the role of nature for man, or mathematical notation might be incompatible with that of symbolic logic. These are not cases of interdisciplinary synthesis, but disciplinary conflict – situations irresolvable by not just the students, but the professors. While we can imagine students crafting interesting papers on the pros and cons of the various sides of this conflict, more often than not, it seems that students simply take sides and shut off the other discipline from their experience. A math student, for example, writes their paper solely on the

mathematical side of the issue, attacking the other side, instead of trying to understand it. A science student in a science and literature class, for their final project, creates and conducts a lab experiment, and completely excludes the literature aspect of the course.

Themselves expressing the academic, the students were experiencing (and struggling with), some professors argued between each other in class over interpretations of the material, further confusing students:

My two professors don't get along with each other. They don't as colleagues, I don't believe that they have ever really gotten along, and I don't know what drove them to team teach a course. But, so they end up arguing about, not arguing/arguing, like tensely discussing random historical facts. Like well, why do you think that they took the eastern flank instead of the western flank? Well, Hitler was doing this at this time. Well, Russia was doing this at this time, and I think that was why. Well, I have to disagree with you because, and it's like we spend chunks of class just watching them like back and forth disagree about like which front somebody should have taken. [Madeline 02-03]

In cases where disciplinary divisions were not as disparate, and where fields were either so close as to avoid significant conflict, or where the professors did not go in-depth enough to stir up conflict, students still faced problems of differing standards in how they were graded:

[The professors] were at odds as to how to approach the humanities section of the [topic]. In the literary and historical sense, they didn't quite understand that. And so the final project that I did, while it was in their context, was not understood by them because they didn't know anything about lit[erature] or history, you know, in the academic sense, in the same way that they do about Biology. [Ruttiger 04-05]

If they want to do team teaching, that's great, but they really need to make sure that the teachers at least agree enough on what they want from like the students that they can teach together, and then be satisfied with the results or else they need to work out a way [to] do work separately for both professors. Because different departments want different things, and then specific professors want different things, and then you have that conflict, and I know that they tried to work it out as best they could in my case, like it might be hard for them to work it out but it's ten times harder to us to try to understand what they want. And then, at the end of the day, at the end of the course, like they're not the ones who get the grade – we're the ones who get the grades... I mean honestly I think that they should teach the professors how to work together if they're going to teach [together]. [Murphy 02-03]

Many students explained that they experienced a double-standard in the grading, teaching, and evaluation from their professors. Some students reported receiving good grades or evaluations from one of the class's professors, while grading poorly with the other, despite having done the same amount of work at the same skill level. "Jane Smith" reports how,

There was not always much sufficient agreement between the two of [the professors], so we were getting papers back with like two very different grades, you know...I initially felt confused because we were getting mixed responses; that, and other stuff; they were getting on. We were more confused as well as like what we should really be focusing on. It was just, it was a big hodge-podge of stuff. [Jane Smith 04-05]

This problem was particularly frustrating to many students, who expressed feeling lost in some of the interdisciplinary material, while at the same time being unaware of what was expected of them due to what they saw as two (or more) different sets of academic and disciplinary expectations expressed by the course's professor team. "Murphy" recounts how,

[The professors] had very conflicting personalities, and you know, they were approaching the same topic – one from like a History point of view, and one from a literary point of view... so they had conflicts and things. And yeah, they didn't know how to grade. So I think, in general, lowered

everyone's grade and kind of like caused a lot of problems for people.

[Murphy 04-05]

As one would expect, the magnitude of the differences between standards was magnified when the disciplines taught were further apart, mainly because the forms and standards of the fields were so radically different. Students of the sciences complained about being graded worse because of their writing style (which would be perfectly accepted in the sciences) by the literature professor of their classes, while some math students complained that they struggled with even a shorter paper, but excelled at the quantitative assignments. These differing standards were problematic even on the small scale, where students were confused about the proper way to cite (Chicago style? APA?) their papers, whether the use of passive voice was acceptable, and whether the use of "I" or "me" is permitted.

As stated, the danger, for the college, in encouraging interdisciplinarity by institutionalizing it in a required class program, is that sometimes this institutionalization can backfire and actually *increase* disciplinary divisions when the mixing of disciplines is unsuccessful. Hence, while many students noted their good experiences in bridging disciplinary gaps, many others suggested that taking these classes simply reinforced their embeddedness in one or the other fields taught in the course. While exposure to other fields can benefit the student, it can also alienate him/her.

All of these problems we have presented are practical – none are inherent to formalizing interdisciplinary experiences into a single class. It is conceivable that, with the right combination of teachers and students, centered around the right subject matter, which was arranged in a way to minimize disciplinary divisions, an interdisciplinary class could be quite successful. However, that so many different kinds of problems arose, with such great frequency, in every class we heard about, suggests at least that there is great practical difficulty to micro-managing these kinds of experiences.

At the same time, the benefits of these classes pale in comparison to the benefits students get out of other forms of interdisciplinarity. No students commented that the interdisciplinary part of their seminar class had a lasting effect on them, while numerous students commented on other forms of interdisciplinary experiences, to which we shall turn now.

b) Interdisciplinarity Across Courses

While we did not explicitly ask students about whether they made interdisciplinary connections between materials in different classes, a good number of students discussed the topic anyway. Most frequently, it was double majors – students who experience two fields in great depth – who made these connections, suggesting again that a superficial knowledge of a discipline is insufficient in providing a real interdisciplinary experience. Hannah (herself a double major) explained how she makes

connections between readings within a single discipline, to demonstrate how forcing students to make these large steps between disciplines can be “contrived”:

I think really when you start to connect disciplines... I think there's a way to have people make connections in reading and have that happen naturally. And then there's a way to really contrive it and to like highlight for everyone well, [and say] “this is where the connection is folks.” I just think that's kind of patronizing. But when I'm able to read, as a writing tutor it's actually something great that happens: I'm able to read something in Philosophy and I get a paper on a different philosopher and all of a sudden I'm making a connection in my head, like okay you know what I mean, like you know, Plato or Aristotle makes this separation between mind and body. And you know, like Descartes like furthers that, and Descartes becomes the western tradition. So in my mind those sort of connections were really fulfilling and when I find in my reading a way to either connect it to my interpersonal relationships or connect it to other academic pursuits, that's when I'm most engaged for sure. [Hannah Morrill 02-03]

Other students with double majors commented on how they planned on one major, but found a good deal of their primary academic interest also in another discipline, and pursuing that, found themselves double majors.

I: What was your reasoning for majoring in Spanish and Soc?

S: Just, I always knew I wanted to be a Spanish major, I guess, because I mean now it's my main issue. And then Sociology, I just took freshman year and liked it. Actually, I think I decided because I took a Latin American Society class, which was kind of a combination, I mean a combination for me in my interests. So that was kind of the deciding class, I guess, for me.

I: What was the name again?

S: Latin American Society.

I: Okay.

S: So that's kind of, I mean it's really both of my majors. I mean I feel like they're kind of really combined, like what I'm interested in pursuing.

I: So it's almost like a Sociology major with a focus on Spanish.

S: Yeah. [Sarah2 03-04]

Outside of double majors, few students commented that they made interdisciplinary connections. Again, this is probably in large part due to the fact that it seems that in order to make these connections, students need more than a superficial understanding of the discipline(s) – something that seems to require, at very least, a handful of classes in the field, and requires the fields to, in a sense, border each other in some way – no student stated that they made interdisciplinary connections between disciplines that were quite different, such as mathematics and foreign language, or biology and

communications. This held true even for those (few) students whose double majors were in vastly different areas. Students make these connections between already similar fields, such as philosophy and political science, sociology and anthropology, biology and ecology, mathematics and computer science, comparative literature and Russian studies.

Part of this seems intuitive – similar fields will have similar standards, expectations, texts, and work styles, and so the translation between one and the other is simple. Reinforcing this, when a professor’s specialty overlaps between fields, it makes the student’s connection-making even easier. A literature professor who knows a great deal about French literature, and maybe even teaches a cross-listed class, can be a link for students from one discipline to the other. Again, fostering good experiences – in this case, interdisciplinary experiences – can be an issue of simply creating an environment and providing options for students such that it makes it easy for interested students to pursue what they want, while not forcing material (in a “contrived” way) down the throats of students.

c) Extracurricular-Academic Interdisciplinarity

While some students made connections between disciplines, often their majors, some students went even further, connecting curricular and extra-curricular activities and studies in startling ways. While it was rare to find students like this, some students seemed so focused on a certain field of study or issue, that they pursued it both inside the class and outside of it.

Sarah, who we have discussed before, is one example of such a student – majoring in both sociology and Spanish, traveling to Spain for her Junior year, writing both her theses on immigration issues, tutoring for a Spanish language class at college, participating in the Spanish club, and also volunteering for immigrant children at both a Red Cross aid center and at a ESL program in a nearby town. Literally, her academic and extracurricular work are fused together around this interdisciplinary issue of Hispanic immigration, and her wealth of experience with the issue has provided her with incredible depth of study, which has been aided by two professors who themselves teach courses on immigration that sit on the walls between disciplines.

The extent to which other students' extracurricular and academics fuse around an interdisciplinary interest is difficult to assess, mainly because few students seem to focus exclusively on an interdisciplinary study, and extracurricular resources for such study are rare. While it is common for students of a certain major to participate in student clubs focused on that major, it would be unfair to call that interdisciplinary, though some students suggest that they receive some interdisciplinary experiences there by learning from students of other disciplines discuss their interests and perspectives. Clearly, the type of academic-extracurricular integration around an interdisciplinary interest that Sarah demonstrates is rare, not only because the type of student who could make such connections is uncommon, but because the resources to support such an endeavor are few and far between. The interdisciplinary interest must come first, it seems, for students to begin integrating their extracurricular interests, though perhaps this is a function less of

the students, and more of the availability of extracurricular activities that themselves break down the disciplinary walls that academics is attempting to do.

2) Concluding Remarks

The general confusion amongst faculty as to what interdisciplinary experiences consist of has led to institutional problems in encouraging it, obvious through Hamilton's failed attempts at fitting the experience into a single class. There seem to be two notions (and practices) of interdisciplinarity:

1) Interdisciplinary *content*, such as text, and lectures that attempt to reconcile two disciplines – students seem to find this kind of material “forced” and “contrived,” and seem to get little practical benefit out of it, as it does not permit *them* to make the connections, it just forces (often new, unfamiliar) material on them. Further, because of how such material is often presented, students simply side with their familiar discipline against the other, creating disciplinary divisions, instead of interdisciplinary experiences.

2) Interdisciplinarity as a *connection-building skill*, where students are presented with, and allowed to thoroughly explore, two or more ways of thinking about a subject, and then encouraged to make their own connections between them. As evinced by our data, instilling this interdisciplinarity in students only works when the student gains a *deep* understanding of the nuances, practices, methods, and perspectives of *both* disciplines. A superficial overview will do little but confuse.