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Report From the Field: Interdisciplinary General Education

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With recently increased interest in and efforts to reform and revitalize general education curricula to make that educational experience more vital and germane, many institutions have become interested in incorporating interdisciplinary learning opportunities, or even in creating fully interdisciplinary programs. In order to address the growing need for interdisciplinary curricula work, in February 2017, the three authors, as representatives of AIS, facilitated a 90 minute workshop on Interdisciplinary General Education at the Association of American Colleges and Universities (AAC&U) conference on General Education in Phoenix, Arizona, and hosted over 80 participants. In addition to its decades' long work in developing interdisciplinary scholarship and academic programming, the Association for Interdisciplinary Studies has been increasingly recognized over the years as an important place for discussions of interdisciplinarity within General Education programming; previous to this AAC&U workshop, the authors were also involved in the creation of the Interdisciplinary General Education set of webpages on the AIS website (under Resources).

The purpose of the workshop was to describe how we employ

interdisciplinary thinking in our programs and courses; we then workshopped some simple interdisciplinary teaching exercises. The overall lesson that we wanted to communicate was not just that interdisciplinary thinking and practice should be widely employed within General Education, but also that it is quite feasible for instructors not immersed in the literature on interdisciplinarity to develop and teach interdisciplinary courses and curricula. In addition, we wished to introduce attendees to further resources available for interdisciplinary curriculum design on our AIS website (see below)[1].

We began the workshop with an overview of successful models of interdisciplinary general education, discussed effective interdisciplinary processes, and then guided the workshop cohort through several hands-on exercises to help them envision interdisciplinary curricula within the frameworks of their own unique programs and institutions.

Successful Models of Interdisciplinary General Education

Many scholars have documented the effectiveness of interdisciplinary pedagogical approaches in individual classes and within interdisciplinary curricula (Astin, 1993; Dewey, 1938; Jones, 1981; Boix Mansilla, 2004; Kuh et al., 2005; Pascarella & Terenzini, 1991, 2005; Smith, 1991;Tinto, 2000; Zhao & Kuh, 2004). Interdisciplinary pedagogies embedded in and connecting general education courses have also proven effective (Carmichael & LaPierre, 2014).

To begin our workshop at AAC&U, we introduced the audience to the example of a long-time, successful general education learning community that heavily utilizes fully interdisciplinary curricula, the Integrated Studies Program (ISP) at the University of North Dakota (UND). Integrated Studies, then in its 30th year, was created as a first-year, general education learning community that allows students at a public research university the opportunity to take a cluster of four fully integrated general education courses each semester (13 credits) – courses in science, humanities, social science, and communications. The curriculum for these courses, developed and team-taught by an interdisciplinary faculty team, is offered in a student-centered

[1] We thank AAC&U for the opportunity. We thank Karen Moranski, former AIS President, now Associate Vice President for Academic Affairs at Sonoma State, for attending our workshop and reporting on it on the AIS Facebook page. We thank preeminent interdisciplinarian Julie Thompson Klein for responding and urging us to make our slides available (these are now attached to the main webpage on Interdisciplinary General Education). And we thank the editors of this journal for then inviting us to briefly describe our workshop.

learning environment where students engage in active learning projects, primary research, and informed discussions of challenging texts. Integration of courses is accomplished by organizing materials around a central theme, and classes are formatted to service students in small group settings where discussion and active participation are encouraged. Pedagogically, one of the most important aspects of the program is that "it consistently attempts to break down the barriers between disciplines and draw together the various disciplinary areas into comprehensive, connective units that demonstrate the relationships between the different fields of knowledge" (Carmichael, 2004, p. 6). Students can complete one or both of their first-year semesters in the Integrated Studies Program. Understanding the core questions and approaches of each discipline, making connections between disciplinary issues, thinking through the meaning of those connections, and studying the effect of one issue on another, particularly as they relate to topics of personal concern, create a more engaged learner who develops and sustains a curiosity about the world and his or her place in it and is therefore prepared to be more successful in college and beyond (Carmichael, 2004, p.29). At the very least, interdisciplinary learning allows students to develop a more holistic view of their world and to better understand the way they each can navigate in it. As Boix Mansilla observes, "preparing young adults to be full participants in contemporary society demands that we foster their capacity to draw on multiple sources of knowledge to build deep understanding" (2004, p. 2).

For those skeptical about the value of converting general education courses or curricula into a more comprehensively interdisciplinary format, the Integrated Studies Program learning outcomes should prove convincing. In recent and ongoing assessment of direct and indirect student learning outcomes, first-year retention rates, years to graduation, and levels of student engagement (as measured by the National Survey for Student Engagement), students in this interdisciplinary general education program show higher learning gains, GPAs, retention rates, and engagement rates, while maintaining their progress to a four-year graduation (Carmichael & LaPierre, 2014). Information on the assessment process and its general results was shared with the workshop group.

After sharing this specific example of successful interdisciplinary general education, we discussed the nature of the interdisciplinary research process with the group in our seminar (as outlined in the "About Interdisciplinarity" webpages on the AIS website). As we explained, if we are to help students become successful in interdisciplinary course work, they need to know how to perform interdisciplinary analysis: to compare, contrast and, ideally, integrate

the insights they encounter in different classes and in the wider world. The key point we emphasized with the group is that interdisciplinary analysis can be broken into a set of steps and for each of these a handful of useful strategies have been identified. It is wasteful for scholars or students at any level to attempt interdisciplinary analysis without being familiar with these "best practices." Fortunately, these strategies are each fairly straightforward – though students will only appreciate their value once they actually apply them in their own interdisciplinary research. One of the points we stressed throughout our presentation was the "Aha!" moments that students experience when they learn a strategy that helps them transcend a challenge they were facing in their own research.

We noted that while this sort of process can be taught in a class dedicated to interdisciplinary analysis, the various steps could also can be taught and applied in many different courses not characterized as specifically about interdisciplinary process.

Interdisciplinarity in a Course on Information Literacy at Ocean County College

For those who cannot convert their general education courses or curriculum into a more comprehensive interdisciplinary format, it is nonetheless possible to teach the practices of interdisciplinary analysis within courses that are found in the typical "menu option" structure of many general education programs. The experience with a particular course described at the workshop (and here) suggests that engaging the interdisciplinary capacity within general education programs is highly worthwhile, creating ways in which students can consciously make connections between what they perceive as "random," disparate courses they are forced to take to complete a degree.

"Library Research Skills and Information Literacy," or INFO 110, is a basic level course at Ocean County College that fulfills the New Jersey Technological Competency/Information Literacy area.[2] Since it requires research, but does not require that research be done within a specific field or discipline, it is ripe to be structured around complex, interdisciplinary problems that are discovered by students in the process of learning to

[2] " In this course, students will learn researching skills using databases, computers, the Internet and electronic media along with traditional print information sources. Understanding the commonalities of how information is indexed and organized will allow students to develop a contextual framework vital to finding and evaluating relevant information for their research needs. Students will develop the ability to make ethical and legal choices in using the information they find. "

understand and evaluate the nature of information and produce a research paper. In order to create a more intentionally interdisciplinary pedagogical approach, *Introduction to Interdisciplinary Studies* (Repko, et al., 2017) was used to supplement a more compact textbook on the basics of library research (George, 2018). The course was structured around a series of exercises and explorations not dissimilar to those found in the section below, but beginning at a more basic level of understanding of the nature of disciplines and the nature of interdisciplinary thinking.

As we explained to those attending the workshop, an under-observed or under-problematized aspect of students' transition from high school to college is that K-12 education has taught them to think in terms of "subjects," whereas higher education thinks in terms of "disciplines." To address this distinction, even in terms of the difference between Dewey and LOC classification systems, is eye-opening for student and professor alike. To reframe students' thinking from content/subject to the kinds of questions various different disciplines ask and how they approach them through interdisciplinary perspective taking (Repko et al., 2017) gives them a powerful new tool for making use of their education, which they have heretofore seen as consisting of isolated blocks of knowledge

Thinking in terms of disciplines opens up the idea of thinking of research in terms of asking questions and how those questions may be formulated; students then begin to see that many disciplines study and address problems or topics, often in complementary ways. An early exercise in the class is to have students working in groups look up a known problem or issue, such as poverty, terrorism (of immediate interest to many students in Homeland Security who take the class to fulfill a requirement within their degree program), water shortage, or online bullying in three very distinctly disciplinary library databases (selected from Science Direct, Psych Abstracts, JSTOR, Art History Full Text, and others). They then report on the kind of articles, if any, they have found about the issue or problem. Their sense of both the connectedness and the gaps among disciplinary approaches is vital to their growing understanding of knowledge production and problem-based approaches to learning, and understanding how their general education curriculum may be useful to their own thinking about the "real world," their own lives, and their studies.

Helping them build upon their discoveries in order to foster the application and integration of various interdisciplinary perspectives is itself an iterative pedagogical strategy in the course. The students are often encouraged to ask as many questions as they can think of about a given news article, issue, or problem, or to return to the database exercise in order to further explore

their research problem. These beginning students, many of whom were not on the college prep track in high school, work through the process of articulating their research project as a problem they want to understand, where they will do research and perhaps reach interdisciplinary insight(s): they keep research logs, they struggle with the academic level of articles, they make connections to the rest of their education. Each term, some students ask if they can continue to work on something they have studied in another class, because they had no idea other research was out there, hadn't been "allowed" to look beyond subject databases in a discipline, and/or had not actually been curious at the time. To enable students to engage consciously in interdisciplinary thinking and practice then, is to also to foster an experience of intellectual freedom and autonomy, as Carmichael (2004) observed earlier.

An important point to be noted from all of the above is the scalability of interdisciplinary practice no matter the curricular level of general education: From course to program level and from initial steps to more sophisticated applications, the creation of opportunities for interdisciplinary thinking and practice allows students to find value in their general education program, no matter what form it takes.

Workshop Exercises

To help the workshop audience gain insight into beginning the process of creating interdisciplinary elements in their courses or curricula, we conducted a couple of group exercises. First we gave groups a few minutes to work in teams to develop an interdisciplinary research question. We guided them at the start to focus on a research question that would necessarily draw upon insights from multiple disciplines. As each group reported on the question they had developed, we were able to constructively mention some of the other criteria for a good interdisciplinary research question: clarity, manageability, freedom from jargon (or defining jargon if necessary). Even more importantly we were able to draw out examples from groups of how they had learned from each other's expertise while performing this fairly simple task. We told the audience about our experiences as interdisciplinary instructors in guiding such discussions – and how students gain self-efficacy from finding that they have something to contribute from their own majors or life experiences to interdisciplinary conversations.

Once the questions were established, we then proceeded to a simple mapping exercise, asking each group to visually diagram their research question: to identify the key phenomena involved and to indicate how these

influence each other. We showed an example of such a diagram on the screen. Each of our groups managed in a few minutes to construct diagrams with several boxes and several arrows among them. We lacked the time to have each group describe its diagram. But we collectively reflected on what we had learned. There was a general understanding that they had gained a deeper appreciation of the contours and complexity of their research question. We noted that if they – or their students – were engaged in group research, such a diagram could aid group members in dividing up research tasks and understanding how their tasks fit together. Next we invited them to think about how they could look at each arrow on their diagram and reflect on what theories or methods or indeed disciplines might be most appropriate to its investigation. We informed them that there were resources on our website (under *About Interdisciplinarity*) that could assist them, including classifications of types of theories, discussions of the strengths and weaknesses of each of the dozen primary methods used by scholars, and an outline of the key characteristics of disciplines.[3]

By the end of this session, the participants could appreciate the value of such exercises, and thus the research strategies that they represented, and also appreciate how they could potentially lead their own students in such exercises. We hoped to emphasize, particularly, that interdisciplinary analysis was thus both desirable and feasible.

After this discussion of the first steps in the interdisciplinary research process we briefly discussed later steps in the process. The first main point we made here is that an interdisciplinary approach provides students and scholars with important techniques for evaluating the disciplinary insights that they uncover in their literature search. Many students question their own capacity to critique the works of academics. But they can usefully learn to evaluate any disciplinary insight in the light of disciplinary perspective: To what extent does the insight reflect the discipline's preference for particular theories, methods, or variables or its epistemological perspective? With

[3] The Interdisciplinary General Education website (under Resources at https://oakland.edu/ais/) is designed – we hope! – to be self-explanatory. So we will not repeat at length here material that is already there. As noted above our purpose was to communicate that a range of resources exist that can allow instructors and curriculum designers at any institution to pursue Interdisciplinary General Education. The website is divided into two parts. The first part discusses how Interdisciplinary General Education supports a diverse range of general education goals. The second part then explores how different aspects of an Interdisciplinary General Education might be implemented.

respect to the last, students can come to appreciate that some disciplines are more confident of their ability to achieve both precision and objectivity than others. If students identify insights from multiple disciplines, they can then explore the degree to which these reflect the different theories, methods, variables, and epistemologies pursued in different disciplines. Students can come to see that these interdisciplinary forms of evaluation are complementary to disciplinary evaluations that tend to focus on whether the discipline's theories and methods have been employed appropriately. They can then be guided to draw in a sophisticated manner from disciplinary literatures by both applying interdisciplinary analysis and gauging disciplinary debates on an issue.

Naturally, we spent a bit of time discussing the four techniques for achieving integration when disciplinary insights appear to disagree: redefinition or clarifying terminology; theory extension (adding variables from one discipline to a theory from another discipline or an already integrative theory); organization to visually show how different insights interact; and transformation, which requires placing seeming opposites, such as rationality and non-rationality, on a continuum. Again, our point was that these strategies are fairly straightforward to communicate to students, and will allow them to constructively address conflicts. And we noted that it was crucially important for students to recognize that scholars often disagree. But this recognition can be disturbing to students if they lack the skills to first evaluate and then potentially integrate across disciplinary differences. The simple strategies that we outlined allow students both to face up to conflicts and potentially transcend these.

The Shared Goals of General and Interdisciplinary Education

General Education programs inevitably require students to take courses that are grounded in a variety of disciplines. Throughout the workshop we stressed that only an interdisciplinary approach can prepare students to connect the diverse sets of disciplinary insights that they will encounter in general education, and further connect these to their (disciplinary or interdisciplinary) majors. In other words, interdisciplinarity provides general education with coherence.

Interdisciplinary analysis is an important form of critical thinking: It provides students with tools for evaluation and integration. This in turn encourages self-actualization. An interdisciplinary understanding of the academy (itself a goal of general education), buttressed with practical library search techniques, provides students with information literacy. The

combination of information literacy and critical thinking prepares them for lifelong learning. "Teaching the conflicts" is often seen as a general education goal; an interdisciplinary approach allows that but also allows these to be transcended even when the subject matter involved is particularly difficult. We also briefly mentioned that interdisciplinary strategies can be applied to disagreements over values or ethics, as well as to differences grounded in scholarly research. An interdisciplinary approach can thus also support the important goal of ethical understanding and sensitivity. Students who know how to cope with both ethical and scientific disagreements are well-prepared for active citizenship. We also noted that (many) interdisciplinary strategies encourage creativity, another important general education goal.[4]

Designing an Interdisciplinary General Education Curriculum

Teaching interdisciplinary strategies as a key part of a general education curriculum can help students to engage with and transcend difficulties created by disciplinary boundaries, and encourage creative and analytical thinking. As we discussed with participants, such strategies could be taught in a dedicated course or two, or dispersed across multiple courses. As with any material, these strategies will be most effective if reinforced across the general education curriculum, and such reinforcement isn't hard to manage. An interdisciplinary course on ethics could recognize that there are only a handful of ways in which ethical analysis is performed and apply integrative techniques in those situations in which there is ethical conflict (while recognizing that many values such as honesty and responsibility receive broad support from all types of ethical analysis). Other courses might employ interdisciplinary strategies in the pursuit of Community Service Learning or the integration of coursework with campus life. A course might be devoted to encouraging creativity; this could apply many interdisciplinary strategies. More generally a variety of thematic interdisciplinary courses might address important public policy issues or issues of psychological or artistic significance while employing strategies of interdisciplinary analysis. While interdisciplinarity can strengthen General Education in all institutions, each institution can tailor its Interdisciplinary General Education curriculum to reflect both institutional priorities and faculty strengths.

Concluding Thoughts

[4] These various goals are each discussed on the Interdisciplinary General Education website, as are the issues of curricular design addressed below.

Throughout the workshop, we strove to present both an overarching vision of interdisciplinary general education as well as clear practical guidance on how this vision can be achieved both in terms of curriculum and pedagogy. This approach seemed valuable to the attendees.

We had begun the workshop with an expectation that there would be some participants who would be skeptical of the notion of developing interdisciplinary courses or course components. What we discovered, however, is that the 80 participants were eager for instruction in how to do just this. They brought great ideas to the tables (literally) and were able to capitalize on our expertise as well as on the good ideas generated by others in the audience to conceive of new, interdisciplinary approaches to their own general education offerings.

As AAC&U continues to develop and promote its interest in interdisciplinary general education, and undergraduate education as a whole, we hope to continue contributing to the dialogue. One of our team, Tami Carmichael, is already serving as an AAC&U Fellow for Scientific Thinking and Integrative Reasoning, an initiative that is inherently interdisciplinary. The work of these Fellows will be contributing to new AAC&U VALUE rubrics and further workshop opportunities in the coming year that will also highlight ways interdisciplinary thought and practice can advance the educational goals we all share.[5]

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[5] The authors of this article also guided a workshop on creating interdisciplinary general education curricula at the AIS conference at UMBC in October 2017.

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