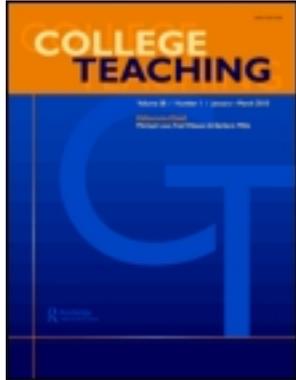


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The “Death” of Disciplines: Development of a Team-Taught Course to Provide an Interdisciplinary Perspective for First-Year Students

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The “Death” of Disciplines: Development of a Team-Taught Course to Provide an Interdisciplinary Perspective for First-Year Students

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Although interdisciplinary efforts in teaching and research are promoted as a possible antidote to increasing disciplinary separatism in colleges and universities, evaluations of interdisciplinary efforts in the classroom, particularly those spanning the traditional science-humanities divide, are not frequently documented. This article describes the development, execution, and assessment of a unique effort in interdisciplinary teaching in which four doctoral candidates from widely varying home disciplines collaborated to create and teach a “truly interdisciplinary” course for first-year students centered on the pervasiveness of humankind’s quest for immortality. Assessment of the course indicates several desirable student outcomes, including the development of a more mature world view and appreciation for different epistemologies, which recommend the continuation of this and similar interdisciplinary efforts. While students at times found the enormous number of disciplines potentially related to the central topic overwhelming, at the conclusion of the course, they largely identified the exposure to new perspectives as an exciting and worthwhile academic experience. Similar interdisciplinary efforts in the classroom are encouraged, though ample course development time is recommended to maximize success.

Keywords: freshmen, graduate students, interdisciplinary, mortality, team teaching

In his 1959 lecture “The Two Cultures,” C. P. Snow lamented that one half of the intellectual community did not read Dickens, while the other half could not define the Second Law of Thermodynamics (Snow 1998). In the intervening half-century, disciplinary separatism has failed to disappear. Negative effects from the current atmosphere of intellectual isolationism have extended down into the sphere of undergraduate education, including a failure to achieve “intellectual coherence” within most university curricula (Boyer

1990), which may result in uneven or fragmented personal epistemologies among graduates (Marra and Palmer 2008). Although interdisciplinary efforts in teaching and research have been promoted as a possible antidote and discussed at length in the academic community (Davis 1995; Klein 1990; Lattuca 2001), evaluations of interdisciplinary efforts in the classroom are less frequently documented (Lattuca, Voigt, & Fath 2004).

While there have been several anecdotal reports of interdisciplinary courses or teaching programs involving participants from the humanities and social sciences (Barisonzi and Thorn 2003; Ivanitskaya et al 2002; Letterman and Dugan 2004), collaborative teaching efforts attempting to bridge the barrier between the humanities and the biological/physical sciences, though frequently extolled in concept (Klein 1990; Lattuca 2001; Newell 1994), appear rare in execution or perhaps are rarely reported. Concern has been expressed that current graduates in “non-science” disciplines do not gain sufficient experience in their required introductory survey-level

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science courses to develop mature understandings of the state of scientific knowledge and discovery (Marra and Palmer 2008), instead viewing science as an “unproblematic fountain of truth” (Newell 1994). Examples of attempts to explicitly integrate knowledge from the sciences and the humanities in the undergraduate classroom have generally involved the creation of undergraduate course series, which require students to commit to multiple subsequent or concurrent courses to attain an interdisciplinary perspective on a given issue (Bekken and Marie, 2007; Elveton et al. 2000). Although successful in broadening and deepening student perspectives, the rigidity of many disciplinary curricula, particularly in the sciences, often do not readily allow for the addition of a non-major multi-course series, rendering this option unavailable to some undergraduates.

In 2006, the University of North Carolina at Chapel Hill initiated a unique program aimed at engaging graduate students in the development and execution of interdisciplinary courses intended to cross the traditional science-humanities divide. The program was developed by doctoral candidates within the university’s Royster Society of Fellows program as a simultaneous effort to promote interactions between doctoral fellows from disparate disciplines and to contribute to the broader university community. The program is currently in its initial years (courses were first offered in Fall 2008) and continues to evolve. This article will describe the development, execution, and preliminary results from the assessment of one of the first courses (entitled “Cheating Death”) successfully implemented in the classroom as part of this program.

Program Motivation

Interdisciplinary efforts in research and teaching are continuing to grow in American universities. The potential benefits to students arising from exposure to an interdisciplinary perspective have been reviewed extensively (Davis 1995; Ivanitskaya et al 2002; Lattuca, Voigt, & Fath 2004; Newell 1994) and include improved classroom interest, maturation in personal epistemologies, greater appreciation for the worth of knowledge beyond one’s home discipline, and an enhanced ability to navigate and synthesize knowledge in our current information-saturated culture.

In general, interdisciplinary or multidisciplinary courses are often designed as capstone experiences for upper-level students who have mastered the basics of their home disciplines, as there is the perception that greater levels of maturity and knowledge are required for success (Klein 1990). However, we believe there may be advantages in the incorporation of an intensive interdisciplinary experience within the freshman curriculum. First-year students are relatively unencumbered by discipline-specific biases and rigid epistemological frameworks. Interdisciplinary experience may also provide a strong basis for upper-level coursework by honing critical thinking, writing, and reading skills, ideally resulting in

a more well-rounded student better able to recognize and evaluate competing perspectives.

In the specific course to be discussed, implementation was substantially aided by the presence of Carolina’s existing First Year Seminar (FYS) program (<http://www.unc.edu/fys/>). The FYS program, which provides all incoming students with the opportunity to study an advanced topic within a small discussion-based group, is a campus-wide effort by the university to counteract the typical freshman experience as one among hundreds in large lecture halls focused on basic introductory material. Rather than the conveyance of discipline-specific knowledge, FYS courses require only a “shared intellectual adventure,” providing the ideal home for the experimental classroom effort here described.

Finally, although interdisciplinary experience in research and the classroom is often noted as highly desirable in the hiring of young academics, graduate student teaching experience is frequently limited either to grading responsibilities or to lecturing introductory-level courses. Once hired in an academic position, new faculty are less likely to engage in experimental teaching efforts, as the demands of the tenure process often pressure faculty to engage in more conventional, readily appreciated, and promotion-friendly activities (Borrego and Newswander 2008; Boyer 1990; Klein 1990). The experience of developing and teaching an interdisciplinary course with a significant degree of autonomy provided us as graduate student instructors with an opportunity to explore pedagogies less traditionally practiced within our home disciplines and to gain substantial classroom experience, thus greatly contributing to our individual dossiers before embarking on formal academic careers.

Course Description

The targeted course was designed, taught, and assessed by four doctoral members from varying home disciplines (Environmental Engineering, Slavic Languages and Literatures, Religious Studies, Genetics and Molecular Biology). We were mentored throughout the project by Society of Fellows program advisors, with our final syllabus and accompanying course prospectus subject to review prior to course advertisement by the university registrar.

As a central unifying idea to connect our diverse backgrounds, we selected the course theme (and title) of “Cheating Death”—i.e., the pervasiveness of humankind’s quest for immortality and the effects of this central motivation on individual and culture-level decisions. We focused on the idea of “Cheating Death” for two distinct reasons: (1) we identified the topic as a broad unifying force that could build unique bridges between disciplines seemingly concerned with completely discrete quests for truth; and (2) the topic seemed particularly engaging for first-year students contemplating their adult life and potential to affect their world.

Our goal was to create a course centered on the idea of “conceptual interdisciplinarity” as presented by Lattuca,

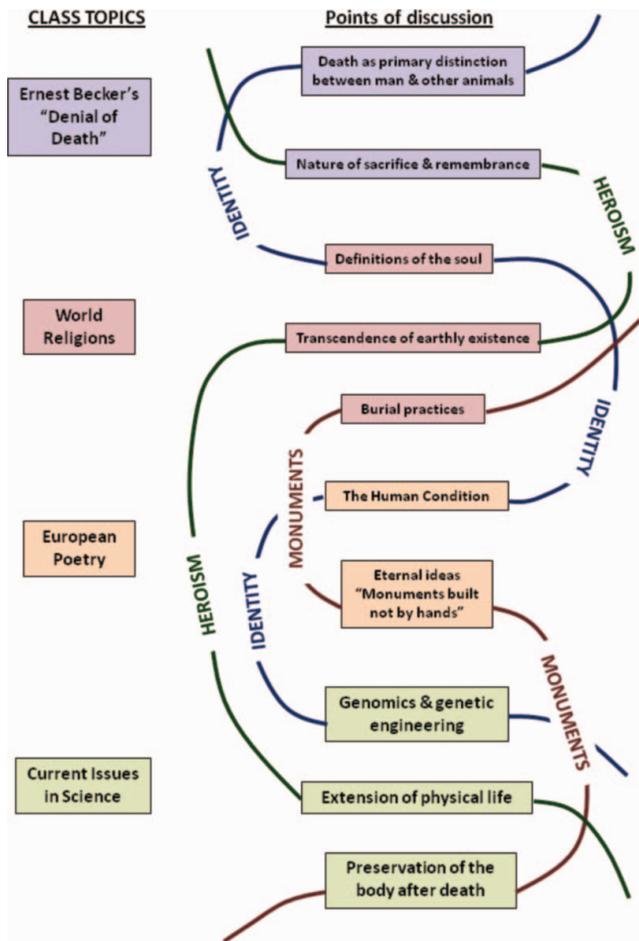


FIGURE 1 Cheating Death course structure: specific class topics are color coded and included in blocks; unifying themes are illustrated as threads weaving these together.

Voigt, & Fath (2004): rather than a compelling disciplinary focus during any class period, we were motivated by a “desire to preserve the complexity of the phenomenon of learning.” With this goal in mind, we sought less emphasis on the mastery of a particular subject matter (e.g., “knowledge” questions in Bloom’s taxonomy), and more on the higher order goals of synthesis and evaluation. Each class meeting was team taught with all four instructors actively engaged. We were concerned that a more multidisciplinary approach dividing the course into a patchwork of loosely connected modules taught by each instructor in sequence would fail to demonstrate to students the key cross-disciplinary connections we found most compelling. Therefore, themes and ideas were continuously emphasized and woven through discussions to create a backbone supporting investigation into many different discipline-based concepts of immortality. An illustration of the course structure, including selected example class topics and broad themes, is given in Figure 1.

The diverse offerings of materials and learning structures were designed to force both the students and instructors out of their comfort zones to maximize the richness of the final

experience. Class meetings were designed to promote active learning through a wide spectrum of pedagogical strategies, including class debates, thought experiments, weekly reflection journals, and field trips (campus “necropolis” tour; medical genetics laboratory visit), and through a wide array of out-of-class readings, including philosophy, literary, and religious texts, and peer-reviewed scientific manuscripts. In keeping with suggestions by Newell (1994), highly technical or likely “foreign” material was paired with more contemporary or familiar examples to encourage interest and a sense of connection (e.g., Homer Simpson and Ernest Becker’s heroism; genetic counseling and Andrew Niccol’s film *Gattaca*). Students became excited and engaged in background material upon recognizing that the ideas discussed were not confined to historical philosophy and literature but are pervasive even in “pop” culture today.

Student assessment was evaluated based on class participation, reflection journals, and a final culminating project with related essay. Titled “The Immortal Class,” the final project sought to mimic the instructors’ original experience in developing the course, albeit on a much more limited scale. The students were divided into groups of different intended majors (i.e., a proxy for home discipline) and charged to design and teach a class period centered on a relevant topic that was not covered during the actual course. The intention, as explained to the students, was to empower them with the ability to suggest and demonstrate new topics that could be incorporated into subsequent offerings of the course. Thus, the course could continue to evolve, and the students themselves could attain “immortality”—live on in subsequent course incarnations that would acknowledge their unique ideas and lesson plans. Presentation of the projects, which included topics such as “Modern Cryogenics and Rip Van Winkle” and “Thrill-seeking” occurred during the final week of the course.

Assessment

The success of Cheating Death, both as a “shared intellectual adventure,” and in encouraging the development of interdisciplinary critical thinking skills, was assessed through comparisons of first and last day anonymous opinion polls and the analysis of final student essays. Since the course has been taught only once, the results presented are largely anecdotal in nature; however, they indicate several desirable outcomes that strongly recommend the continuation of this interdisciplinary effort.

In their final reflective essays, students were charged with two major tasks: (1) to illustrate the benefits and challenges of interdisciplinary work through a discussion of their own experiences as part of an interdisciplinary team; and (2) to identify four class themes that were related to their choice of final project topic, with appropriate examples. The majority of student essays (15/19 or 79%) identified a broadening of perspective/new insights as the main benefits of interdisciplinary work and illustrated a general satisfaction with and

appreciation for the course's nontraditional approach. Sample comments within individual essays include:

- "I gained an immensely rewarding experience by learning from my peers and taking on new perspectives. I would not have done so had I not been forced."
- "After all the work we put in preparing for the final presentation, it was thrilling to get in front of the class and see the same level of interest and excitement we had about our topic reflected by the audience. The rewards of interdisciplinary experience are definitely worth the amount of time and effort such a challenge innately requires."
- "To learn in a fashion that considers all sides of a topic, that meshes diverse ideas and backgrounds through discussion, and that provides an avenue for many different strengths is truly an experience I appreciate and value."

It is important to remember that the enthusiasm of these responses must be tempered with the knowledge that the writers knew that the graders of their work were avowed believers in the interdisciplinary experience. However, anonymous final university course evaluations suggest that much of this positive feedback and enthusiasm was genuine, with 17 of 19 students marking "strongly agree" or "agree" in response to the prompt "Overall, I learned a great deal from this course," and 18 of 19 marking "strongly agree" or "agree" in response to the prompt "This course challenged me to think deeply about the subject matter."

Interestingly, "group work" and "collaboration" were cited as a major advantage/benefit of interdisciplinary work in eight essays (42%) and as a major challenge in the remaining eleven essays (58%). Students who expressed an appreciation for working in a group generally equated this collaborative effort with increased available background knowledge and a diversity of perspectives, which rendered difficult concepts more approachable. Those who viewed group work negatively remarked that scheduling meeting times was frequently a problem and discussed the difficulty of remaining on topic and achieving consensus during meetings.

The challenge associated with interdisciplinary work most frequently identified by students in their essays was the difficulty of setting appropriate boundaries to frame their central topic. Eleven students (58%) remarked that their topic simply involved "too much material," and nine students (47%) mentioned trouble maintaining "focus" during their group meetings in preparation for their final project. These remarks directly echoed the instructors' experience, as the temptation to encompass too much was perhaps the greatest continual challenge in both the development and teaching of the Cheating Death course. As described by one instructor, the universality of "death" as a central focus constantly threatened to "drown us all in a widening gyre" of possible appropriate lesson topics. While it was gratifying to see that the students, like the instructors, were sufficiently engaged by the topic to recognize the myriad of possible connections, it would likely have lessened their frustration if an instructor had met with

each group multiple times during the semester to assist in narrowing their focus to a manageable topic.

The identification of course themes in final essays varied considerably between students, likely as a function of their final project topic. The theme of "monuments" was very popular, appearing in nine (47%) essays. This was particularly interesting, as this idea was not explicitly recognized by the instructors during course planning but arose organically from class discussions. Flexibility within the syllabus allowed the instructors to nurture this idea through the addition of new relevant topics (e.g. "green" burial; graveyard visit), and the idea gradually became a defining theme that enriched the course.

In order to determine more directly whether the course affected students' perceptions of death and immortality, we designed a classroom opinion poll for each student to complete anonymously on the first and last day of class. Questions in the short poll included: "What is death?"; "What is immortality?"; "List four professions that are concerned with cheating death."; and "Are you cheating death? How?" Opinion polls were collected, transcribed, and compared by the instructors.

Responses to these questions changed between the first and last day of class, with answers predictably broader and more encompassing at the end of the semester. On the first day, 57% of students described death as some sort of "end" (of consciousness, life, physicality), while on the final day, the most frequently used word (44%) was "loss" (of memory, consciousness, body) and only two students used the word "end" in their definitions. By the end of the class, immortality was almost universally described as a "lasting legacy" or "remembrance" (by 78% of students), though only 30% of students had used this term at the beginning of the semester. Descriptions of professions concerned with cheating death did not change appreciably, with most students listing members of the medical profession (nurses, surgeons), poets, and religious figures at both times.

Perhaps the most interesting and dramatic changes were observed between responses to the question, "Are you cheating death?" On the first day of the course, the majority of students equated "cheating death" with care for the physical body (example responses, Figure 2), with only one or two responses mentioning the possibility of spiritual or personal legacy. In contrast, on the last day of the course, 11 of the 18 students present mentioned the potential of a lasting legacy as their primary intended means of achieving immortality. This perceptible move beyond considerations of the physical self to the self's impact on the greater community perhaps indicates a more mature world view. While no doubt affected by the myriad of eye-opening experiences of any student's first semester at college, we nonetheless hope this broadening of perspective and ambition was partially aided by the completion of the Cheating Death course.

A Note of Caution

While early indicators suggest that the Cheating Death course provided both students and instructors with a transformative

<i>Are you cheating death? Will you? How?</i>	
FIRST DAY	LAST DAY
<ul style="list-style-type: none"> • "Yes I have taken medicines and vaccinations and still intend to for a majority of my life." • "Yes I wear sunscreen every day because I'm afraid of melanoma." • "I'm cheating death by taking vitamins to make me healthy and prolong my life." 	<ul style="list-style-type: none"> • "I am, I will. By making an impact on others so when I physically die my marks on the world will remain for a time." • "Yep. I live my life connected to other people. My existence affects the lives of those around me and they affect other people into the future." • "Hopefully. Humans try to make their lives mean something. I don't plan on being an exception."

FIGURE 2 Comparison of first and last day opinion poll student responses.

learning experience, we would like to interject some notes of caution regarding interdisciplinary efforts in general and the use of graduate students as instructors in particular.

Both anecdotal reports and broader reviews (Barisonzi and Thorn 2003; Davis 1995; Lattuca 2001; Letterman and Dugan 2004; Shapiro and Dempsey 2008) of interdisciplinary teaching repeatedly emphasize the intensive time requirements of successful interdisciplinary teaching efforts. The development of the "Cheating Death" course comprised two full years, during which we as instructors taught each other the necessary basic tenants of our respective disciplines, brainstormed class ideas and materials, and refined the intended course structure. During the actual semester in which the course was taught, we met two to four hours a week outside class time to discuss future lesson plans, choreograph classroom activities, address unforeseen issues, and design grading rubrics. Although absolved of any additional teaching responsibilities during the semester in which the course was actually taught, all four instructors still struggled to balance research, qualifying exams, university service requirements, job searches, and familial responsibilities with the demands of course preparation and administration. Therefore, although unencumbered by formal tenure demands, it is important to remember that demands of graduate students beyond the classroom can nonetheless be considerable.

Developers of team-taught interdisciplinary courses have remarked that teaching the course again in subsequent semesters resulted in substantial improvements in the integration of course material and more successful presentation of connections across disciplines, thus more closely approximating the interdisciplinary ideal (Barisonzi and Thorn 2003; Shapiro and Dempsey 2008). Cheating Death would undoubtedly improve if taught again; however, graduate students are by nature transients. In the year following completion of the course, one instructor graduated and accepted a position at another institution, and another began the intensive job search of her final semester. Consequently, it is

highly unlikely that Cheating Death, at least as originally imagined, will be taught by any of the four instructors in the foreseeable future.

Planning Future Courses

Based on our initial assessment of the Cheating Death course, it appears that both students and instructors benefit from the inclusion of interdisciplinary team-taught courses in the undergraduate curriculum. The creation of similar courses as a means to explore new disciplinary intersections is encouraged. Ideally, more formal studies comparing the undergraduate careers of students exposed to interdisciplinarity as freshmen and those with more traditional first-year programs would be compared to determine whether benefits from these courses persist over time. Studies of the long-term careers of graduate students exposed to this sort of teaching experience may provide interesting information regarding early faculty development.

For those eager to experiment with the development of interdisciplinary courses, we echo past authors' advice that substantial lead time is essential. The longer the course genesis, the better prepared the instructors and the more familiar they will be with the material taught. While no one can be an "instant polymath" (Davis 2007), a basic understanding of the vocabulary and fundamentals of fellow instructors' disciplines is necessary, both to present a "unified front" in the classroom, and to identify possible areas of synergy to be emphasized in the course. In leaving disciplinary rigidity behind and considering new perspectives, new and exciting ideas are inevitably born, which can translate into exciting new classroom experiences both in front of and behind the teacher's podium.

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