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ABSTRACT

Interdisciplinary research seminars in the arts and humanities represent an excellent way to deliver the pedagogy of undergraduate research, scholarship and creative activity more efficiently than one-on-one. Combining two fields can also provide students the opportunity to conduct original research on academic pathways not nearly as well trodden as those in standard disciplines. Examples of such seminars will be described, including the structures through which faculty were credited for the teaching load and students incorporated them into their degree requirements. Two of the seminars culminated with trips to Europe to see firsthand what the students had studied. The teacher-scholar model works well here because the students work with the faculty to make discoveries at the intersection of two traditional disciplines. Included in the article will be additional ideas gleaned from several conference presentations during which the audience was asked by this author for suggestions of exciting interdisciplinary seminars that could be offered.

In many cases these seminars can advance the research agenda of the faculty member through a journal article describing the pedagogy, or by incorporating salient findings from the seminar into a larger project being conducted by the professor. Our first seminar, *Seeking Useful Correlations Between Music and Architecture* resulted in student work published in the MIT Journal *Leonardo*, clearly a measurable outcome. This approach to teaching aligns well with our primary programmatic and institutional goal, which is to link student learning with the discovery of knowledge.

ARTICLE

Interdisciplinary Research Seminars in the Arts and Humanities at Montana State University

Across the country, undergraduate research and creativity as a pedagogy is spreading rapidly from the sciences and engineering to the arts and humanities. This raises several questions for faculty and administrators, including the following. How can we involve students in delivery methods that are more cost-effective than one-to-one? How can

faculty research agendas be assisted rather than impinged upon, by this activity? How can we prepare students so that they are up to the task and can most benefit by such instruction? Interdisciplinary UGR seminars have the potential to provide at least a partial answer to these questions.

The context for undergraduate research at Montana State University (MSU) is best summed up by quoting President Geoffrey Gamble when he describes our primary goal as “linking student learning with the discovery of knowledge.” In 1994 MSU became one of the first public universities with a centralized office for undergraduate research in all disciplines, the Undergraduate Scholars Program (<http://www.montana.edu/usp>) and a decade later we redoubled our efforts in this important pedagogy by requiring a research/creativity (R/C) course for all undergraduates. A faculty committee reviews proposals to offer R/C courses, which must adhere to the following:

R/C Course Guidelines

- Students experience the process of research and creative experience as a unique intellectual activity and generate a scholarly product.
- Student autonomy directs the research and creative experience, while faculty and staff provide the framing concepts and contexts.
- Research and Creative Experience courses provide frequent and early benchmarks for student progress to encourage early engagement in the research and creative process.
- The research and creative experience component done individually or in small groups constitutes at least 1/3 of the course. The remaining part of the course should provide sufficient information about the subject to enable the student to formulate a project as well as provide the student with the tools to do a research and creative project.
- Courses geared toward sophomore level students are particularly encouraged, but Research & Creative Experience courses can be at any level. Research & Creative Experience courses may have prerequisites.

R/C Learning Outcomes

Through the Research and Creative Experience students will:

- Improve their ability to put concepts and facts into practice.
- Increase their understanding of the processes and dynamic nature of knowledge.
- Strengthen their habits of critical and creative thinking while seeking and synthesizing information from broad and diverse sources.
- Deepen their understanding of the importance of team work and collaboration.
- Develop responsibility, competency, and confidence.
- Expand intellectual curiosity and interest in the subject area.

This major curricular change was part of a reinvention of our general education curriculum entitled Core 2.0 (<http://www.montana.edu/newcore>).

Most of the funding for this initiative came from reallocating resources from the delivery of the old core. In some cases, departments revamped their capstone courses to provide

research seminars to their majors, and in others, departmental requirements were altered to include the research/creativity requirement. This was done with the intention of including this activity in normal faculty teaching loads.

Interdisciplinary Undergraduate Research (UGR) Seminars

Interdisciplinary research seminars give undergraduates opportunities to not only make interesting connections between disciplines, but also to conduct original research on academic pathways not nearly as well trodden as those in standard disciplines. They also provide professors an opportunity to collaborate with colleagues in other disciplines, and by so doing come to a better understanding of their own disciplines while exploring new research pathways. In some cases, these interdisciplinary tracks have become their primary research.

Musi-Tecture

In 1991, three years before Montana State University had established its Undergraduate Scholars Program, an architecture professor inquired, “What do you think of the adage ‘Architecture is Frozen Music’?” We both thought this was a Frank Lloyd Wright quote, and soon found out that some sources attribute it to Goethe, and others claim it even preceded him. After several discussions on this topic, wherein we discovered that the two fields had much more in common than we had thought, we decided to co-teach a seminar on this topic. At that time only the sciences and engineering had a course rubric for undergraduate research so we used the independent study rubric, and recruited eight architecture majors and eight music majors. At that time, additional faculty compensation was not available, so we taught the course in addition to our normal teaching loads purely out of our interest in the subject. Before the course started, we prepared a taxonomy for comparing terminology and sources of inspiration in both disciplines. The students helped flesh out this taxonomy in the first ten weeks of the course. They found visual and audio examples from each field that represented many common terms and sources of inspiration so they could be easily juxtaposed. The last five weeks of the seminar were devoted to independent projects in which each architecture major had to design a building inspired by and correlating to a piece of music, and each music major had to compose a piece to be performed in class, based on a building. The student projects were very successful, and can be found in an article published by the M.I.T. Press.¹

Music and Economics

The University Honors Program (UHP) offers faculty a choice between course buyouts and extra compensation for teaching its seminars. This provides a structure within which interdisciplinary research seminars can flourish. Each seminar proposal is vetted by the UHP faculty advisory council.

The following is one example of how such a seminar can inspire students to do independent scholarly work in an interdisciplinary context, with a study abroad component to reward them for their efforts and bring an enhanced perspective to their projects. “London and the Lakes: Music and Economics from Handel to McCartney” focused on how money influenced musical composition in England from 1700-2000.

Economics as a discipline provides an interesting lens through which one can investigate the history of music composition and performance. Music, on the other hand, can provide a context for examining the field of economics, providing insights for both economics majors and non-majors. Looking at the liturgical music of Bach, supported almost entirely by church funding; the royal court music of Mozart paid for by monarchs; operas of Wagner supported by ticket sales; or the CD and internet sales of recent music; money has directly influenced musical creativity for centuries. Larger socio-economic influences, such as the industrial revolution, the mass acquisition of audio and visual technology, and the evolution of the internet, created major shifts in the funding of musical performance and composition.

During the last three hundred years, several diverse entities have exerted major influences on the composition and performance of English music. These include the royal courts, churches, governments, universities, private foundations, and, more recently to an increasing extent, commercial enterprises. The interface of these influences with folk culture, the economic status of different social classes, poetry, instrumental development, musical developments in other nations, publishing media, and technology provide a fascinating and critical perspective on creativity in music.

Students met as a class with the faculty once each week in the Spring Semester and flew to England at semester's end, to spend a week in the Lake District and a week in London. During the course, we examined how music in England between 1700 and 2000 was influenced by money. At the beginning of the semester, the two professors set the stage by giving examples of influential connections between the two disciplines, and encouraged students to begin thinking about possible topics for their research projects. Students were then required to have a draft outline approved before they moved on to researching their topics, with the eventual goal of a 40 minute class presentation and a 12-15 page paper on the topic. Many of the presentations included PowerPoint slides and recorded musical examples. As we prepared for the trip, students planned events or side trips in London and the Lakes that related to their projects, and they were responsible for all logistical details of these events, and led the excursions.

Following on the success of the first course, we offered another one, entitled "From the Vienna Woods to the Black Forest: Music and Economics in Vienna, Salzburg and Munich." Again, students chose academic projects according to their interest, and studied both direct influences and larger economic developments. In both courses they presented their findings to the class and suggested ideas for related activities that we could include in our itinerary for the subsequent trip abroad.

Occasionally, students start down a research path and end up discovering something related to their topic that they find even more interesting. Senior cell biology and neuroscience major Lindsey Hopper studied the Vienna Philharmonic Orchestra (VPO) and although she found it difficult to obtain salary figures and other financial information, she found the issue of gender equity in the orchestra intriguing and asked if she could focus on that in her paper. The VPO has resisted hiring women for most of its centuries-old existence, and has not followed the lead of most of the world's major symphony orchestras in using a blind audition process. She wrote about hiring practices, attitudes of current members on allowing women to play, and other pertinent information about equity issues.

Even after a course like this is designed, which was an entirely pleasurable and intellectually stimulating process with the author and economist Vince Smith, enough students have to enroll and both professors have to make time for it. Having a trip abroad is a mixed blessing, and sometimes students find they cannot afford the cost of the travel. The following are two examples of courses designed but not yet offered.

Music and Literature

This seminar involves looking for useful correlations between music and literature. Comparing historical periods through the genres of art song, opera, chamber and orchestral music, with poetry and prose will set the context for student research projects on particular subjects. The entire course will be spent examining the ways in which music and literature intersect, share common traits, and influence one another; first by the faculty, then by the students presenting the results of their research.

Music and Literature have been structured by scholars into similar historical periods, such as Classicism, Romanticism etc. As a class, we will compare and contrast the essential elements of these periods in each discipline. Then, within each period, we will do a case study comparison: say Mozart and Jane Austen. Students could choose a research project that examines a similar pairing, chosen for its aesthetic, chronological, textual, historical or other links.

A study of the major genres of music, and literature, will focus on similarities in form, meter, rhythm, etc, focusing on the incorporation of various genres into musical settings: e.g. opera (comic or tragic), the musical, lyrics, etc. A case study discussed in class might be a Shakespearean sonnet, and that same sonnet set to music by one or more composers. Students could choose a similar comparison for their research project, or compare a particular musical genre, like the sonata, to a literary genre.

All assignments will be active research assignments, allowing the students to delve deeper into a particular research topic, and present it orally, in writing, and musically (through live performance or multi-media). They will also be required to submit a 15-page paper on their research topic. Musicologists examining genres from different perspectives try to find out, to the extent possible, what factors affected musical style. An example of a research topic might be how the stylistic elements of Mozart's Divertimenti reflect the stylistic elements of classicism in literature. Conversely, a student could pick a specific work of classical literature and do a similar comparison with the stylistic elements of the Classical period in music. Students will be able to visit the sites relevant to their topic when we go to London, Stratford-on-Avon, Cambridge and Oxford.

Music and Sculpture

Art professor Nelleke Beltjens and I are currently in the process of designing a UGR seminar in which eight music students and eight sculpture students will pair up and design joint projects, each pair creating a new multi-media piece in which original music will reflect original sculpture and vice versa. This course will be modeled on the music and architecture seminar outlined above, but instead of extensive faculty preparation, student engagement in setting up the process will add a new level of interaction to this original creative or artistic work.

More Possibilities for Interdisciplinary UGR Seminars

During a session at the 2008 Student Engagement Conference at the University of Kentucky, I led an interactive session that explored other possibilities for interdisciplinary UGR seminars that could be designed and offered. We came up with: English composition and musical composition; Language acquisition and the Suzuki Talent Education Method; String theory and aleatory music composition; Music as a Protest Genre; Pattern Recognition; An Interdisciplinary Look at Time; Music and Mathematics; the Geography of Music; Music and Communication.

Ideally, faculty in the Arts & Humanities will find a way to deliver UGR as a mainstream pedagogy to more than one student at a time, while advancing their own research agendas. This has been accomplished in the science laboratory where a professor has a range of personnel helping out, from undergrads to post-doctoral students. Interdisciplinary UGR seminars may be one way of achieving that goal.

Enabling students to become more familiar with the process of inquiry is essential to making the kinds of connections that lead to the discovery of knowledge. Harvard professor Tony Dangerfield said that universities' "most precious contribution is to send out into the world a group of students who are full of this energy that permit them to make discoveries we can't even imagine, and to make connections we have never thought of"(AAC&U Conference Presentation, New Orleans, LA, 2007).² In designing and teaching these seminars, we hope to foster these traits in students, for their future and for the future of our society.

¹Young GD, Bancroft JA and Sanderson M, Musi-Tecture: Seeking Useful Correlations Between Music and Architecture. *Leonardo Music Journal*, 1993 (3): 39-43

²http://www.aacu.org/podcast/feed/103/engell_dangerfield_AM07.mp3