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What is Expected of Twenty-First-Century Honors Students: An Analysis of an Integrative Learning Experience

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INTRODUCTION

Integrative learning has been identified as a primary goal for university graduates in the twenty-first century. The word "integrative" has been part of higher education scholarship for at least the past ten years and increasingly since the 2007 Report by the National Leadership Council for Liberal Education and America's Promise, a document that includes integrative learning as one of the main objectives of higher education for the new century. Honors programs and colleges offer excellent opportunities to accomplish this objective along with an interdisciplinary and international perspective. In this article, we present current scholarship on integrative learning in the context of an innovative, international program that explicitly sought to address this outcome and that had both experiential and international components. We also discuss the qualitative assessment measures used in the program, which generally indicated that students learned to connect skills and knowledge, were able to make connections and reflect on them, and demonstrated ability to address real-world problems.

In the spring of 2007, the University of New Mexico Honors Program offered a new and highly experimental program to its students. The "From the Rockies to the Andes" program comprised two linked courses (Biogeography and Social Science) that compared arid zones on two continents. This program explicitly aimed to address the four essential learning outcomes identified in 2002 by the Association of American Colleges and Universities (AAC&U) that students must achieve to be prepared for the twenty-first century: knowledge of human cultures and the physical and natural world; intellectual and practical skills; personal and social responsibility; and integrative

learning. The first and second objectives are the most universally accepted as the responsibility of American universities and are most easily aligned with the curricula of academic disciplines and professional programs. Some educators and community leaders may feel more contentious about the third objective, believing it not to be within the province of education. We disagree strongly and believe that all good teaching must at a minimum model all of the first three objectives; however, they are not the focus of this article.

Here we focus on the fourth objective, which requires some explanation and is the most difficult to achieve. Our experience in "From the Rockies to the Andes" has led us to reexamine its meaning and implementation several times. Carol Schneider defined integrative learning as "a shorthand term for teaching a set of capacities (arts of connection, reflective judgment, and considered action) that enable students to put their knowledge to effective use" (1). We would add to this definition the 2007 National Leadership Council's description of integrative learning as "achieving synthesis and advanced accomplishment across general and specialized studies," which is "demonstrated through the application of knowledge, skills and responsibilities to new settings and complex problems" (3).

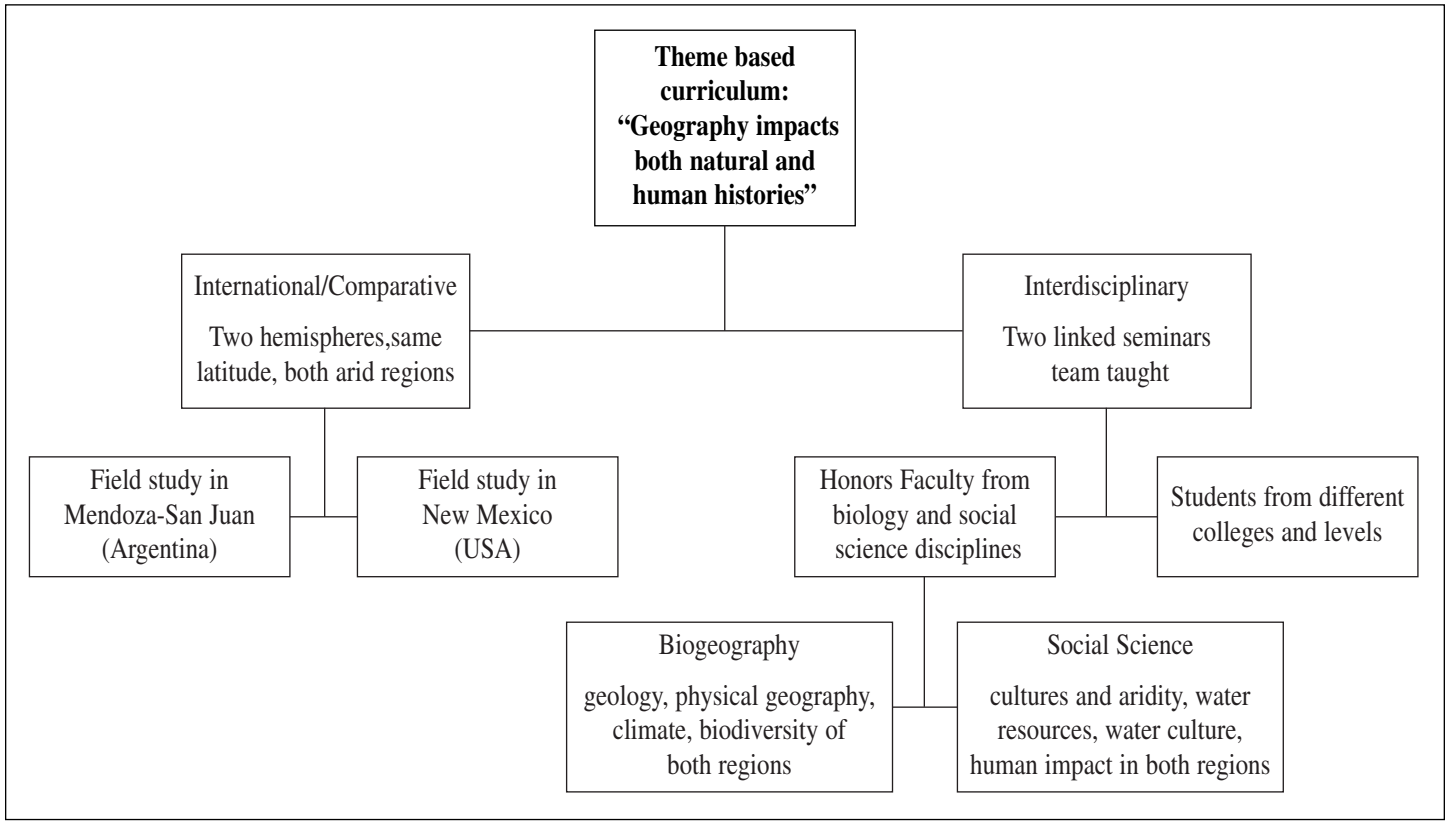
The program we offered in 2007 and 2009 provides a special opportunity to examine efforts to achieve this fourth objective in a setting that went beyond a single course but did not encompass an entire curriculum. UNM is a large, public, metropolitan research university with more than 27,000 students. The honors program has existed within this university for nearly fifty years. It is an interdisciplinary program that allows students to engage in courses and experiences beyond their disciplines and that is deeply committed to experiential learning and international experiences. The program also has an unusual grading system (A, Credit, No Credit) that encourages students to take classes outside their comfort zone.

THE PROGRAM

"From the Rockies to the Andes: A Comparative Study of Arid Zones in Two Hemispheres" linked two courses with a common overall theme (i.e., geography influences both natural and human histories.) This program had several unique characteristics that allowed us to work toward higher-order connections and syntheses. These characteristics are described in Figure 1.

Because this program involved two linked courses it worked as an intensive interdisciplinary experience for our students, and it fitted well into UNM's overall honors curriculum. Education experts have noted a strong relationship between integrative learning and interdisciplinary studies. Welch finds that synthesis and integration can not be achieved in the absence of an interdisciplinary approach (171) while Schneider asserts that "advanced

Figure 1: Characteristics of From the Rockies to the Andes Program



interdisciplinary general education" (1–2) is crucial to promoting integrative studies. Welch further counsels that several elements must be included in order for interdisciplinary experience to be productive: a theme based curriculum, team teaching that provides real expertise in each field, and instruction in the methods and tools of each type of investigation (182–89). "From the Rockies to the Andes" incorporated all of these elements as outlined in Figure 2.

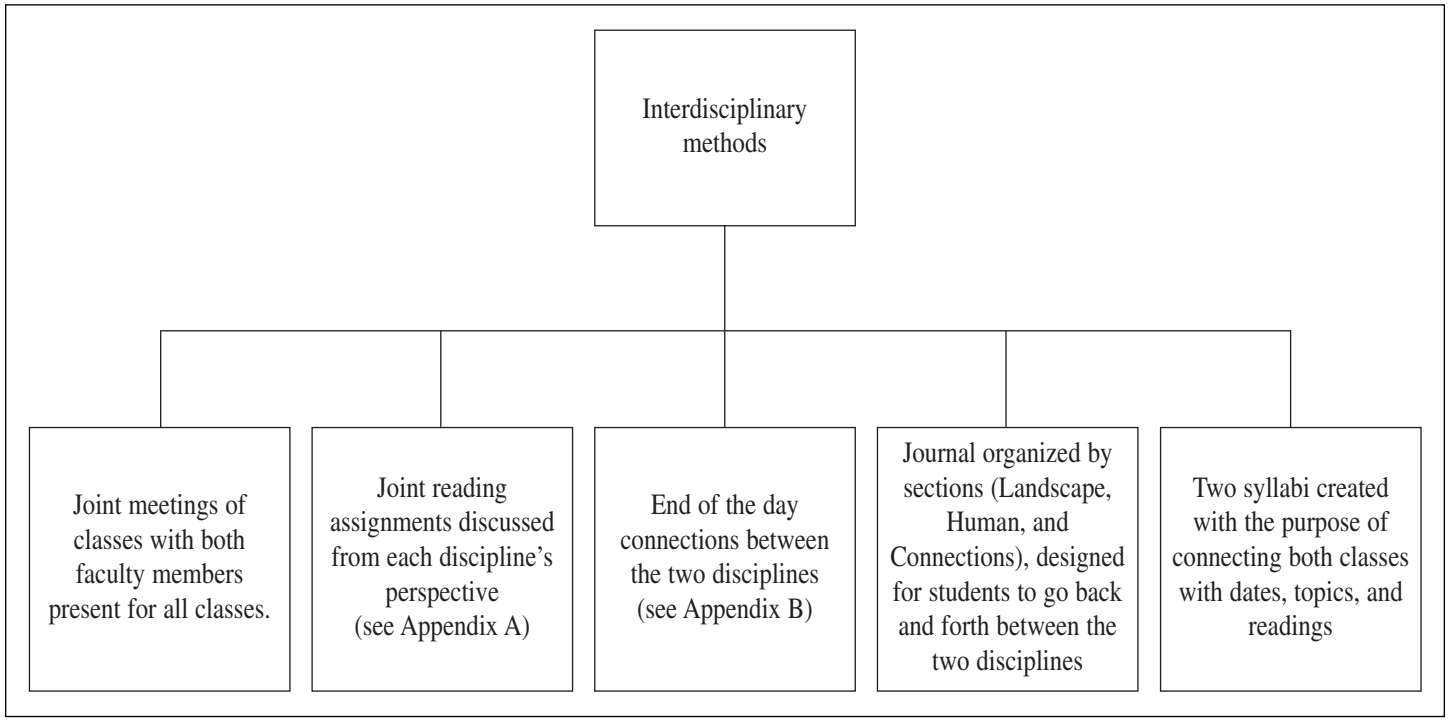
The program emphasized another critical component identified in the 2007 NLC Report: development of a global perspective. NLC cites the advantage to students of participating in international experiences that stress learning about diverse cultures and worldviews. In addition, Richard M. Freeland emphasizes the importance of various forms of experiential opportunities in liberal education. We achieved these objectives through the comparison of two arid regions, with fieldwork at several sites in New Mexico during the semester and in western Argentina during spring break. In this way, we provided both international and experiential components.

In summary, our program included the most important components identified by educational experts as necessary to achieve integrative learning, making "From the Rockies to the Andes" an excellent model for examining the success or failure of curricular efforts to achieve this goal. Did our students achieve integrative learning and why or why not? We used the Huber and Hutchings report to develop standards for evaluating student success; this information was used to construct Table 1. We also assessed outcomes of assignments and unsolicited comments from students following completion of the classes and during exit interviews as students graduated. Finally, we evaluated our own efforts at achieving "intentional teaching," another crucial element if students are to achieve integrative learning.

PEDAGOGICAL TOOLS AND ANALYSIS OF OUTCOMES

Measure 1 was "Did students develop the ability to connect skills and knowledge from multiple sources and experiences, applying theory to practice in various settings?" We are able to answer with a resounding "Yes" (Table 1). Through the use of worksheets at each field site and for each course, students were trained to gather information from a variety of sources. Students demonstrated the ability to make direct connections between theory and practice or between knowledge and experience by answering questions based on direct observations, analyzing readings, and, in some cases, participating in hands-on activities such as museum visits, outdoor explorations, and lab work).

Figure 2: Welch's Elements Applied in From the Rockies to the Andes Program



A highly successful tool for making connections was the required journal. While Huber and Hutchings propose a portfolio, a journal served in similar ways, acting as "a vehicle for students to document, connect, and reflect upon their learning across courses" (8). Through the journal, students dealt with the content of both courses and connected them. We asked students to create sections titled "Landscape" (for the biogeography course), "Human" (for the social science course), and "Connections" (to integrate both). For each field study and often in the classroom, students worked in the journal on answering questions, making observations, or developing topics that each faculty provided for each course. Students went back and forth, titling each page with the specific course for which they were writing. The goal was for students to become comfortable with moving easily between the two disciplines. We also encouraged students to make drawings and paste examples of species (e.g., plant specimens), pictures, even souvenirs from the different sites into their journal, creating a scrapbook of the semester. We invited an artist to spend several hours with the class to demonstrate how the students might incorporate art and design. Documenting and recording were ongoing, regular parts of the program, and students became more and more comfortable with the habit of making connections. Although they were often successful, they struggled to make in-depth connections, not merely obvious or superficial ones.

The element of "intentional teaching" came into play because we had difficulties in making students aware of the types of connections we wanted, and we did not spend enough time in assessing this issue systematically. By the end of the semester, however, and based on the feedback we gave them when we reviewed their journals, some students had significantly improved this component of their learning. From unsolicited comments in exit interviews of graduating seniors, we know that several students believed that they saw the world differently after struggling to make connections throughout a whole semester.

Measure 2 was "Did students participate as intentional learners in this program?" Both Huber and Hutchings and the 2007 NLC Report identified intentional learning as a key element in achieving the highest levels of integrative learning. Huber and Hutchings stated that intentional learners "approach learning with high levels of self-awareness, understanding their own processes and goals as learners and making choices that promote connections and depth of understanding. . . . They are, if you will, on the road to lifelong learning" (6). In a nutshell, intentional learning entails "cognitive processes that have learning as a goal rather than an incidental outcome" (Bereiter and Scardamalia, 363). Several theorists have identified the art of reflection as an important skill linked to becoming intentional learners (e.g., Dewey; Schon; Kolb; Colby et al.).

Table 1. Effectiveness of Various Tools We Created for From the Rockies to the Andes to Achieve the Elements of Integrative Learning

Elements	Teaching/Learning Tools	Results
1. Documenting and connecting skills and knowledge	– Worksheets: Questions based on observations, reading analysis, hands on activities – Journal: Documenting in landscape/human sections, and discussing and writing about relations between topics and disciplines.	**Yes** **Yes**
2. Intentional learning	– Journal: Reflecting Final essays and end of semester class discussions	**Inconsistent** **Yes**
3. Addresing real world problems	– In-class essay – Class discussions – Questions for journal (topics: climate change, aridity, water resources, biodiversity issues, socio-economics)	**Yes, varying success**
4. Intentional teaching	– In-class dialogue between faculty – Mentoring for research	**Yes**
Modeling	– Specifying kinds of connections	**Inconsistent**
Assessing	– Systematic reflection on challenges	**Inconsistent**

At the outset we intended the journal to be a vehicle for students to reflect. However, we did not explicitly design a portion of the journal for this activity. As a result, ongoing reflection occurred less often than we had hoped. In future classes, we will increase explicit efforts to engage students in active reflection about their learning during the semester.

Reflection did, however, take place at the end of the semester when we had several class discussions and an in-class essay in which students were asked to write about such topics as climate change and international relations (Appendix C). Also, students from the 2007 program spontaneously reported during graduation exit interviews that in this program they had developed an awareness of the importance of reflection and of the connection between thought and action. Several reported that this program was pivotal to their

eventual understanding of specific personal issues about their lives and professional goals. One student, a math and education major, noted that "as a result, I learned how to truly synthesize different subjects together—taking two entirely separate entities of knowledge and combining them to analyze their effects on one another and search for commonalities." Another student, a political science major, commented that the "'From the Rockies to the Andes' was simply the most innovative course at UNM and was important because of the tie-in it forced between hard and soft sciences."

For Measure 3 we asked, "Did students have opportunities to, and succeed in, addressing real word problems?" The answer was "yes" to some degree. A comparative study of arid regions with field experience in two hemispheres guaranteed a global perspective, and the focus on aridity and water made it possible to connect class topics to other parts of the planet. We often discussed real world issues in class discussions, and sometimes students wrote about them in the "connections section" of their journals.

In the final in-class essays, students discussed current issues such as climate change in the context of knowledge gained in class (Appendix C). Some did a better job than others, but students struggled with this exercise. We believe we should have required this type of thought more often throughout the semester either in take-home essays involving research or writing exercises based on the program's readings. On the other hand, we strongly believe that one of the benefits of using study abroad for integrative learning is that "addressing real world problems" occurs naturally. The international aspect of our program definitely helped students see their own region from a different a perspective.

Our experience in teaching this program taught us that intentional teaching is essential if students are to achieve integrative learning. Following Huber and Hutchings' definition, "intentional teaching" occurs when faculty model "the thoughtful approach to learning that they want their students to develop"; this requires "systematic reflection on and inquiry into the specific challenges and dilemmas faculty face in the classroom," requiring that they bring the habits, skills, and values of scholarship to their work as teachers (9).

We practiced intentional teaching as we modeled professional discourse through in-class dialogue between the two of us; through mentoring for research skills; and through long-time experience in an interdisciplinary environment. We noticed that students very much valued the opportunity to witness dialogues between scholars that enriched the interdisciplinary experience. The more difficult components of intentional teaching included training students to identify the types and depths of connections to make.

Intentional teaching also includes assessment. Our efforts were hampered by the limited time we spent during the semester in reflection about assessing

student learning, which resulted in part from the heavy logistical requirements of such a program. However, both beforehand, as we designed the program, and afterwards, as we reflected on it, we spent a great deal of time on qualitative assessment.

We did not succeed completely in intentional teaching because integrative education, which implies a continuous learning process for both students and faculty, has so many other challenges in any semester. In our program, for instance, many factors related to students' backgrounds and educational levels played roles in how they were able to make connections; because we accepted second-semester freshmen through senior-level students, members of the class differed greatly in sophistication, interdisciplinary experience, and maturity levels.

We believe that, although we did not fully accomplish every goal, we came a long way toward developing the skills of intentional teaching. We recognize that education is a two-way-experience: for successful integrative education, "intentional learning" and "intentional teaching" must occur simultaneously.

CONCLUSION

Overall, we believe that students succeeded in achieving integrative learning, which is a continuous process with many factors in play. Our program achieved many of the goals of integrative education, but we argue that it remains difficult to get to the "perfect integrative experience" in practice. Greater success may be achieved by focusing on a few key areas: first, incorporate explicit "reflections on learning" exercises; second, be clear about the types of connections students should make; third, allow better feedback by not making too many assignments; and fourth, maintain a strong awareness of being intentional teachers. With these four components in place, our efforts should continue to bring even greater success. At the same time, we are proud of what our students have achieved, and one important lesson that senior exit interviews taught us about assessing the impacts of our teaching is that often both we and our students recognize the fruits of our learning only long after a class is finished.

Over the next decade and beyond, our students and our nation face great challenges both economically and culturally as we participate in a new global community. The AAC&U has described the change that is in process as a movement from the American Century to what they describe as the Global Century. The learning outcomes outlined by the AAC&U will be imperative to the success of our citizens as they deal with this shift. We in the honors community have a long history of working both intuitively and explicitly toward all of these goals, and we are in many ways better positioned than

other parts of the academy to provide this education to our students. Courses, programs, and whole curricula that aim to address these goals will play a key role in the future success of our students.

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APPENDIX A

Joint Reading Assignments

Reading for both seminars: selection from *Voyage of the Beagle* by Charles Darwin

The subsequent assignment required students to look at the reading from more than one perspective.

Prior to class meeting:

- Biogeography: Each student was required to provide a species description and life history traits for an animal or plant species mentioned in Darwin's work.
- Social Science: Each student had to write a short essay about Darwin's perceptions of nineteenth-century Argentinean society, culture, and politics.

APPENDIX B

End of the Day Connections

Reading for both seminars: *Seeing Things Whole. The Essential John Wesley Powell*, edited by William de Buys.

Prior to class meeting: students were required to read with special attention to certain topics for the Biogeography seminar and other topics for the Social Science seminar.

In-class "Connections" assignment: Students worked in small groups connecting Powell's ideas with specific current-day conservation issues and write their conclusions in their journal.

APPENDIX C

Final In-class Essays

This assignment required students to address real world issues using knowledge and skills learned throughout the semester and going beyond those topics that had been discussed.

- Social Science seminar:
  On April 29, 2009 President Obama concluded a summit of the hemisphere's leaders (Summit of the Americas) with a speech in which he offered a new agenda for Latin America that is broader than under the Bush and Clinton administrations, which were more focused on trade and counter-narcotics programs. You have been thinking about similarities and differences of two regions and two countries, one in the Northern and one in the Southern Hemisphere. You have learned some concepts and tools to be able to observe, to compare, and to come up to some conclusions regarding geographical and human aspects of both regions and countries. The current global crisis and the "new agenda" towards Latin America by Obama's administration indicate that we are living important times. What new skills and understanding did you gain through these classes that you can use in your professional life and/or as a world citizen committed to create a more equal world? What knowledge did you gain that can help you to understand and/or propose solutions to make the U.S.-Latin America (and Argentina) relations come to the point of "equal partners" (using President Obama's words)?

- Biogeography seminar:
  In February 2007 the IPCC released its report on the subject of climate change and global warming. This is not a topic we covered in either course, however, you have now been thinking about arid lands in both the Northern and Southern hemispheres. Will there be special problems for the earth's arid regions or will they escape the worst of the problems due to their geography and cultures? After considering this global issue, think more locally. How might Mendoza and Albuquerque in particular experience the impacts of rising temperatures, water issues, etc. looming in the face of predicted climate change? Finally, as an informed citizen who will be required to participate in the dialogue, what issues, concepts, and concerns do we need to consider to understand and alleviate this problem.