Integrating Curricula Through Southwestern Studies: A Faculty Institute

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EW-20339
FY 1995 $ 153,698
Science and Humanities

The Center for the Study of the Southwest at Southwest Texas State University is offering a four-week summer faculty institute in Summer 1996. Twenty-five college teachers from various disciplines will be invited to investigate how to break down the compartmentalization of traditional university disciplines through regional studies courses that draw upon the unique cultural, social, artistic, and physical nature of the greater Southwest. Faculty from various universities are helped to develop their interdisciplinary understanding and plan strong, innovative curricula that integrate science, social science, and the humanities and build intercultural knowledge. The Institute includes presentations by nationally recognized science and humanities scholars; large- and small-group discussions among participants, visiting scholars, and university professors; re-examination of core literary, historical, and scientific text they have read before their arrival at the Institute; and planning of curricula to make this intellectual substance available to students and other teachers.

The Institute concentrates on four topics: the Physical Southwest, the Historical Southwest, the Changing Environment of the Southwest, and the Cultural Southwest. Each topic corresponds to one of the four weeks of the Institute. Each weekly topic is investigated under the leadership of a distinguished teacher/scholar-biologist. They are Frederick Gehlbach, Baylor University, historian; David Weber, Southern Methodist University, environmental historian; Dan Flores, University of Montana; and film specialist, Don Graham, University of Texas. Each weekly discussion is capped by a field trip to a nearby site that relates to the topic of the week's discussion. Participants also study several key texts that relate to understanding the Southwest: the *Relación of Alvar Nuñez Cabeza de Vaca*, one of the key rare books in the Southwestern Writers Collection at Southwest Texas State University, and important literary texts that reflect the varied culture of the Southwest such as *All the Pretty Horses* by Cormac McCarthy, *Bless Me Ultima*, by Rudolfo Anaya, *Ceremony* by Leslie Silko, and *Desert Solitaire* by Edward Abbey. They also read and discuss books by the consultant scholars: *Mountain Islands and Desert Sears: A Natural History of the U.S.-Mexico Borderlands* by Frederick Gehlbach; *The Spanish Frontier in North America* by David Weber; and *Caprock Canyonlands* by Dan Flores. These works have been selected because they can be used as core texts in Southwestern Studies curricula to be developed by faculty at their home institutions and because each of the texts blends disciplines in different ways.

Human Nature: Integrating Nature and Nurture

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EW-20310
FY 1995 $ 207,200
Science and Humanities

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Scientists who map the human genome, observe primates in the field, analyze hominid evolution, or explore the dangers of environmental pollution often challenge traditional beliefs concerning human nature and society. Research on human behavior in the light of contemporary biology reveals complex interactions between individual, cultural, and environmental factors. No longer is it reasonable to think in terms of "nature versus nurture." Informed citizens and leaders will need to know more about the relationships between genetics, neuroscience, or ecology and the social sciences and humanities.

To encourage balanced and responsible courses in the area that relates biology, the humanities, and the social sciences, a Summer Faculty Institute is being developed. This six-week program is co-sponsored by the Rockefeller Center for the Social Sciences at Dartmouth College and the Gruter Institute for Law and Behavioral Research, two institutions that have cooperated in organizing interdisciplinary seminars since 1988.

Participants are 25 college and university faculty members committed to teach at least one course that approaches human nature from a perspective integrating the humanities, life sciences, and social sciences. There is a mixture of roughly one-third of the participants from each of these areas to insure that participants represent a variety of disciplinary interests and theoretical approaches.

Emphasis is placed on dialogue among the participants, on laboratory, computer, and observational exercises, and on small-group workshops exploring specific interdisciplinary issue areas. During the last week of the Institute, each workshop presents its approach to teaching the issues chosen for study, and each participant submits a possible course outline for discussion.

Genetic Technology: Scientific, Ethical and Social Challenges

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EW-20332
FY 1995 $ 143,500
Science and Humanities

Recent developments in molecular genetics are presenting society with a Pandora's box of difficult moral, social, and scientific questions. New dilemmas will face our students, whether they are scientists or humanists. Increasing academic specialization makes it less likely that students today will have the kind of integrated knowledge of the sciences, social sciences and humanities that these issues require.

The University of Puget Sound is developing a summer faculty institute which will integrate laboratory science into humanities and social science courses and at the same time promote the integration of the ethical and social implications of technology into science courses.

Central to the program is a summer workshop which combines laboratory demonstrations of genetic technology with seminar discussion of its ramifications. Hands-on experience with the technology is crucial to improving the comfort level humanities and social science faculty feel with genetic science. At the same time, the seminar introduces science faculty to the analytical tools of the humanities and social sciences

The institute is being taught by some of the leading figures in various fields. By exposing participants to the way that different disciplines examine genetic technology, the gap between the sciences and humanities is bridged. Scientists are introduced to the analytical tools, methods and texts of the humanities and social sciences, at the same time that humanists become familiar with the science.

Science, Culture, Society: The Modern Studies Curriculum

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EW-20320
FY 1995 $ 143,000
Science and Humanities

This project implements and assesses an experimental general education curriculum for college students that integrates the natural sciences, social sciences, and humanities. It seeks to develop both an integrated curriculum and a highly innovative pedagogy; both content and context are crucial to the project's success.

Large public research universities must provide undergraduate students, especially first- and second-year students, with a meaningful, intellectually engaging, and challenging academic experience rooted in a coherent liberal arts curriculum. Rather than offer courses that "cover" the intellectual domains of diverse disciplines, the goal is to develop an innovative, cross-disciplinary pedagogy with two characteristics: *intellectual integration*, such that all courses in the program are self-consciously cross-disciplinary; and *support of learning*, for which a novel mini-college concept is developed.

Developing an intellectually integrated curriculum goes beyond informing students of the differences among disciplines; rather, it shows how one discipline's study of some phenomenon may be enriched by the perspectives of other disciplines, including disciplines seemingly remote from the first. The effort to develop this curriculum is led by a multidisciplinary faculty team.

To foster a supportive environment, mini-colleges consisting of a small number of students and an associated multidisciplinary faculty team are being organized. Within the context of a large research university, the pedagogical advantages of a small liberal arts college are being recreated. This pilot project will become replicable for large numbers of students not by making the mini-college large, but rather by establishing a sufficient number of side-by-side mini-colleges with different topical foci.

Science, Technology and Society

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EW-20307
FY 1995 $ 120,000
Science and Humanities

Science, Technology, and Society is an established field at engineering and science colleges and institutes, but not at community colleges. This project addresses the following: (1) key BMCC science and social science faculty are developing the curriculum for four courses in Science, Technology, and Society (STS), and teaching them; and (2) the three project directors are planning two four-week summer workshops, one in-service and another for dissemination with several visiting scholars. The in-service workshop affords BMCC faculty from several departments expanded participation and immersion in STS. The dissemination workshop provides a forum in which to share the experience and knowledge of curriculum and faculty development in STS with community college faculty from other CUNY campuses. One advantage of this arrangement is that the curriculum for four STS courses becomes enriched by incorporation in workshops where further experience and performance data can be obtained from a dialogue in an interdisciplinary—science and humanities intensive—setting. Dissemination reinforces learning acquired by the project directors about the implementation of Science, Technology, and Society at the community college and permits the sharing of this knowledge with faculty at other CUNY campuses. Such faculty and course development benefits students registered in BMCC's science and engineering science associate degree programs. Another goal of the project is that the STS courses resulting from this project become electives in and should enhance both of these degree programs because of the integration of science and humanities education.

BMCC faculty, by virtue of acquiring knowledge of Science, Technology, and Society, will achieve competence to judge and appreciate its need, its innovative quality, and its place as a degree program in the community college of today and tomorrow. A traditional liberal arts degree affords wide humanistic study, but an associate degree in Science, Technology, and Society has that advantage and others such as providing the student with the scientific and technological understanding to participate as full citizens in our technoscientific age.

Gender Studies Core-Course Sequence: Examining and Integrating Disciplinary Perspectives

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EW-20321
FY 1995 $ 160,000
Science and Humanities

Cognitive tension, created by comparing specific disciplinary approaches with attempts to combine them, so they may actively draw upon and interrogate each other, forms the central conceptual problem that is guiding curricular development in the Gender Studies Interdisciplinary Area at Lawrence University. A multidisciplinary approach can show students that different answers to like questions are possible, whereas an interdisciplinary one can encourage them to

bring the disciplines together in an interactive way to develop new lines of inquiry. The Lawrence University Gender Studies Faculty is creating a dramatically revised sequence of three core courses intended to highlight how the disciplines can work both for and against each other when answering questions related to gender. An introductory course, "Knowledge of Gender," is a multidisciplinary survey of how various disciplines define, describe, and represent sex and gender. An intermediate course, "Gender of Knowledge," is an interdisciplinary examination of what happens when the assumptions of different disciplines are re-evaluated in light of the claims and findings of the others. A capstone experience for seniors, "Interdisciplinary Research in Gender Studies," asks students to apply multidisciplinary perspectives and interdisciplinary skills to focused research projects in their major fields.

The specific goals of the project include: (1) planning and implementing a new three-course sequence for Gender Studies at the beginning, intermediate, and advanced levels; (2) bringing together faculty from all four divisions of the university (natural sciences, social sciences, humanities, and the fine arts) to plan and teach these courses; (3) organizing week-long summer work sessions with guest speakers for involved faculty; (4) purchasing books, videos, and periodicals to provide necessary resources for faculty and students; (5) planning and implementing evaluation procedures during the course of the three-year grant period; and (6) disseminating the results of the efforts to other colleges and appropriate consortia. Assessment of these courses begin at the end of the first year. The university is creating a resource area on campus for the Gender Studies program to keep newly acquired materials available for faculty and student use. At regional conferences and consortia, participating faculty will present papers and workshops detailing the planning, implementation and results of these curricular changes. Faculty will also submit articles describing the program to appropriate scholarly publications.

Environmental Studies: Faculty and Interdisciplinary Curriculum Development

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EW-20313
FY 1995 $ 122,000
Science and Humanities

Eckerd College is implementing a comprehensive, 17-month program in Environmental Studies. The project's goal is to broaden faculty knowledge and expand interdisciplinary methodology in the field of Environmental Studies leading to the expansion of course offerings in the major as well as in the general education program. The program of faculty and curriculum development builds upon prior efforts to promote multidisciplinary and interdisciplinary thinking and teaching. The project includes faculty representing the humanities and social sciences as well as a curriculum development specialist and establishes interdisciplinary conversations about the field of Environmental Studies.

The project includes six phases: Phase I: Readings and Conversations in Environmental Studies, an opportunity for 16 faculty from humanities, sciences, social science, and natural sciences to read and discuss foundational works; Phase II: Interdisciplinary Faculty Seminar, a focused case study accompanied by cross disciplinary readings and interdisciplinary conversations exploring five overarching themes inherent in Environmental Studies; Phase III: Course Design in the major with a focus on the interdisciplinary Introduction to Environmental Studies course; Phase IV: Curriculum Design for General Education Winter Term; Phase V: Course Design with a Focus

on Internships and Service Projects and the design of the interdisciplinary senior capstone course Research Seminar and Senior Comprehensive in Environmental Studies; Phase VI: Conversations: Interdisciplinary Environmental Studies for a Changing World, Parts I and II, Winter Term Environmental Studies general education projects focused on local, national, or international case studies.

The primary intended outcome is to establish an interdisciplinary faculty development program integrating contributions from the humanities, natural sciences, and social sciences and focused on the development of a truly interdisciplinary Environmental Studies major. This case-study-based program includes the restructuring of the Environmental Studies major which is projected to be one of the three most heavily enrolled at the college. In addition, new general education courses highlighting environmental science and humanities literacy will be offered in the winter term, 1997.

Mathematics Across the Curriculum

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EW-20327
FY 1995 $ 169,000
Science and Humanities

The traditional mathematics curriculum from kindergarten through college fails too often to capture the imagination of many students who ought to be well served by our discipline. Worse still, passage through that curriculum too often brutalizes students, leaving many with an aversion to the subject and lifelong insecurities about using mathematical ideas and reasoning at all. This is a shame: mathematics arises naturally in almost every field. Unfortunately, many faculty in non-scientific disciplines count themselves among the brutalized and, consequently, steer a wide course around topics with latent mathematical content.

Over the last eight years, members of the Mathematics Department have worked together with colleagues from the humanities and social sciences in the creation and teaching of two interdisciplinary courses which have become centerpieces of Mount Holyoke's curriculum for entering students: Pasts and Presences in Western Civilization, and Case Studies in Quantitative Reasoning. During the teaching of these courses, an ongoing exchange of ideas on curriculum and pedagogy has taken place and grown to include a larger group of faculty and a broader range of disciplinary interests than those initially represented. For mathematics it is clear that adapting the pedagogy of the humanities to the mathematics courses can enliven the classroom environment and make the mathematical content more appealing and effective for a broader range of students. In the humanities a long list of topics can be identified within existing courses whose latent mathematical content currently lies neglected but which could be made explicit.

Sixteen faculty members from the mathematics and various humanities departments are creating a "Mathematics Across the Curriculum" program at Mount Holyoke College. This program is introducing students to applications of mathematics appearing in a variety of disciplinary settings and serve as a model for future efforts, at Mount Holyoke and at other institutions, to provide students with opportunities to grapple with mathematical ideas and reasoning in contexts drawn from the humanities. To begin this part of the project, mathematical materials will be introduced into nine different entry-level humanities courses and students who

ordinarily do not take mathematics courses will be allowed to encounter mathematical ideas in contexts which are useful, non-threatening, and intellectually engaging.

Humanistic Studies of Science: An Undergraduate Major

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EW-20349
FY 1995 $ 95,000
Science and Humanities

The aim of this project is to develop an interdisciplinary undergraduate major program in humanistic studies of science, technology, and medicine appropriate for the curriculum of a distinguished liberal arts college. The major will enable students to study the sciences as institutions, practices, intellectual achievements, and constituents of culture, by integrating the methods and perspectives of multiple humanistic disciplines and drawing upon a solid foundation of coursework in a science. History of science and medicine, philosophy of science, and social and anthropological studies of science and technology provide the disciplinary core of the major, but elective courses range more widely. The program is being made available as a self-contained major or as a joint major program with any of the natural sciences.

The project is an outgrowth of an NEH Summer Institute on "Science as Cultural Practice" held at Wesleyan in 1991. The project further develops and implements within a specific liberal arts institution the Institute's reflections upon how to bring together the perspectives of humanistic science studies both within individual courses from traditional disciplines, and as an undergraduate major. Wesleyan University is especially well suited to develop such a program, for the new major is a natural successor to an interdisciplinary Science in Society Program that reflected quite different scholarly approaches to the humanistic study of science and technology 20 years ago.

The new major includes three required core courses in historical, philosophical, and sociocultural studies of science, two additional elective courses in science studies, a minimum of four courses in a single scientific discipline, and either a four course area of concentration in one of the humanistic disciplines that contribute to science studies, or sufficient additional science courses to fulfill the requirements for a science major. Funding is requested to support the development of modification of three core courses and five electives (two of the core courses and three of the electives would be entirely new courses).

Two outside scholars will evaluate the new program. Revised course syllabi and descriptions of the overall program will then be made available to other college and university teachers and administrators over the Internet and through professional newsletters and other publications.

A General University Science-Humanities Curriculum

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EW-20331
FY 1995 $ 176,000
Science and Humanities

Portland State University is designing and implementing an integrated set of nine interdisciplinary courses—the Science-Humanities Curriculum—to bridge the two cultures of the sciences and the humanities and to become part of the full-scale reform of general education occurring at the University. That reform, already underway, has led to the creation of an Office of University Studies which coordinates and administers the new interdisciplinary general education curriculum taken throughout a normal four-year program of study.

Faculty are taking part in two sorts of interdisciplinary ventures. First, academic-year seminars make clear the intellectual issues surrounding the development of this new curriculum in order to promote participation beyond the faculty already involved in the project. Second, there are on-campus summer workshops leading to new course development. These feature immersion in requisite disciplinary and interdisciplinary content and teaching strategies (e.g., "writing to learn" techniques, effective use of collaborative inquiry methods, and state-of-the-art use of the computer for writing and modeling, as well as for accessing resources via Internet). Science-Humanities curriculum faculty are collaborating with faculty of the already-existing, NSF-funded Science in the Liberal Arts program, working to establish curricular links among the courses in the two curricula, and to clarify and enrich our understanding of the diverse intellectual issues arising at the intersection of 'science' and 'the humanities.'

The Science-Humanities curriculum provides students a sophisticated portrayal of the past, and present relationships between the sciences and the humanities; and brings together students and faculty from the Science-Humanities program and the existing NSF program. Students in the latter program have the opportunity to extend their science literacy in the direction of the humanities, and students with a primary interest in literature, philosophy, or theater (for example) explore paths of inquiry into the sciences from the solid interdisciplinary base of the Science-Humanities curriculum.

The Science-Humanities curriculum is offered at the sophomore and junior level and serves students who are not majoring in the sciences as well as those who are. In their sophomore years students begin with the overview course, "Framing the Two Cultures." That course introduces perspectives both on science inquiry, the methods of the humanities, and their useful interrelation and integration. Students complete at least three other courses from the program before the end of their junior year, thereby meeting roughly a third of their general education requirement with coursework from this innovative curriculum. Several of the new Science-Humanities courses are offered jointly in the Science in the Liberal Arts program and are available to students near the end of their interdisciplinary work in the latter program.