DOCUMENT RESUME

ED 397 872 JC 960 466

AUTHOR Hepner, Freda
TITLE Interdisciplinary Classes.
INSTITUTION Princeton Univ., NJ. Mid-Career Fellowship Program.to
PUB DATE Jun 96
NOTE 20p.; In its: Issues of Education at Community Colleges: Essays by Fellows in the Mid-Career Fellowship Program at Princeton University; see JC 950 341.
PUB TYPE Information Analyses (070) -- Viewpoints (Opinion/Position Papers, Essays, etc.) (120)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Community Colleges; *Core Curriculum; *Curriculum Design; Curriculum Development; *Educational History; *General Education; *Interdisciplinary Approach; Liberal Arts; Program Descriptions; Social Problems; *Team Teaching; Thematic Approach; Two Year Colleges; Writing Across the Curriculum

ABSTRACT

Interdisciplinary learning is most simply defined as the co-teaching of courses by at least two faculty members from different departments in the institution. Interdisciplinary learning in the United States began after World War II with the proposal of a core curriculum covering Western civilization, literary texts, science, and English composition and based on "holistic" courses then offered. Beginning in the 1970's, the movement shifted towards models of writing across different disciplines, addressing social problems, and critical thinking. Connecting disciplines in classes appears to be an effective experience for students and an energizing experience for faculty, with research showing a relationship between interdisciplinary education and significant increases in student skills. The most successful interdisciplinary programs involve broad based social issues requiring the study of a multiplicity of disciplines. Key elements of exemplary interdisciplinary programs currently in existence include the following: (1) sensitivity to issues of diversity; (2) student-centered, problem-solving approaches that emphasize writing and communication skills; (3) integration of gender and diversity issues and alternative perspectives on the changes in society; (4) curriculum for older adult students; (5) a focus on students' needs in the world of work; (6) basic content areas linked with writing; and (7) study of history and literature to explore expressions of national heritage and contemporary lives. Contains 20 references. (TGI)

INTERDISCIPLINARY CLASSES

Mid-Career Fellowship Program

Princeton University

Freda Hepner

Brookdale Community College

Lincroft, N.J.

May, 1996

The idea that knowledge of all sorts should be synthesized and integrated for better understanding probably started with Plato who described philosophy as a "unified" science. Perhaps, as a foreshadowing of the debates that were to come, Aristotle disagreed with that notion and proposed a "logical" method of thinking and learning. From these auspicious beginnings, the discussion has continued and scholars slowly struggle to establish some common ground for "unity" and/or "logic" in learning and teaching. However it is addressed, we know that interdisciplinary or "holistically unified" classes provide students with opportunities to solve problems and address questions more creatively than single disciplined classes do.

Lawrence Wheeler, an educational planner tells a tale.

Once upon a time a planning group was formed to design a house for an elephant. On the committee were an architect, an interior designer, an engineer, a sociologist and a psychologist. The elephant was highly educated too...but he was not on the committee.

The five professionals met and elected the architect as their chairman. His firm was paying the engineer's salary, and the consulting fees of the other experts, which, of course, made him the natural leader of the group.

At their fourth meeting they agreed it was time to get at the essentials of their problem. The architect asked just two things: "How much money can the elephant spend?" and "What does the site look like?"

The engineer said that precast concrete was the ideal material for elephant houses, especially as his firm had a new computer just begging for a stress problem to run.

The psychologist and the sociologist whispered together and then one of them said, "How many elephants are going to live in this house?"...It turned out that one elephant was a psychological problem, but two or more were a sociological matter. The group finally agreed that though one elephant was buying the house, he might eventually marry and raise a family. Each consultant could, therefore, take a legitimate interest in the problem.

The interior designer asked, "What do elephants do when they're home?"

"They lean against things," said the engineer. We'll need strong walls."

"They eat a lot," said the psychologist. "You'll want a big dining room...and they like the color green."

"As a sociological matter," said the sociologist, "I can tell you that they mate standing up. You'll need high ceilings."

So they built the elephant his house. It had precast concrete walls, high ceilings, and a large dining area. It was painted green to remind him of the jungle. And it was completed for only 15% over the original estimate.

The elephant moved in. He always ate outdoors, so he used the dining room for a library...but it wasn't very cozy.

He never leaned against anything, because he had lived in circus tents for years, and knew that walls fall down when you lean on them.

The girl he married hated green, and so did he. They were very urban elephants.

And the sociologist was wrong too...they didn't stand up. So the high ceilings merely produced echoes that greatly annoyed the elephants. They moved out in less than six months (Klein 121).

The story illustrates the difficulties faced by those attempting to conduct empirical research in interdisciplinary education while bound to the structures and conventions of a singular area of study. It also speaks to the issues that underline the debate. As Clifford Geertz and Stanley Fish and a host of others have pointed out; "Being interdisciplinary is more than hard to do; it is impossible to do" (Fish 231-242). It means a "blurring of genres", a redrawing of property lines or a reconfiguration with the addition of a new discipline: contextual relations. Most simply, interdisciplinary learning means the co-teaching of at least two faculty members from different departments in the institution. The practitioners of interdisciplinary learning would therefore have to believe that the experience would stimulate new pedagogies; after all, there must be some connection(s) between the different areas of study and the manner in which they have traditionally been studied. They might also find that the energy created in this kind of teaching experience would encourage them to develop new avenues

for research just as the students would be doing.

Indeed, the research indicates that faculty participants in such programs report that they work harder than in their traditional disciplines but that they find the contact with other colleagues energizing. They report that contact with colleagues from other parts of the campus prevents program duplication and faculty "burnout" (Klein 11-13).

The history of interdisciplinarity in the United States really began after World War II. It had many names but the essential ideas were remarkably similar. In 1945, Harvard University published a "redbook" called General Education in a Free Society. It proposed a core curriculum covering Western civilization, literary texts, scientific principles, and English composition, with an additional course in each of humanities, social sciences and natural sciences. This was based on what were termed "holistic" courses already initiated at Columbia University and continuing to this day as a seminar program in the issues of the day. The University of Chicago adopted the same model and called it "general education". Their program moved in the direction of community with the hope of dealing, in an interdisciplinary manner, with some of the human problems increasingly being created by specialization. These programs were interesting to pedagogues and theorists but, despite institutional support, they did not immediately trigger any revolutions. Nevertheless, some seeds seem to have been planted.

By the early 1970s, scholars were rediscovering some strong connections between learning theory and the writing process.

Vygotsky described learning as the "deliberate structuring of the web of meaning"...(in writing). Piaget and Dewey discussed learning as a "reorganization of a cognitive scheme in light of an experience"...(in writing) (Emig 122-127). The Writing Across the Curriculum movement was born and, however it was termed, interdisciplinarity became a pedagogical fashion. As Susanne Langer wrote; "All knowledge is interpretation" (Berthoff 164). Writing was acknowledged as an important vehicle for learning in context and as a separate discipline.

Grant monies became available from government agencies, private trusts and philanthropies. Institutions supported W.A.C. programs and a number of faculties participated. There were many different models but all of the projects required some interaction between writing "experts" and other discipline "experts". In some projects, the writing professional became a consultant to a colleague in paper grading or journal reading. In California, the whole state system of higher education was mandated to include a W.A.C. component. Miami-Dade Community College in Florida mandated the writing of a given number of words in every class. Community colleges across the country seemed particularly to welcome these projects. As newcomers to the higher education business, some administrators commented, at least in this movement, that everyone was starting from the same place.

Within the next ten years, educational theorists were building on the W.A.C. movement and the recurring demand that education address the social problems of the day. Faculty were

strongly urged not only to include writing in their teaching but to encourage critical thinking in their discussions and assignments. Platonic ideas reared their heads at state and national conferences sponsored by philosophy departments. Presenters noted that the "disciplines are artificial and too narrow for multi- logical and ethical issues...they need a more ecological perspective" (Weinstein 123).

Ernest R. Boyer, of the Carnegie Foundation for the Advancement of Teaching, has put the matter in a nutshell; "If I were to sweep away all of the inquiry and all of the speculation, I would reduce the purposes of education to the simple word - connections" (Common). It is what we already have noted: if the subject matter has no relationship to other subjects or to one's life experience, students cannot put their learning into perspective and move forward into a wider world.

The National Center of Postsecondary Teaching, Learning and Assessment research has followed a nationally representative sample of nearly 4,000 students at 26 widely varying institutions through their first three years of college. One of the factors associated with significant increases in mathematics, reading comprehension and critical thinking scores is collaborative learning experiences with groups of students who move through clusters of courses together. When these kinds of experiences are available, two year and historically Black institutions' entrants improved at a rate comparable to that for four year and predominantly White institutions (N.E.A.).

No matter what it is called; core curricula,

interdisciplinary learning, team teaching, collaboration, or the currently fashionable - learning communities, the connecting of the disciplines appears to be an affective experience for students and energizing experience for faculty. The most successful and long lasting, if peripheral, programs involve the study of broad based social issues which, by definition, require the study of a multiplicity of disciplines. Some of the projects have published curricula and organized national and international conferences. The Five College Program in Peace and World Security Studies has been publishing an annual curriculum guide since 1984 and includes syl'abi, articles, and teaching techniques contributed by faculties from more than 100 institutions of higher learning around the world (Thomas). More locally, the New Jersey Project on Race, Gender and Class, founded in 1986, has focused its efforts on curriculum transformation that will include sensitivity to issues of diversity in curricula and in pedagogy. Recently, it has published a teaching source book which contains concrete information on curriculum development from faculty in more than 40 two and four year colleges and universities. More than half of the contributions address at least two areas of study. The organization of these courses are as varied as the institutions they house.

Like Columbia, Harvard and the University of Chicago, Princeton University supports the development of new courses, including interdisciplinary efforts, with a "bank" of available F.T.E.'s that faculty, with departmental approval, can use to pilot new projects. In the Winter of 1996, for instance, a

graduate seminar called "Questions Across Disciplines in Women's Studies" was launched. The course was organized by a professor in the English Department but each session was taught by a different scholar from the "humanistic disciplines". Students prepared for the sessions with extensive readings in the discipline of the week. The facilitating English professor was the only connecting link between the sessions. The visiting lecturers donated their services to help the course get off the ground. Despite enthusiastic evaluations from faculty and students, the seminar will not however be offered again for at least another year, perhaps because of limited enrollment.

In 1984, the Interdisciplinary General Education Program of California State Polytechnic University in Pomona, California reported on an experimental program to develop a "learning community of faculty and students who have common goals and mutual aspirations" to work as independent scholars and to develop their intellectual capacities (Jacobs 10). Curricula and pedagogical approaches were developed collaboratively by team teaching faculty and focused on student-centered, problem-solving approaches that emphasized writing and communication skills. Periodic retreats throughout the academic year, for faculty and students, provided ongoing evaluation and revision of the program. This was important because team teaching was a new experience for this faculty and all were teaching outside the traditional orientation of their disciplines. At the end of the first year, all the participants wanted to continue and several other faculty members asked if they could be involved.

New Jersey's Trenton State College reports on a course that is one of a three course required interdisciplinary core sequence. It is called "Change in Society" and was revised from a traditional second semester history course by a faculty development team aiming firstly, to completely integrate gender and diversity issues into the course. Secondly, the team wanted to provide alternative perspectives on the historical events students were learning about. They decided to focus on case studies of how change was effected in specific societies at certain critical times. The case studies are presented in a mass lecture by team faculty members and some guest lecturers. Small student seminar sections are met by other faculty members. References include literature, diaries, films, etc. from a variety of disciplines (Fichner-Ratus 139-146).

With the support of a F.I.P.S.E. grant in the 1983-84 academic year, faculty at the State University of New York at Oswego were released to develop five interdisciplinary courses. The grant included student participants and provided faculty with an opportunity to explore a number of model structures of interdisciplinary thought and study. The faculty members welcomed the students throughout the process because they made for a more practical approach. Their questions helped create a truer synthesis of disciplines: a "metadiscipline".

The program was called "Liberal Studies" and was topic centered around the special interests of the participating faculty members. These were narrowed to five general topics by polling the students and were finally titled: "Women and Men",

" Myth and Symbol", "Tolerance and Prejudice", "The Fallen World", and "Energy Use". All of the courses were planned collaboratively and emphasized exploration and discovery with a multiplicity of perspectives. Because the courses were very much identified with individual department members, there was little continuity when they moved on to other institutions. Nevertheless, their Honors Program, which was subsequently developed and is still flourishing, was based on this seminal work in interdisciplinary studies (Varhus).

As far back as 1978, some administrators and faculty of Urseline College, a small Catholic liberal arts college in Ohio, began to explore pedagogy appropriate for older students. By 1980, the humanities faculty had designed three six credit interdisciplinary courses and had piloted them with N.E.H. grant funds. The college then committed to this interdisciplinary program and required all of its adult students (60% of enrollees) to take at least one of these courses. Each course provides an introduction to the liberal arts and is taught by at least two faculty members from different disciplines.

Courses are specifically designed for pragmatic adult learners who expect to find relevance in what they study. The first course is "Focus On Life" and assists students to make transitions from the work world to academia. "Science and the Human Condition" addresses the impact of technology on contemporary life and the third course, "Humanities Through the Arts," explores the arts not only as aesthetics but also as reflections of human values.

To this day, participating faculty are overwhelmingly enthusiastic. More traditional staff members however, are critical of their methodology which discourages lectures and requires extensive writing. They are hesitant to endorse the program because collaborative course preparation and encouraging students to think independently requires a great deal of planning and flexibility (Moore 136).

George Mason University's New Century College, which opened in 1995, is an effort to respond to students' needs in the world of work. They report that their new College is a compilation of competency-based educational programs and the ideas leading to college learning communities. The College offers a bachelor's degree in integrative studies. Freshmen students take four six week courses, team taught by four or five faculty members from various disciplines. The courses are thematically based; i.e., "Community of Learners", "The Natural World", "The Socially Constructed World", "Self as Citizen". Additionally, they are required in succeeding years, to take twenty-four credits in thematic courses like "Energy and Environment" and "Women and Violence". These are offered in group based learning communities (Chronicle 11/10/95). It is too soon to measure the results of this approach that seems to want to utilize a blend of the most successful of all the new pedagogies. What is known however, is that the enrollment has been above what was anticipated.

The Great Basin Chautauqua program, sponsored by the Nevada Humanities Committee, brought together scholars, artists, business people and other citizens interested in learning about

water related issues in the west. In 1994, faculty at the University of Nevada campus in Reno participated in the teacher education component of the program that brought thirty teachers, from kindergarten through college, for a two week intensive institute on campus. The participants became involved in an interdisciplinary exploration of the nearby Truckee River. The river served as a metaphor and as the focus of historians, biologists, developers, conservationists, economists, sociologists, poets, etc.

All of the methods of inquiry known to the different disciplines were employed to "reading and writing the river." Word of mouth in the community brought faculty and a variety of resources to the project. Trips to the various water distribution sites were preceded by discussion of an extensive book list. In succeeding trips, the variety of university and community guides presented varied cultural perspectives that raised more and more questions. The forums of the Chautouqua itself gave participants a chance to be involved, in a knowledgeable, way in the policy debates about the region. Afterwards, the teachers began to plan their river-based interdisciplinary units to take back to their own classrooms. The curricula materials were varied but all were activity oriented. "They concluded that their personal experiences gave them insights into what could become powerful pedagogy" (Lafer and Tchudi 14-20).

Community colleges have been very supportive of many innovative endeavors. Some institutions have special offerings in Interdisciplinary Studies centering around specific themes that

are subject to change. Most often, as in the four year institutions, these courses are in the humanities. Raritan Valley Community College in New Jersey, for instance, has offered such courses team taught by history and English faculty for many years. The administration has supported and encouraged these courses even in times of financial retrenchment. They focus on current issues like "Politics and Culture", "Racism and Nationalism" and include trips to relevant historical sites, films and guest lecturers.

A similar humanities course, a six credit sequence that included history, philosophy, music and literature, was team taught at the County College of Morris, in New Jersey, in the 1970s. Recently, they have begun to think about reviving this kind of course. The N.E.H., in 1993, granted the college funding for a four week summer "Journey Through the Humanities" intensive faculty seminar. The participants were from all departments across the campus. Follow-up projects focused on a thematic, interdisciplinary course chronologically tracing the artist as social critic; thus, revisiting the earlier interdisciplinary effort (Grabowsky 8-10).

Most community colleges are wary about the cost effectiveness of putting the necessary resources into interdisciplinary programs. In 1987, when Chesapeake College in Maryland began to revise the institutional general education core, the faculty discussed the need for a course that would teach students to make meaningful connections between their career courses and their other requirements. An interdisciplinary

committee, representing humanities, natural and social science departments was formed to determine precisely whether such a course was feasible for a community college and if so, what kind of course it would be.

The committee noted the popularity of courses labeled interdisciplinary and the models being utilized in some neighboring institutions. They also noted that making connections between disciplines was not a major goal of most existing programs. Therefore, they decided to concentrate on the similarities among the disciplines. The course in "The Nature of Knowledge" examines different cultural perspectives on experience and then covers topics as diverse as relativity and Marxism from the points of view of different disciplines. Faculty collaborate in all aspects of the course which includes experimenting, readings, journal writing and discussing. Final projects require students to work individually and in teams to demonstrate concretely what they have learned about how the disciplines interconnect (Bounds, Berkowitz, Gilmartin).

Interdisciplinary studies, by definition, involve team teaching, but that can also have different implications. For instance, the ASPIRE (A Student Paper In An Interdisciplinary Research Environment) program at North Arkansas Community College in Harrison, permits students to write one paper that meets the requirements for two or more classes. One of the instructors is always from the English department. In some instances, there is only one other discipline involved as in a paper entitled "Hamlet's Burden" which paired the English professor with someone

from the psychology department. A paper on "Aging in America" however, included faculty from sociology, science and philosophy. Students in any class may participate with the instructor's approval. The college supports the project because it believes that it encourages critical thinking skills and student autonomy and responsibility. Faculty consider this a writing-across-the-curriculum approach that is pragmatic and popular with students. (Hunterthuer, Horrell, Terrill).

This is a pale version of the system reported in 1991, at Solano Community College in California, that links basic content areas with writing classes. Because linked classes have had mixed success, Solano also created a team teaching component to their program. English and "content" classes are scheduled back-to-back and both instructors are present throughout both sessions. Students begin to see how they can use English to learn in other disciplines. They read more primary texts and are less likely to drop two sections when they are having difficulty (Wishner).

At Abraham Baldwin College in Tifton, Georgia, two team teachers from history and English departments, respectively, had the same general goal in creating an interdisciplinary course. Their specific focus was on American history and the use of readings and writings from the historical periods under discussion. They aimed to "approach the study of history and literature as seamless expressions of our national heritage and of our contemporary lives" (Hammons-Bryner & Robinson 97). Unlike the Chesapeake College staff, who wanted the students to learn their differences and similarities, the Baldwin teachers wanted

to be perceived as "seamless" as their disciplines. They stressed activity centered, cooperative projects and participated as co-learners as well as resource people. Because of this approach, students, they discovered, began increasingly to take charge of and design their own learning activities. They asked for additional readings and times for class discussions. Everyone kept evaluative journals and faculty spent many planning hours together. The administration, which had been reluctant to permit the interdisciplinary course, has asked the faculty team to develop a similar offering for the honors program.

Honors programs, particularly those that use the Honor Societies' annual themes, as is the practice at Brookdale Community College in New Jersey, almost always present team taught classes. Faculty submit proposals for course development and sometimes the team partners come from disparate disciplines. One of the first courses offered is "Civilization at Risk" that is taught by a psychology professor who is process oriented in the classroom in conjunction with a professor from the speech department who prefers a much more structured pedagogical approach. The two spent many hours identifying and defining how they would present their different perspectives and yet, both report surprise at how different their "teaching styles" are.

Other interdisciplinary courses at Borokdale are also peripheral to most departments but have more concrete themes. "Holocaust Studies" has been team taught for more than a dozen years by a psychology professor and an historian. They both report that their goal is to clearly present the history of a

short period of time as universal and unique. They use texts, films, journals and guest speakers. Because of their years of experience and unity of purpose, they feel confident that they can fill in for each other at any time; they are as "seamless" as the Baldwin faculty.

The problems interdisciplinarians face are myriad and they too vary from one institution to another. Community colleges, particularly those that are actively engaged with locally based businesses or public school districts, find it almost impossible to be effective without an interdisciplinary approach. N.E.A. research indicates that "business leaders...federal policy makers...agree upon the basic skills that are crucial to a core postindustrial workforce" (Barrow 39). These are the skills that are inherent in an interdisciplinary educational setting.

In these times of cost cutting and consolidation, the research indicates, Morris County College is not the only institution to take a new look at old ideas. Brandeis University is redesigning its curriculum into thirty nine interdisciplinary thematic clusters. The University of Rhode Island is considering the establishment of eight research centers in place of the existing departments (45). Instead of targeting interdisciplinary programs for elimination, the new downsizing might mean they will receive strong administrative support. Issues like departmental territoriality, increased faculty workload, and counselor concerns about transfers will become less overwhelming. Institutional policy might mandate a more holistic approach to course planning when it becomes clear that students are better

prepared for the future when they have that experience.

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