

Changes at U.S. Colleges of Agriculture



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Abstract

Through semi-structured interviews and descriptive literature, the present study examined change and the change process within colleges of agriculture from 1997 through 2002. The findings are that 1) Transformational change had a champion, not necessarily at the top of the college hierarchy. 2) Institutional change did not happen all at once, throughout the entire college. 3) External, as well as internal, stakeholders brought about institutional change. The degree to which changes were transformational varied widely, but certain themes are clear: a growing emphasis on student-centered forms of instruction, the emergence of competencies-based assessment, and the creation of interdisciplinary academic programs aligned with real-world employment opportunities.

Introduction

In the late 1980s and 1990s postsecondary educational institutions, particularly colleges of agriculture, began to rethink their institutional missions in order to meet the challenges of the approaching 21st century. Many individuals in positions of educational leadership saw that agriculture could no longer be traditionally defined. The social and environmental complexities of the world in which agricultural production occurred required a more holistic “food systems” approach (Board on Agriculture, 1992).

Data collected by Fields et al., (2003) indicated that the colleges' rethinking of their missions had begun to yield concrete results. Structural and programmatic changes in undergraduate education were taking place in colleges of agriculture throughout the nation. Indeed, noteworthy alterations in structure (departmental organization) or programming (course requirements for majors) were reported for the five-year period ending in 2002 by more than 90% of responding college administrators. The ultimate significance of these structural and programmatic alterations as indicators of paradigmatic shifts in the character of agricultural education remains to be seen, but at the very least the Fields study provides an overview of the current institutional landscape. The purpose of this study is to document concrete changes that colleges of agriculture are experiencing, discover the impetus (whether internally driven or externally driven), how the

change process took place, and the implications, if any, for students. The goal of this paper is to provide knowledge of the change and the change process, in order to help colleges of agriculture more effectively and efficiently bring about change in the future.

Methodology

To learn more about why and how changes were actually taking place, the present study adopted a qualitative approach, which facilitated the examination of people and processes “in their natural settings” in order to “make sense of, or interpret, phenomena in terms of the meanings people bring to them” (Denzin and Lincoln, 1994). “Qualitative research” is a broad term, denoting a variety of methodologies. Recounting of personal experiences, observational data, interpretation of texts or visual images, and many other techniques can be described as “qualitative.” Interviews with representatives of the case-study institutions were the primary means of gathering data in the research reported here.

According to Yin (2002), case studies are “the preferred strategy when ‘how’ or ‘why’ questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context” (p. 13). Over a dozen interviews were conducted by the author of this study, as well as gathering empirical evidence, as a means to garner different perspectives of the same phenomenon (change in undergraduate education in colleges of agriculture). Triangulation of interviews, empirical evidence, and published works were used as an alternative to validation (Flick, 1992). The research from the case study approach using semi-structured interviews will be primarily applied research, having “immediate or potential practical applications or implications” (LeCompte et al., 1992, p. 610). The application of the changes will be tempered or enhanced by each institution's culture and the agricultural needs of the geographic area of the institution.

The semi-structured interviews concentrated on collecting data that addressed the following questions:

- What major changes have taken place during the last five years in regards to mission, departments, majors, and pedagogy in the classroom?
- What was the impetus for institutional change? Was the change internally or externally driven?

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- Has the change process been transformational or incremental?

The first goal of the study is to draw conclusions regarding the above questions. Additionally, the reader will construct his or her own knowledge from the interview data, based on the reader's unique set of circumstances. The case studies are meant to encourage, support, and drive the change process in other colleges of agriculture. Individual names are used in this study to promote collegiality and interaction with the interviewees. A secondary goal of the study is to promote learning, which will lead to changes in perceptions and behaviors in colleges of agriculture in order to improve responsiveness to the needs of students and other institutional stakeholders.

Participants and Procedure

Land grant colleges of agriculture remain the principal source of undergraduate food-systems education nationwide, but programs at other institutions have supported a number of alternative, and often highly creative, pathways for undergraduate entrée into food-systems professions. Several of these alternative pathways will be examined as alternative viewpoints, outside the agricultural-education mainstream. Participants were selected from one of three groups: land-grant institutions included in the Kellogg Foundation's Food Systems Professions Education (FSPE) initiative, colleges of agriculture who responded to the Fields et al. study (2003), or alternative agriculture programs. The individual institutions included in this qualitative study include the following:

- FSPE institutions: Clemson University, Cornell University (partner with Rutgers-The State University of New Jersey), Iowa State University and the University of California-Davis
- Participants in the Fields et al. study (2003): University of Georgia, Kansas State University, University of Illinois, University of Wyoming, University of Arkansas at Pine Bluff
- Innovative agricultural programs: University of California-Santa Cruz and the Freedman School of Nutrition at Tufts University

Motivated by emerging concerns regarding population and environmental pressures related to food security and safety, the Kellogg Foundation launched the Food Systems Professions Education (FSPE) initiative in 1994 to support efforts to enhance the responsiveness of land-grant university education to these global challenges. Thirteen U.S. land-grant colleges of agriculture received FSPE awards: University of California-Davis, Clemson University, Iowa State University, University of Minnesota, University of Nebraska-Lincoln, The Ohio State University, Oregon State University, The Pennsylvania State University, Rutgers-The State University of New Jersey, Texas A&M University, Tuskegee University, Washington State University, and the University of Wisconsin-Madison (Kellogg Foundation website, 2004).

Semi-structured, research-based, telephone interviews were used to determine the factors shaping reported changes in the case-study programs. Properly managed, semi-structured interview scripts yield comparable data among case-study institutions without stifling the imagination of interviewees who may provide unexpected insights into change phenomena at their respective institutions (Wengraf, 2001). Representatives of nearly a dozen institutions were interviewed during the summer and fall of 2003. Interview data from the case-study institutions were supplemented by descriptive literature regarding their food-systems education curricula available in print and electronic sources. Information from both sources was sought regarding instructional models, best practices, and lessons learned by administrators who have undertaken structural and curriculum change.

Results and Discussion

The interviews, along with documents issued by the case-study institutions, suggested that restructured academic programs, revised pedagogies, and innovative student services may indicate the beginnings of transformative change in undergraduate education in agriculture. According to Schermerhorn et al., (2005), "transformational change...results in a major overhaul of the organization...including the overall purpose/mission, underlying values and beliefs, and supporting strategies and structures" (p. 360-361). The degree to which changes were transformational varied widely, but certain themes are clear: the emergence of competencies-based assessment, a growing emphasis on student-centered forms of instruction, and the creation of interdisciplinary academic programs aligned with real-world employment opportunities. Table 1 documents the changes and whether the change impetus was internal (faculty and student driven) or external (stakeholders and policy makers).

When discussing change with the interviewees and analyzing the transcriptions for common themes, it became apparent that transformational change had three basic components. 1) In colleges of agriculture, transformational change must have a champion; the higher administrative position of the change champion, the more wide-spread the change can become. 2) Most transformational change starts in small areas, affecting individual faculty, units, or departments. 3) External stakeholders have brought about transformational change, ranging from interdisciplinary collaboration, assessment, managing enrollment, and leadership initiatives. (All quotations used in the case studies below come from telephone interviews conducted by the author or under her supervision.)

Transformational Change Champions

Of those interviewees who discussed transformational change, it became evident that transformational change needs a champion. Dr.

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Table 1: Institutions, change, impetus, and scope of change

Institution	Change	Impetus Internal/external
Clemson University	<ul style="list-style-type: none"> • University-wide teams • Interdisciplinary majors 	Internal/External Internal
Cornell University	<ul style="list-style-type: none"> • Interdisciplinary, interdepartmental, and intercollegiate majors • Organic farm/Sustainability 	Internal/students Internal/external
Iowa State University	<ul style="list-style-type: none"> • Joint programs with community colleges • Interdepartmental majors • Student-centered learning 	External Internal/external Internal
University of California-Davis	<ul style="list-style-type: none"> • Leading Roles, leadership minor 	Internal/external
University of Georgia	<ul style="list-style-type: none"> • Managing enrollment 	External
Kansas State	<ul style="list-style-type: none"> • Retention • Innovative student learning 	Internal/external Internal
University of Illinois	<ul style="list-style-type: none"> • Student competencies and assessment 	Internal/external
University of Wyoming	<ul style="list-style-type: none"> • Assessment • Teaching critical thinking • Collaboration with community colleges 	External Internal External
University of Arkansas - Pine Bluff	<ul style="list-style-type: none"> • Retention/freshmen programs • Student learning • Assessment plans/Outcomes 	Internal Internal Internal/external
University of California – Santa Cruz	<ul style="list-style-type: none"> • Hands-on learning, focus on sustainable agriculture • Apprenticeship program • Core curriculum for sustainable agriculture 	Internal External Internal
Freedman School of Nutrition/Tufts University	<ul style="list-style-type: none"> • Agriculture, food security and human nutrition 	External

Jacquelyn McCray, Dean of the College of Agriculture, brought about transformational change concerning engaging students is taking place at the University of Arkansas at Pine Bluff where they have focused on student learning since 1995. According to McCray, her student-centered initiative “helped the faculty realize that there is more than teaching there is student learning. The emphasis on student learning has improved the quality of teaching and, therefore, our college is better respected across the campus. We also are retaining our students at a higher rate, thus increasing our enrollment.” A college-wide assessment plan, senior capstone courses, and submitting a portfolio documenting learning are new changes brought about McCray. “This is a transformative change,” she adds. “The faculty as a whole adopted student-learning practices and techniques.”

However, the higher position does not guarantee that more faculty will become involved in transformational change. At Clemson University, Associate Dean B. Allen Dunn recalled, “There was a campus-wide call for interested faculty to join the Provost for a discussion....The Provost challenged the faculty to create interdisciplinary teams to address emphasis areas.” The university was prepared to fund promising projects designed by faculty teams to develop university capacity in areas like sustainable environment. Even though the change agent was the Provost, only a limited number of faculty became involved. However, for those faculty involved the changes were transformational changes,

including a partnership between Clemson's colleges of Agriculture and Engineering to address sustainable environment issues. However, in time, Dunn hopes that more faculty will become encouraged and involved in intercollegiate projects.

Another example of the beginning of transformational change is at Cornell University, which is a member of FSPE's 10-college Mid-Atlantic Consortium (MAC). Silos are being “cracked” by the introduction of interdisciplinary, interdepartmental, and intercollegiate collaboration, programs, and majors. The major Science of Natural and Environmental Systems functions as a collaboration between Cornell and New York State. Two

new interdisciplinary majors, Science of Earth Systems and Information Sciences, involve three colleges: Agriculture and Life Sciences, Arts and Sciences, and Engineering. Cornell realizes that times have changed. “Twenty years ago the majors had a very specific focus,” said Associate Dean Don Viands of Cornell's College of Agriculture and Life Sciences. “Employees have to be willing to collaborate, and the social, physical, biological, and environmental sciences are all interrelated.”

Transformational Change Is Not Necessarily a Big Bang

Iowa State University's College of Agriculture is experiencing transformation change in student learning, as well, but more on an individual level. Associate Dean Eric Hoiberg stated, “I think the traditional lecture format is becoming passé. It is still used, but combined with other learning approaches.” For several years, the College of Agriculture has encouraged individual faculty members to participate in student-based learning opportunities, such as collaborative learning, service learning, writing across the curriculum, communication integration, and authentic assessment. Hoiberg stated that some faculty have transformed their class and assessment tools, while others have taken incremental steps and are waiting to see what happens.

Transformational change can start by a few faculty and then, hopefully, spread to more faculty. At Kansas State University, top-ranked upper-division

students help teach orientation classes designed for first-year students, enhancing skills in communication, organization, and problem-solving for all concerned. Since 1996, the freshman orientation helps students develop core values, set goals, plan and explore careers, learn study skills, and review the student handbook. Created and implemented by a few energetic Kansas State faculty members, the program has given renewed energy to the other faculty who have been encouraged to also initiate innovative approaches to student learning, facilitated by Iowa State University faculty.

External Forces for Transformational Change

At the University of California in Davis, a transformative leadership minor titled "Leading Roles" is offered across campus and operates as a partnership between the faculty and the student services office. Funded and staffed by a Kellogg Foundation leadership grant, Leading Roles provides opportunities for experiential learning in leadership, as well as classroom studies in leadership theory and skills. "Business and industry have repeatedly told us that our students are well equipped academically, but that they cannot write, talk, and are not ready for teamwork and collaborative partnerships," reports Associate Dean Annie King, who supervises the program. King continues that while Leading Roles didn't transform the entire College of Agriculture, it has proved to be an example of collaboration and interdisciplinary teamwork across the campus. "For Davis's College of Agriculture and Environmental Science, the implications are likely to be far-reaching. We aren't there yet, but we're working on a more holistic approach to agriculture," commented King.

Another large external stakeholder is the state and its policies. At the University of Georgia, the College of Agriculture and Environmental Sciences' main concern at present is with managing enrollment due to a surge in applications and admissions standards rather than with changing the curriculum. Conversation with Interim Associate Dean Josef Broder indicated that Georgia has become a more selective institution. By Broder's own admission, Georgia has focused on the prestige dimension, going after the state's best students with hefty scholarships funded by the state's lottery. Public postsecondary education will remain available to all, but most Georgians will have to settle for enrollment at one of the state colleges or community colleges. In Broder's words, the University of Georgia is becoming less accessible to many of the state's rural high-school graduates and can no longer be considered the "birthright" of all Georgians.

Assessment is a key issue for many of the institutions interviewed. According to Associate Dean James Wangberg at Wyoming's College of Agriculture, "as a university and in our college, we are placing increased attention and emphasis on

assessment of student learning, as well as assessment of programs." Wangberg sees assessment as a key element of transformational change in the university experience as a whole. "Because assessment is the link between how teachers teach and the learning of the student, the faculty is thinking in new ways about teaching and learning. The faculty is being challenged to think about improving the teaching and actually assessing the learning that is accomplished."

At the University of California at Santa Cruz, Dr. Carol Shennan, who currently heads the Center for Agroecology and Sustainable Food Systems (CASFS) housed within the Division of Social Sciences, related that educational partnerships are transforming the higher education landscape. The recent publication of the first of a series of Training Manuals, including direct marketing, hands-on learning through internships, small farm planning, and examination of the social and environmental impacts of agriculture, marks a new emphasis on the creation of resource materials for sustainable agriculture education for California's community colleges, as well as other colleges and universities. This network of sustainable agriculture educators continues to evolve, Shennan states, and the outlook for a greater presence of sustainable agriculture within undergraduate curriculum at many post-secondary institutions continues to improve.

Transformational Themes

As the case studies indicate above, the degree to which changes were transformational varied widely, but certain themes are clear: a growing emphasis on student-centered forms of instruction, the emergence of competencies-based assessment, and the creation of interdisciplinary academic programs aligned with real-world employment opportunities. In a groundbreaking article that continues to reverberate throughout the academic community nearly a decade after its publication, Barr and Tagg identified a profound paradigm shift they saw emerging throughout postsecondary education, a movement in education away from an emphasis on teaching to an emphasis on learning (1995). Agriculture and food systems education study groups convened in the early 1990s by Dr. Harry Kunkel, then Dean of the College of Agriculture at Texas A&M University, endorsed pedagogical changes similar to those reported by Barr and Tagg: "The college of agriculture should put the student first" (Kunkel et al., 1996). In its guidelines for change, Kunkel's study group recommended trying new methods of teaching teaching students "how to think, not what to think" and giving students opportunities to integrate knowledge and skills in experiential learning situations. The respondents in this study identified student-centered instruction as one of the major transformational themes.

The second transformation theme was the emergence of competencies-based assessment. After the publication of *A Nation at Risk* (1983), the

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assessment movement struggled to reexamine the quality of education. Thomas Angelo and Patricia Cross (1993) sought to answer two questions, "(1) How well are students learning? and (2) How effectively are teachers teaching?" (p. xiii) through assessment. Now over twenty years later, The Higher Learning Commission in their Handbook of Accreditation states that, "The organization's goals for student learning outcomes are clearly states for each educational program and make effective assessment possible" (p. 3.1-4). Colleges of agriculture clearly defined competency-based assessment as a transformational theme.

A parallel shift from teaching to learning could be categorized as a shift from the mechanistic viewpoint of agriculture to the systems approach to agriculture. The mechanistic viewpoint of agriculture was founded on a set of principles that emerge from Western philosophy of science, European agricultural practices, and European religious ideas. These philosophical assumptions have generated a stance of objectivity and detachment that uses mechanistic understandings and technology as the means to produce food. Religious principles that suggest a 'dominion over fish and fowl, land and water' have defined how humans view themselves as the stewards who exercise ultimate determination over the landscape. The shift to a more holistic, systemic view of agriculture changes the thought patterns from economy to ecology, from efficiency to effectiveness, and from profitability to sustainability.

Summary

In conclusion, colleges of agriculture are in the midst of change. The amount of transformational change and the scope of change depends on finding a champion, regardless of whether the champion is internal or external or the power or administrative scope of the champion. The focus on student learning, student-centered assessment, and the food systems perspective are transformational changes that are happening throughout colleges of agriculture, just at different rates of change. As Dr. Eric Hoiberg from Iowa State concluded, "I think higher education is close to being involved in a revolution." Optimistic about the future, he is also realistic about the enormity of the challenges ahead. "We can't just let change happen to us, we have to be in charge of our own change."

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