

THE IMPACT OF POLICY ON INTERDISCIPLINARY GRADUATE EDUCATION AT IOWA STATE UNIVERSITY

John E. Mayfield
Associate Dean of the Graduate College
Iowa State University

Iowa State, like most other universities, is administratively structured with departments reporting to academic colleges. Faculty appointments are in departments. Graduate programs that grant advanced degrees are called graduate majors. Most graduate majors draw their faculty from a single department; but, at Iowa State, twenty-two programs draw faculty from multiple departments. These are designated “interdepartmental majors.” Six interdepartmental majors report to an academic college, one to a department, and fifteen to the Graduate College.

In the fall of 2002, 782 graduate students were enrolled in these 22 programs (436 in the fifteen programs reporting to the Graduate College). This was 20% of all degree seeking graduate students. Growth in interdepartmental graduate programs has averaged 9% per year over the past 6 years. Over this period, four new programs were added and a fifth is expected this fall. Such growth is likely to continue in the foreseeable future. Most of the programs (sixteen) and most of the growth is in the sciences or engineering.

Earlier, Jan Buss told you about one of our oldest programs, Molecular, Cellular, and Developmental Biology (MCDB). I would now like to introduce one of our newest, **Bioinformatics and Computational Biology (BCB)**. The program officially began in the spring of 1999 and now has 48 students enrolled (mostly at the Ph.D. level).

The program time line is instructive:

Fall 1997: Faculty in Mathematics and Biology realized they had common interests and held a faculty seminar on “Bioinformatics” (about 20 faculty attended).

Spring 1998: Creation of the Iowa Computational Biology Laboratory—essentially a web site where faculty shared their interests.

Fall 1998: Formal proposal developed for a graduate major and the approval process initiated. The Graduate College provided active assistance by shepherding the proposal through the approval process.

Fall 1998: Preparation of an NSF IGERT proposal.

Spring 1999: Creation of a budget line for three proposed new programs in the computational sciences, one of these was BCB.

Summer 1999: Approval of the new major by the state Board of Regents.

Summer 1999: NSF IGERT training grant awarded.

Fall 1999: Students were allowed to transfer to the new major and new students recruited.

Fall 2000: First recruiting class of 11 new students (25 students total, including transfers).

Spring 2002: USDA MGET training grant awarded.

Spring 2003: Sixty-seven faculty and forty-eight students representing twelve departments and three academic colleges.

The program and its students are now firmly engrained into the research and graduate training fabric of the life sciences and provide an important bridge between the life sciences and the computational sciences and engineering.

By most measures, interdepartmental graduate education at Iowa State is a success story. Janice Buss talked about why faculty are willing to spend time and effort to make these programs succeed. The short answer is that the programs are able to recruit better graduate students. I wish now to turn to how university policies affect interdepartmental programs.

I pose two questions:

- What policies are responsible for the success we have had?
- What new policies would make the interdepartmental program environment even better?

Existing key policies:

1. (Absence of a policy) graduate majors need not be associated with a single department.
2. The curriculum requirements of every graduate major are established and maintained by a defined group of qualified faculty. These faculty need not have their appointments in a single department or academic college.
3. When the faculty constituting a graduate major hold appointments in different colleges, the Graduate College usually serves as the administrative home for the major.
4. Students in interdepartmental majors have a “home department” (normally the department of their major professor) for non-academic purposes.

5. Academic appointments, and tenure and promotion decisions are made in departments and academic colleges, not in interdepartmental programs and not in the Graduate College.
6. Academic programs are distinct from research centers and institutes.
7. The Graduate College has a significant (though inadequate) budget to support the programs it administers.

Issues that need to be addressed by new policies:

1. Interdepartmental programs need access to financing budgeted at the university level.
2. Interdepartmental programs need to have influence on faculty hiring.
3. Faculty activities (teaching, service, administration) in interdepartmental programs need to be recognized and valued by their department and college.

What might the needed policies be?

Budget

If current trends continue, within the next ten years, there will be thirty or more interdepartmental graduate programs at Iowa State enrolling more than one-third of all graduate students. The budgeting process must begin to recognize this important aspect of the educational enterprise.

A very simple way to address the problem would be for the University to establish an annually incremented fund that would allow interdepartmental graduate programs (or groups of programs) to compete for long-term (budgeted) funding. \$50,000 per year in operating expenses (less that .01% of the budget) for three years would have a huge impact. Matching with academic colleges would make colleges more aware of the importance of these programs to the success of their faculty and departments.

Another idea would be head-count budgeting. It is estimated that effective programs cost about \$800 per student per year excluding the cost of faculty and graduate stipends. Institution of such a policy, if not tied to individual programs, would provide a growing budget as more and more programs attracted more and more students.

Influence on Faculty Hiring

This past year, the Provost put out a call for new faculty hires that could be justified in three ways:

1. departmental need
2. continuation of previously funded academic initiatives
3. interdepartmental program need

The addition of the last justification was unprecedented at Iowa State, and resulted in at least four requests made jointly by departments and interdepartmental programs to fill critical staffing needs. Three of eight approved positions involved an interdisciplinary graduate program. If this rationale were to become standard operating procedure for new hires, then this simple policy change would have a major positive impact on the quality of education delivered by interdepartmental graduate programs.

Recognition by Departments and Colleges

Interdisciplinary (interdepartmental) education and research must become a fundamental aspect of the university, college and departmental thinking. Appropriate wording changes to mission statements would be simple, but it is not so simple to make mission statement wording translate into effective action. **A strong effort needs to be made by the President and Provost to establish a culture of interdisciplinarity.** In concert with this, a series of detailed policy changes at the College and department levels would need to be made that recognize contributions made by faculty to interdisciplinary activities. The Graduate College must continue to raise this issue and to provide leadership when appropriate.

Conclusion

A major change that is occurring in graduate education today is the increasing role of interdisciplinary programs. These programs provide flexibility that is difficult to achieve within the traditional departmental structure, and they often appeal to the best students. Universities that are not able to adjust to and effectively support interdisciplinary programs will suffer, and Universities that are able to create environments in which they thrive will benefit. Graduate schools must provide the leadership needed to change campus cultures that determine the success or failure of such programs. Policy details and budgets both play critical but different roles in the success or failure of interdisciplinary graduate programs.