



Center for Innovation and Research
in Graduate Education

Best Practices for IGERT Sustainability

Tami Blumenfield, Renate Sadrozinski & Maresi Nerad

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A Report on Best Practices for IGERT Sustainability

As a research center focused on current issues and innovative practices in graduate education, CIRGE has a strong interest in how IGERT PIs and university administrations respond to the challenge of securing sustained support for the innovations initiated and implemented by the IGERT programs. We support this process by collecting the successful experiences of IGERT program directors, the best practices put forth by institutions on the forefront of interdisciplinary innovation of doctoral education, and the recommendations by scholars and university committees concerned with reform of interdisciplinary study and research. Part of an evaluation project at the University of Washington, this report includes materials of diverse nature and provenance:

- Section I and II are two Best Practices reports on sustainability of IGERTs
- Section III reports on lessons from national initiatives on interdisciplinary graduate education
- Section IV presents the work of UW initiatives on interdisciplinarity

Why Focus on Sustainability?

Through its IGERT programs, the National Science Foundation (NSF) has fostered a generation of doctoral students—and teachers of doctoral students—who approach graduate education in innovative ways. The programs vary in their scope and their methods, but all share a commitment to improving the connection between graduate education and students' professional futures. And they all foster interdisciplinarity.

The National Science Foundation funds IGERT programs in order to incubate new practices, not to provide long-term program funding. Once initial funding peters out, program directors and graduate school administrators face the challenge of maintaining the generous funding levels that fostered excellence. Achieving sustainability not only ensures that the IGERT legacy will continue, it also helps nurture an interdisciplinary campus environment. This report explores ways to meet this challenge and sustain the programming initiated with IGERT funds.

Section I: Best Practices Research– Report on Sustainability from Nineteen IGERTs (e-mail survey)

Results showed that programs were most successful in attaining sustainability if they managed to: a) be integrated early on in wider campus initiatives of interdisciplinary study and research; and b) foster close ties to disciplinary home departments. However, securing generous student funding at IGERT levels is very unlikely even if the IGERT programs have been able to attract first rate graduate students. IGERT PIs report 'moral' support for their efforts but lack of material and financial backing.

Section II: Best Practices Research – Report on Sustainability from Eight IGERTs (Interviews)

The most common ideas for sustaining IGERTs following the end of the grant cycle are to: a) incorporate them into existing university programs; and b) secure institutional support (both moral and financial) for the program through university-wide commitments to interdisciplinary programs.

Section III: Best practices for interdisciplinarity sustainability: Lessons from Other Sources

Reviewing a range of materials revealed that two crucial elements in interdisciplinary sustainability are the administrative capacity to coordinate interdisciplinarity and the administrative will to support it. Faculty allocation and funds allocation are important markers of support that enable success in interdisciplinary programs. Programs benefit greatly from administrations which articulate a strong vision of interdisciplinarity and provide the resources to facilitate it.

Section IV: UW Initiatives on Interdisciplinarity

The Graduate School at the University of Washington is host to an interdisciplinary task force, the Network for Interdisciplinary Initiatives (NII). This task force has issued a series of reports and recommendations for fostering and sustaining interdisciplinary programs at the UW. The two most important ideas for institutionalizing interdisciplinarity are: a) establishing a new position of Provost for Interdisciplinary Affairs; and b) assigning development officers to interdisciplinary programs in order to compensate for the current structure of department- and college-based fundraising.

Appendix I: NII Working Group Recommendations

Appendix II: Vice Provost for Interdisciplinary Affairs: Recommendations from the University of Washington Committee on the Organization of Colleges and Schools

Appendix III: Seeding, Supporting, and Sustaining an Interdisciplinary Campus Culture (Recommendations from Julie Thompson Klein)

Section I: Best Practices Research– Report on Sustainability from Nineteen IGERTs

This section presents strategies used by IGERT PIs to sustain their programs after NSF funding runs out. Program sustainability is a key concern for most IGERT PIs and affiliated faculty. After their significant investments in the development and implementation of their programs during the initial four to five year grant cycle period, these faculty wish to continue the programs. Many research projects begun under the auspices of the IGERT grant are nowhere near completion at the end of the first grant cycle, and finding ways to sustain these projects and other program activities is a high priority for those involved. Moreover, in many cases these IGERT programs contributed to innovation in doctoral education that spilled over into wider educational reform that can only be sustained with additional resources.

In May 2007, Maresi Nerad, Director of CIRGE, UW, sent the following message to 120 IGERT PIs in an attempt to better understand and support these efforts:

Dear Colleagues:

Speaking with a number of you during the recent NSF IGERT workshop in Washington, DC, the issue of sustainability of the IGERT programs once the NSF money runs out has been voiced by many. Our Center for Innovation and Research in Graduate Education (CIRGE) would be happy to collect ideas you have and modes you already tried of sustaining this valuable work. Therefore, I am sending you today three questions on this topic and would be happy to provide you in return for your answer, the summary of all your replies as this seems a burning issue for many of us.

1. Do you plan to continue the IGERT program after NSF funding is terminated?
2. How do you plan on financing the program? (Departments? With new support from the university?)
3. What has been the most effective way of finding support for your program?

Twenty PIs from 19 IGERT programs responded (see list of programs at the end of this section) to this brief survey. That the exceptional dedication of IGERT faculty makes these programs so successful becomes evident in their resourcefulness and unrelenting efforts to maintain these programs in full (or at least in their essence) after NSF funding has run out. It appears as if the programs which fared best managed to be integrated early on in wider campus initiatives of interdisciplinary study and research and to foster close ties to disciplinary home departments. Obviously, programs that have been successful in generating income through fee-based academic programs are less dependent on grants and outside support. However, securing generous student funding at IGERT levels seems to be very unlikely even if IGERT programs have been able to attract first rate graduate students. IGERT PIs report ‘moral’ support for their efforts but lack of material and financial backing.

In the following summary -sorted by themes- we quote from the PIs’ responses.

1. ***Do you plan to continue the IGERT program after NSF funding is terminated?***
 - a. Yes: 12
 - b. Yes, in some modified form: 5
 - c. Will try / Maybe / Not sure: 2
 - d. No: 0
2. ***How do you plan on financing the program?***

a. University / Departments

- **Fellowships/RAs & TAs/Research Grants**

- Existing faculty, TA's and RA's.
- TA-ships and RA-ships, usually with less funding for graduate students (i.e., offering summer-only support for students following IGERT conclusion)
- Graduate students will be funded on research or teaching assistantships.

- **Interdisciplinary Projects/Umbrella Centers/Research Collaboration**

- Major new interdisciplinary projects have been initiated and, if successful, would provide potential funding and a home for future students. Funding, however, would be project-specific and activities might or might not be linked to other projects (at the discretion of the PI and other faculty investigators). E.g., undergraduate internships have been established oriented towards underrepresented minorities funded with a variety of sources, including, but not limited to, IGERT support (allowable the year we applied).
- We will be seeking participation by other faculty involved in interdisciplinary programs that are not IGERT.
- We integrated our program into existing programs and its success has permanently changed the programs, especially in our chemistry department. More students enter hoping to be part of the IGERT program than our existing program. While the higher stipends are one reason, the greater employment opportunities of our IGERT grads also attract new applicants.
- We envision having some of our new courses become part of the standard curriculum so that we would not have to directly or indirectly support special courses that are integral to our IGERT project.
- Graduate certificate in "Interdisciplinary team-based graduate education"
- There are 2 IGERTs here. We want to find an umbrella center and approach the university administration with it.
- We plan to finance the program from research center funding, and in particular, we wish to pursue an interdisciplinary research center focused on the scientific themes of our IGERT.

- **Interdepartmental Graduate Degree Program/Joint PhD**

- Gain financial support from departments by developing a program in which students are awarded a joint Ph.D. It will also require support by the university, but that should be forthcoming if we gain departmental support. Some of the elements that have the potential to live on are classes (a course in global biogeochemistry and a group process training course), because they are taught by faculty and in that sense have become institutionalized. At least one of those faculty was hired as part of a university initiative (new dollars) to support the

thematic area of our IGERT. The seminar series and annual workshop/retreat will live on for at least three more years because of the university initiative.

- When we began our IGERT 6 years ago, we initiated an interdepartmental graduate degree program also. We now have 54 PhD and 1 MS students matriculating through that program.
- Components of our IGERT can be supported at least in part within the expansion of our new interdisciplinary materials program supported by the university.
- **Fee-based Academic Programs**
 - Extension courses, including technical short-courses and one-year master's programs; and summer courses. We can keep some of the innovations going (e.g. the 9-week "boot camp" summer course our IGERT created). We created a one-year master's program via UC extension that generates some revenues that support IGERT-related activities (like the summer course), so we have a revenue stream to cover some but certainly not nearly all IGERT project expenses.
 - We have discussed the concept of "profit-making" summer courses that would also generate funding that could be used for graduate student fellowships.
 - We have begun offering technical short courses and have opened a course developed for our IGERT students to the public in hopes of raising income to sponsor summer-only fellowships and offer a biennial international conference.
- **Fundraising**
 - We are also working to get interdisciplinary research and "IGERT-type" programs on the agenda of some of the development officers as they plan for the president's campaign.
 - Needs to be at the University level, especially through fund raising

b. Foundations

- Individual grants and contracts to associated faculty
- We are working on research grants to continue the research support.
- We are submitting grants to other possible funding programs that would further our research on the topics we've worked on during our IGERT
- Donor funding: to fund student fellowships; for general support
- Foundation support for a new center which will take over administrative and program roles
- We are also developing a related program/center for which we plan to seek foundation support, and through which we hope to help support the administrative aspects of the program.
- Mostly philanthropic support

c. Industry

- We are supplementing research assistantships with industrial affiliate funds for incoming students.

d. Government

- GAANN from the Department of Education (funding for fields representing ‘areas of national need,’ i.e., biology, chemistry, engineering, computing, physics, etc.; www.ed.gov/programs/gaann/)
- We are investigating developing **partnerships with agency labs**.
- Continued IGERT funding from NSF – for those programs who have not yet come up for renewal

3. *What has been the most effective way of finding support for your program?*

a. Securing University Support

- The departments have provided two-three years support for the opportunity to attract some first rate students, but they would probably be much more willing to support a degree + program.
- The most effective way has been to point to the increased number of applicants and students. The IGERT program (courses, added features, etc) will live on. Funding for graduate students is a continuing issue.
- We are only in our second year, so funding is primarily through the IGERT. We have started to obtain seed grants through our university to develop research grants.
- The University is now providing SEED funding to help give the faculty time to address the issue of sustainability, including course buy-out and other funds to facilitate trips to leading research centers and universities in our research themes.

b. Synergy with University Initiatives on Interdisciplinarity.

- Working through the administration and integrating graduate education needs into other large programs for partnership with industry and the community.
- Some of the research collaborations among faculty will likely live on and other new ones formed as a result of bringing together the faculty to participate in the IGERT program during the time it was funded.
- When we began our IGERT 6 years ago, we initiated an interdepartmental graduate degree program also. We now have 54 PhD and 1 MS students matriculating through that program. Coursework that began with the IGERT is now part of the interdepartmental graduate program, and will continue. Although I must admit that we didn't know enough at the onset to have planned the degree program to be so important for sustaining the IGERT initiative, we now realize how beneficial this approach has been. The University is happy with us because we are attracting many high quality graduate students. Thus, they are now willing to provide some (5 at this point annually) research assistantships. We are supplementing those with industrial affiliate funds for incoming students.

- The University is very supportive of a new interdisciplinary graduate program in Nanomedicine.

c. Profit-making Courses/Programs

- The MAS program has worked pretty well so far. Students pay for a year of courses and get a certification at the end. We have also considered offering summer courses that would provide a certification in, say, marine science policy, marine invertebrate zoology, marine genomics and so on. Our thinking is to offer a series of short courses that would be advertised widely to other universities and to employees of government labs of NGOs.
- Both the masters program and donations from private donors have been the most effective means of securing additional support for our IGERT project.

d. Outside Grants

- GAANN grants.
- Writing lots of proposals lets us fund students.
- Collaborative research grants have the potential to continue funding interdisciplinary graduate research.

4. Key Issues: Not enough support

- Even when writing lots of proposals secures some student funding, there is “basically no way of finding support to continue the programs for recruiting minorities and women, and for the retention activities. Unfortunately, the new funding is much more directive and allows the students less flexibility than the IGERT funding provided.”
- If you mean stipend support at the NSF level, we have no source for that.
- We have no agreement in place for continued student fellowships equivalent to the IGERT fellowships.
- We are submitting grants to other possible funding programs that would further our research on the topics we've worked on during our IGERT, but few of these will support the model of team-based research we've developed in our IGERT.
- It would help if NSF made it known that they are looking at what the Universities are doing in sustaining their programs. That if they do not make a real effort it will impact consideration for NSF support to the University in the future, especially with respect to interdisciplinary proposals.
- University has not provided any additional funds beyond what was negotiated at the start.
- The university initiative was a one-time thing that I don't expect to happen again--the stars all aligned right for us (and other campus initiatives).
- We have struggled with gaining support.
- At this time, we have no commitment from within the university to re-allocate our often declining state funds and positions (both research assistantships and faculty lines) to support continuing our current IGERT if we do not get a renewal from NSF. Without a renewal of our IGERT, we will not be able to continue the program.
- Basically without external grant support, any faculty time on these activities (including teaching any courses developed to better prepare scientists to do

- interdisciplinary research) will have to be negotiated one-by-one with department chairs to have such courses as part of their normal teaching assignment and not an "add-on".
- Beyond kind and "supportive" words and "pats on the back", we haven't been successful beyond those of us committed to this, giving of our time and energy beyond our regular assignments. This works for awhile, but is not sustainable.

Represented IGERT Programs:

Biomolecular Nanotechnology IGERT
Arizona State

Computational Analysis of Social and Organizational Systems (Casos) IGERT
Carnegie Mellon University

Nanoscale Science and Engineering IGERT
Drexel University/Upenn

Computational Biology IGERT
New York University

Nanomedicine IGERT
Northeastern University

Subsurface Biosphere IGERT
Oregon State University

Computational Nanoscience and Materials IGERT
Texas A&M

Marine Biodiversity IGERT (2)
UC San Diego

Biodiversity Conservation and Sustainable Production in Tropical and Temperate Fragmented Landscapes IGERT
University of Idaho

Computational Transportation Science IGERT
University of Illinois at Chicago

Biosphere-Atmosphere Research and Training Program
University of Michigan

Non-equilibrium Dynamics Across Space and Time IGERT
University of Minnesota

Population and Environment IGERT
UNC Chapel Hill

Global Linkages of Biology, the Environment, and Society (GLOBES)
University of Notre Dame

Evolution, Development, & Genomics IGERT
University of Oregon

Macromolecular Interfaces with Life Sciences (MILES) IGERT
Virginia Tech

Macromolecular Science and Infrastructure Engineering IGERT
Virginia Tech

Evolutionary Modeling (IPEM) IGERT
Washington State/University of Washington

Section II: Best Practices Research– Report on Sustainability in Eight IGERTs **(Based on research by Jaya Ramesh)**

This section discusses two ways to sustain IGERTs following end of grant cycles: a) incorporate them into existing university programs; and b) secure institutional support (both moral and financial) for the program through university-wide commitments to interdisciplinary programs.

This research sought to connect with IGERTs at other universities and understand how they were dealing with issues of sustainability and cooperation between deans, chairs, and faculty. In many cases, the levels of support from university administrators including provosts, deans, and presidents; and from department chairs and other department faculty; directly impact the future of the IGERT programs.

We found that most IGERT programs identify outreach and development as key issues. However, principal investigators were not keen on talking extensively about dean, chair, and faculty cooperation.

Objective:

The purpose of this inquiry, which involved connecting with IGERTs in other universities, was two-fold. First, it aimed to understand how other IGERTs are remaining sustainable after their NSF funding expired and if they are at the point where funding is to end, what options they are considering to remain sustainable in the long-term. Also, tied to funding was understanding the underlying points of friction and cooperation between deans, chairs and program faculty. A second purpose of this research project was to identify key IGERTs to follow up with in the coming months that we could engage with in gaining a deeper understanding of how to address the issue of sustainability.

Participants:

There were fourteen IGERTs identified and contacted, of which eight resulted in successful interviews (see list of participating programs at the end of this section).

Selection criteria for the IGERTs: The IGERTs were selected from the NSF awards list. From that list, the IGERTs that received funding between the years 1998 and 2001 were identified as IGERTs that could have possibly gotten round 2 funding from NSF. Interestingly, there were some IGERTs not listed in round 2, that were still in existence.

Selection Criteria for Individual Participants: The people interviewed were either the PI's or the program coordinators as they were the people most closely associated with the formation and the fundraising aspect of the program.

Methods:

Most often the Primary Investigator was approached via telephone or email. He/she was informed that they were being contacted by a doctoral student, who was a research assistant for CIRGE, explaining that CIRGE is doing an external evaluation of the Astrobiology IGERT. The PI was then told that this research project was seeking to understand how other university

IGERTs deal with the issues of sustainability and dean-chair cooperation, given that the AB program is also facing similar issues. From the telephone interviews, the following themes emerged consistently regarding sustainability and dean-chair cooperation.

(1) Findings:

Many universities seek to continue the IGERT as an academic program by locating new funding. Some incorporate the IGERT into broader interdisciplinary campus initiatives. Others subsume IGERT programming into departments. Finally, some programs obtained financial support from the university level (Provost, Dean, Development Office). Some programs pursued several of these strategies.

Continuing IGERT academic programs through new funding arrangements:

- through PI grants
- by forming industry-student partnerships
- by raising funds through development from private donors
- by applying for NIH funding
- by re-applying for a second round of IGERT funding from NSF

Incorporating the IGERT into broader interdisciplinary campus initiatives:

- NSF-funded Science of Learning Center
- Interdisciplinary Graduate Academy

Incorporating the IGERT into constituent departments:

- Departments take over IGERT activities and student funding

University support:

- Partial funding through the development office and private donors
- Support from the provost and / or dean

Details from conversations with the universities

- They feel they need to revamp their proposal to be funded for round 2. The PI stated they do not receive much financial support at the institutional level. They are not considering outside partnerships, only thinking of NIH as a funding source.
- Their IGERT has ended now, but its presence continues to be felt through collaboration between disciplines.
- The PI felt he had to consider a new topic for the renewal. He notes that they have had many successes but NSF does not appreciate them as much as for the future proposal when it comes to funding. They have some financial support from deans and provost.

They are only considering money from NIH. If the 2nd round of NSF funding does not go through, they plan on having the IGERT continue as an academic program through the funding that the PIs receive for their research.

- They have changed the focus of their renewal proposal and hired new faculty to be fundable. They do not receive a lot of support from the university, and they do not feel there are partnerships to consider other than NIH. However, they anticipate moving beyond the IGERT into attaining money from NSF to fund the Science of Learning Center which will receive 20 million dollars.
- If they do not get funded in round 2, then the proposal is to have departments adopt IGERT activities. This is feasible for them because they do not give out IGERT certificates. As of now departments are willing to incorporate elements of the IGERT program. Students will be funded by departments through traditional means of RA-ships and TA-ships.
- They also had to come up with new aspects of the program for round 2. They developed an international component. They receive money through development offices from private donors. The provost gave them \$20,000 for 5 years.
- The IGERT started as an institutionalized program. It then became an IGERT. So if NSF money runs out there are mechanisms in place to keep it going. They have strong institutional backing from the dean and provost. They also plan on forming partnerships with industries in which they will collaborate with a private corporation in a long-term project, assign a student to it, and feed the money from the corporation into the IGERT.
- Their renewal proposal to NSF involved using grant money as seed money for the creation of an applied program. Students and the PI would be involved in the capital campaign (meaning raising funds through private sources, which often fund focused research). The VP of research agreed that the overhead fee that results from paying these students could be used to fund new students. However, this proposal was not approved by NSF.
- They decided to incorporate the proposed plan into a campus Interdisciplinary Graduate Academy, which is responsible for generating platforms and organizing the raising of funds. This allows them to get funding for non-American students. The university is strongly committed to interdisciplinary education on a financial level and moral level.

For more information on the Interdisciplinary Graduate Academy, see <http://www.asu.edu/graduate/iga/index.htm>

(2) Cooperation between Program Faculty, Department Chairs, and University

Administrators

Managing faculty time in terms of teaching and managing faculty pay presented challenges to departments and, at the next level, the schools and colleges above the departments. This was an issue that the PIs were reluctant to address as it is a sensitive issue. However, they discussed the varying degrees of support from key administrators and department chairs, including general support for program activities and financial support that could offer relief from teaching or departmental duties for program faculty.

The following statements from IGERT PIs illustrate the range of support at various universities:

- The departments view the IGERT favorably and do not view it as a resource drain.
- While there is chair level competition for IGERT, there is buy-in at the dean and provost level.
- The president is supportive, and there is enough support at the dean and chair level—both financial and moral.
- There is moral support from the dean's and the provost's office but not much financial support.
- There is institutional support—there is an intellectual commitment, if not so much financial.
- There is not a lot of financial support from the provost and deans office.

In many cases, underlying points of friction and cooperation between deans, chairs and faculty relate to the degree of internal university support for IGERT activities.

Participating IGERT Programs:

- Physical Biosciences: From Molecular Machines to Neural Imaging- University of California-Berkeley (UCB)
- Bio Invasion-University of California-Davis (UCD)
- Neuroengineering Training Program – University of California-Los Angeles (UCLA)
- Vision and Learning in Humans and Machine- University of California-San Diego (UCSD)
- Economics and Environment- University of California-Santa Barbara (UCSB)
- Inequality and Social Policy-Harvard University (Harvard)
- Arts, Media and Engineering-Arizona State University (ASU 1)
- Optical Biomolecular Devices: From Natural Paradigms to Practical Applications- Arizona State University (ASU 2)

Section III – Best practices for interdisciplinary sustainability: Lessons from Other Sources

For this section, we researched national initiatives for interdisciplinary graduate education and examined several universities with strong commitments to interdisciplinarity. These include the Responsive Ph.D. initiative, Interdisciplinary Studies at Duke University, and Interdisciplinary Initiatives at the University of Michigan.

Reviewing a range of materials exposed the following themes.: 1) two crucial elements in interdisciplinarity sustainability are the administrative capacity to coordinate interdisciplinarity and the administrative will to support it; 2) faculty allocation and funds allocation are important markers of this support that enable success in interdisciplinary programs; 3) programs benefit greatly from administrations that articulate a strong vision of interdisciplinarity and provide the resources to facilitate it.

1. *The Responsive Ph.D.: Innovations in U.S. Doctoral Education*

The Woodrow Wilson National Fellowship Foundation

<http://www.woodrow.org/responsivephd/doctoralinnovation.php>

Two key excerpts from their report about creating more responsive PhDs:

- “An assessed excellence: The quality of doctoral education depends upon assessment with reasonable consequences. Attainment of specific objectives can **be rewarded through commensurate increases in valued resources.**” [emphasis added]
- “A graduate school for real: A truly responsive Ph.D. requires strong graduate schools and graduate deans with real budgets and real scope — a stronger administrative structure than typically exists at present.”

These excerpts demonstrate the importance of rewarding excellence in interdisciplinary work by expanding resources available for the programs. To offer these resources, the administration needs access to them and power to provision them to departments.

2. Interdisciplinary Studies at Duke University

<http://www.interdisciplinary.duke.edu/>

Duke has instituted interdisciplinarity through creating an administrative position of Vice Provost for Interdisciplinary Studies. It also fosters networks through its Interdisciplinary Administrators Working Group (IAWG), which meets monthly.

“The Vice Provost for Interdisciplinary Studies works with faculty members and administrators from Duke's nine schools to instigate and facilitate interdisciplinary research, collaboration, and instruction and is responsible for approving, reviewing, and helping to manage over sixty interdisciplinary centers and institutes.”

Other Duke innovations carried about by the Vice Provost for Interdisciplinary Studies:

Publicizing and promoting excellence in interdisciplinary research

- sponsoring a competition for interdisciplinary research

Funding

- working with the development staff to raise funds for interdisciplinary programs

- implementing the Interdisciplinary Infrastructure Fund

Faculty time and promotion

- helping to create structural changes in support of interdisciplinarity, including new Appointments, Promotion, and Tenure guidelines and hiring procedures
- collaborating with deans and department chairs to overcome obstacles to interdisciplinarity (including team-teaching credit and flexible scheduling)

These measures offer significant support for interdisciplinary activities on the campus.

3. Interdisciplinary Initiatives at the University of Michigan

<http://www.rackham.umich.edu/Events/interdis.html>

Like Duke University, the University of Michigan offers interdisciplinary faculty regular opportunities to come together and exchange information.

“The Interdisciplinary Faculty Associates program provides both funding and a supportive structure, including meetings where participating faculty exchange ideas and learn from one another.”

Another program of note is the Life Sciences Institute (<http://lsi.umich.edu/about>).

“The Life Sciences Institute is a hub for collaboration among outstanding scientists from a variety of life sciences disciplines focusing on the biological problems of human health.”

The Life Sciences Institute may be an excellent model for the Astrobiology Program to learn more about collaboration across scientific boundaries.

Section IV – UW Initiatives on Interdisciplinarity

Network of Interdisciplinary Initiatives - University of Washington

http://www.grad.washington.edu/Acad/interdisc_network/InterdisNetwork.htm

“The NII is an affiliation of UW faculty, students, and staff who advocate for interdisciplinary (ID) teaching, research, and training activities across the University.”

The Graduate School at the University of Washington is host to an interdisciplinary task force, the Network for Interdisciplinary Initiatives. This task force has issued a series of reports and recommendations for fostering and sustaining interdisciplinary programs at UW. The two most important ideas for institutionalizing interdisciplinarity are: a) establishing a new position of provost for interdisciplinary affairs; and b) assigning development officers to interdisciplinary programs in order to compensate for the current structure of department- and college-based fundraising.

An important component of the efforts to develop resources for interdisciplinary programs is shifting the way indirect costs of research grants are used by the university. The task force has recommended these be returned to the programs eventually, beginning by allocating any increase in costs to the programs.

To achieve its long-term goals of institutional support and sustainability, the Astrobiology Program is encouraged to align itself with the NII task force and add its strength to the calls for administrative change. Networking with this group of people may also help share best practices within the university and offer opportunities to develop together.

More specific recommendations from Julie Thompson Klein, an expert on interdisciplinarity from Wayne State University, and from University of Washington initiatives on interdisciplinarity are available in the appendix.

Appendix I: NII Working Group Recommendations.

The Network of Interdisciplinary Initiatives at the University of Washington offers recommendations for improving support for interdisciplinary activities. The following material is reproduced from a document available from

http://www.grad.washington.edu/Acad/interdisc_network/ID_Docs/NII_Recs_for_Action.pdf

The NII Working Group identified three core areas where action would significantly increase support for interdisciplinary (ID) teaching, research, and training at the University of Washington:¹

1. Faculty appointments, promotion, and tenure
2. Allocation of resources: indirect costs
3. Development and outreach

1. Faculty Appointments, Promotion, and Tenure

Faculty Appointments

- Build the expectation that the University will support faculty members as both departmental and interdisciplinary citizens.
- Allow all faculty members to allocate a significant portion of teaching, research, and service activity among units as they choose. This could be used to facilitate interdisciplinary work or disciplinary pursuits.
- Consider creating a “university-wide” appointment for interdisciplinary faculty. These faculty members would not be bound to a single department, and could participate in several academic programs. Consider creating institutional mechanisms to allow clusters of interdisciplinary faculty to propose new faculty positions.

Promotion and Tenure: supporting ID activity throughout a faculty member’s career

- Encourage the formalization and enforcement of agreements about research, teaching, and service expectations when faculty participation, including WOT and research faculty, is in multiple units. This could be accomplished by developing written promotion and tenure guidelines that allow recognition of ID activity. Note that such agreements need to be acknowledged and “taken to heart” by faculty members who vote on promotion and tenure, not only agreed upon by administrators.
- In addition, college councils and deans should actively formulate policies to take account of interdisciplinary activities when considering faculty members for promotion, tenure, and merit increases.

¹ These recommendations were identified at the November 15, 2005 meeting of the Network of Interdisciplinary Initiatives’ Informal Working Group. See http://www.grad.washington.edu/Acad/interdisc_network/ID_Docs/NII_Recs_for_Action.pdf for the original document (reproduced here verbatim).

- If a faculty member spends significant time and energy on activities not in the “home” unit, representatives from those units should be on the promotion and tenure review committee. Similar to Dissertation Supervisory Committees, promotion and tenure committees could include a “Graduate School Representative (GSR)”-type faculty representative who assures that standards such as ID activity are appropriately considered during the process.

2. Allocation of Resources: Indirect Costs

- Raise awareness that ID activity increases the net research revenue of the University.
- Assess the current flow of indirect cost funds and how they are allocated in various units across campus. The flow of this resource throughout the University needs to be understood before considering ways to revise policies that can build sustainability of resources to support ID initiatives.
- Allocate a percentage of the future increases in indirect costs throughout the University to fund ID programs. This would lessen potential conflicts over re-allocation of existing indirect cost resources.
- Incentivize collaboration among units by sharing the indirect costs rather than allocating all of these funds to departments/deans. This could be one aspect of University policy that consistently and uniformly encourages interaction across disciplines and guides the sharing of revenue.

3. Development and Outreach

- Increase awareness that many ID programs are a natural fit for community outreach since they deal with the complexities and ambiguities of real-world issues. Programs in the health sciences, environmental sciences, and global education and research, all areas of strength at the University, would be effective in this effort.
- Educate development staff about the importance of ID initiatives and coordinate outreach with departmental development efforts.
- Assign a development officer dedicated to enlarging the pool of resources available to seed, support, and sustain interdisciplinary programs. Consider locating this officer in the Graduate School, the Provost’s Office, or another program-neutral location. Currently ID programs “fall through the cracks” in development activities, since these activities are assigned to colleges, schools, and departments. Ensure that this officer works closely with units involved in ID programs to ensure coordinated development activities that benefit both ID programs and individual units. Consider identifying ID programs that can serve as “poster children” for how ID programs and initiatives enrich the University and community.
- Investigate whether the Washington State Discovery Fund will support University ID programs and initiatives.

Additional Comments

- Bring the Bothell and Tacoma campuses into the discussion, since they have programs built on the principle of ID work.
- Identify how to best garner broad support as policy changes surrounding ID work move through the University.

Signatories

Marina Alberti, Director, Interdisciplinary Urban Design and Planning PhD Program; Associate Professor, Urban Design and Planning; Adjunct Associate Professor, Landscape Architecture;

Melissa Austin, Associate Dean for Academic Programs, The Graduate School; Professor, Epidemiology; Director, Institute for Public Health Genetics

Stevan Harrell, Professor, Anthropology; Curator, Burke Museum; Faculty Associate, Center for Studies in Demography and Ecology

Christine Ingebritsen, Acting Dean and Acting Vice Provost, Office of Undergraduate Education; Associate Professor, Scandinavian Studies

Anna Mastroianni, Assistant Professor, Law School; Assistant Professor, Public Health Genetics

Maresi Nerad, Associate Dean for Research, The Graduate School; Director and Associate Professor, Center for Innovation and Research in Graduate Education (CIRGE)

Suzanne Ortega, Dean and Vice Provost, The Graduate School; Professor, Sociology

Tom Reh, Director, Interdisciplinary Neurobiology and Behavior Graduate Program; Professor, Biological Structure

Henk Roelink, Director, Molecular and Cell Biology (MCB) Graduate Program; Associate Professor, Biological Structure

David Secord, Co-director, Program on the Environment; Associate Professor, Interdisciplinary Arts & Sciences, Environmental Science (UW Tacoma); Adjunct Associate Professor, Biology (UW Seattle),

Kathy Woodward, Director, Walter Chapin Simpson Center for the Humanities; Professor, English

Appendix II: Vice Provost for Interdisciplinary Affairs: Recommendations from the University of Washington Committee on the Organization of Colleges and Schools.

These recommendations are drawn from a report (pp. 20-21) of the University of Washington's Committee on the Organization of Colleges and Schools, issued on December 22, 2006. The report is available from <http://www.washington.edu/provost/reports/CSOCreport.pdf>

Their report references "Seeding, Supporting, and Sustaining Interdisciplinary Initiatives at the University of Washington: Findings, Recommendations, and Strategies" which is another excellent resource for enhancing interdisciplinarity at the University of Washington. It is available from

http://www.grad.washington.edu/Acad/interdisc_network/ID_Docs/Dubrow_Harris_Report.pdf

We recommend appointing a Vice Provost for Interdisciplinary Affairs.

The vice provost for interdisciplinary affairs would represent interdisciplinary programs and initiatives at all levels, negotiate conflicting needs, and advocate for attention to interdisciplinary programs in the raising of philanthropic funds through development. The establishment of a vice provost for interdisciplinary affairs would be analogous to the establishment of several new positions at that level, including the vice provost for information management and the vice provost for global affairs. We strongly encourage analyzing ways to accommodate this recommendation with existing resources.

We recommend that the vice provost for interdisciplinary affairs build on the excellent and thorough report Seeding, Supporting, and Sustaining Interdisciplinary Initiatives. Among other things, the portfolio of the vice provost would include addressing policy matters connected to: (1) issues of faculty hiring, promotion, tenure, merit, and retention related to interdisciplinarity and collaboration; (2) matters crucial to the allocation of resources (including indirect cost recovery policies); (3) allocation of space; (4) the coordination of development (fund-raising) for interdisciplinary programs; and (5) issues raised by students, both at the graduate and undergraduate levels. (See Appendix F for a more complete outline of some of these issues and possibilities.)

To advise the vice provost for interdisciplinary affairs, we recommend creating a Faculty Council on Interdisciplinary Affairs. This council be parallel to the new council that advises the vice provost for global affairs. We suggest that it include professional staff as well as students at the undergraduate and graduate levels. We also suggest that it have a broad mix of those involved in interdisciplinary and collaborative work (for example, research centers and undergraduate teaching programs). The purpose and functions of this council should be conceived in conjunction with the newly created Interdisciplinary Research Subcommittee in the Office of Research.

Finally, one of the key functions of the vice provost for interdisciplinary affairs should be instituting campus forums on matters of critical and collaborative importance to the State of Washington, our nation, and our life on this planet. Led by this vice provost, these forums would be designed as think-tank meetings whose purpose is to generate

ideas and commitments to ideals, highlighting our common concerns and the grand challenges facing our institution. Areas might include the environment, digital technologies, youth, global health, and cultural traditions around the globe. From these meetings might emerge ideas and strategies that would lead to strategic hiring and sustained collaboration across colleges and schools in research and teaching. These forums promise to demonstrate our responsibility to pursue new knowledge and to conduct research and scholarship that has the potential to create and sustain a better world. As the vision statement of the University of Washington stresses, “As a public university, we are deeply committed to serving all our citizens.”

Appendix III: Seeding, Supporting, and Sustaining an Interdisciplinary Campus Culture (Recommendations from Julie Thompson Klein)

This document is a verbatim reproduction of Klein's recommendations, which set forth a comprehensive model for fostering and funding interdisciplinarity at the University of Washington

Network of Interdisciplinary Initiatives Seeding, Supporting, and Sustaining an Interdisciplinary Campus Culture Professor Julie Thompson Klein, Wayne State University (30 November 2006)

Overriding Thematics of Change

- Combine short-term targeting with long-term institutional deep-structuring.
- Orchestrate a dialogue of top-down sanctioning and bottom-up incubation.
- Build a Both-And institutional culture, not Either/Or, with **dual** citizenship of departmental and interdisciplinary (ID) identities.
- Move from Adhocracy to Sustainability.

Re-Map the Campus Through Additional Research

- Conduct a comprehensive inventory of current interdisciplinary interests and activities.
- Conduct research to understand ID faculty and student experiences.
- Conduct research to understand administrators' views.
- Conduct research to understand the dynamics of different ID programs (e.g...~ IGERTs, Grad School's targeted ID programs. research centers, tri-campus offerings).
- Conduct research on practices ID programs use for finance, finding, and budget structure (e.g., entrepreneurial, state-based, untapped potential)
- Create a comprehensive map of space allocations and support staff for ID programs, initiatives.

On the Basis of Data From Research

- Design a multi-year phase-in plan using a multi-tiered Portfolio of Strategies.
- Build an ID Planning Matrix distinguishing the nature and level of desired changes: institution-wide, center or program, a single course or research project; general education, majors, department or program enhancement, learning communities.
- Determine requirements of particular changes: modification of existing structures or creation of new ones; small, limited, localized, and incremental interventions versus more global, comprehensive, or radical transformation of "second-order change."
- Determine adequacy of material and human resources for change: internal feasibility versus need for external consultation and finding; current faculty capabilities and interests, existing administrative personnel and support structures; networks of stakeholders.
- Determine appropriate homes and administrative structures, key personnel.
- Identify basis for internal partnerships: departments, programs, centers, off-campus sites.
- identify basis for external partnerships: industry, government, other academic institutions.

Take Global Actions

- Establish a University-wide ID oversight body (office or committee) for greater visibility, legitimacy, protection, and resource basing.
- Create a central University ID website with sublinks to units, resources. ID) literatures. (Models: Duke, Michigan, Wayne State).
- Revise all materials to be inclusive of interdisciplinarity, from organizational charts to the

- “public face” of catalogues, bulletins, and advertising.
- Create a corresponding inclusion in all support service practices, from recruitment and advising to research and alumni offices.
- Rewrite all policies and practices to be inclusive of ID.

Area #1: Hiring & Appointments, Promotion & Tenure, Merit & Rewards

Hiring and Appointments

- Institutionalize ID in the new hire process: ads, interviews, letters, contracts.
- Develop new ID faculty appointments (cluster hiring enabling faculty to propose interest areas, coordinated hiring across units).
- Create a university-wide appointment not bound to a single department and allowing participation in several programs: “College Professor,” University Professor.
- Enable more joint appointments in departments and/or programs and centers with clearly designated. expectations for work performance and evaluation.
- Establish recurring appointments with tenure lines in “robust” ID programs and centers.

Tenure and Promotion (T&P)

- For both new and old hires, include representation from each relevant unit on a pre-T&P committee (department, program, center).
- Provide pit-tenure mentoring for junior faculty.
- Rewrite guidelines for T&P in all units to guarantee inclusion of ID interests and activities.
- If necessary. insure consideration at college, Dean, and. upper-administrative levels.
- Allow candidates to suggest suitable reviewers.
- Take ID activities into account in Chairs’ annual conference with faculty.

Reward. Not Punish. ID (See also below in Outreach/Communication)

- Include ID as a designated category in merit-based salary.
- Include ID in eligibility for existing system of awards and performance incentives.
- Establish new awards and seed grants for ID research, teaching, curriculum development.
- Establish counterpart awards and seed. grants for innovation and creativity in technology transfer, joint ventures, product innovation, collaborative partnerships.
- Identify regional and national awards for innovative work and submit exemplars from UW.
- Rewrite dean, director, and chair job descriptions to “hardwire” ID activity with flexibility.

Area #2: Resource Allocation

- Assess current flow of indirect cost funds and allocations in units across campus.
- Work with upper administration to determine the total pool of money available and set guidelines for distribution to existing and future ID programs and initiatives.
- On the basis of data, revise policies for normalizing and centralizing ID support.
- Devise routine mechanisms to return funding generated from collaborative research to ID programs. remitting portion of indirect cost returns to programs.
- Incentivize collaboration among units by sharing indirect costs.
- Encourage deans to work together, defining proportional amounts for ID programs.
- Let “credit” and resources follow faculty and students through individual pathways. Provide both collegiate and central support for ID initiatives well-positioned for leveraging funding

through entrepreneurial. and. development activity.

Area #3. Development and Outreach

- Educate development staff about importance of ID initiatives and coordinate outreach with departmental development efforts.
- Appoint a development officer dedicated to enlarging pool of resources. (in Graduate School, Provost's Office, or other neutral location).
- Create development committee to investigate ID-specific issues.
- Work with development offices of all units to facilitate more cross-unit cooperation.
- Raise awareness that ID activity increases net research revenue of University.
- Investigate whether Washington State Discovery Fund will support ID programs. initiatives.
- Have Grad School or Development Office offer a "cookie cutter" communication tool for solicitation.

Build an Interdisciplinary Endowment

- Build a diversified ID financial portfolio tapping multiple sources (research & curriculum grants, fundraising, indirect costs return & overheads, technology transfers, partnerships)
- Tap existing institutional support system for ID purposes (from grants and seed funds to graduate assistants, research and curriculum development).
- Channel indirect costs and overhead from external grants into patronage options, seed money for ID research, teaching, and curriculum development.
- Target particular ID Themes and Interest Areas in a capital campaign and coordinate efforts with Development and Alumni units.
- Redirect existing resources to support ID Themes and Interest Areas (e.g., sustainability).
- Align ID Themes and Interest Areas with unit campaigns (e.g. Engineering, Biomedicine).
- Fund annual incentive seed grants in new areas with prospects for external funding. Note: UW endowed fellowship with matches to seed ID programs and ASU "Intellectual Fusion" campaign for ID programs.
- Hold annual budget hearings to assess allocation of resources to implement new plan.

Outreach/Communication

- Identify ID programs that can serve as "poster children" for how programs and initiatives enrich the University and community.
- Increase awareness that many ID programs are a "natural fit" for community outreach since they deal with complexities and ambiguities of real-world issues (e.g., health, environmental sciences, global education and research).
- Help all University members understand that ID programs benefit the institution by attracting high-quality students, retaining productive faculty, external funding.
- Tell ID success stories both internally and externally: print and e-newsletters, centralized University ID website.
- Collect information on all models (e.g. UPress development program and series).
- Create a centralized showcase of ID opportunities akin to "Come Together Washington."

Area #4. Stewardship. Leadership. and Advocacy

- Encourage upper-level administrative leadership to better seed, support, and sustain ID.
- Coach academic leaders at all levels in skills that foster and sustain ID research and education.
- Build an ID institutional memory to ease leadership transitions: e.g., communication mechanisms and forums that allow for exchanging ideas among ID programs.
- Assign development officers to ID programs.
- Create “intellectual space” for faculty and student to experiment and to take risks.
- Foster shared responsibility of Graduate School and academic units to prepare future faculty and professionals to cross disciplinary boundaries
- Cluster small and vulnerable interdisciplinary programs and initiatives.

Faculty Participation

- Foster greater intellectual mobility of faculty over the course of their careers:
- Allow faculty to commit part of their appointment or move primary appointment to other units, including ID initiatives.
- Encourage and reward collaborative research and teaching.

Broad-Based Strategies and Incentives

- Align all existing college and unit strategic plans with elements of a University ID master plan.
- Create strategic indicators in all report forms and an annual report card.
- Implement ID-specific criteria for learning assessment, research evaluation, program review.
- Create forums for idea sharing: e.g., shared course experiences, speaker series, student presentations, social gatherings, Brown Bags.
- Heed recommendations of disciplinary, professional, and educational groups. (e.g. AACU’s reports on changing disciplines and majors, AAHE’s reports on rewarding faculty, ABET report).
- Loosen structural barriers in curriculum by cross-listing courses and interest areas.
- Strengthen undergraduate research profile.
- Infuse new research developments into the curriculum at all levels.
- Develop appropriate criteria for learning assessment and program review,
- Examine all points in the existing curriculum where interdisciplinarity can be infused (e.g.. general education majors, thesis/dissertation, FIGS and capstone seminars, co-curricular activities, fieldwork, internships, service learning, travel study
- Track students longitudinally to discover then publicize ID outcomes.
- Become a pilot campus for pertinent national initiatives.