DATE: August 7, 2019
FROM: Eric J. Barron
TO: Nicholas J. Rowland

I have reviewed the Advisory and Consultative report, Barriers to Sustainability and Growth of Intercollege Graduate Degree Programs, which was passed by the University Faculty Senate on April 23, 2019. I concur with the following report.

As an institution at the forefront of interdisciplinary, collaborative research and education, the Intercollege Graduate Degree Programs (IGDPs) have constituted critically important graduate education and professional training in some of Penn State’s most innovative and prominent fields. IGDPs represent some of the Graduate School’s most successful, highly regarded research doctorate programs.

The issues raised by the report are important and compelling, and we will be looking into these further. Current efforts related to reexamination of the University’s budget and tuition models may have particular relevance for possible solutions; and once conclusions have been reached by these efforts, they may help inform the core issue of a viable funding model (i.e., programmatic and administrative support) for the IGDPs.

By copy of this memo, I am asking that Michael Verderame, Acting Vice Provost for Graduate Education and Dean of the Graduate School, implement the recommendation.

Thank you for the opportunity to review this item.

cc: Kathleen J. Bieschke
    Dawn Blasko
    Nicholas P. Jones
    Michael Verderame
June 26, 2019

Eric Barron, President
201 Old Main
University Park, PA 16802

Dear President Barron:

The University Faculty Senate, at its April 23, 2019 meeting, passed the following Advisory and Consultative report:

**Barriers to Sustainability and Growth of Intercollege Graduate Degree Programs**

Attached to this letter are the report from the Senate Agenda and the comments from the Senate meeting. We forward these recommendations to you for your approval and implementation.

Sincerely,

Michael F Bérubé, Immediate Past Chair
University Faculty Senate

ENCLOSURE
Introduction and Rationale

Intercollege Graduate Degree Programs (IGDPs) offering the Ph.D. at Penn State are an important mechanism to provide outstanding interdisciplinary research training that prepares future research leaders. Penn State currently has 11 IGDPs offering the PhD; of those, two were particularly highly ranked in the 2006 National Research Council Assessment of Research Doctorate Programs: Plant Biology (ranked at the very top of its field nationally) and Materials Science and Engineering (see Penn State summary here: http://gradschool.psu.edu/prospective-students/nrc/programs-top-ranked-notable-overallpdf/).

In reviewing The Graduate School’s 2008 *Report of the Task Force on Interdisciplinary Graduate Education* (available at: http://gradschool.psu.edu/about-us/stratplanandtfrpts/tfrptidgredforacgepdf/), the Senate Committee on Research, Scholarship and Creative Activity (SCoRSCA) noted that:

“Existing institutional structure of resource allocation through colleges/departments is limiting to the proliferation, scope and impact of intercollege programs; a mandate to colleges to support and invest in such programs, as well as central resources for incentives are needed.”

Given the importance of IGDPs to interdisciplinary research education at Penn State, and with almost 10 years elapsed since that Graduate School Task Force report, in December 2017 SCoRSCA surveyed IGDP leaders to assess the current state of these important educational programs. To accomplish this, SCoRSCA partnered with The Graduate School to craft a basic survey. The survey included the following questions:

1. How many students do you plan to matriculate each year?
2. Is this the ideal number of incoming students for your program? If not, are you restricted by available funds to support first year students? Are any other issues restricting the number of students in your program?
3. What is the source of funding for 1st year students in your program?
4. Do you use program funds to support all students in subsequent years?
5. Do you use program funds to support students who unexpectedly have no support after the first year? If so, please briefly describe under what conditions you will use program funds for this purpose.
6. Do you have access to funds other than those regularly budgeted for your program to support students? If so, where are these funds coming from?
7. Other than funding, what are the barriers for sustainability and growth of your program?
8. Any suggestions to improve and grow your program?

In FA 2017 this survey was sent to the program chairs of all IGDPs offering the PhD:

1. Agricultural and Biological Engineering
2. Acoustics
3. Bioinformatics and Genomics
4. Bioengineering
5. Ecology
6. Energy, Environmental, and Food Economics
7. Materials Science and Engineering
8. Molecular, Cellular and Integrative Biosciences
9. Neuroscience
10. Integrative and Biomedical Physiology
11. Plant Biology

Ten of the eleven program chairs replied to this survey. The program chairs identified three significant barriers to the long-term sustainability and growth of their programs:

1. **Funding.** Lack of adequate funding is limiting the success of IGDPs (mentioned explicitly by 8 of the 10 responding programs). Because IGDPs do not receive instructional budgets, they do not have teaching assistantships (TAs) to offer first year students (TAs are the primary institutional support mechanism for PhD students). This limitation is frequently compounded by the fact that many departmental programs see IGDPs as competing for resources with the departmental graduate program, and thus do not support faculty members interested in IGDP students (see #2 below). The IGDPs typically assemble first year funding support for PhD students from a variety of sources, including extramural research grants, the Huck Institutes for the Life Sciences (for relevant programs), departmental or college support, The Graduate School (University Graduate Fellowships; other recruitment funds; and assistantships in the case of IGDPs for which the Graduate School serves as the academic home). However, this support is variable across the IGDPs, insufficient for the number of competitive students who apply to most of these programs, and collectively leads to a reliance on extramural funding (particularly beyond year 1). Overreliance on extramural funds due to lack of TAs limits both the growth of these programs, as well as programmatic flexibility, particularly for out-year support (e.g., if a faculty member loses extramural funding).

2. **Status relative to departmental programs.** SCoRSCA was surprised to learn that IGDP students are sometimes viewed as “second class” compared to students in departmentally-based programs. For example, some departments will not use their TAs to support IGDP students being advised by faculty members from their own department. In the case of at least one department, faculty start-up funds are explicitly prohibited from being used for IGDP students. As noted above, this compounds the problem of limited institutional funding provided to IGDPs.
3. **Faculty availability.** Six of the ten responding programs indicated that the limited participation of faculty, particularly funded senior faculty members, is a concern. As the survey was sent only to IGDP chairs, it is unclear why this might be true, and what steps would help remedy this concern.

The survey results were compiled into a preliminary report that that SCoRSCA reviewed in April 2018. After further discussion, the report was shared with the Graduate Council through the Council’s Committee on Graduate Research (CoGR) in late Fall 2018.

After reviewing the survey results, SCoRSCA and CoGR agree the following actions would significantly strengthen interdisciplinary research education through IGDPs at Penn State:

1. Identify sustainable and appropriate funding for IGDPs offering the Ph.D.
2. End departmental and college practices and policies that discriminate against IGDP students.
3. Understand and address the reasons funded senior faculty members have limited participation in some IGDPs.

SCoRSCA and CoGR also note that The Graduate School’s 2008 Task Force report described six “Institutional encumbrances”, three of which (items 1, 2, and 4) identified the same challenges identified in this survey:

1. Stand-alone intercollege programs are often viewed as competing with departmental programs for resources, students and recognition/credit, despite the fact that the “credit” for each IGDP student is assigned formally within the SIS [Student Information System] to the unit of the advisor.
2. Institutional support (e.g., assistantships, fellowships) for students (especially first-year) in intercollege programs is very limited and constraining.
   ...
3. As intercollege programs do not receive instructional budgets, the primary mechanism for institutional support of graduate students (i.e., TAs) is dissociated from these programs.

The 2008 Report also made one recommendation directly parallel to one of the recommended actions SCoRSCA and CoGR listed above:

1. Collaborative, interdisciplinary graduate education should be a priority reflected in strategic planning at the highest level. As such, Colleges should be given a mandate to more formally promote and support participation and leadership by their academic units and individual faculty in intercollege graduate programs, and to remove disincentives to such participation, and these should be reflected in College strategic plans.

As the Committee was finalizing its report, we received a copy of a comprehensive study of interdisciplinary graduate programs (IDGPs) at multiple institutions conducted by Oregon State University (OSU) entitled “Successful Models for Interdisciplinary Graduate Education in the
US”. While there is much useful information in this report¹, we highlight here several high-level conclusions that are consistent with the conclusions from our own study:

Factors critical for the success of IDGPs

“Two factors were repeatedly cited as critical for the success of IDGPs: (a) the presence of strong, consistent financial support from the central administration, which could also include contributions from colleges; and (b) a strong, committed, and energetic champion for IDGPs in the graduate school (or college or medical school) in the form of an Associate Dean tasked with this responsibility, and even better, a formal Office of Interdisciplinary Graduate Education.”

Challenges to the Success of IDGPs

“Challenges existed for sustaining IDGPs, other than funding. These included: maintaining faculty engagement, staffing courses specific to IDGPs, competition between degree-granting IDGPs and departmental programs…”

The report also articulated the many important benefits that robust interdisciplinary graduate education programs can bring to the University:

“Institutions with successful IDGPs reported major benefits to their research and training missions. The chief benefits were greatly increased quality, ethnic diversity, and technical backgrounds of incoming students, improved training of students in both “soft” and technical skills through professional development classes and laboratory rotations, increased interdisciplinary collaboration among faculty, increased success with research and training grant proposals, and increased institutional reputation… Student success at the undergraduate level was also promoted by strong IDGPs that attract strong, diverse graduate students because the interdisciplinary graduate students mentor undergraduate researchers, bring an interdisciplinary perspective to the classes they TA, and they act as role models for undergraduate students.”

Recommendation

Given that substantial issues limiting the sustainability and growth of Penn State’s premiere interdisciplinary graduate research education mechanism originally identified nearly 10 years ago remain and constitute serious concerns of the current IGDP leadership, SCoRSCA and CoGR jointly strongly recommend that the Provost establish a University-level Task Force to identify long-term solutions that will address the major issues identified in this report. In particular the Task Force should investigate:

1) programmatic funding of these programs commensurate with their value to the University;

¹ The task force reviewed practices at 29 institutions, including 11 land grant institutions, and visited 5 institutions, including 4 land grant institutions.
2) the perceived ‘second class’ status of these important educational programs. We further recommend that this Task Force have representation from appropriate University units that control potential funding sources (including, but not limited to, college/department instructional budgets supporting TAs);

3) the feasibility of suggested solutions identified in the 2008 Report such as:

- An endowed graduate college, similar to the Rackham Graduate School at the University of Michigan, should be pursued as a valuable major investment for the University.
- Incentives for academic units to host intercollege, interdisciplinary programs:
  - Establish a central budget from which to allocate funds to academic units willing to provide a “home”, administrative support and academic oversight to IGDPs.

Barriers to Sustainability and Growth of Intercollege Graduate Degree Programs

Advisory/Consultative Report

SENATE COMMITTEE ON RESEARCH, SCHOLARSHIP, AND CREATIVE ACTIVITY
AND
GRADUATE COUNCIL COMMITTEE ON GRADUATE RESEARCH

PennState
Background and Rationale

- Intercollege Graduate Degree Programs (IGDPs) offering the Ph.D. at Penn State provide important interdisciplinary research training.

- Penn State currently offers 11 IGDPs; several highly ranked nationally.

- Task Force on Interdisciplinary Graduate Education report was published in 2008 so time to assess progress, if any.

- In December 2017 SCoSRCA conducted a survey to assess the current state of these important educational programs.

Main Conclusions from 2017 Survey

There are three significant barriers for long-term sustainability and growth of IGDPs

1. **Funding**
   - Teaching assistantships are an important source of funds to support Ph.D. students. IGDPs do **NOT** receive instructional budgets, so they cannot offer TAs.
   - IGDPs must seek funding from variety of sources, including extramural grants, departmental or college support, and The Graduate School.

2. **Status relative to departmental programs**
   - IGDP students are sometimes viewed as “second class” compared to students in departmentally-based programs

3. **Faculty availability**
   - Limited participation of faculty, particularly funded senior faculty members
Successful Models for Interdisciplinary Graduate Education in the U.S.

Report of the Taskforce on Interdisciplinary Graduate Education Programs.

- Programs evaluated: 29 universities of various sizes, including 11 LGUs.
- Institutions with successful IDGPs reported major benefits to their research and training missions.
- Major factors critical for the success of IDGPs:
  a. A strong, consistent financial support from the central administration and the colleges.
  b. A strong, committed, and energetic champion for IDGPs in the graduate school.

July 5, 2018

SCoRSCA and CoGR agree that the following actions are needed

1. Identify sustainable and appropriate funding for IGDPs offering the Ph.D.

2. End departmental and college practices and policies that discriminate against IGDP students.

3. Understand and address the reasons funded senior faculty members have limited participation in some IGDPs.
SCoRSCA and CoGR jointly recommend

The Establishment of a University-level Task Force, with representation from appropriate University units, to:

- Identify long-term solutions to address the need for programmatic funding of these programs commensurate with their value to the University
- Mitigate the perceived “second class” status of these important educational programs.

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- Logan Rutten
- James Tybout
- Sarah Ades
Siela Maximova, Agricultural Sciences: Okay. I have prepared five slides. I’m going to try to go as fast as possible. This is a report prepared jointly by the Committee for Research and Creative Activities, the Senate Committee for Research and Creative Scholarship and Creative Activity, and the Graduate Council Committee on Graduate Research.

The reason this effort was taking place is because there was a report back in 2008 that has produced a report, almost 11 years ago, that evaluated the impact in some of the barriers for intercollege graduate degree programs, at that time, under the leadership of Eva Pell. And the report was generated as a result of the task force effort of 15 members.

And the task force, at that time, was charged with assessing interdisciplinary graduate education at Penn State, in particular contrasting intercollege versus departmental based programs and again identifying institutional burdens and possible solutions for the success of those programs. The task force came– slide two, please. Do I have the clicker?

So, the task force came with multiple conclusions related to the importance, the funding, and the characteristics of interdisciplinary graduate education and published a report. And the report at that time pointed to substantial issues limiting the sustainability and the growth of Penn State IGDPs. But at the end of the day, the final number six conclusion stated that existing institutional structure of resources allocating to colleges departments is limiting the proliferation, scope, and impact of intercollege programs, and mandate the colleges to support and invest in such programs, as well as essential resources for incentives are needed. That was back in 2008.

Given the importance of the IGDP for interdisciplinary research education at Penn State, and the fact that with almost ten years elapsed since the graduate school task force report was released in December of 2017, the Senate Committee for Research partnered with the graduate school and the Graduate Council Committee for Research to survey the IGDP leaders to assess the current status of these important educational programs.

So, we have– after reviewing the survey, we have multiple conclusions. And the main conclusions are that funding is a problem. And the IGDPs seek funding from varieties of sources, from extramural grants to internal grants, and so on. But the fact is that IGDPs do not receive instructional budgets, which results in not availability of teaching assistantships, which are an important source of funds to support PhD students.
In addition to that, there is– IGDP students are sometimes viewed as a second-class students compared to students in departmentally based programs. And the third outcome was that the faculty who are participating in this program, by limited number, especially on the part of senior faculties.

So, in addition to our report, what I would like to share with you is something that was made available to us by Oregon State. The Oregon State had undertaken a massive effort in evaluating interdisciplinary graduate education across multiple institutions. The task force there evaluated 29 different schools, from which 11 [INAUDIBLE] universities. And what you can see here is that they have come up with very similar conclusions as we did.

But the bottom line is, the institutions with successful IGDPs reported major benefits to their research and training missions, including greatly increasing quality, ethnic diversity, and technical backgrounds of incoming students, improved training of students in both soft and technical skills for professional developmental classes and laboratory rotations. And reading this directly from the report, I think it’s important.

And increased success with research and training, grant proposals, and increased institutional reputation. At UNC, participation of underrepresented minority students grew from 6 percent to 33 percent over the ten years after the introduction of the Umbrella Graduate Program for the Life in Biomedical Sciences.

And what I would like to point is that the two main factors of success that are highlighted in the report is the strong consistent financial support from the central administration of the University and the colleges, and also strong champion in the graduate school. With that said, our joint task force, our joint committees, we have made a conclusion that the following actions are needed.

We need to identify sustainable and appropriate funding for the IGDPs offering the PhD, and departmental and college practices that discriminate against IGDP students need to be ended. And we need to understand and address the reasons why funded senior faculty members have limited participation in the IGDP programs.

The recommendations that our joint committees are putting forward are to establish a university-level task force with representation from appropriate University units to identify long term solutions to address the need for programmatic funding of these programs, and also to mitigate the perceived second-class status of these students.

And I have to say that at Penn State, we have 11 IGDPs. And some of those are ranked very highly. And I am very proud to be part of actually one of the highest ranked programs in the nation, the Plant Biology Program. So, with this, I’m just going to open the floor for questions. And I have a few other people that can help me out.

Chair Bérubé: Any questions? That was a pretty comprehensive presentation. The report is brought to the floor by committee, needs no second. Are we ready to vote? MediaSite, Poll Everywhere. To accept this report, press A. To reject, press B.

Anna Butler: Poll Everywhere, I have ten accept.
Paula Brown: In house, 76 accept, seven reject.

Chair Bérubé: Motion carries. Thank you, Siela.