

2008 IGERT Project Meeting
Session VI: Technical Session
Computational Approaches to Science and Engineering

PI Responses:

- **How to ensure IGERTs are leading the way on transformative interdisciplinary research?**
 - More money on graduate support and less on PI meetings,
 - Trying to get more areas together that typically do not work together for example
 - Be in the white spaces between disciplines
 - Give brownie points for new interdisciplinary initiatives
 - Create communities of students and faculty around interdisciplinary themes
 - Provide a pool of funds for students who have demonstrable transformative research
 - A pool of funds that IGERT trainees (potentially groups) could apply for to continue on research that is emerging as transformative (2 years)
 - Put resources where you want activity – need more large scale interdisciplinary funding programs as faculty incentive programs for interdisciplinary research – consider a faculty (re)training program
 - Support for sabbatical programs to encourage interdisciplinary research
 - Target support for trainees transitioning to faculty positions to prepare them to develop large scale interdisciplinary grants
 - Need for additional support but some should come from the institutions – but need to Identify specific institutional requirements that should be provided – universities pay to play – they must develop a plan to incentivize interdisciplinary work at the institution

- **How to optimally integrate interdisciplinary research and education?**
 - How to create “crash “ courses that prepare students outside the discipline with foundation skills
 - Use co-teaching strategies with trainees, e.g. computer science students teach biologists, visa versa.
 - Develop special bridge courses – special course sequences that get students prepared
 - Consider shared courses that have been developed to cross disciplines - develop coordinated courses across programs, need site or mechanism to find and share such courses use access grid for delivering these courses
 - Give shared teaching responsibilities to trainees for bridge courses
Participation of all representative groups on steering committees that can effect institutional change to help integration issues.

- **How has globalization of interdisciplinary research in your topic area had an impact on graduate education and research?**

- **What are the career opportunities for Trainees, and how are Trainees being prepared to be successful?**
 - Job opportunities not a problem for IGERT graduates
 - Importance of internships –
 - Career panels for trainees – industry, academic how to apply ,prepare etc

- **What role does the interdisciplinary research in your topic area play in recruiting and retaining a diverse group of trainees? (Please think: Broadening participation)**
 - Share recruitment initiatives across thematic IGERTs – address in part the timing problem that pipelines need time to develop and the initiating IGERT may not be able to take advantage – Jointly as a computation thematic cluster try to pool recruitment efforts

- Create interactions with faculty from computational programs at minority institutions
- Think of more evolutionary time scales in broadening participation – think of the minority as a future faculty member if not a IGERT trainee
- Be lenient with minority students – give extra time to compensate for culture shock
- Tag job opportunities with traineeship

- **How can the IGERTs in this topic area collaborate or cooperate to further the goals of each IGERT?**
 - Consider regional consortia of programs that can share resources and information
 - More small group discussions centered on thematic areas and have PIs set agenda in advance
 - Alternate overall PI meeting with alternate year thematic focused meetings - format with smaller groups that meet more intensively
 - IGERT clearinghouse network to inform trainees and faculty about conferences that are attending – facilitate somehow to find each other at meetings
 - would facilitate IGERT interactions in more depth – approximately 4-5 thematically similar IGERTs

- **PLEASE feel free to add any other questions you wish and provide your input!**
 - The group would like to get the email contact information for all participants in this technical session- please.

Trainee Responses:

- **How to ensure IGERTs are leading the way on transformative interdisciplinary research?**
 - It is important that the IGERT is proactive in making sure that they are not a “code monkey” for the non-computational students. PI’s need to also be aware of and involved in the various fields in the local IGERT program.
 - In addition, it would be better for the IGERT to last longer since it takes more time to integrate other researchers from different fields. Either that or there should be a relaxation of normal departmental requirements.

- **How to ensure that the departments are training IGERTs to lead the way on transformative interdisciplinary research?**
 - Have an IGERT official come in a check with how the program is being run, evaluate organization. Both PIs and students should be talked to.
 - In addition, have a mandatory meeting where PIs and trainees get together to discuss how to get each program more streamlined.

- **How to optimally integrate interdisciplinary research and education?**
 - It is important to make sure that those teaching the courses are required for the IGERT are aware that the IGERT students may not have a background in that field.
 - Also, when schools are submitting IGERT applications they should receive portfolio case studies that show how previous departments have successfully “bridged” the disciplines through courses (training students from several fields) and research.
 - Having a successful IGERT PI visit and act as a mentor could help new schools quickly integrate the various fields.

- **How has globalization of interdisciplinary research in your topic area had an impact on graduate education and research?**
 - Some programs invite people other from other countries, which provides a more global flavor to the program. Not many students/PIs are willing to take

time from their research to conduct research abroad, though the students that do or want to work elsewhere on IGERT funds find it a great opportunity.

- At Iowa state, the IGERT helped lead to the development of a bioinformatics and computational biology graduate program there.

- **What are the career opportunities for Trainees, and how are Trainees being prepared to be successful?**
 - IGERT is pushing us to improve communications, presentation courses, etc. between disciplines. This has been very beneficial in helping us polish up our skills.

 - Those that have required courses through the IGERT have found the coursework useful, but hard to get through. The IGERT is also helping us to be able to communicate in different fields.

 - The internships that IGERT funds also helps students gain extra skills and to network.

 - The Washington University in St. Louis has a course for IGERTs in which the students have to write a grant for training from another source, thus providing each student with grant writing skills and possibly funding to put on their CV.

- **What role does the interdisciplinary research in your topic area play in recruiting and retaining a diverse group of trainees? (Please think: Broadening participation)**
 - This can be a problem in retaining some students who don't stand to gain as much in pursuing a PhD. In some programs there seems to be a problem, even with the IGERT to get women into computer science and to retain them. Suggestions: women recruits could have breakfast with female researchers in the program, or microconferences about women in sciences, or additional funding for child care, etc.

 - One IGERT fellow with a child said that his IGERT funding made his wife more comfortable with the idea of her pursuing a graduate degree.

- **How can the IGERTs in this topic area collaborate or cooperate to further the goals of each IGERT?**
 - There isn't much overlap between the other IGERTs in general. However, there was a group of IGERT programs that dealt with brain research that got together and those that attended it really enjoyed it.
 - We would also be interested in having a national IGERT meeting where all students could come to show their research, with small sessions about the work (as opposed to one student per program).

- **PLEASE feel free to add any other questions you wish and provide your input!**