The IGERT Program Evaluation:

A Focus Group Study on the IGERT Lab Rotation

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Introduction

This report is the result of one assessment in a larger study designed to evaluate Maryland's Integrative Graduate Education and Research Traineeship (IGERT) program in language science. The evaluation seeks to determine the effectiveness of the program in terms of its goals. It also seeks to obtain information that offers insight into the program's most beneficial components and into those that could be refined to enhance IGERT's impact. The program evaluation is led by the Director of Assessment in Institutional Research, Planning, and Assessment (IRPA) and a graduate assistant.

Focus groups allow evaluators to explore salient issues pertinent to participants by providing them an opportunity to express their thoughts, opinions, and experiences in their own words about their experiences in the program. On September 16, 2011, program evaluators conducted a focus group study of advanced IGERT graduate students who had either completed the lab rotation requirement or were prepared to do so. The focus group was designed to capture data on participant experiences searching for, securing, and completing the lab rotation component of the IGERT program at the University of Maryland (see Appendix for protocol).

Data provided in this report are participants' perceptions of their experience with IGERT, regardless of whether the perceptions are based on fact. As always, caution should be used not to generalize qualitative data beyond this focus group.

Methods

Program evaluators, in consultation with the IGERT administrators, formed the research team responsible for the protocol development, data collection, and analyses of the focus group study.

The focus group protocol was vetted by program evaluators and IGERT program leadership to ensure questions were: (1) clear and understandable, (2) broad, non-leading and open-ended, and (3) capable of capturing a range of issues. Questions were ordered, prioritized, and assigned approximate time limits for discussion based on their complexity and importance. The focus group was designed to run approximately 60-90 minutes. Program evaluators developed the focus group script, including information about the confidentiality of the session and the informed consent form, as per IRB agreement.

Data Collection

All IGERT students who were either in their second year of the program or who had graduated from the program but were still enrolled at the University were invited via email to participate. All students who responded and could attend the entire focus group were selected to participate.

The focus group was staffed by three trained research team members and was audio recorded. Two served as discussion facilitators and the third served as a note-taker. The lead facilitator followed the protocol to ensure that all topics were covered. The lead facilitator began by reading a script to communicate necessary information about the discussion. Attendees were informed of the confidentiality of the session and asked to sign a consent form. After initiating the audio recording, the lead facilitator began the discussion.

Data Analysis

After the completion of the focus group, student employees in the IRPA office transcribed the audio recording. A student employee who was not involved in the transcription reviewed the script to verify its accuracy. One evaluator analyzed focus group data using qualitative procedures. After reading the transcript and generating a list of common themes, the researcher assigned each theme a code. A second evaluator audited the analyses to confirm that themes were properly assigned and to ensure that the report accurately reflects the focus group discussion.

Participants

Nine IGERT students participated in the focus group. Seven of the participants were students in the Linguistics department and two were from other departments. Three participants were at least partially funded by IGERT, whereas two were previously funded by IGERT, and four had not received IGERT funding. Four of the nine focus group participants had not completed their lab rotation, three had completed the rotation, and two were unsure as to whether or not they had completed the rotation requirement.

All participants had at least a general understanding of the lab rotation component of the IGERT program. The participants' ongoing participation in the IGERT program, and the fact that some were at least partially funded by the program, may have resulted in a participant bias. It is important to keep this potential bias in mind as the results reflect a group of students with a vested interest in the IGERT program.

Results

The following focus group results are grouped into three topic areas: (1) how IGERT students conceptualize the lab rotation requirement and the program's goals for the experience; (2) descriptions of students' experiences while completing the lab rotation; and (3) the challenges and benefits of the lab rotation requirement, including any new skills, partnerships or products emerging from the experience.

Conceptualizing the Lab Rotation Requirement

In general, focus group participants expressed uncertainty about the expectations for the lab rotation requirement, both among students and among some IGERT faculty members. The lack of clarity on the guidelines for the rotation, and whether students' projects met those guidelines, is evidenced by the fact that two of the nine study participants were unsure as to whether or not they had completed the requirement. One of these students said that s/he thought s/he completed the rotation requirement "but it wasn't very extensive." This student went on to comment about difficulties s/he encountered in developing a satisfactory rotation experience:

> I had taken a class with [my rotation advisor] and then for the next, maybe, three quarters of the year I continued to meet with him maybe once a week. Then I was supposed to do

more of a lab rotation, because I guess that didn't count. But then I was supposed to go to this reading group, but then they didn't meet that often, so it ended up like, being like, two, I don't know, failed attempts at a lab rotation and I keep on trying so...

Another focus group participant commented on the blurred boundary between the projects students completed in the required interdisciplinary IGERT courses and the lab rotation requirement.

… I'm confused where the border is between the classes that we're required to take outside the department. And everybody is supposed to do that as an IGERT requirement. So everybody is supposed to take classes outside the department, and then it seems like that also counts as a lab rotation? And so I'm still not clear if I've fulfilled my lab rotation requirement or not because I was going to take classes in another department anyway.

One student noted that the difficulty in discerning expectations for the IGERT lab rotation may have been more acute for those who were among the first IGERT student participants. S/he described the rotation process as "mysterious," and noted that communication regarding expectations did not directly reach students.

Well I think that I was one of the first people to do a lab rotation, if that's what I did, and nobody knew what was going on, so I didn't really know what was expected of me. So we'd have these meetings but he didn't really know like what we were supposed to be doing and then every once in a while I would get word from up-high that I wasn't doing the right thing or I should be doing something else. I mean, not directly but it filtered down … And then also communications from IGERT to the student about "well it doesn't seem like you're really doing the lab rotation" or "yea you did a great lab rotation you can be done now." I mean it's very mysterious.

Students also reported that some IGERT advisors may not be clear themselves on the expectations for the requirement or their role as an advisor.

I haven't [completed my rotation] yet, but the people I have contacted to do it seem as confused as I am with regard to … their role; I mean it's not like they don't want to, they're super nice. They're like "yea sure" but they have like no idea. You can tell that they're nervous because they don't know what to do with you. So they're like "ok, but why don't you get some more information about what you should be getting from this experience because"... so... It's really hard for them to supervise if they don't know what they're supposed to be supervising.

And so I think there's definite room for improvement for both having the people hosting lab rotations know what is kind of expected of them or what the student wants to get out of it and what IGERT wants to get out of it.

One focus group participant commented that s/he received little guidance pertaining to the lab rotation when s/he applied for the IGERT program, but s/he suspects the process may have improved.

…when I applied it was just sort of "well here are some ideas for things I could do." But it wasn't necessarily stuff that was gonna be good to follow up on. So I think maybe now

there's a better system in place for making sure people know what they're supposed to do and what they're gonna do or whatever.

A second participant, who entered the program a year after the above student, made the following two comments about the feedback s/he received throughout the application process. While it was helpful that his/her advisor encouraged communication with the student's potential lab rotation advisor early in the process, there seemed to be a lack of communication among IGERT faculty members.

> I came in a year after [above] did, and [the application] seemed to be shifting in the right direction of getting more formality into it. In the application process, working with my advisor, he pushed me to make clear what I'd be doing, and make sure to contact a potential outside advisor, just to make sure the lines of communication remained open and the possibility will be there. But then as far as saying, you know, "you need to be over there X number of times and participate in this way," you know, wasn't specified, but where as it might be now for first year IGERT students, I don't know.

> I guess I got some guidance during the application process but it was kinda like, confusing … I had selected a potential advisor, contacted, you know, the potential advisor. He said "fine, that sounds like a good plan." Then I got the reviews back from the feedback thing and they said "well, actually, it might be better for you to work with, you know, this other professor. Go and contact this other professor." And he's like "yea this sounds fine, but you might actually want to work with the first person." So it was like going back and forth …

When asked about their perception of the IGERT program's goals for the lab rotation, focus group participants had difficulty articulating a clear set of aims for the requirement. Furthermore, they were unsure to what degree they should be "pushing" themselves to pursue a rotation that was significantly different from their research in their home department.

> I'm very unclear on the goals. I mean I understand that you're supposed to be learning about something beyond what you learn in your home department. But, beyond that, I don't know how involved you ideally would be, or if you're supposed to have some, you know, product at the end of it or not or it's just kind of feeding into your understanding of what you're working on anyway. I don't know.

> And I guess this maybe goes back to the goals in what you're saying, is like how far are you supposed to be pushing yourself when you're finding a lab rotation? Like should it just be something that complements you and it happens that you can talk really well with that person because really you're kind of working on the same thing in different departments or should it be something that seems completely unrelated and you're going to be the bridge that really pulls these things together. But in that case then I think that you end up potentially having the other problem where what you're doing isn't going to be that interesting to them and you're sort of just learning how you can apply what they do to what you do. So maybe it would be good if people picking out lab rotations knew which of those ends they were supposed to be shooting for.

> I think for some people it will work well to be the bridge, and do something really weird and different for them; for some people it won't work at all given the researchers we happen to have. And I think this whole thing would be a little bit less fraught if it was just like, "It's okay, for whatever time you do." Maybe you work with a professor and it's not really a stretch but you are seeing somebody in another department. Or maybe you're doing something that's totally a stretch, but like, just admitting that there's, not everybody is gonna be able to do the same thing.

One student suggested that there is less motivation for students in the Linguistics department to pursue a more challenging lab rotation because the department already has the necessary equipment and expertise to approach the study of language science from an interdisciplinary perspective.

> I feel like there's a little bit of a tension between … so you wanna do something that will integrate with your other work because that's the way it'll be easiest and the most productive. But then they also want it to be a stretch for you in terms of what you're used to … There are plenty of people on campus that I could work with where we'd have like a lot of things in common but we have so much in common that it's sort of like being in the Linguistics department and also the Linguistics department just happens to be very interdisciplinary in the topics that it covers already, so I don't need to go to another department to do language acquisition work or sentence processing work or whatever. And we have all the equipment right here. And so it's like, to do something that would be different I have to do something just totally different and that's a pain.

Summary. Overall, focus group participants described the process of securing a lab rotation as challenging because the definition of lab rotations and the program's goals for their experiences are unclear, both to students and also to some IGERT faculty members. Students were unclear as to how projects they completed for the interdisciplinary IGERT classes related to the lab rotation requirement. They also expressed uncertainty regarding the extent to which the experience should challenge them to explore unfamiliar disciplines.

Lab Rotation Experience

Focus group participants reported completing their lab rotation requirement at various points before or during their IGERT experience. One student said s/he finished the rotation prior to enrolling in the IGERT program and another student said s/he planned to complete one rotation with each of his/her two IGERT advisors. A third student, who said s/he had already completed the lab rotation requirement, said s/he "still [has] to do [the] second year of lab rotations" which suggests that s/he also expects to complete more than one lab rotation.

Beyond these differences in the timeline for completion and the number of planned rotations, students' experiences while completing their lab rotations differed along three main dimensions: (1) whether the student completed the requirement within or outside the confines of a course; (2) the physical location of the rotation and availability of a lab workspace; and (3) whether and to what degree students became integrated in the host research community.

Completing the Lab Rotation through a Course. All five of the students who reported either completing or possibly completing the IGERT lab rotation identified their rotation department

during or after taking a class with their would-be rotation advisor. Some students utilized a project they completed in class to satisfy their rotation requirement, while others continued their project beyond class requirements by meeting regularly with their rotation advisor and/or attending lab meetings in their host department.

> So I took a class in [another department] and I did a project within a semester so mine wasn't as extensive. It was just within that one semester that I did a project for that class.

> In my case, I didn't actually technically go outside my department … I worked with somebody in this department who is also in [another department] … Sort of similar to [another student] I had taken a class with him and then for the next, maybe, three quarters of the year I continued to meet with him maybe once a week…

> I have two advisors … Last year I took two courses with [one advisor], it was like a series of courses, and then I guess I did a project with him and then I kind of met with him regularly when there, like there was question about the project that came up and so I met with him regularly. And so I also attend... a … group that meets every [week] … So that's for [one advisor] and then for [the other advisor], I don't meet with her as often, but I also go to...I didn't go to her lab meeting but in … [that] program they have this … [organization] so it's like a presentation every week, and then for [their] students and faculty to present their research. And I actually presented my research there too. And this semester, I am taking a class with [the second advisor] and hopefully I will start a project with her.

Two students enrolled in an independent study with their rotation advisors that they used to complete the lab rotation requirement. One of the two describes his/her experience:

> In my case, I had taken a course with [a] professor in the fall and then in the spring I took an independent study with him and that was the start of the lab rotation and I continued to meet with him on a weekly basis through the fall while I was finishing a project.

Integration in the Host Lab Community. Two students reported having a physical work space in their host department and three students described travelling to another building at least occasionally to attend meetings for their rotation. Although one participant commented that it "actually makes a difference" to have a physical workspace in the host department, two others reported that a physical workspace alone is insufficient for integration into the host department given the short duration of the rotation.

> I also think that just having a physical, or maybe even a metaphorical place, in a different lab doesn't really...[is] maybe not, the best thing to do either because you're a new person. You come to a different lab where the group of people are already well integrated, so, and it takes time to get to know other people. So you can't expect to be integrated right away, and then you can … only do that only for one semester but it takes much longer than that to get to know other people. So I think it would help more if, you know, you just got more engaged in what the lab is doing ... I was expecting [to] just watch what people are doing and how they're collecting data or, you know, just observe. But, I don't know, I

don't think I can expect much by just, you know, coming and sitting at the desk and still doing your own work while other people are doing their work too. So I don't know...

So I started the very beginning of what you could call lab rotation-- you know, it never got finished--there was a physical lab there, that I could be in with, you know, other students that I was introduced to, and they were doing this and that ... I had meetings with somebody in the lab, but…the thing is… maybe it's [an] idiosyncrasy of that lab, but although there's a physical space and although there seem to people going around, nevertheless, there isn't really I think, a way to get integrated, in the sense that, like, they don't really have lab meetings. They were irregular and there are no desks or anything and to do what I wanted to do didn't require that I be in the lab. So, although there was sort of a semblance of a transition, there was nothing to transition to, right? So there was something there, but not for me to do.

Three students described their lab rotation as consisting of one-on-one meetings with their rotation advisor. Whereas one student commented that this individual relationship was "fine" and "the most natural," another noted that s/he would have liked to have been more integrated into the host community.

I didn't feel like I was interacting with a lab at all, I mean, I was interacting with one person and maybe that is a lab in [that department] … I think that was fine, and the most natural within what I was working on, but … this person was also in my own department so I often didn't leave my department.

The other thing I would've liked, and which didn't really happen, was kind of getting integrated into [a departmental] community. So I got to meet the individual people, but I don't think I haven't had very many opportunities to talk that much about research. Like, I didn't feel that integrated into the community. And part of that, I think…is that there is a meeting … but there isn't a general lab where everyone is meeting. So there's not even a general space where most people are. They are kind of scattered depending on what they're TA'ing for and stuff, so I knew a few people very well, and I got to meet the other people from the class, but I would've liked to have been considered part of that group of people as well. I mean, I don't know if that would be totally feasible. So what seems to be easy from the lab rotations, well maybe I'm being optimistic about this because in my case it worked well, but it seems like you can get a faculty member to meet with on a regular basis if you find the right faculty member, but what's harder is necessarily getting integrated into the community and getting all the other stuff going that you might want to get going.

One participant, who initiated his/her rotation during a class with his/her rotation advisor, reported having "a lot of interaction" with students in the host department, particularly during and after the class.

I had regular meetings and I feel like I also had a lot of interaction, I guess, with students in his class because it's a very small class of like 5 to 6 people so I really got to know them very well. And I got to get close because we had the same supervisor and we shared the same interest. And then we also started a project with another group of students from another department, which was great.

While discussing the nature of their rotation experiences and the degree of interaction between themselves and the host department, multiple focus group participants emphasized that a significant amount of valuable interdisciplinary interaction occurs outside the boundaries of the lab rotation requirement, frequently as a result of other IGERT-related events such as Winter Storm and Language Science Day.

> I think it's other events that help you get to know other people from other departments other than just doing a lab rotation.

> I think one thing to say about attending lab meetings is if you're involved in say your home department, IGERT, and the NACS certificate, for example, you're going to lab meetings and seminars and discussions, you know, multiple times during the week. And so whether or not … that's actually part of a formal lab rotation, you know, you're still participating, you know, in quite a few lab discussion groups, you know?

Summary. Nearly all focus group participants began their lab rotation by taking a class with their rotation advisor; however, they reported varied experiences regarding the nature of their work in the host lab. Whereas some students interacted with only their lab rotation advisor, others became integrated, to various degrees, in the host research community. Although some participants emphasized that they would have liked to have been more integrated in the host community, many commented that the IGERT program fosters interdisciplinary interaction through multiple events and opportunities associated with the program beyond the lab rotation requirement.

Outcomes, Challenges and Suggestions

Focus group participants described a range of outcomes and challenges associated with their lab rotation experience. They also commented on how the experience affected their perceptions of conducting interdisciplinary research and made suggestions for improving this component of the IGERT program.

Outcomes and Perceptions of Interdisciplinary Research. In terms of products emerging from the rotation, one student said s/he submitted an article for publication, one is in the process of writing a report on data from the experience, one continues to work on the project from his/her rotation, and a fourth is no longer working on his/her project because it became "less central to the work [s/he] was more interested in." Two students developed ongoing partnerships through the rotation and continue to occasionally meet with their rotation advisors and/or with students in the host lab to work on projects.

Participants had mixed experiences with regard to whether or not they acquired new skills as a result of the lab rotation experience. One student had difficulty discerning whether the new theories s/he learned were a result of the lab rotation or the connected course in which s/he enrolled; s/he did, however, note that the skills s/he used throughout the rotation were "the same set of skills that [s/he] used in [his/her] own research to begin with." Another student said s/he learned "some skills … and tools" but that s/he "would've learned them anyways" regardless of the rotation experience. In contrast, a third student reported that the skills s/he gained through the rotation experience fit "very well" with his/her future and academic plans and that s/he planned to "take it a step further for [his/her] dissertation."

Participants also had mixed responses to whether and how the lab rotation shaped their understanding and/or expectation of conducting interdisciplinary research in language science. The following student reported benefitting from the immersion in another discipline:

> I think one thing is just like being able to converse and translate your ideas, you know, to a different audience. So, and then in doing so, that allows you to see, to take a step back and see what are the real issues with what you're doing and what are the real issues that span across these disciplines. So you can kind of see what the coherences are, and any potential difference, determine what potential differences are due to ways of actually thinking and analyzing data or whether it's just terminology differences.

Two participants experienced difficulties in communicating with individuals in other disciplines while searching for and/or completing their lab rotation. For one student, these communication challenges made it difficult to set up the rotation requirement:

> For me, I haven't done [the] IGERT rotation, [but] what's been most helpful is there's someone that knows because he is part of the IGERT, that can talk to me and I talk to that person and part of the reason I haven't done it is because while talking to that person I realize all the things I need to do in order to be able to communicate with that person. It's hard when you're in a room with a person that [doesn't] understand what you're saying and you can't understand what they're saying. But I'm taking courses to be able to understand and work with this person eventually, but it was useful that this person was receptive, like I know I should be meeting with you, but let's just talk. I really don't think that having a lab rotation as a physical rotation is going to help, it's more just having someone to talk to you.

For a second student, the difficulties s/he experienced while attempting to reach "common ground" with the individuals in his/her host lab reinforced the idea that interdisciplinary communication can be challenging and that those who seek out interdisciplinary collaboration would "really have to commit to doing it."

> I realize how far down you have to go to reach common ground. Even though maybe you're both working on language, you really have to go to a basic level to be able to talk about the same thing and then you could slowly build up. But me, thinking of things from a high linguistics level I think about them on, and them thinking about them on their high computer science level. We both had to go...so that we both felt like we were talking to infants for our research, and then slowly starting to build up. To think about actually having productive collaborations, you just see like...how far you're going to have to go to be able to do that. I mean, to really be able to do it, you'd really have to commit, both people would really have to commit to doing it and I think I realized how much that is true.

The same student quoted above also reported that individuals in his/her lab rotation department appeared not to "care" about his/her work, which made bridging interdisciplinary divides more challenging.

> When I originally wrote my proposal, I had all this flowery language about learning to talk to people in different areas, and learning how to relate my work to [their] work …

> What I learned is they don't really care about my work, that's okay because I care, and there are other people who care, but … people who do care aren't in [that department], they're in the Linguistics department. So maybe, I can now have the vocabulary and experience to be able to talk better with the people working on similar things like me so I don't think I have really bridged any divides or will be able to better bridge divides in the future because of this.

Another student commented that by completing his/her lab rotation earlier in the program, s/he was fulfilling a requirement rather than viewing the rotation as an opportunity to approach his/her research from an interdisciplinary perspective.

> I didn't feel interdisciplinary when I was doing my lab rotation, I was feeling that I'm just moving from this discipline to okay now I'm in a different discipline. I never feel like I'm actually bringing the two things together, so maybe I should be disappointed, I don't know, that's how I felt… I guess I didn't expect to be able to integrate the two things together…so the way I viewed this requirement that I have to fulfill and now I've fulfilled it. I think if you ask me now what kind of lab rotation I would do, I'd have a better idea let's say, computer science ... because that is more relevant to what I'm interested in now. But at that time in my graduate career I knew it was just a requirement that I wanted to fulfill, and I know that I can do that so I did but it didn't help me with my own research.

Challenges. Although focus group participants communicated varied experiences with regard to rotation outcomes, many expressed concerns about balancing responsibilities in their home department and lab rotation. Two students who have not yet completed their lab rotation reported that having multiple competing demands for their time has delayed their progress on completing the requirement. They commented that advanced students have less available time to complete the lab rotation, particularly during the fall and spring semesters when labs typically meet.

> The main reason I haven't done mine yet is that I don't see [balance] happening. I don't know how I possibly could. Like this far along, I have so many things going on in Linguistics that I would have to drop several projects in order to do it. It would have been a much better idea for me to get it done when I was like a second-year or something.

> It's definitely hard to do it during the school year, during the semester, like fall or spring… So it's definitely hard to do that because you're taking classes and doing your own department... whatever you have to do for that. It's hard to do that then. And it's like "well look" the other time that you really have to kind of, really, expand your stuff is during the summer and then the problem is that labs don't regularly meet during the summer, so it's kind of like an off-timing type thing.

Focus group participants reported that the challenges associated with balancing the responsibilities of the lab rotation requirement with those of their academic program are more pronounced for students with additional responsibilities such as international students, who may have assistantship responsibilities, or students who are pursuing the NACS certificate.

> I think one thing to add to that the situation is a little more different for international students who participate in IGERT because you're not actually freed up from your assistantship responsibilities to continue working full time, 20 hours a week, and then

you work for 20 hours a week, and then you do your own research. You take classes and you're also supposed to do lab presentations and be somewhere else when... right. So that's just a time conflict. You can't always be in different places at the same time.

You know it seems like there needs to be some give and take. If you're an international student there has to be some lee way, right? If you're also doing the NACS certificate on top of, you know, your home department and the IGERT, there's gotta be some leeway. And I guess maybe then it's like, well if you can't balance all that then you shouldn't apply to these things I guess. You could take that stringent view, but at the same time participating and doing all these types of things, you are getting a very diverse experience so...

Relating to the above comment, most participants agreed that the design of the research rotation as a required component of the IGERT program was "inorganic" because the IGERT program already fosters significant interdisciplinary collaboration. Focus group participants described the requirement as problematic for multiple reasons. First, as mentioned, IGERT encourages interdisciplinary collaboration in other areas of the program, such as Winter Storm.

Second, students' research interests and familiarity with the IGERT program are shaped and reshaped throughout their academic experience; thus, the rotation they propose in the program application may no longer be salient to their academic goals as they progress throughout their program.

Especially since your research and your perspective develops a lot from when you're in your first or second year applying to IGERT and when you're a fourth year thinking about your dissertation, to have this lab rotation as a requirement hanging over you, it becomes a burden rather than something to help you better understand what you're doing or do better work.

You have to specify the labs you're going to be working with, but at that time in your career you don't really know…

Third, one participant, who is at least partially funded by IGERT, noted that the lab rotation requirement is "kind of stilted" because IGERT students are already required to complete a customized curriculum but do not receive any formal certificate or academic recognition as an incentive for completing program requirements, like the research rotation.

Well I think it's certainly something good in the application process to say like look, the point of this is to bolster interdisciplinary. How would you go about doing that and in doing so, propose something like a lab rotation. But calling it a formal lab rotation with it being a requirement for you to do this is really hard. I think that is not the way to go about it. I think that's really hard, because you do this IGERT thing but you don't come out with like somebody like stamp something saying "okay, you completed this," there's no final thing that says, "here's a certificate you've done your IGERT requirements." So it's kind of like, that makes it a really weird requirement, a requirement for what? You know, it's like not taking...you need classes for a requirement, for a degree, but the lab rotation as a requirement for doing interdisciplinary work seems kind of stilted.

Furthermore, the same student in the above quotation noted that positioning the lab rotation as a programmatic requirement put the experience "on par with coursework," which s/he expects will receive less of his/her time and attention than other projects related to personal research interests.

> So, you're kind of taught throughout your graduate education: "Okay look, you gotta take some classes, you gotta do these requirements. But really, the important thing is for you to do your research and be able to translate these ideas across a couple of disciplines if your department is interdisciplinary." So you come into the game thinking "yeah, these requirements, like classes, I gotta do them but it's not that important." You see, so you realize where the importance is. You see, so in making something like a lab rotation a requirement, that's putting it on par with coursework and that type of thing, where as you know, if you were to let it happen a little more organically, then something more fruitful will come out.

Focus group participants offered three suggestions for improving the IGERT lab rotation requirement. First, the two students who incorporated their lab rotation into an independent study course as a part of their IGERT curriculum recommended this strategy as "ideal" for attaining balance among responsibilities during the semester in which they completed their lab rotation.

> One thing I did … is that I made my lab rotation into an independent study with this professor and I devoted as much time to it as I would have devoted to any other class. And I devote a lot more time to my other research than I do to classes but at least that sort of, in my head anyway, made it seem like "okay, so that's gonna get this much of your time because it's a class so it gets that much of your time" and so that helped. But I guess depending on what other class requirements you need, that might not be possible for everyone.

> I didn't feel stressed out about this at all because I had kind of designed my own lab rotation that was counting for course credit anyway. I put it in the IGERT application as a course that was going up I don't know, whatever. It was one of my IGERT courses, and those kind of things so I think that, if you can make your own course then if this is fine that your lab rotation is an independent study and you can make that be one of your requirements, then that's a way to … do two things at once, alleviates some of the difficulty. If that's what's allowed to be IGERT lab rotation, I guess. But it's kind of ideal because you get make it exactly what you want to do. It's like the course that you wanted to take. So... I mean it worked out well for me.

Second, participants recommended changing the name of the experience to reflect the idea that students are rarely working in an organized "lab" similar to those in the natural science disciplines. Participants expressed general agreement with the following two comments:

> So, I was just going to say that "lab rotations" is a really crappy specification for this, because in the end what everybody is talking about is "I had a project I was working on with someone. I didn't have a lab to go to and to the extent that I did, it didn't make sense to call it a lab rotation." And I think "lab rotation," it maybe made sense in Chemistry where in one department there are like five labs if you go to the other lab someone will give you something to do. But if you go to another "lab" here nobody is going to give you something to do, so you have to have a project and that comes out of coursework or

discussion with somebody. So I think that the fact that it's called a lab rotation and then it is not really specified what it is means that nobody has any clue what to do. If it was like, "you should do a project," that would make sense to me, to other people.

I think calling it something like "Having a second advisor you can actually work with" and maybe you found a more eloquent way of putting it … with no expectations … I'm kind of interested in what this person is saying and what this person does and maybe eventually we'll have something to say to each other, and maybe … that's gonna take time to get to the point where you understand, you know, what each of you cares about and can talk and then maybe a project will come out of it. But then it has to be okay if a project doesn't come out of it too because otherwise you're just going to be under this pressure all the time like "I have to find my project, I have to find my project" and you might not. Maybe what you're gonna get out of this is a deeper understanding of how a psychologist thinks about what you do and how you can explain your work to a psychologist really well and that might be more valuable than having a paper on something really mundane that happens to cross between the two.

Third, focus group participants suggested that the IGERT program assign students a second advisor when they enter the program and either expect or suggest that a project, similar to the ones some students produce during the lab rotation, will emerge from that ongoing relationship.

One way to sort of combine the spontaneity … with something that you can propose and have a plan for will just be that people can just have a second advisor outside their department from the beginning. So in your first semester in IGERT you're gonna meet with him a few times so there's no expectations, you're just talking with him. Anybody can benefit from just having an advisor without having a project and I think in almost every case, by the end of two years if you're talking to them semi-regularly, you know it may go up and down, sometimes you're meeting with them all the time, sometimes you're not very much; you're gonna get a project out of that.

Similarly, one student suggested that the program should permit students to integrate into the IGERT community first, then allow them to have "the option to affiliate or attach with some faculty member from another department, depending on what the nature of the collaboration is." S/he went on to say:

We could be applying to a program with the knowledge that we'll be doing lab rotations at some point but I don't think it's a good idea to feel compelled to put something on paper when you propose something, but just let it form naturally. You will still do that eventually when you finish the program because we are already involved in a lot of cooperations, but during the second year is a better time to do that.

Summary

- In general, focus group participants reported that the guidelines for what type of experience will satisfy the lab rotation requirement are not clear. More specifically, they were unsure to what degree their lab rotation should immerse them in an unfamiliar discipline and whether the rotation should entail mostly meeting one-on-one with a second advisor from another department or attending organized meetings in the host lab.

- Participants also had difficulty articulating the IGERT program's goals for the lab rotation.
- The majority of focus group participants who have completed their lab rotation initiated the experience by enrolling in a course with their would-be lab rotation advisor.
- Students have varied experiences while completing their lab rotation. Some complete the requirement through a course project and individual advisor meetings, while others develop ongoing relationships with the host community.
- Whereas some participants wished they could have been more integrated in the community of their host lab, others emphasized that the IGERT program fosters interdisciplinary collaboration through many venues outside the lab rotation.
- Students reported mixed experiences with regard to outcomes emerging from the lab rotation. Some acquired new skills and developed cross-disciplinary partnerships that will advance their ongoing academic work while others regarded the lab rotation as a requirement to be completed.
- The lab rotation experience underscored challenges associated with interdisciplinary communication and collaboration for some focus group participants.
- Participants noted that the term "lab rotation" does not align with the work most students complete for the requirement.
- Students expressed concern with the lab rotation as an IGERT program requirement because of the multiple competing demands for their time and for the "inorganic" nature of the experience as a requirement. They suggested assigning IGERT students a second advisor outside their home department rather than having the formal lab rotation requirement.

Appendix: Focus Group Protocol

Topics of Interest

- Process for selecting and securing a research rotation position.
- IGERT students' experiences in the host lab.
- Emergent skills, partnerships, and experiences that contribute to interdisciplinary language science research as a result of the rotation.

Focus Group Script

Hello, my name is _____. I am _____ (TELL BRIEFLY WHO YOU ARE HERE AT UM). I will be moderating our discussion today about your experiences with interdisciplinary research and the IGERT program. This is my colleague _____ who will be taking notes. (EITHER INTRODUCE THE NOTE TAKER, OR LET THEM INTRODUCE THEMSELVES.) I'm going to read the following information from a script to ensure that I communicate all of the necessary information about our discussion. Most of you already know a lot about cross-department language research at the university, but I am going to remind you of the standard NSF goals for the IGERT program:

The IGERT program is an interdisciplinary program in Biological and Computational Foundations of Language Diversity, which is supported by the National Science Foundation's prestigious Integrative Graduate Education and Research Training (IGERT) program. The IGERT program's main goal is to strengthen the language science community at University of Maryland by offering students and faculty venues and resources for interdisciplinary training and collaborative research.

This is a focus group, which is a research method useful for gaining information about a topic in a comfortable environment. As participants, we ask you to maintain the confidentiality of today's discussion and not share the content with anyone outside the focus group. With your permission, we will tape record the session so that the notes will accurately reflect the conversation. Your identity will be kept confidential. We will summarize the focus group's discussion today and present our findings, with no names included, to the IGERT program staff, after which they may present the findings to agencies funding the project and members of the academic community. This focus group is a part of a larger study to assess the effectiveness of the IGERT program and to provide internal feedback that facilitates program improvements. As NSF states, IGERT is an "experiment in graduate education", and participating in the assessment process is an important part of the educational research effort.

Over the past year we have conducted focus groups with new students, returning students, graduating students, and faculty members with similar goals in mind. Although the assessment process is guided and funded by the IGERT program in language science, its goal is to better understand the environment for language science research more broadly at UMD, and to create a model for sustainable change in the science of language.

In order for this to be a productive session, we ask that you speak clearly and one at a time, and that you think about the questions and answer candidly. Keep in mind you don't have to answer every question. While at times you may disagree with the comments made by others, we ask that you respect their right to say what they think. At this point, if you would like to leave and not participate in the focus group, feel free to do so now. [IF ANYONE GETS UP, THANK THEM FOR THEIR TIME.]

Now I would like you to write your name on one side and your number on the other side of the card in front of you [have participants count off after this sentence]. The number on the opposite side of your card will be used for note taking today [reference note taker] and it will also be used later for the transcriptions and data analysis to ensure the confidentiality for your individual responses. We will use your names, as written, to talk with each other during today's session for conversational purposes.

I am also handing out a consent form for you to read. If you feel comfortable doing so, sign the form indicating that you understand the purpose and procedure of this session, and that you agree to participate. If you have any questions about this study, please contact Sharon La Voy. I will hand out her business cards now. [HAVE STUDENTS SIGN AND RETURN INFORMED CONSENT FORMS. IF ANYONE DOES NOT WANT TO SIGN, AND CHOOSES TO LEAVE, THANK THEM FOR THEIR TIME.]

1. Let's start our conversation by having you each tell us your name and what stage of the IGERT program and the research rotation process you are currently in.

2. Please discuss your experience exploring and securing your research lab rotation. How did you locate lab opportunities in areas other than your home department?

   A. *What role, if any, did IGERT faculty, staff, and/or students play in your decisions regarding your research rotation? Did you find this guidance helpful?*

   B. *Did you have multiple opportunities for rotation labs? If so, how did you select from among the options?*

   C. *When did you begin your search and when did you solidify your plans with the host department?*
      i. *Was the rotation plan in place at the time that you completed your application to join the IGERT program?*
      ii. *Is the rotation that you ended up doing the same as what you proposed in your application?*

   D. *How would you describe the IGERT program's goals for the rotation requirement?*

      E. *What were your initial expectations, if any, for the research rotation (e.g. gaining skills, forming partnerships, shaping your dissertation research)?*

3. The next set of questions addresses your experiences while completing the IGERT research rotation.

      A. *Please start by providing a general description of the nature of the rotation. For instance, was your experience based in another location for a semester, or was there an ongoing collaboration that didn't involve physical travel to another lab?*

      B. *How was your transition into the host lab?*

      C. *How would you describe any supervision you received throughout the experience?*

      D. *What type of interaction, if any, did you have with other students in the host lab? (i.e. participating in lab meetings or other activities hosted by department)*
           i. *Were you paired with another student in the host lab? If so, were they a beginning or advanced student?*

      E. *How were you able to balance your responsibilities in your home department while completing your research rotation?*

4. Please describe the benefits you see emerging from your IGERT research rotation experience. What have been the challenges?

      A. *Did you form any lasting partnerships with students, faculty, or staff in your host lab? If so, what hopes or expectations do you have for these partnerships in the future?*

      B. *Were there any new or ongoing projects or publications that emerged for you as a result of your research rotation?*

      C. *What, if any, new research skills did you gain from the rotation (i.e. methodologies, theoretical frameworks, etc.)?*

      D. *How does the work you completed through your research rotation fit into your future academic and career plans?*
           i. *Do you plan to pursue any additional training or interdisciplinary opportunities in the academic area of your host lab?*

      E. *How did your research rotation shape your understanding of and expectations for conducting interdisciplinary research in language science?*

5. Thinking about your experiences overall with the IGERT research rotation, what has been most and least helpful?

      A. *Do you have any suggestions for improving the research rotation component of the IGERT program? [If you could redesign the research rotation experience, or particular components of the experience, what would it look like?]*

      B. *Earlier we asked about your perception of the program's purpose behind requiring the rotation experience. For those of you who have completed your rotation, how has your perspective on the purpose of the requirement changed (if at all)?*

6. Is there anything else you'd like to tell us about your experiences with the IGERT research rotation?

Thank you for participating in today's discussion, your insights have been extremely valuable. As a reminder, we ask you to maintain the confidentiality of today's discussion and not share the content with anyone outside the focus group. Before you leave, if you feel comfortable doing so, please answer the following questions on the back of your name card. [department, expected graduation date, year in IGERT program, race/citizenship, funding]