

## **Crosswalk of IGERT Follow-up Study *Desired* Focal Issues to Research Questions, Evaluation Indicators, and Data Sources**

**Study Goal:** To determine the value of an IGERT Traineeship in preparing scientists and engineers who will pursue careers in research and education with the interdisciplinary backgrounds, deep knowledge in chosen disciplines, and technical, professional, and personal skills to become, in their own careers, leaders and creative agents for change.

**Note:** All analyses will examine together and separately the various groups of IGERT PhD Completers, IGERT Masters Completers, Comparison PhD Completers, as relevant. We will also examine differences by subgroups as relevant.

### **Key:**

#### *Subgroups for Cross-tab Analysis:*

G= Gender, URM= Under Represented Minority, STEM = STEM discipline, YIP= Years involved in IGERT Program, YFP = Year first participated in IGERT; IE= International Experience

#### *Data Source:*

CG= Comparison Group, OE= Open End, MD= Monitoring Data, NN= National Norms, I= Interview, S=Survey

#### *National Surveys:*

APA= American Psychological Association's 1997 Doctorate Employment Survey

Golde= Chris Golde's Survey on Doctoral Education

LIT – Leaving the Ivory Tower (noncompleter survey)

PS = Physical Science Ph.D. Careers Project: Career and Work Survey

SED = 2004 Survey of Earned Doctorates

SDR = 2003 Survey of Doctorate Recipients

3ML – Three Magic Letters

<b>Focal Issue #1: Diversity and breadth of interests among IGERT versus traditionally trained STEM students.</b>				
<b>Focal Questions</b>	<b>Research Questions</b>	<b>Indicators (Data Items)</b>	<b>Comparison</b>	<b>Survey Question</b>
1A. Do IGERT trainees <sup>1</sup> have more diverse career perspectives, expectations and interests than traditionally trained STEM graduate students (TTS)? <sup>2</sup>	1. Why do IGERT trainees pursue careers in STEM? What elements do IGERT trainees report as their most important priorities in pursuing a scientific career? Do IGERT trainees report different priorities than TTS?	A. What's most important to you in a scientific career? (top 3 most important) Notes: Examine personal motivations then, now, and how they relate. ( <i>Parallel to Y</i> ) <i>Subgroups: G, URM</i>	CG, NN=SDR C10	A1
1B. Does IGERT attract students who otherwise might not have chosen graduate school in STEM?	2. For what reasons did IGERT trainees pursue graduate training in STEM? Do these reasons differ from the reasons for which TTS pursued graduate training in STEM?	B. Reasons for pursuing graduate school in a STEM field (all, most important) Notes: Retrospective item, addresses motivation <i>Subgroups: G, URM</i>	CG, NN=3ML A-11	A2, A3, A4
	3. What role does IGERT play in attracting IGERT trainees to IGERT graduate programs?	C. Role of IGERT in decision to pursue graduate school (analyzed by students' year in graduate program when first participating in IGERT) Notes: addresses motivation <i>Subgroups: G, URM, YFP</i>	n/a	A5
1C. Has IGERT contributed to broadening participation (i.e., to include more women, and minorities) in STEM graduate fields?	<i>Analysis of questions 2 and 3 above for sub-groups of women and underrepresented minorities.</i>	n/a		

<sup>1</sup> "IGERT trainees" refers to two groups of formerly funded trainees: PhD Completers and Masters Completers. Non-IGERT comparisons will exist for the PhD Completers.

<sup>2</sup> We will use two categories of "traditionally trained STEM graduate students" – national norms (NN) from various national studies, and a carefully constructed comparison group (CG) surveyed for this study.

<b>Focal Issue #2 Satisfaction with graduate experience and completion of graduate degrees among IGERT trainees as compared to traditionally trained STEM graduate students.</b>				
<b>Focal Questions</b>	<b>Research Questions</b>	<b>Indicators</b>	<b>Comparison</b>	<b>Survey Question</b>
2A. Are IGERT trainees more satisfied with their graduate experience compared to traditionally trained STEM graduate students?	4. To what extent would IGERT trainees and TTS recommend their graduate program to prospective students?	D. Degree to which respondents recommend their graduate program  <i>Subgroups: G, URM, YIP, YFP</i>		O3, O6,
2B. Are IGERT trainees more likely to complete graduate degrees than traditionally trained STEM graduate students?	5. What proportion of IGERT trainees graduate from their IGERT program (Ph.D., Masters) or drop out? How do graduation rates for IGERT trainees (MS, PhD) compare to those for TTS? (Higher, lower?)	E. Degree earned (PhD, Masters, No degree)  <i>Subgroups: G, URM, STEM (Confirming monitoring data)</i>	CG, NN=S&E Indicators	B4
	6. Does IGERT play a role?	F. Degree to which IGERT experience contributed to IGERT trainees' ability to complete degree.	CG	B12
2C. How long do IGERT trainees take to complete their degrees as compared to traditionally trained STEM graduate students?  Note: We added B2 to be able to control for the few IGERT projects that enrolled Masters students.	7. How long does it take IGERT trainees to complete their Ph.D. or Masters degrees? Does time-to-degree for IGERT trainees vary from time-to-degree for TTS? (More, less time?)	<i>Two measures: time from undergraduate degree and time from graduate enrollment, controlling for prior Master's degree, time stopped out, and discipline.</i>  G. Date of Undergraduate degree H. Date of graduate enrollment I. Date of graduation / departure J. Whether or not students had a Master's degree prior to entering, K. STEM discipline of degree L. Originally enrolled in PhD versus Masters <i>Subgroup: G, URM, STEM</i>	CG, NN=S&E Indicators	P5 B1 B5,B6,B8 B3  B10, B11 B2

<b>Focal Issue #2 Satisfaction with graduate experience and completion of graduate degrees among IGERT trainees as compared to traditionally trained STEM graduate students.</b>				
<b>Focal Questions</b>	<b>Research Questions</b>	<b>Indicators</b>	<b>Comparison</b>	<b>Survey Question</b>
Note: Questions B7 and B9 address something that was not an original indicator. Given that our sample is designed to include people who got a degree, the number of respondents who even get these questions will be very small and not representative.	8. Do IGERT trainees who leave without a PhD subsequently earn a PhD at rates higher than TTS?	M. Subsequently pursued additional education and obtained degree		B7, B9

<b>Focal Issue #3: Preparation for STEM careers of the 21st century among IGERT trainees as compared to traditionally trained STEM graduate students.</b>				
<b>Focal Questions</b>	<b>Research Questions</b>	<b>Indicators</b>	<b>Comparison</b>	<b>Survey Question</b>
3A. How successful are IGERT trainees in entering and persisting in STEM careers after graduation as compared to traditionally trained STEM graduate students?	9. What is the average number of months for IGERT trainees between leaving the IGERT institution and obtaining a job?  Do IGERT trainees take more or less time than TTS to obtain a job?	N. Time between leaving institution and obtaining first position in workforce (including postdoctoral fellowship)	CG, NN= APA #22	C2
	10. How competitive are IGERT trainees in the job market for new PhD/Masters graduates?  What role (if any) does IGERT play in trainees obtaining a position?  Do IGERT trainees have job offers before leaving their institution?  Are IGERT trainees being recruited by employers while they are still in their graduate program?  How competitive are IGERT trainees relative to TTS?	O. Respondents perceived role of IGERT experience in obtaining position  P. Possession of job offer before leaving institution  Q. Respondents' perceptions about their job competitiveness and preparation,.	CG	C6,N7  C1  C5, N3
	11. What percent of IGERT trainees are currently employed?  Are they more likely to be employed than TTS?	R. Currently working for salary or wages.  Current position a postdoctoral appointment or fellowship.  If not working, reasons for not working  <i>Subgroup: G</i>	CG, NN= SDR A1	C3  C4  N1

<b>Focal Issue #3: Preparation for STEM careers of the 21st century among IGERT trainees as compared to traditionally trained STEM graduate students.</b>				
<b>Focal Questions</b>	<b>Research Questions</b>	<b>Indicators</b>	<b>Comparison</b>	<b>Survey Question</b>
3B. How do IGERT trainees compare with traditionally trained STEM graduate students in the breadth of the range of careers entered, the diversity of responsibilities assumed, and their positioning in careers on the cutting edge of STEM research, interdisciplinary and/or emerging fields in STEM?	12. What types of positions do IGERT trainees consider when entering the workforce?  Do they consider a broader range of career options than TTS?	S. Type of employment sectors (i.e., government, business, nonprofit) sought after for first position upon leaving graduate school (the three most desired)	NN=SED B5 & SDR A15	C7, N4
	13. What factors are important to IGERT trainees when considering a career, as compared to TTS?	T. Factors that were important in choosing first position out of graduate school ( <i>parallel to A</i> )	NN= SDR C10	C8, N6
	14. What careers do IGERT trainees pursue?  Do they pursue a broader range of careers than TTS?	U. Employment sector  V. Characteristics of current employer (CODED FROM EMPLOYER NAME: type, size, single or multiple locations, new firm)  W. Job title/rank/position	CG, NN= SED B5, B6 & SDR A15  SDR A12 – A14, A18, A22  NN=SDR A19, A20	C9, N5  D1, D2, D4, E1, E2, F1, F7, G1, G2, G4, H1-H8  D3, D5, E3, E4, F2, F3, F4, F5, F6,, G3, G5, H9, H10

<b>Focal Issue #3: Preparation for STEM careers of the 21st century among IGERT trainees as compared to traditionally trained STEM graduate students.</b>				
<b>Focal Questions</b>	<b>Research Questions</b>	<b>Indicators</b>	<b>Comparison</b>	<b>Survey Question</b>
(cont.) 3B. . How do IGERT trainees compare with traditionally trained STEM graduate students in the breadth of the range of careers entered, the diversity of responsibilities assumed, and their positioning in careers on the cutting edge of STEM research, interdisciplinary and/or emerging fields in STEM.?	15. Are IGERT trainees more likely to pursue careers in cutting edge, interdisciplinary, and/or emerging fields in STEM than TTS?	X. Extent to which work is interdisciplinary <ul style="list-style-type: none"> <li>- Disciplines <u>used</u> or drawn upon in dissertation research and in current responsibilities</li> <li>- Extent to which respondents integrate multiple disciplines and/or work on multidisciplinary teams</li> </ul> Y. Extent to which work is cutting edge or emerging. (For IGERT respondents in Research sector only—Optional question)	CG, NN=APA #34, SDR A22	B10, B11, I1  J2, J3, K1, K3, K5, L1, M2, M3  P7
	16. What are the responsibilities of IGERT trainees in their current positions? Do these responsibilities differ from those of TTS?	Z. Job responsibilities (R&D, manufacturing, Tech support, Education, Admin/Mgmt)	CG, NN=SED B7 SDR A31	I2, J1 K2, K4 L2, L3 M1

<b>Focal Issue #3: Preparation for STEM careers of the 21st century among IGERT trainees as compared to traditionally trained STEM graduate students.</b>				
<b>Focal Questions</b>	<b>Research Questions</b>	<b>Indicators</b>	<b>Comparison</b>	<b>Survey Question</b>
3C. Are IGERT trainees better prepared for careers as globally competitive and aware STEM professionals compared to traditionally trained STEM graduate students?	17. To what extent are IGERT trainees globally aware of STEM research in their discipline, and/or engaged in global interactions as part of their current responsibilities?	AA. Global relevance to function/position/work- implications of work is globally relevant is part of the global enterprise,  <i>Subgroup: IE</i>	CG	Sub-item h in D7, E6, F9, G7, H12  D8, E7, F10, G8, H13
	18. How relevant is the graduate training (IGERT, other) of IGERT trainees to their current responsibilities? Do IGERT trainees report more relevance of their IGERT experiences than (a) their own other non-IGERT experiences, and (b) than TTS?	BB. Self-reported relevancy of graduate training (IGERT, other) to current responsibilities. For each current responsibility, "How well did your [IGERT/Graduate] program prepare you for the following responsibilities?" (4-point scale from "Not well" to "Very well").  CC. Single greatest contribution and deficit of IGERT/graduate training to current job responsibilities  Note: Crossed against Y, Y1, and CC <i>Subgroup: YIP</i>	CG	D7, E6, F9, G7, H12  J5, J6, K6 K7, L4, L5, M6, M7  O1, O2, O4, O5
	19. Within their current careers, as evidenced by their responsibilities, to what extent do IGERT trainees demonstrate leadership as compared to TTS?	DD. Job responsibilities demonstrating leadership.	CG, NN=SDR A33	D6, E5, F8, G6, H11  D7, E6, F9, G7, H12