Evaluating the VIP Consortium

VIP Consortium Meeting
May 12-13, 2016
Atlanta, GA
Today’s Agenda and Purpose

• Purpose:
  • To overview the role and expected deliverables of VIP Consortium Evaluation team
  • Review progress to date, early observations, findings, on VIP Consortium Evaluation activities
  • Discuss next steps, evaluation activities for on-going improvement and accountability of VIP Consortium work.

➢ Breakout sessions!!
  ➢ Institutional data
  ➢ Student surveys

Vertically Integrated Projects Program
VIP Consortium Evaluation Team: Our Charge

- Develop a foundational evaluation framework for the VIP Consortium that is adaptable and scalable
- Development of early evidence of Consortium impacts
- Provide feedback to VIP Consortium and site leadership, and Helmsley staff

Two Key Components

**Development of Evaluation Plan**
- Identification of Metrics
- Development and testing of instruments
- Preparation of guidelines

**Early Observations/Study**
- “Test bed” approach in 4 sites
- Expansion to other sites as possible (cooperation/IRB/other feasibility)
Major Focal Areas

- Faculty experience (VIP and impacts on other aspects of VIP)
- Student VIP Experiences (VIP specific experiences and comparison group)
- Student Performance and Outcomes (institutional data)
- Institutional Development and Impacts (VIP site development/consortium development)
- GATECH Retrospective (institutional data)
VIP Consortium Team: A Tiered Evaluation Approach

**First 18 months**

- VIP Sites -- Institutional Analysis (Case studies)
- GATECH institutional data retrospective
- Institutional Data: Identification of common student/VIP program metrics
- Coordinated collection of student survey data

**Second 18 months**

- Addition of sites to Student Survey

**Faculty Surveys**

- (May 2016) to (May 2017)
Introductions: Project Team and Roles

- **Team Lead, Faculty Surveys, Other Reporting**
  - Julia Melkers

- **Institutionalization Study**
  - Gordon Kingsley
  - Mackenzie Wood (PhD student)

- **Institutional Student-Level Data**
  - Donna Llewelyn
  - Jocelyn Cullers
  - Justin Shepherd

- **Student Surveys**
  - Lisa Lattuca
  - Shanna Daly
  - Erika Mosyjowski (PhD student)
  - Carla Zoltowski
VIP Consortium Evaluation Team: Deliverables

- Series of early/preliminary findings reports provided periodically throughout funding period to VIP leadership
  - Formative memos (institutional development analysis)
  - Student survey
  - Faculty survey
  - Institutional data analysis

- VIP Evaluation Plan
  - Detailed evaluation plan for continued roll-out of VIP Consortium
  - Detailed data collection instruments/protocols for Consortium-wide/individual site use
    - Institutional data variables and analytical suggestions
    - Student surveys and suggested implementation protocol
  - Summary of lessons learned/observations to enable plan adoption
INSTITUTIONAL ANALYSIS UPDATE
Institutional Analysis Launch Questions

Embedding VIP Sites

Fostering Consortium

Relating Sites and Consortium
Approaches for Institutional Analysis

• **Types of institutional questions:**
  - Embeddedness of VIP program: organizational, cultural, knowledge
  - Origin stories: building off of existing programs or starting from scratch
  - Leadership and administrative behaviors: administrative networks and operating networks within and between VIP institutions
  - Impact on faculty: research and workload
  - Partnerships: collaborations among VIP universities, consortium development

• **Sources of Data**
  - Semi-structured interviews with more established programs
  - Focus groups
  - Archival evidence: 6-month reports, emails, working groups, VIP summaries
  - Surveys: PI and faculty
## Summary of Defining Characteristics of VIP

<table>
<thead>
<tr>
<th>Key defining characteristic</th>
<th>Archival Evidence</th>
<th>New Characteristic</th>
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<tbody>
<tr>
<td>Students can participate for at least two years</td>
<td>Multiple sources of evidence</td>
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<td>Projects based on faculty mentor’s research</td>
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<td>Program is curricular</td>
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<td>Learning outcomes focused on the development of both technical and professional skills</td>
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<td>Multi-disciplinary teams are encouraged but not required</td>
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<td>Dedicated classroom and meeting spaces</td>
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<tr>
<td>Long-term, large-scale projects that each continue for many years, even decades</td>
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-紫色圆圈表示关键特性
-蓝色圆圈表示档案证据
-红色圆圈表示新特性
VIP constructs straddle the research and education missions of universities, exhibiting the following models across the consortium campuses:

A. Strong administrative support (Dean level and above), PI’s not leading a VIP team(s).

B. Strong administrative support (Dean level and above), PI’s leading VIP team(s).

C. VIP is PI driven, PI leads a team(s).

Most schools are R1 Research Universities with the following exceptions:
* Baccalaureate Colleges--Arts & Sciences
** R2 - Research Universities (high research activity)
*** R3 - Research University (limited activity)

Number of teams per school shown in parenthesis
Key Consortium Elements

A review of select literature detailing consortium projects exists across a variety of fields – including healthcare, psychology, computing, and physical sciences – with a variety of sponsoring partners, including NIH, NASA, state government, and regional agencies – reveals the following key consortium elements.

1. What factors lead to successful consortium formation?
   • Ownership and Leadership
   • Mix of university and commercial members with institutional buy-in
   • Perception of value – financial, educational or utilization
   • Understanding the diverse needs of consortium members

2. How does a consortium become a positive factor toward achieving larger goals?
   • Understanding the diverse needs of consortium members
   • Time and trust
   • Clear roles for consortium members
   • Clear strategy and targeted financial incentives
Franchise Model for Consortium

VIP Site

VIP Site

VIP Site

VIP Site

VIP Site

VIP Site

GT VIP
Network or Cluster Model for Consortium

Source: http://advance.unl.edu/research
INSTITUTIONAL DATA UPDATE
Institutional Data

• Goal:
  ➢ Leverage existing institutional student-level data as much as possible to understand student trajectory and outcomes
    • Student demand for and participation in VIP
    • Student STEM persistence and completion
    • VIP as an “intervention”
    • Offers opportunities for comparatives

• Approach
  • Understanding data availability, scope/definition, and utility across Consortium
  • Tiered approach to maximize learning based on GATECH experience
    • Georgia Tech: Deep Dive in historical VIP data
    • 4 Schools: Collection and Analysis
    • Full Consortium: Data Summaries

  • Development of guidelines for institutional data analysis and reporting by VIP Consortium institutions
Sources of Data

VIP Student Data

- Student Information System
- Self-, Faculty- and Peer-Reported Data
- Institutional Context Data
Comparison of Key Elements Among VIP Institutions

A  % Bachelors Degrees (of Bachelors and Grad degrees)
B  % Full-time Undergraduate enrollment
C  % Full-time Undergraduate enrollment in Engineering
D  Six-year graduation rate
E  % Undergraduate adult learners
F  Percent admitted (total)
G  Published out-of-state tuition and fees (normalized; 100 = maximum among VIP Consortium institutions, $46,170 at New York University)

NOTES
1 Data includes VIP institutions only.
2 Element G, "Published out-of-state tuition and fees," is a relative comparison among the VIP institutions. The maximum value of $46,170 is set as 100 and used as the denominator in calculating values for the institutions. All other elements are actual values for the respective institutions.
Comparison of Key Elements Among VIP Institutions

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VIP Draft Data Plan (Units of Analysis)

Categories of students:
- Express interest in VIP
- Enrolled in VIP
- Past expressed interest in VIP
- Past enrollment in VIP

Institutional Context Data:
- Proportion of Enrollment
- Proportion of Degrees Awarded
- Comparison to Non-VIP Students
VIP Draft Data Plan (Measures)

- **VIP Participation**
- **Outcomes**
  - GPA – Cumulative and Term
  - Retention to Next Term
  - Graduation / Time-to-Degree
- **Demographics**
  - Gender
  - IPEDS Ethnicity
  - First-Gen status
  - Pell Eligibility and/or Recipient
- **Preparation**
  - SAT/ACT scores
  - HS GPA
- **Academics**
  - Transfer status
  - Enrollment status (part-time/full-time)
  - Year in school (level)
  - Major
- **Other education opportunities**
  - First-year orientation / Seminar
  - Study Abroad
  - Housing
  - Greek Life
  - Undergraduate Research
## VIP Draft Data Timeline

<table>
<thead>
<tr>
<th>Period</th>
<th>Tasks</th>
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<tbody>
<tr>
<td>Fall 2015</td>
<td>• Identify variables at Boise State &amp; Georgia Tech</td>
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<tr>
<td>Spring 2016</td>
<td>• Verify IRB protocol for sharing data</td>
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<td></td>
<td>• Collect data at Boise State &amp; Georgia Tech</td>
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<td></td>
<td>• Finalize VIP data collection template</td>
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<td></td>
<td>• Open for Michigan &amp; Purdue</td>
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<tr>
<td></td>
<td>• Verify availability of IPEDS data / collect IPEDS data for all consortium sites</td>
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<tr>
<td></td>
<td>• Collect IPEDS data for all four evaluation sites</td>
</tr>
<tr>
<td>Fall 2016 &amp; Onward</td>
<td>• Collect VIP student data at all four evaluation sites</td>
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</tbody>
</table>
Undergraduate VIP Participation at Georgia Tech
Georgia Tech Preliminary Descriptives

Top 5 Most Popular Undergraduate Majors at Time of VIP Participation

1. Electrical Engineering – 587
2. Computer Science – 468
3. Computer Engineering – 346
4. Mechanical Engineering – 288
5. Industrial Engineering – 275

Most Popular College of Enrollment at Time of VIP Participation

1. College of Engineering – 1,852
2. College of Computing – 472
3. College of Sciences – 38
4. Ivan Allen College – 19
5. Scheller College of Business – 13
6. College of Architecture – 10
7. Undeclared – 10

STEM majors account for 97.9% of VIP participation at Georgia Tech.
Race / Ethnicity

Race/Ethnicity Representation in the VIP Program Over Time

STEM includes the College of Computing, College of Engineering, and College of Sciences.
Other includes the College of Architecture, Ivan Allen College of Liberal Arts, and Scheller College of Business.
Gender Representation in the VIP Program Over Time

STEM includes the College of Computing, College of Engineering, and College of Sciences.
Other includes the College of Architecture, Ivan Allen College of Liberal Arts, and Scheller College of Business.
Residency

Residency Representation in the VIP Program Over Time

STEM includes the College of Computing, College of Engineering, and College of Sciences.
Other includes the College of Architecture, Ivan Allen College of Liberal Arts, and Scheller College of Business.
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Four-Year Graduation Rate

STEM includes the College of Computing, College of Engineering, and College of Sciences.
Other includes the College of Architecture, Ivan Allen College of Liberal Arts, and Scheller College of Business.
Fall 2004 Fall 2005 Fall 2006 Fall 2007 Fall 2008 Fall 2009 Fall 2010

FIRST-TIME, FULL-TIME FRESHMAN COHORT

Five-Year Graduation Rate

STEM includes the College of Computing, College of Engineering, and College of Sciences.
Other includes the College of Architecture, Ivan Allen College of Liberal Arts, and Scheller College of Business.
FIRST-TIME, FULL-TIME FRESHMAN COHORT

Six-Year Graduation Rate

STEM includes the College of Computing, College of Engineering, and College of Sciences.
Other includes the College of Architecture, Ivan Allen College of Liberal Arts, and Scheller College of Business.
VIP CONSORTIUM STUDENT SURVEYS
Student Survey Evaluation Questions

- What are the characteristics of students who participate in VIP, what are their reasons for engaging in VIP, and what are their reasons for ending VIP participation?
- Does VIP participation influence students’ development of key learning outcomes associated with undergraduate research, specifically:
  - Teamwork
  - Research Skills/Knowledge
  - Interdisciplinary competence
  - Design Skills
  - Intention to major in a STEM field and pursue a STEM career
Student Survey Development Process

1. Literature Review and Collection of Survey Items
2. Item Reduction & Revisions by Research Team
3. Pilot Test to Determine Psychometric Properties & Revise
4. Final Survey Items

- Pre-VIP Participation
- Post-VIP Participation

Vet with VIP Faculty
### Student Survey Distribution Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Survey Type</th>
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<tbody>
<tr>
<td>VIP Pilot Student Survey</td>
<td>September 2015 Pre-VIP Experience Survey (All enrolled students)</td>
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<tr>
<td></td>
<td>December 2015 Semester 1 Leaving Students Survey (Leaving students)</td>
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<tr>
<td></td>
<td>January 2016 New Student Pre-VIP Survey (New students only)</td>
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<tr>
<td></td>
<td>April/May 2016 End of Year Post-VIP Survey (All enrolled students)</td>
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</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Survey Type</th>
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<tbody>
<tr>
<td>VIP Cross-Consortium Student Survey</td>
<td>September 2016 Pre-VIP Experience Survey (All enrolled students)</td>
</tr>
<tr>
<td></td>
<td>December 2016 Semester 1 Post-VIP Survey (All enrolled students)</td>
</tr>
<tr>
<td></td>
<td>January 2017 New Student Pre-VIP Survey (New students only)</td>
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<td></td>
<td>April/May 2017 End of Year Post-VIP Survey (All enrolled students)</td>
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Content of Student Survey

• Student Characteristics
• Academic and Career Plans (Persistence in STEM)
• Decision to Participate in VIP
• Participation in College Activities
• Past VIP Participation (Pre-survey, if applicable) / VIP Experiences (Post-survey)
• Interdisciplinary Competence
• Teamwork
• Research Skills and Knowledge
• Design Skills
Did VIP help students develop these skills?

**Interdisciplinary Competence**
- I recognize the kinds of evidence that different fields of study rely on.
- In solving problems I often seek information from experts in other academic fields.
- I see connections between ideas in my field and ideas in other fields

**Teamwork**
- Work on a project with teams of people with a variety of skills and backgrounds
- Develop ways to resolve conflict and reach agreement in a project group
- Be patient and tolerate the ideas or solutions proposed by others on my team

**Design Skills**
- Develop design solutions
- Construct a prototype
- Evaluate and test a design

**Research Skills**
- Designing/conducting experiments
- Analyzing and interpreting data
- Coordinating the logistics of work as a team

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Analysis Plan for VIP Evaluation Study

• Descriptive Statistics to understand:
  • nature of student experiences in VIP teams
  • why students participate in and leave VIP teams
  • socio-demographic characteristics of VIP students and leavers

• Factor analyses: to create scale variables for learning outcomes

• ANCOVAs: to explore pre-post differences in student outcomes; compare VIP participants and a comparison group

• Regression analysis: identify relationships between student experiences and outcomes
Cross-Consortium Student Survey

Information about Participation
Our Team will do most of the work -- At no direct cost to you!

• All data collection, file management, analyses (of aggregate data), and reporting
• Coordinate with a campus liaison to obtain VIP student contact information
• Ensure secure storage and transfer of student data
• Combine data across all institutions to analyze student experiences in VIP teams collectively
• Ensure consistency in data collection
What will institutions receive?

1) Your institution’s dataset, including:
   - Students’ motivations for joining VIP
   - VIP team activities
   - Who students work with on VIP teams
   - Student major and career plans
   - Student learning outcomes

2) An Executive Summary of cross-site findings

Datasets and the Executive Summary will be distributed in late 2017.
What are institutions asked to do?

• Contact Mackenzie Wood regarding participation by **May 27th**

• Require all VIP students to participate in the student surveys

• Provide basic demographic information for all VIP students

• Appoint a campus liaison by July, 2016 to provide student information and inform students of survey requirement

• Either 1) cede IRB approval to Georgia Tech, or 2) obtain IRB approval at your home institution (July, 2016)

• Allow us to list your institution as a participant in the VIP Cross-Consortium Student Survey
Want to learn more about participating?

Please join us for the breakout session on Friday at 10:00 AM!

- Get more information about the student survey
- Ask us your questions about participation
- And please give us your input on our student outcome measures!
VIP FACULTY SURVEY
Faculty and Local VIP PI’s

• Goals:
  • to understand faculty and PI experiences in VIP as it develops (formative)
  • to understand impacts of VIP team work and Consortium on faculty research and pedagogical approaches (summative and key contribution)
Faculty Survey Evaluation Questions

- **INTEREST:** What are the characteristics of faculty who engage in VIP? What is their motivation to lead a VIP team?
- **STUDENTS:** How do faculty views of what students should gain from their VIP experience align with student assessment of their skill development?
- **SOCIAL CAPITAL:** What resources are VIP faculty developing to enhance their capacity to lead and develop their teams? To what extent is the Consortium developing learning communities to this end?
- **VIP VARIATION:** How do the institutional settings/culture across the Consortium vary, and what are the implications for how VIP develops on different campuses?
- **FACULTY BENEFITS:** Does leading a VIP team have effects on faculty (research, pedagogy, other?)
- **FORMATIVE FEEDBACK:** What are the early experiences of faculty relevant to the on-going improvement of the consortium?
Faculty Survey Content

• **Project-Based and Other Relevant Experience**
  - Faculty capacity, interests, prior experiences
  - Support needs/interests
  - Industry experience and existing ties

• **VIP Goals**
  - Student skill development
  - Student development of professional/team skills

• **Perceptions of VIP Students**
  - Needs
  - Interests
  - Motivation

• **VIP Leadership Experience and Capacity**
  - Understanding of VIP purpose and characteristics
  - Interaction with and assessment of leadership/management/mentorship
  - Grading and assessment clarity

• **Faculty Networks & Social Capital**
  - Development of VIP learning network (on campus and consortium-wide social networks)
  - Faculty diffusion of VIP principles and approaches (on/off campus and consortium-wide)

• **Impacts of VIP**
  - Pedagogical
  - Research
  - Student mentoring

• **Feedback**
  - Feedback on improving VIP from the faculty experience
PI Survey Content *(in early discussions)*

- VIP Understanding and Experience
  - Understanding of VIP purpose
  - Interaction with and assessment of leadership/management/mentorship
- VIP Activities
  - Implementation of Consortium tasks/activities
  - Local innovations/activities
  - Faculty recruitment
  - Student recruitment
- Lessons learning
- Early Outcomes and Successes
- Expected Outcomes
- Barriers and Opportunities
- Data reporting and evaluation activities
- Feedback to VIP Consortium Leadership

Follow-Up with VIP Site PI’s later in 2016
Questions and Discussion
VIP Consortium Logic Model

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Activities/Strategies</th>
<th>Outputs</th>
<th>Early/Mid Term</th>
<th>Impacts</th>
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<tbody>
<tr>
<td></td>
<td><strong>Institutional Development</strong></td>
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<td><strong>Institutional Development</strong></td>
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<tr>
<td></td>
<td>VIP planning, staffing</td>
<td>Enrollment, credit and requirement systems aligned</td>
<td>Curricular change</td>
<td>Increase in numbers and diversity of STEM graduates in member institutions</td>
</tr>
<tr>
<td></td>
<td>Credit Issues</td>
<td>Faculty support systems and incentives in place</td>
<td>Maturation of student and faculty recruitment and development strategies</td>
<td>Vacc impacts</td>
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<tr>
<td></td>
<td>Course creation</td>
<td>Teams established and functioning, team composition, knowledge transfer, client interaction</td>
<td>Maturation of teams, external partnerships</td>
<td>Institutional capacity for VIP implementation</td>
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<tr>
<td></td>
<td>Faculty recruitment VIP team planning</td>
<td>Students</td>
<td>Students</td>
<td>VIP projects scaled to highered institutions</td>
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<td>Students</td>
<td>Enroll, engage, clarify roles</td>
<td>Continued enrollment, Skill development, STEM interests</td>
<td>Increased: motivation, engagement, confidence, retention, self-efficacy, capacity, learning</td>
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<td>Faculty</td>
<td>Faculty</td>
<td>Knowledge acquisition</td>
<td>Collaborative attribution (prototypes, pubs, etc)</td>
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<td>Recruitment, alignment with VIP principles</td>
<td>Development of team activities/goals</td>
<td>Faculty development, project advancements, prototypes, publications, pedagogical approaches</td>
<td>Integration of knowledge across the students’ curriculum</td>
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<td>Development of team</td>
<td>Management</td>
<td>Mature and established systems, evidence-based adjustments to VIP based on evaluation findings</td>
<td>Jobs, advanced degrees</td>
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<td>activities/goals</td>
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<td>Dissemination</td>
<td>Faculty innovation in VIP, publications, patents, other advancement</td>
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<td>Management</td>
<td>Dissemination</td>
<td>Cross-institutional interaction</td>
<td>Material development</td>
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<td>Develop Consortium process, support systems, interactions</td>
<td>Relationships established Communication products</td>
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<td>Coordination of institutional resources</td>
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<td>Interact with evaluation team</td>
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VIP impacts