

***Indiana Louis Stokes Alliance for Minority Participation***

Interim Evaluation Report on Year 2 Faculty-Mentored Research Program & Student Symposium Conference

**PREPARED BY**

#### Colleen F. Manning, Ph.D.

**PREPARED FOR**

#### Indiana LSAMP Leadership Team & Governing and Advisory Boards

#### December 12, 2024



This material is based upon work supported by the National Science Foundation under Grant No. 2308500. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

**Table of Contents**

[Executive Summary i](#_bookmark0)

[Introduction and Methods 1](#_bookmark1)

[Summer Research Program 5](#_bookmark2)

[Student Feedback about Faculty-Mentored Research 5](#_bookmark3)

[Faculty Feedback about The Program 11](#_bookmark4)

[Outcomes of Faculty-Mentored Research 12](#_bookmark5)

[A Closer Look at the Mentoring Relationship 15](#_bookmark8)

[Likelihood of Recommending Participation in Indiana LSAMP 16](#_bookmark9)

[Student Research Symposium 17](#_bookmark10)

[Conclusions & Areas for Consideration 20](#_bookmark11)

# EXECUTIVE SUMMARY

The second year of The Louis Stokes STEM Pathways Implementation-Only Alliance: Indiana LSAMP program focused on the high impact practice of faculty- mentored research. This included a Summer Research Program as well as a Student Symposium Conference held in September at the Madam Walker Legacy Center in Indianapolis. GRG conducted online surveys of Summer Research Scholars (63% response rate), Faculty Mentors (32% response rate), and conference attendees (39% response rate). Key findings include strengths and challenges, and point to areas for improvement.

**STRENGTHS**

* **Research and Academic Development**: The program effectively enhanced students' research abilities, with scholars and mentors reporting improvements in research skills, time management, problem- solving, and disciplinary knowledge. A high percentage of students reported increased confidence in research and a stronger likelihood of pursuing STEM graduate programs or careers.
* **Sense of Belonging**: Scholars reported a strong sense of community within the program and their research labs, an important factor for academic persistence, especially for underrepresented minorities (URMs).
* **Mentorship Quality**: Faculty mentors were pivotal, providing academic guidance, career advice, and creating supportive environments for learning. The mentorship experience was highly valued by students.
* **Professional Development**: Workshops and poster presentations were identified as valuable components, aiding students in career preparation and professional growth.
* **Conference Success**: The research symposium provided networking opportunities, enhanced students' understanding of STEM culture, and helped them feel part of a broader academic and professional community.

**CHALLENGES**

* **Logistical and Administrative Issues**: Delays with payroll, hiring paperwork, and background checks created stress for students and detracted from the overall experience. Confusion around lab placements and mentor pairings was noted by some participants.
* **Program Structure**: Scholars recommended more time for research projects and expanded research opportunities to align better with their interests. Faculty emphasized the need for clearer communication of program requirements and expectations.
* **Community Building**: Scholars desired more structured opportunities for peer interaction and social events to enhance cohort engagement.
* **Networking Opportunities**: While the conference was generally successful, networking opportunities were identified as an area for improvement, with suggestions for mixers and better integration of LinkedIn or QR codes for sharing profiles.

**RECOMMENDATIONS FOR PROGRAM IMPROVEMENT**

Program leadership and partners may wish to consider the following suggestions as they plan for Year 3 and beyond:

* **Streamline Administrative Processes**: Address hiring, payroll, and onboarding delays before the program begins.
* **Enhance Mentor Matching**: Improve alignment between student interests and lab placements and provide flexibility for changes early in the program.
* **Expand Professional Development**: Offer more workshops on graduate school preparation and career pathways in STEM fields.
* **Strengthen Community Building**: Increase activities to foster a sense of community and provide additional networking opportunities.
* **Refine Conference Organization**: Improve poster logistics, expand attendance to include more alumni and professionals, and offer structured networking sessions.

In summary, this evaluation underscores the program’s strengths in enhancing STEM pathways for URM students while identifying actionable areas for improvement to maximize its impact on degree completion and workforce readiness. The program demonstrated its effectiveness in building research capacity, fostering a sense of belonging, and preparing URM students for STEM careers or graduate studies. With an emphasis on refining program logistics, expanding research and professional development opportunities, and strengthening mentor-mentee matching, the program can enhance its impact and work toward achieving its goal of a 35% increase in URM STEM baccalaureate degrees by 2028.

# INTRODUCTION AND METHODS

We begin by reviewing the overall goal and objectives of Indiana LSAMP, and then describe evaluation activities around the Summer Research Program and the Student Symposium Conference.

**PROGRAM GOALS AND OBJECTIVES**

The Louis Stokes STEM Pathways Implementation-Only Alliance: Indiana LSAMP program was funded by the National Science Foundation in May 2023. It builds on the Alliance’s STEM pathways implementation award (2016-2023) and is comprised of the same six institutions:

1. Indiana University Indianapolis (IUI, the lead institution),
2. Indiana University Bloomington (IUB),
3. Ball State University (BSU),
4. Indiana University Northwest (IUN),
5. Indiana University South Bend (IUSB), and
6. Ivy Tech Community College of Indianapolis (ITCC Indianapolis).

The goal of the Indiana LSAMP is to significantly increase the quantity and quality of URM students earning STEM baccalaureate degrees. By 2028, the Alliance plans to increase degree production by 35%, from 359 URM STEM graduates in 2020-2021 (the baseline year) to 485 URM STEM graduates (with 50 of these students earning degrees in three areas of national priority: Computer Science, Informatics, and Artificial Intelligence).

To help achieve this goal, the Alliance has proposed three objectives:

1. Continue to refine the faculty-mentored undergraduate research program, peer-mentoring outcome assessment, and STEM professional development programs for LSAMP research scholars;
2. Support LSAMP graduating scholars to seek admission to STEM graduate school (with at least a 20% success rate); and
3. Continue strengthening the ongoing partnership with ITCC Indianapolis, specifically to:
   1. assist at least 25 LSAMP associate degree holders to transition into four-year STEM degree programs offered by Indiana University Indianapolis; and
   2. provide annual opportunities for four ITCC Indianapolis students to participate in the faculty-mentored research program at IUI and provide opportunities in years 4 and 5 for two ITCC South Bend students to engage in research opportunities offered by IUSB.

The second year of the program, and therefore the evaluation, focused on the first objective, specifically, the high impact practice of faculty-mentored research. This included the Summer Research Program as well as the Student Symposium Conference held in September at the Madam Walker Legacy Center in Indianapolis.

**EVALUATION ACTIVITIES**

GRG conducted online surveys of summer 2024 Indiana LSAMP research scholars and participating faculty mentors. The Indiana LSAMP coordinators provided valid email addresses for 48 unique scholars and 44 unique faculty mentors; 30 scholars and 15 mentors submitted complete responses, for respective response rates of 63% (up from 48% last year) and 32% (down from 40% last year).

Exhibits 1 and 2 describe the scholar and mentor respondents. Respondents to both surveys represented all Indiana LSAMP institutions. More than two- thirds of scholar respondents identified as female. Half identified as Black or African American, and half were first-generation college students. Most scholar respondents were having their first Indiana LSAMP experience.

Biology was the most common major among respondents.

More than half of faculty respondents were having their first experience as an LSAMP mentor. All but one mentored one student; one faculty mentored five students.

GRG also conducted an online survey of the 77 conference attendees immediately following the conference; 30 responded, for a response rate of 39%. Half (n=15) of the respondents were students; the rest were program coordinators or staff (n=5), faculty or graduate mentors (n=5), invited speakers or other guests (n=4), and a Board member (n=1).

Exhibit 1

Background Information about Indiana LSAMP Research Scholar Respondents

|  |  |  |
| --- | --- | --- |
|  |  | **#**  **students** |
| Gender | Female | 20 |
|  | Male | 9 |
| Race/ethnicity | Black or African American | 14 |
|  | Hispanic / Latino | 11 |
|  | More than one race | 3 |
| First generation college student | Yes | 14 |
|  | No | 14 |
| Length of participation in IN LSAMP | Summer 2024 was first  experience | 28 |
|  | In the 2023-2024 year  (before summer) | 2 |
| IN LSAMP institution where enrolled for 2024-2025 | Ball State University | 8 |
| Indiana University  Bloomington | 11 |
|  | Indiana University  Northwest | 1 |
|  | Indiana University  Indianapolis | 5 |
|  | Indiana University South  Bend | 5 |
| Status in 2024-2025 | Sophomore | 9 |
|  | Junior | 12 |
|  | Senior | 9 |
| Anticipated graduation year | 2025 | 9 |
|  | 2026 | 12 |
|  | 2027 | 9 |
| Major  (4 students were double-majoring and are counted in both majors; 1 student had not yet declared a major, but listed Informatics as a probable major) | Biology | 14 |
| Chemistry | 3 |
| Computer Science | 3 |
| Neuroscience | 3 |
| Pre-Med | 3 |
|  | Microbiology | 2 |
|  | Atmospheric Science, Biochemistry, Biotechnology,  Informatics, Pre-Pharmacy | 1 each |

Exhibit 2

Background Information about Indiana LSAMP Faculty Mentor Respondents

|  |  |  |
| --- | --- | --- |
|  |  | **#**  **faculty** |
| Institutional affiliation | Ball State University | 2 |
|  | Indiana University Bloomington | 3 |
|  | Indiana University Northwest | 3 |
|  | Indiana University Indianapolis | 2 |
|  | Indiana University South Bend | 2 |
|  | Ivy Tech Community College of  Indianapolis | 2 |
| Experience as Faculty Mentor | Summer 2024 was first experience | 8 |
| Served as faculty mentor in previous  summers | 6 |
| Number students  mentored | 1 student | 13 |
| 5 students | 1 |

This report presents the findings of the three surveys described above. We first examine the results of the summer research scholar and faculty mentor surveys, and then present the results of the conference survey.

# SUMMER RESEARCH PROGRAM

Our surveys of summer research scholars and faculty mentors gathered their feedback about the program, including its strengths and areas for improvement, the outcomes of faculty-mentored research, and their likelihood of recommending program participation to others.

## STUDENT FEEDBACK ABOUT FACULTY-MENTORED RESEARCH

We began the survey of Research Scholars by asking them what three words or phrases they would use to describe their summer research experience. We generated a word cloud from the list of words provided. Words with higher frequencies appear larger in the visualization in Exhibit 3.

The words scholars chose reflect a dynamic and enriching experience characterized by fun, engagement, learning, collaboration, and challenges. It suggests that scholars gained value through both enjoyable moments and growth opportunities, even if some parts were demanding.

Exhibit 3

Words Students Used to Describe Indiana LSAMP Summer Research Experience

We also asked Scholars about what aspects of their Summer Research Programs went well and did not go well, and their suggestions for improving the program.

### What Went Well

Several closely related themes about the programs’ strengths emerged.

Overall, students found the program enriching, supportive, and well-

structured, offering a mix of hands-on experience, mentorship, and community building.

*Hand-on Research Experience*

Participants valued the opportunity to conduct hypothesis-driven research and learn new lab techniques. Some students noted the ability to work on meaningful projects, gain hands-on experience, and understand the research process. Access to funding, resources, and time was instrumental in allowing students to immerse themselves in their summer research.

*“The research and learning experience went well. I was able to be hands on and learn from my peers.”*

*“The research I did went well. I learned a lot. I gained a place in the research lab for the upcoming years. I had fun and found something that I enjoy.”*

*“I feel like the LSAMP program taught me a lot of research tips and how to problem solve.”*

*“Working in labs helping grad students went well. It helped me get settled in before beginning my own research.”*

*“Through this program, I was able to learn different lab techniques through my mentor and more.”*

*“Having time, funding and resources to be able to conduct hypothesis- driven research with my faculty mentor.”*

*Networking and Community*

Weekly meetings, pod groups, and collaborative activities fostered a sense of community and engagement. Students appreciated connecting with peers, faculty, and professionals in their fields of interest. These opportunities to network with others provided insights and support for future career decisions.

*“I enjoyed being able to connect with my peers and with other mentors.”*

*“I got to work with new people who were interested in the same things as me and helped me when I got stuck. I made new friends.”*

*“There was willingness to help, a sense of an engaged community, and activities involving all the students.”*

*“The aspects that went well was having a good pod group. Having a good pod group not only allowed me to have fun, but allowed me to learn valuable skills.”*

*“These meetings also gave everyone the opportunity to share their research and any new developments they may have had.”*

*Mentorship and Support*

Many students emphasized the positive impact of their mentors, highlighting their support, advice, and encouragement in both academic and personal aspects. Mentors created safe environments for asking questions and overcoming obstacles. Students appreciated mentors for offering career guidance and teaching valuable research skills.

*“I felt my mentor created a safe environment that allowed me to ask questions, as well as the wisdom to overcome any obstacles we came across and any feelings of self-doubt.”*

*“I love that I got along with my mentor and she gave me advice for my career.”*

*“I love working with my mentor and presenting my research, it was an amazing experience.”*

*“I feel like our research went well and I was able to connect with my mentor on a level where I felt comfortable enough to ask for advice whether it was academically or in my personal life.”*

*Personal and Professional Growth*

Students noted gaining valuable skills such as time management, problem- solving, and multitasking. They benefited from workshops on creating professional profiles (e.g., LinkedIn/CV building) and discussing career development. Their experiences presenting posters were particularly rewarding.

*“Through this program, I was able to multitask and make tough decisions.”*

*“The time management [aspect] of the project [went well].”*

*“The weekly meetings went very well along with creating things such as LinkedIn/CN profiles to help with job applications in addition to building a good CV.”*

*“The poster presentation was so good I loved seeing what everyone else was researching.”*

*Program Structure*

Students expressed positive feelings about the overall structure of the program. Many students felt their placement in the program matched their interests well. Weekly check-ins by faculty mentors and coordinators ensured students felt supported and on track, and group activities and opportunities to share research progress were effective in building confidence and knowledge.

*“My placement in the program allowed me to meet and network with new people who are interested or already working in career fields I am interested in and that was very helpful and insightful.”*

*“The program mentors checking in on us every week and making sure we’re doing well in the labs [was a strength].”*

*“The weekly activities were helpful for me to make decisions about my future.”*

### What Did Not Go Well

Students also provided information on a few aspects of their programs that did not go well. Despite these challenges, students acknowledged that the program provided opportunities to learn and grow, and some challenges were framed as valuable experiences for personal and professional development.

*Research-Related Challenges*

Limited time to complete studies and collect sufficient data hindered some research projects, and some participants mentioned struggles with adapting to the research process, making mistakes, or facing equipment malfunctions. A few students felt lost or confused about specific aspects of their research, though some noted that these challenges ultimately provided valuable learning opportunities. Weather conditions also disrupted certain research activities.

*“My research group didn’t have enough time to fully run the study and get data to formulate a conclusion and I wish we had more time.”*

*“The aspects of the program that did not go well were … making a few mistakes, and constantly having to persevere do difficult trials. Even though that was the case, I believe through all of that I was able to learn valuable skills I can take out of the program.”*

*“I had a lot of failures in the laboratory. There were malfunctions with equipment sometimes. There were times when I mislabeled the vials and messed up the sample. There were a lot of mistakes but I was able to overcome them and learn from them.”*

*“I was lost in the meaning of certain steps in research. I felt lost at times with machines and sometimes lacked connection and confidence with my research.”*

*“I got confused about the data analysis aspects of this project.”*

*“Some nights of our research were ruined by the weather other than that I do not have any complaints.”*

*Administrative and Logistical Issues*

Some students faced delays or problems with payroll, hiring paperwork, and background checks, which distracted from their research experience. Logging hours was cumbersome for at least one participant. A lack of clarity in lab placement and mentor pairing was noted by a few participants.

*“The only thing that didn’t go well was dealing with payroll and getting paid on time like we were told.”*

*“The issues with the hiring paperwork in the beginning were not great and they distracted me from research. I also feel like pairing students with mentors that actually matched their interests was okay, but not the best.”*

*“There were some issues with my background check and being hired so I wasn't hired for about 2 months after I had already begun working on my research so I wasn't being paid, which is a bit frustrating but luckily is now sorted out.”*

*“I would always forget to log my hours so I’d have to go back and fix*

*it.”*

*“I was not assigned a mentor until after a week of the program starting.”*

*Program Structure and Engagement*

Several students expressed a desire for more connection and interaction with peers and mentors within the LSAMP program. Professional development opportunities and engagement with campus resources were seen as lacking by some. A few participants expected more group activities and LSAMP-specific events.

*“Having engagement and interaction with other scholars and professional development events with campus resources like PREPS were lacking this year.’*

*“There were not a lot of connections with the people in the LSAMP program and building connections within the selected group.”*

*“I thought there would be LSAMP specific group activities.”*

### Suggestions for Improvement

Students’ recommendations for improving the program follow from the challenges summarized above and reflect a mix of logistical, structural, and experiential improvements aimed at enhancing both the academic and social aspects of the program.

*Administrative and Logistical Improvements*

* **Streamline Hiring and Payroll:** Address issues with payroll delays, hiring paperwork, and employment status before the program starts to reduce stress for participants.
* **Early Preparation:** Ensure mentors, lab placements, and necessary paperwork are finalized before students arrive.
* **Housing Support:** Provide stipends or discounts for summer housing to alleviate financial burdens.

*Program Structure and Organization*

* **Mentor Pairing:** Improve mentor-student matching to better align

with students’ career interests and goals.

* **Flexible Lab Placement:** Allow students to switch labs early in the program if their placement is not aligned with their preferences.
* **Clear Instructions:** Provide more detailed guidance on campus systems and administrative tasks for students unfamiliar with the campus or resources.

*Social and Community Building*

* **Increase Cohort Engagement:** Organize more activities to foster connections among students, such as social events, team meetings, and discipline-specific gatherings.
* **Mandatory Participation:** Make certain program activities mandatory to ensure all students benefit from shared experiences.
* **Outings and Group Activities:** Plan non-research activities like field trips, bowling, or group walks to encourage camaraderie.

*Research and Professional Development*

* **Expanded Research Options:** Broaden the range of research areas available to align better with students’ academic and career interests.
* **More Time for Research:** Extend the program duration or provide more time for students to complete their projects and collect data.
* **Skill-Building Opportunities:** Offer workshops on topics like publishing research, post-undergraduate research opportunities, etc.

*Financial Considerations*

* **Increase Stipends:** Provide higher stipends to make it financially viable for students to focus on research instead of part-time jobs.
* **Adjust Payment Process:** Consider upfront stipends rather than requiring clock-in systems to ease administrative burdens.

*Peer Advice*

* Encourage students to approach the program with an open mind, build relationships with mentors and peers, and embrace the learning process, including making and learning from mistakes.

## FACULTY FEEDBACK ABOUT THE PROGRAM

We also asked faculty about the strengths or highlights of the program and their suggestions for improvement.

### Strengths

Faculty mentors emphasized the mutual benefits of the Summer Research Program. They felt the program provided students with valuable research experience, increased confidence, and opportunities for academic and personal growth. In turn, faculty received assistance with advancing their research projects. In addition, one respondent highlighted the value of the mentor training.

*“LSAMP is a terrific program for supporting the training of qualified undergrads at IU.”*

*“It provided a win-win scenario for both the scholar and myself. The scholar gained more experience and confidence, and I had someone to help advance my research.”*

*“It is a great way for interested students to learn more about research and participate in research projects. I benefit by having engaged students work in my lab, as well as for me to recruit research assistants for the rest of the academic year.”*

*“For me, undergraduate mentorship is always a learning experience, and I appreciated the mentor training at the beginning (even with nearly 30 yrs of experience mentoring undergrads in research).”*

### Suggestions for Improvement

Suggestions from faculty indicate the need for enhanced communication, structural clarity, and support for both mentors and students to improve the overall program experience.

Most of the faculty suggestions had to do with communication and transparency. These suggestions came from faculty from four different partner institutions. They felt communication needed improvement in multiple ways, and they wanted to be provided with clear processes to help them understand the full scope of students’ activities. They also stressed the importance of sharing program requirements and expectations directly with the mentors rather than relying on students to relay information.

*“Communication at all levels. Transparent processes to understand what ELSE the students are doing in the program.”*

*“I still am not entirely sure how the LSAMP program differs from the rest of the summer STEM program. I wasn't sure who my LSAMP student was until the student told me about having to log hours and meet an hour requirement. It would have been important for the mentor to understand the hour requirement.”*

*“More information about the students in advance; more communication about deadlines/events with the mentor than just the student (e.g. poster criteria, deadlines, etc.).”*

*“There was no communication about the program or requirements to the mentor. I had to rely on asking questions to my mentee to get information, which is not a great way to help them, especially regarding abstract, poster, and so on.”*

*“I have found the process confusing. I don't seem to have any knowledge of what the mentee is learning from the Canvas site or how his hours are being tracked.”*

A couple of faculty had suggestions for enhancing the structure of the program, including offering more structured opportunities for students to present informally to peers during the summer and expanding eligibility to include a broader range of majors. One faculty would like to see a tool for evaluating students’ posters during the conference.

## OUTCOMES OF FACULTY-MENTORED RESEARCH

In terms of the outcomes of faculty-mentored research, we examined its influence on students’ research abilities, their likelihood of future STEM endeavors, and their sense of belonging in the program.

### Students’ Research Abilities

Both students and faculty mentors (on their respective surveys) indicated the extent to which they believed the summer research experience helped the students improve in 10 different aspects of research. Respondents used a five- point Likert scale to respond; the five points on the rating scale were labeled not at all, a little, some, quite a bit, and a great deal. As shown in Exhibit 4, on average, students indicated that their research abilities had improved *quite a bit*

(the second highest point on the scale). Faculty had more conservative ratings of student progress, with ratings falling between *some* and *quite a bit* of improvement. Students gave the highest rating to their ability to collect data, followed by their ability to present the results of their research. The latter was the area rated highest by faculty.

Exhibit 4

Student and Faculty Mentor Reports of Extent to which Summer Research Experience Resulted in Improvements

|  |  |  |
| --- | --- | --- |
| **Mean** | | |
|  | **Students**  **(N=29-30)** | **Faculty**  **(N=12-15)** |
| Ability to collect data / observations | 4.53 | 3.80 |
| Ability to present the results of their research | 4.50 | 4.15 |
| Understanding of the ethics of research | 4.43 | 3.57 |
| Technical science skills | 4.40 | 4.07 |
| Knowledge of laboratory procedures and safety protocols | 4.40 | 3.43 |
| Ability to analyze and interpret data / observations | 4.31 | 3.73 |
| Ability to design an appropriate research plan | 4.30 | 3.27 |
| Ability to write up the results of their research | 4.28 | 3.75 |
| Ability to formulate a good research question | 4.27 | 3.27 |
| Use of scientific language and terminology | 4.20 | 3.93 |

### Students’ Likelihood of Future STEM Endeavors

Changes in students’ likelihood of future STEM endeavors was assessed using the “retrospective post-then-pre design.” In this design, both before and after information is collected at the same time. In this case, after the summer program, respondents were asked to: 1) rate their current likelihood of future STEM endeavors (i.e., “now” or “after,” as a result of the program); and 2) reflect back and rate those same likelihoods “before” participating in the program.[1](#_bookmark6)

They rated two items using a 7-point Likert scale, ranging from 1 (exceptionally unlikely; 0-1% probability) to 7 (virtually certain; 99-100% probability). See Exhibit 5 for the results, which indicate that students were statistically significantly more likely to one day pursue a graduate degree in a STEM field and enter the STEM workforce.

1 The retrospective post-then-pre design is a common way to assess learners’ self- reported changes. In addition to being efficient and respondent-friendly, it avoids pretest sensitivity and response shift bias that result from pretest overestimation or underestimation. See Lam, T. C. & Bengo, P. (2003). A comparison of three retrospective self-reporting methods of measuring change in instructional practice. American Journal of Evaluation, 24(1), 65-80.

Exhibit 5

Retrospective Pre Changes in Students’ Likelihood of Future STEM Endeavors

Before Summer Research After Summer Research

Likelihood of one day pursuing a graduate

degree in a STEM field\*

6.07

6.47

Likelihood of one day entering the STEM

workforce\*\*

6.23

6.57

N=30. \* p < .05; \*\* p < .01.

### Students’ Sense of Belonging

Research has shown that a student’s sense of belonging in an academic community helps explain their persistence.[2](#_bookmark7) As shown in Exhibit 6, a majority of scholars felt a sense of belonging in their research lab as well as in the program overall. Two-thirds of Scholars *strongly* endorsed feeling like an integral part of their research lab or team and six in ten *strongly agreed* that they felt like a member of the Indiana LSAMP Summer Research Scholars community overall.

Exhibit 6

Research Scholar Agreement with Statements about Belonging

Felt like an integral part of the research lab or team **10% 3% 20%**

**67%**

Felt like a member of the IN LSAMP Summer Research

Scholars community overall

**3%**

**13%**

**23%**

**60%**

Disagree

Slightly agree

Somewhat agree

Strongly agree

N=30

2 Farrington, C.A., Roderick, M., Allensworth, E., Nagaoka, J., Keyes, T.S., Johnson, D.W., & Beechum, N.O. (2012). Teaching adolescents to become learners. The role of noncognitive factors in shaping school performance: A critical literature review. Chicago: University of Chicago Consortium on Chicago School Research.

At the conclusion of summer research, students also had a significantly heightened sense of having a mentor as well as a supportive peer group. See Exhibit 7. These outcomes were also assessed using the retrospective post-then- pre design. Students rated these items using a 5-point Likert scale, ranging from 1 (Not at all like me) to 5 (Very much like me).

Exhibit 7

Retrospective Pre Changes in Students’ Sense of Mentorship and Peer Support

Before Summer Research After Summer Research

I have someone that I consider to be a

mentor in my major area of study.\*

3.30

3.90

I have a peer group that I rely on for

support as I pursue my major.\*\*

2.87

3.47

N=30. \* p < 0.05, \*\* p < .01.

## A CLOSER LOOK AT THE MENTORING RELATIONSHIP

As shown in Exhibit 8, scholars’ feedback about working with their faculty mentors further confirmed some of the findings presented above: 87% *strongly agreed* that they learned from their mentor; 80% *strongly agreed* that their mentor helped them gain more confidence in research; and 73% *strongly agreed* that their mentor helped them gain more advanced disciplinary knowledge and skills.

Exhibit 8

Research Scholar Agreement with Statements about Working with Their Mentor

Learned from mentor **3%3%7%**

**87%**

Mentor helped increase confidence in research **3%3% 13%**

**80%**

Enjoyed working with mentor

Mentor helped increase advanced disciplinary knowledge or skills

Mentor gave advice about graduate school or career options

Mentor helped with aspects of college life

**30%% 20%**

**77%**

**7%0% 20%**

**73%**

**7% 13%**

**27%**

**53%**

**13%**

**20%**

**20%**

**47%**

Disagree

Slightly agree

Somewhat agree

Strongly agree

N=30

Faculty respondents were also positive about working with Indiana LSAMP students, as shown in Exhibit 9; a vast majority *strongly agreed* that they enjoyed working with students and helped their mentees gain more advanced disciplinary knowledge or skills. Most faculty mentors reported *somewhat or strongly agreeing* that they helped mentees gain more confidence in research. Results indicate faculty were also involved in varying degrees with mentoring students around graduate school and careers and with helping their mentees with aspects of college life.

Exhibit 9

Faculty Mentor Agreement with Statements about Working with and Mentoring Students

Enjoyed working with mentee

**7%**

**86%**

Helped mentee gain more advanced disciplinary knowledge or skills

**21%**

**71%**

Helped mentee gain more confidence in research

**57%**

**36%**

Learned from mentee

**21%**

**36%**

**29%**

Gave mentee advice about graduate school or career options

**46%**

**23%**

Helped mentee with aspects of college life **14%**

**29%**

**36%**

**21%**

Gained insight into teaching from mentee **14%**

**29%**

**43%**

**14%**

Disagree

Slightly agree

Somewhat agree

Strongly agree

N=14

## LIKELIHOOD OF RECOMMENDING PARTICIPATION IN INDIANA LSAMP

As a further measure of their satisfaction with the Indiana LSAMP program experience, both surveys included a popular metric called the Net Promoter Score (NPS). The NPS is derived from a single question asking respondents how likely they would be to recommend that other students or faculty participate in the LSAMP program.

* Promoters (score of 9 or 10) are considered loyal enthusiasts who love the program and will recommend it to others;
* Passives (score of 7 or 8) are considered satisfied but unenthusiastic; and
* Detractors (score of 0 to 6) are felt to be not particularly thrilled with the program.

Exhibits 10 and 11 show the results for scholars and faculty, respectively. The NPS (calculated as promoters minus detractors) was 73 for scholars, an excellent score. The NPS for faculty was 29, indicating less enthusiasm than students, however, still more promoters than detractors.

Exhibit 10 Exhibit 11

Indiana LSAMP Scholar Net Promoter Score Indiana LSAMP Faculty Net Promoter Score

**Passives**

**29%**

**Promoters**

**50%**

**Detractors**

**21%**

**Promoters**

**76%**

**Detractors**

**Passives 3%**

**21%**

N=29 N=14

Using the same scale, faculty also reported their likelihood of serving as a faculty mentor in the future. Half indicated a high likelihood of participating again (ratings of 9 or 10); 36% were as likely as not (ratings of 7 or 8); and two respondents were unlikely to serve as mentors in the future (a 6 or below on the scale).

# STUDENT RESEARCH SYMPOSIUM

The survey of student research symposium attendees gathered information about their perceived success of the conference in accomplishing various objectives, their satisfaction with aspects of the conference, their conference highlights, and their suggestions for improving the conference.

### Perceived Success of the Conference

As illustrated in Exhibit 12, results of the conference survey indicate that the conference helped attendees feel part of a bigger community, and helped students feel a sense of belonging in STEM, understand STEM culture, and prepare for other conferences. At least 83% of respondents reported “top-box” ratings of very or extremely helpful in each of these four areas.

Exhibit 12

Perceived Success of the Conference

Not or only a little successful Somewhat successful

Very successful Extremely successful

Helping attendees feel part of an Indiana

LSAMP community

**3% 10%**

**28%**

**59%**

Increasing students' sense of belonging in

STEM

**3%3%**

**45%**

**48%**

Helping students understand the

professional culture and conventions of STEM

**6%7%**

**38%**

**48%**

Preparing students for other conferences **17%**

**45%**

**38%**

N=29

### Satisfaction with the Conference

Attendees were highly satisfied with the conference. More than 90% of respondents were *satisfied* or *very satisfied* with the organization, content, and quality of the event. The opportunities for networking stood out as one area in which students were less satisfied relative to other areas, although a majority (68%) were still *satisfied* or *very satisfied*.

Exhibit 13

Respondent Satisfaction with Aspects of the Conference

**% satisfied or very satisfied**

Quality of conference

96%

Conference agenda

96%

Organization of conference

93%

Registration

89%

Information provided in advance

89%

Opportunities to network

68%

N=28

### Conference Highlights

When asked about their favorite part of the conference, respondents highlighted presenting their own posters or interacting with (other) presenters, learning from others, networking, and the panel sessions. Their comments paint a picture of a rich, interactive, and inspiring conference experience.

*“Being able to share with students my research and then being able to hear what other students did research about.”*

*“Getting to meet and speak with different people from all the schools that attended and learning all about their research.”*

*“I liked being able to hear what other people had been researching and learn about topics that I would have never known or thought about otherwise.”*

*“Hearing and interacting with LSAMP students from other campuses.”*

*“Opportunity to converse with peers from other schools and potential mentors.”*

*“Hearing the students reflect on their experiences with LSAMP.*

*“I greatly enjoyed the panel of speakers. It was all encompassing and the members were very knowledgeable.”*

*“Being on the panel and speaking one on one with the poster presenters.”*

### Suggestions for Improving the Conference

Respondents also had a number of suggestions for improving the conference. As detailed below, they had suggestions regarding networking, attendees, posters, and registration:

*More networking*

* Time to network (e.g., with guest speakers, grad school and industry representatives, attendees with similar interests).
* An introductory mixer for students.
* Encouragement for students from different schools to interact more (e.g., share ideas/experiences with each other).
* Have people bring their LinkedIn ready to share with others.
* Have QR codes that lead to scholar profiles or bios and abstracts.

*Broadening attendees*

* Involving mentors, more invited speakers, more representatives from grad schools and industry jobs, more alums (and time to interact with them).

*Poster logistics*

* Spread out poster stands, rather than having some in the back.
* Have judging.

*Registration*

* More details about poster criteria during the summer.
* Integrate the abstract submission into the program registration.
* Have a single registration link/process for attendees and presenters.

# CONCLUSIONS & AREAS FOR CONSIDERATION

This evaluation underscores the program’s strengths in enhancing STEM pathways for URM students while identifying actionable areas for improvement to maximize its impact on degree completion and workforce readiness.

Key strengths include:

* Enhancing students’ research abilities, increasing their confidence in research, and increasing their motivation to pursue STEM graduate programs or careers.
* Supporting academic persistence by creating a strong sense of community within the program.
* Faculty mentors who provided academic guidance, career advice, and a supportive environment for learning.
* Offering workshops and poster presentations, to aid students in career preparation and professional growth.
* A successful research symposium that provided networking opportunities, enhanced students’ understanding of STEM culture, and helped them feel part of a broader academic and professional community.

##### Actionable areas for improvement include:

* Addressing hiring, payroll, and onboarding delays before the program begins.
* Providing scholars with more time for their research projects and expanded research opportunities to align better with their interests.
* Improving the alignment between student interests and lab placements and providing flexibility for changes early in the program.
* Offering even more workshops on graduate school preparation and career pathways in STEM fields.
* Creating or modifying the program’s internal communication plan to ensure faculty are clear on program requirements and expectations.
* Increasing activities to foster a sense of community and provide additional networking opportunities.
* Regarding the conference, improving poster logistics, expanding attendance to include more alumni and professionals, and offering structured networking sessions.

With an emphasis on continuing promising practices and making suggested improvements, the program can continue to make progress toward achieving its goal of a 35% increase in URM STEM baccalaureate degrees by 2028.

**Goodman Research Group, Inc.**

**Main Office**

26 Lee Street

Cambridge, Massachusetts 02139

Tel: (617) 491-7033

Fax: (617) 864-2399

[info@grginc.com](mailto:info@grginc.com) [www.grginc.com](http://www.grginc.com/)

© 2024 Goodman Research Group, Inc.