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Indiana Louis Stokes Alliance for Minority Participation (IN LSAMP)

Year 2: External Evaluation Report on Site Visit to Community College Partner and Research Conference

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EXECUTIVE SUMMARY

To achieve the LSAMP mission of doubling the number of STEM bachelor's degrees earned by historically underrepresented minorities, one key strategy of Alliance partners is to facilitate seamless transitions into STEM undergraduate and graduate degree programs. To assess IN LSAMP's progress in implementing this strategy and offering program activities for community college transfers, in October 2018, GRG's lead for the evaluation visited the community college partner of the Alliance and also attended the inaugural IN LSAMP Research Conference and STEM Career and Resource Fair.

Findings and Recommendations

The connections that IN LSAMP is making with students while they are still enrolled in their community college are important to their transition, retention, and future workplace readiness.

The program offered transfer students a range of activities in which to participate before their transfer. These support activities focused on the soft skills needed for college completion and workplace readiness, such as time management, scheduling, resume-building, and networking activities. The activities helped the students build confidence in interacting with others and at professional events, and helped them feel part of a community of other students "like me."

IN LSAMP's faculty-mentored summer research opportunities for transfer students have positive academic and social outcomes.

Students' faculty-mentored research resulted in poster presentations at summer and fall student research conferences. Students also had positive and meaningful mentoring experiences. They developed trusting relationships with their mentors, engaged in hands-on research that built their self-esteem, and enjoyed feeling part of a community in their labs.

The LSAMP program at the community college is doing an exceptional job of preparing students for their transition to the senior institution.

The Biotech coursework and labs that students completed at the community college not only prepared them for their courses and research at the senior institution, but gave them a leg up. This advantage was verified by faculty at both institutions.

The Research Conference and Career Fair were meaningful and beneficial for students.

Students were inspired by and received helpful information from peers, presenters, faculty, and staff about research and career opportunities. They had an opportunity to bring their own research full circle and practice their presentation skills, and the events went a long way toward building IN LSAMP community.

In summary, the site visit yielded compelling qualitative evidence of IN LSAMP's agenda to facilitate seamless transitions into STEM undergraduate and graduate degree programs. Recommendations include:

- Detail from the beginning what continued involvement in LSAMP means for transfer students
- Create a database of potential faculty mentors and ensure the mentors understand LSAMP and are willing to help LSAMP transfer students
- Moderate students' perceptions that Biotech is a field where they "don't really have to deal with people"
- Step up efforts to orient all Scholars – those from community colleges and four-year institutions – to the IN LSAMP "big picture"

INTRODUCTION

The Indiana Louis Stokes Alliance for Minority Participation (IN LSAMP) started in December 2016 and has an end date of November 2021. It is one of 53 recent Alliances funded through NSF's LSAMP Program and one of 26 funded in 2016. IN LSAMP consists of six institutions, three research institutions, two four-year regional universities, and a community college partner.

Goodman Research Group, Inc. (GRG) was contracted to serve as the external evaluator for the five-year IN LSAMP program. As part of the evaluation, in October 2018, GRG's lead for the evaluation visited the community college partner of the Alliance and also attended the inaugural IN LSAMP Research Conference.

The community college partner of the Alliance is a member of the nation's largest singly accredited statewide community college system. In addition to offering degree programs and technical training, it offers courses and programs that transfer to other colleges and universities in Indiana. The site we visited is the top provider of transfer students for one of the other Alliance partner's STEM degree programs (hereafter the senior institution). The LSAMP program is housed in the Biotechnology department, which had relatively small student enrollment; it has conferred a total of 33 associate's degrees.

According to the National Center for Education Statistics, the community college partner has 75,486 students enrolled across all of the programs and campuses. Concerning attendance status, 72% of students are enrolled part-time whereas 28% are enrolled fulltime. The student body is 57% female and 43% male. In terms of racial demographics, the institution is 71% white, 12% black, 4% Latino/ Hispanic, 2% Asian, 3% multi-racial. The remaining 8% of students indicated their race and ethnicities as unknown.

The retention rate between years one and two is 50% among full-time students, and 41% among part-time students. The graduation rate for all students – full-time and part-time – is 16%, and 18% of the students transfer-out to another college or university. The graduation rates by race and ethnicity for full-time students are 18% for white students, 9% for black students, 10% for white students, 23% for Asian students, 17% for multi-racial students, and 6% for American Indian or Alaskan Indian students.

The community college and senior institution share an office, the Passport Office, which liaises and coordinates programs between the two institutions to facilitate seamless transfers for students. The office helps with course-to-course articulations, "2+2" transfer agreements, pre-transfer advising, and student affairs activities.

COMMUNITY COLLEGE SITE VISIT

The goal of IN LSAMP is to double the number of historically underrepresented minority (URM) graduates receiving a baccalaureate degree in a STEM discipline. One of IN LSAMP's key strategies toward this goal is to facilitate seamless transitions into STEM degree programs, in part by increasing program activities for community college transfers. Therefore, our primary goal for this site visit was to gather qualitative data on IN LSAMP progress in offering program activities for community college transfers.

We accomplished this by meeting with two Scholars who had transferred from the community college to the senior institution, the Graduate Assistant who had worked with them, two representatives from the Passport Office (a joint operation office), and a Co-Coordinator at the senior institution. We also had a telephone call with one of the transfer student's faculty mentors.

We also wanted to gain first-hand experience and direct contact with the community college's key players, faculty, students, and campus. So, at the community college site, we had lunch with three IN LSAMP faculty, three Scholars/Learning Assistants, and the site's new Program Coordinator. We also toured several labs, observed a Cell Culture lab in session, and had a chance to sit down with the Dean.

The three most important themes resulting from these activities are discussed in the following pages and include:

- The connections that IN LSAMP is making with students while they are still enrolled in their community college are important to their transition, retention, and future workplace readiness.
- IN LSAMP's faculty-mentored summer research opportunities for transfer students have positive academic and social outcomes.
- The LSAMP program at the community college is doing an exceptional job of preparing students for their transition to the senior institution.

The connections that IN LSAMP is making with students while they are still enrolled in their community college are important to their transition, retention, and future workplace readiness.

The community college faculty and administrators with whom we met as well as the Passport Office representatives described the creation of an articulation agreement, in which students who complete an associate of applied science degree in biotechnology at the community college receive transfer credits toward the bachelor's degree of science in biotechnology at the university. The community college informants we met with also described engaging in alignment activities with employer partners, in which they aligned their course outcomes with business hiring requirements and the labor market needs of relevant industries.

Our interviews with the Graduate Assistant and the two transfer students highlighted *other* ways in which IN LSAMP is making connections with students while they are still enrolled in their community college. The program offered transfer students a range of activities in which to participate beginning the February before their transfer. These support activities focused on providing guidance and information on the knowledge and skills students need outside of courses. These included the soft skills needed for college completion and workplace readiness, such as time management, scheduling, resume-building, and networking activities. Our meetings with Passport Office representatives underscored how these activities have complemented and helped deepen the existing relationship between the two institutions.

The two transfer students with whom we met both reported that they had had participated in LSAMP as Learning Assistants (tutoring other students in labs) during their final semester at the community college. LSAMP had been recommended to them by the same faculty member. They had both enrolled in community college with the goal of continuing to the senior institution. However, nationally, while 80% of students entering community college intend to transfer to a four-year institution, only 24% actually do. The students felt LSAMP had made a difference in their ability to follow through on their transfer intentions.

> *"I wanted to go to [the senior institution], for sure, that was a definite thing. And [I saw LSAMP as something that would help me to be able to do that] and it would be easier for me to transition here if I kind of new some people."*

> *"I heard about financial benefits, and that was like the huge catalyst because I am '21st century' and I don't really have that much money for school. And that would help me out."*

The students viewed the IN LSAMP activities as a combination of personal and professional development. In particular, they stressed how the activities helped them build confidence in interacting with others and at professional events. They were enthusiastic about having put these lessons learned to the test and with good results. They clearly appreciated the importance of social connections and networking. It also means a great deal to them to be part of a community of other students "like me."

> *"[The IN LSAMP Graduate Assistant] went over how to convey myself with interacting with other people in the field and how to make me feel more comfortable because there are other people there who are just as nervous as us … He pretty much prepared me to go [to the Research Conference] … He worked on our professional development in a way that we could all relate."*

"Going to [networking events], I don't know what to say to people. [The Graduate Assistant] showed us a video that showed different ways that you can look welcoming, and how to introduce yourself to someone and not just be awkward and that helped out. I actually went and I spoke to quite a few people … So that was really awesome!"

"When I first started college years ago, I kept to myself. I would leave class, go right to my apartment, and I didn't really explore campus. I didn't really join any groups or anything. So, [LSAMP], it helps out because I'm introduced to other people; I know the people on campus. I'm not scared. … And a few of them are over in the science building with me, so I was like, 'Hey, how are you doing? How are the classes? You need help with this? I need help with that…' So, it's a feeling of belonging. Having a group that I am in, and others like me are in, is … it's just welcoming."

"Being with this group it kind of helps … because there are new students that came that I met during the summer time and I'm like, okay, each one new person that's joining, just kinda open up a little bit and talk to them … and it's neat because I found some students who are in the same classes but at different times, so I was like, 'Let's exchange numbers,' and we talk with each other."

IN LSAMP's faculty-mentored summer research opportunities for transfer students have positive academic and social outcomes.

Both transfer students had participated in faculty-mentored research at the senior institution the summer before transferring. One had a faculty mentor in the Department of Biology as well as a mentor who was a graduate student in Medical Neuroscience. The broad goal of her research involved investigating the potential role of a particular protein in ameliorating ADHD. The other IN LSAMP transfer student had a faculty mentor in the Department of Anesthesia in the School of Medicine. Her research involved trying to better understand how long-term pain develops and the implications for prevention and treatment.

Both students' research resulted in poster presentations at summer and fall student research conferences. Both students also had positive and meaningful mentoring experiences. They developed trusting relationships with their mentors, engaged in hands-on research that built their self-esteem, and enjoyed feeling part of a community.

"Because of that summer experience, my mentor got to know me and understand me. And he has seen all that [the community college Biotechnology program] did for me. So now they trust me a little bit more. I trust myself a little bit more."

"Initially, I didn't even have an interest in neuroscience. So, when I got paired with him, I was kind of like ugh…kind of scared a little bit because I wasn't sure how it was going to turn out. But when I got there, they did a lot of other stuff there that I was actually prepared to do. So it actually went really smoothly, and I wasn't as nervous as I thought I would be. And it wasn't as nerve racking as a thought it would be. And it was like, I don't know, I think I was like, very well prepared."

"We were all learning together. It was a lot of trial an error, and we all had to kind of work together and bounce off of each other. And research is research, so we didn't really accomplish anything or make any groundbreaking techniques or whatever…"

"I would like to continue with LSAMP next semester, and then in the summer hopefully do research again because it was a great experience. Doing a whole summer of research with the Ph.D. students in our labs – it's really awesome!"

Community college LSAMP students also participate in the annual **Research Conference** and the **Career Night**, described on the following pages.

The LSAMP program at the community college is doing an exceptional job of preparing students for their transition to the senior institution.

The Biotech coursework and labs that students completed at the community college not only prepared them for their courses and research at the senior institution, but gave them a leg up. This advantage was verified by faculty at both institutions.

"I feel like I have a great advantage starting over there and then coming over here. 'Cause, like, so many students, I feel like they are at the level I was when I first started the program. And I am about to graduate. So it is great."

"I was really like 'Wow!' My teacher [at the community college] who told me about the program, he told me, he told all of us students, 'You guys are going to need this; it's going to be helpful for you.' I didn't get it at the time. Until I actually got like hands-on experience and I had to actually show these random people what I was made of … So I was like 'Wow!' I was kind of just shocked. I didn't know how well prepared I was. And I don't know if I can dedicate that to [the community college], or LSAMP, or just me as a student."

"In my personal opinion, I feel like I'm a little more ahead of some of my peers [at the senior institution] – because of [LSAMP] and some of the opportunities I had in the summer, because I had that hands-on experience."

Considerations/Recommendations

The community college site is a resource for other IN LSAMP institutions in terms of preparing community college students for transfer to four-year institutions, especially developing students' lab skills. Specific recommendations for the community college site – or for community college transfer activities – include:

- Orienting students to the IN LSAMP "big picture"; that is, that they are one of six campuses in an Indiana Alliance (each with its own group of Scholars), which is itself one of more than 100 such Alliances funded by the National Science Foundation – and orienting them to the resources that will be available to them from/at other IN LSAMP institutions; it wasn't until the Research Conference that some students realized that they were part of something bigger
- Creating a database of potential faculty mentors and ensuring the mentors understand LSAMP and are willing to help LSAMP Scholars, in order to facilitate easier pairing of Scholars with faculty mentors; one student talked about difficulty getting matched with a mentor
- Dispelling or moderating students' perceptions that Biotech is a field where they "don't really have to deal with people"; both transfer students expressed this belief
- At the senior institution, detailing from the beginning what continued involvement in LSAMP means; students were not clear on plans for their spring 2019 semester

RESEARCH CONFERENCE AND STEM CAREER AND RESOURCE FAIR

Conference and Career Fair

From our attendance and observations at the Research Conference and Career Fair, we conclude the events were meaningful and beneficial for students (and faculty, although our observations focused on students). Students were inspired by and received helpful information from peers, presenters, faculty, and staff about research and career opportunities. They had an opportunity to bring their own research full circle and practice their presentation skills, which they did admirably. Finally, the events went a long way toward building IN LSAMP community. This section of the report describes the conference and these observations in a bit more detail.

The inaugural IN LSAMP Research Conference took place on Friday, October 19, 2018 at the Alliance's community college partner. The conference theme was "Investing in Future STEM Leaders." The conference featured separate tracks for students and faculty. In the morning students had sessions on developing and promoting professionalism in STEM and on using ePortfolio to leverage their undergraduate research and build their STEM networks. Faculty had sessions on

research mentoring (including discussion of the first international journal that publishes undergraduate research in microbiology) and on cultural proficiency.

In the afternoon, the student and faculty tracks featured panels and Q & A (on summer research and faculty mentoring, respectively). The student panel was helpful in providing students with information about summer research opportunities.

Over lunch, six IN LSAMP Scholars shared their summer research. The students presented their research in a professional manner and clearly expressed their ideas. This was followed by two keynotes. The first was from the community college President and the second was from an LSAMP Alumnae who holds a Ph.D. in Chemistry and is an Associate Scientist at Amvac Chemical Corporation. The alumnae keynote was exceptionally motivating in terms of pursuing STEM post-baccalaureate and career opportunities.

The last 90 minutes of the conference featured the STEM Undergraduate Research Poster Session. This session was very effective in demonstrating the kinds of research being conducted at Alliance institutions. Most important, the session provided students with both experience presenting their research to an audience, and with recognition for their work. The experience was clearly a positive one for students.

There was ample opportunity throughout the day for students to network with peers from their own institutions as well as from other Alliance campuses. The students appeared to feel part of a community and part of "something bigger."

Following the conference, the community college hosted a STEM Career and Resource Fair for the students. This event gave students direct exposure to STEM faculty from other Alliance institutions and representatives from STEM businesses and industries that need STEM workers with higher levels of career preparation.

Student Interviews

The conference also provided an opportunity to interview four students who had not been on their campuses during the evaluator's June 2018 site visits. All of the students were seniors. Two were majoring in biology, one in biology and chemistry, and one in geology and Spanish. These interviews surfaced themes similar to those heard during the prior site visits.

Students found their research opportunities and experiences invaluable. Two of the students had had summer research experiences off-campus, one in another state and one in another country.

"LSAMP has opened up a lot of doors in research."

"What LSAMP has mostly done for me is build my confidence, especially in the lab setting. It has allowed me to think in a different way. When you're in class, you think you just need to study, whereas in lab it is just different; it allows you to really think."

"Because I was funded for research, I was able to get a lot more progress done on my project and was then able to go to present at the National American Chemical Society meeting. That was also funded by LSAMP, a chance to get exposure at a national level."

The students had graduate school in mind, and all seemed intent on continuing in a STEM field. Specifically, one student intended to go to dental school, one to optometry or medical school, and two to graduate school and then industry. As the second quote below illustrates, some students may learn that the lab route is not for them.

"When I started school, I didn't think I was going to do grad school but as I've been through it that's definitely what I want to do."

"I enjoy being in the lab, but that's not everything that a Ph.D. and the career entails. There is a lot of writing and reading and you are constantly trying to write and fight for money just to be able to be in the lab and I don't like that."

One of the students had served as a peer mentor and described the experience very positively, and eloquently. In addition, two of the students were involved in outreach to high school students through LSAMP.

"I've always liked helping people when I can and if I'm able to. I feel like when they accomplish something, I feel like I've also accomplished something. It is rewarding for me. If they are successful, that's another successful person in the country that's going on to do something meaningful for society."

The students spoke very highly of their mentors and it was clear in some cases that they had developed close relationships with them.

"She has been an extremely invaluable person in my life. She took me into her lab and then I was able to start a research project and collaborate with [her] on it. I was able to continue that same project with her through LSAMP. Without her I wouldn't have been able to go to France because they required research experience and a recommendation. With grad school, she is able to help me choose the right fit. She is a guiding hand and she goes one step and above with helping."

In our June 2018 site visits we had heard students say they had not had specific expectations of the LSAMP program. We heard something similar from these four students. Some of the students went further in describing the challenges of the LSAMP "unknowns." Some expressed their surprise at learning what LSAMP is really all about at the conference.

> *"I think it comes off as a lot of unknowns. LSAMP doesn't do a good job of telling students how grad school works and what exactly the program entails overall. It's just kinda like, 'We'll pay you to come do research, and we'll just make it happen."*
>
> *"… I think it is more, 'So, what all is LSAMP going to offer me?' and that's just like a big unknown. It's just like, 'Oh hey, here's some money.' Until you get to [the] conference, you have no idea how big and how supportive LSAMP is."*
>
> *"When I heard about LSAMP, I thought it was this small thing of minorities. This [the conference] is all a shock to me."*
>
> *"I was surprised. At first I thought it was just a source of funding but it was so much more. LSAMP exposes you to research but also these events that expose you to what other people are out there and it is interesting to see the different paths we can take. LSAMP is more of a network to me than just funding. [It] opens your eyes, opens the view of all these avenues to science."*
>
> *"I thought they would just pay me to mentor a student. I didn't know about the research or anything. It all exceeded my expectations above that. It was life changing and I was not expecting it to be."*

SUMMARY OF FINDINGS AND RECOMMENDATIONS

In summary, the site visit yielded compelling qualitative evidence of IN LSAMP's agenda to facilitate seamless transitions into STEM undergraduate and graduate degree programs. The connections that IN LSAMP is making with students while they are still enrolled in their community college are important to their transition, retention, and future workplace readiness. IN LSAMP's faculty-mentored summer research opportunities for transfer students have positive academic and social outcomes. In addition, the LSAMP program at the community college is doing an exceptional job of preparing students for their transition to the senior institution.

Recommendations include:

- Detail from the beginning what continued involvement in LSAMP means for transfer students
- Create a database of potential faculty mentors and ensure the mentors understand LSAMP and are willing to help LSAMP transfer students

- Moderate students' perceptions that Biotech is a field where they "don't really have to deal with people"
- Step up efforts to orient all Scholars – those from community colleges and four-year institutions – to the IN LSAMP "big picture"

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