The Ohio LSAMP Alliance
Year 2: 2014-2015

Evaluation Report: Results from Partner Interviews

FINAL: May 29, 2015

Prepared by
Jan Upton, Ph.D.
Rachel Ross
TABLE OF CONTENTS

Executive Summary ...........................................................................................................................................ii
Introduction .........................................................................................................................................................1

Table 1: Year 2 - Partner Institutions and LSAMP Scholars................................................................. 1

Description of the Interview Process ......................................................................................................... 3
Summary of Year 1 Activities ....................................................................................................................... 4
Year 2 Progress of LSAMP Partners ........................................................................................................... 5
Important Emerging Lessons ....................................................................................................................... 16
Year 2 Challenges LSAMP Partners Are Facing ..................................................................................... 20
Potential Areas for Action and Recommendations .................................................................................. 29
Conclusions ...................................................................................................................................................... 34
Appendix 1A: Summary of Key LSAMP Activities – Four-year Institutions.................................35
Appendix 1B: Summary of Key LSAMP Activities – Two-year Institutions.................................36
EXECUTIVE SUMMARY

Funded by a five-year grant from the National Science Foundation beginning in September 2013, The Ohio Louis Stokes Alliances for Minority Participation (LSAMP) Alliance is comprised of 11 partner institutions of higher learning (seven four-year institutions and four community colleges). The goal of the Alliance is to increase the number of underrepresented minority (URM) students who complete degree programs in science, technology, engineering, and mathematics (STEM). This evaluation report, produced by Institutional Research Consultants, Ltd., is based on interviews with representatives of the 11 partners and presents formative information about their activities, progress, and challenges in Year 2 of the grant in which nearly 300 LSAMP Scholars received stipends funded by the grant.

Most of the Alliance institutions have expended formidable resources and effort toward providing programming that has been proven to help retain and support URM students majoring in STEM fields, including culturally sensitive advisement and counseling, residential early arrival programs, undergraduate research opportunities, tutoring, supplemental instruction, and faculty and peer mentoring. Although a few Alliance partners have struggled to implement the grant-directed activities to the extent anticipated due to recruiting and structural challenges, they remain committed to a robust and full implementation in the coming academic year.

This evaluation found many encouraging examples of successful collaborations between the community college partners and the four-year institutions, especially focused on mutual student activities such as undergraduate research and summer bridge programming. In a substantial feat of collaboration, three pairs of Alliance partners are working together on the provision of 2015 summer bridge programming to LSAMP cohorts. The introductory Math for Engineering Applications course, recommended by LSAMP’s Math Curriculum Reform Task Force, is gaining traction and supporters across the Alliance. All Alliance partners are poised to increase joint efforts moving forward, with specific attention focused on task force activities that will strengthen the Alliance overall. The leadership was not alone in being optimistic about the burgeoning partnerships in evidence to date, as everyone interviewed was committed to setting the bar high in this regard.

All the partners have distributed the LSAMP brochure widely in their recruiting efforts, and they are exploring innovative ways to increase recruitment of LSAMP Scholars, as maintaining a critical mass of scholars in the LSAMP cohorts will be essential for the realization of the grant’s objectives.

Alliance partners are employing a wide variety of advising structures to support their LSAMP cohorts, from ad hoc advising by faculty and peers to regular and sustained advising with progress reports and data tracking of student performance. Workshops offered by the partners to help students adjust to college life and succeed in their respective STEM disciplines are relevant, effective, and plentiful.

---

1 Institutional Research Consultants, Ltd. (IRC) [www.irc-evaluation.com](http://www.irc-evaluation.com) is an independent evaluation research firm located in central Ohio.
The LSAMP program coordinator at Ohio State University developed an exemplary peer mentoring program that several of the Alliance partners intend to replicate in Year 3 of the grant. The low number of current LSAMP Scholars qualified to be peer mentors and tutors has temporarily stymied these aspects of the grant, but such issues should be resolved in the coming year as recruitment increases, additional cohorts join the program, and more scholars move successfully through the program.

LSAMP students at six of the partner institutions are actively engaged in undergraduate research, earning stipends or hourly wages, and the remaining partners are preparing to offer research opportunities to their LSAMP Scholars, either on their respective campuses or in cooperation with an Alliance institution.

Cross-institutional activities in which LSAMP Scholars at the community colleges visit, take classes, and/or work at the four-year partner universities are expected to ease the kinds of adjustment issues that students face when they transfer for degree completion. In Year 3 of the grant, as more LSAMP Scholars, who were primarily freshmen, become sophomores and begin their transition to four-year institutions, it will be incumbent upon the partners to provide more proactive programming at this important juncture.

Additional areas of focus appropriate for Year 3 include reaching recruitment goals, effective use of the case statement with the aim of securing supplemental funding through community and industry partnerships, and the implementation of more robust peer and faculty mentoring which can be tracked and evaluated for its impact on the LSAMP Scholars. Building the LSAMP website into a lively destination portal with current information and resources from all the partners, of value to all the partners, will be another important goal in Year 3 of the grant. Lastly, a concerted effort in the coming academic year to lay the groundwork for institutionalization of the grant activities so that they endure beyond Year 5 would ensure a lasting legacy for The Ohio LSAMP Alliance.
Introduction

The Louis Stokes Alliances for Minority Participation (LSAMP) program is funded by the National Science Foundation (NSF) and has the overall goal of increasing the number of underrepresented minority (URM) students who complete degree programs in science, technology, engineering, and mathematics (STEM). Funded by a five-year grant beginning in September 2013, The Ohio LSAMP Alliance is comprised of 11 partner institutions of higher learning. Listed in Table 1, the partners include seven four-year institutions and four community colleges (CC).

Table 1: Year 2 - Partner Institutions and LSAMP Scholars

<table>
<thead>
<tr>
<th>Partner Institutions</th>
<th>Total Number of LSAMP Scholars Receiving Stipends through May 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Four-year</strong></td>
<td></td>
</tr>
<tr>
<td>1. Central State University</td>
<td>22</td>
</tr>
<tr>
<td>2. Cleveland State University</td>
<td>16</td>
</tr>
<tr>
<td>3. Miami University</td>
<td>28</td>
</tr>
<tr>
<td>4. The Ohio State University (OSU)</td>
<td>59</td>
</tr>
<tr>
<td>5. University of Cincinnati</td>
<td>39</td>
</tr>
<tr>
<td>6. Wilberforce University</td>
<td>19</td>
</tr>
<tr>
<td>7. Wright State University</td>
<td>30</td>
</tr>
<tr>
<td><strong>Two-year</strong></td>
<td></td>
</tr>
<tr>
<td>1. Cincinnati State Technical and CC</td>
<td>7</td>
</tr>
<tr>
<td>2. Columbus State CC</td>
<td>6</td>
</tr>
<tr>
<td>3. Cuyahoga CC</td>
<td>52</td>
</tr>
<tr>
<td>4. Sinclair CC</td>
<td>7</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>285</td>
</tr>
</tbody>
</table>

---

2 Institutional Research Consultants, Ltd. (IRC) [www.irc-evaluation.com](http://www.irc-evaluation.com) is an independent evaluation research firm located in central Ohio.

3 See the Ohio LSAMP Alliance website for additional information [http://odi.osu.edu/centers/ohio-lsamp-alliance/ohio-lsamp-alliance-home/](http://odi.osu.edu/centers/ohio-lsamp-alliance/ohio-lsamp-alliance-home/).
Through March 2015, nearly 300 students across the 11 institutions were actively involved in LSAMP programming. OSU had the largest cohort with 59 scholars. Cuyahoga CC had the second largest cohort with 52. The other three community colleges had fewer than 10 LSAMP Scholars.

The Ohio LSAMP Alliance intends “to double the number of underrepresented minority baccalaureate degrees in STEM disciplines at partner institutions within five years.” Action steps toward achieving this ambitious goal were organized by the following objectives:

Objective 1: To foster a partnership among alliance institutions, working with industry and community partners, that results in programming that is collaborative, effective, and sustainable.

Objective 2: To heighten the awareness of opportunities in STEM disciplines and increase the recruitment of underrepresented minority students to STEM majors at partner institutions.

Objective 3: To provide early and sustained programs to facilitate the critical transition from high school to college at each partner institution.

Objective 4: To increase the retention of first- and second-year underrepresented minority students in STEM disciplines.

Objective 5: To improve the disciplinary socialization of underrepresented minority students in STEM disciplines, particularly by providing undergraduate research opportunities through the baccalaureate.

Objective 6: To provide pathways for smooth transitions from community colleges to four-year institutions.

Programming within the above objectives covers alliance-wide articulation agreements and credit transfers, The Ohio LSAMP Alliance Conference, innovative curricular reforms in mathematics, an interactive web site, sharing of online courses, cyber-enabled sharing of workshops, diversity sensitivity training, collaborative faculty mentoring, and production of Ohio LSAMP Alliance recruitment brochures, programs, and other materials. In addition, each institution has committed to provide programming that includes advisement and counseling, residential summer bridge and early arrival programs, undergraduate research internships with stipends, faculty and peer mentoring, and tutoring or supplemental instruction.

---

4 The underlining was added by the evaluator to highlight aspects of each objective that will be emphasized in this report.
Description of the Interview Process

Institutional Research Consultants, Ltd. (IRC), directed by Dr. Jan Upton, is the external evaluator and worked closely with The Ohio LSAMP Alliance Director, Dr. Barbara Fink at OSU, in developing interview questions that would address the partners’ progress and challenges with implementing the grant. In March 2015, IRC conducted telephone interviews with designated representatives at each of the partner institutions, typically the respective LSAMP Site Coordinator, faculty, and administrators serving on the Steering Committee. In total, IRC conducted 14 interviews. In eight of the interviews, two LSAMP representatives of that partner institution participated jointly in the conversation; the remainder of the interviews were conducted with a single representative of that partner (four separate interviews for two of the institutions). These interviews ran from 30 to 75 minutes and were guided by a set of 10 questions (with a subset of questions specifically related to the grant’s six objectives) provided in advance to the interviewees. The interview was designed to glean information about each of the partner’s LSAMP activities currently underway, their short- and long-term goals, issues they found most pressing in Year 2, and positive changes in their STEM students and/or internal structures that they could attribute to the LSAMP grant. The evaluator probed for details and background to provide essential context to the success stories, challenges, and insights shared by the 11 partners. Finally, IRC did additional email follow-up with most partners following the March 5th Steering Committee, as the leadership presented information about budget changes, and the evaluator realized the need for further clarification on how sites were defining and compensating LSAMP Scholars.

In the November 21, 2013 Steering Committee Meeting minutes, Dr. Fink outlined the criteria for eligible students as follows:

i. African American, Hispanic, Native American, Native Pacific Islander, Alaskan Native.

ii. STEM major (not applicable to community colleges since students do not declare majors)

iii. Citizens or permanent residents of the United States or its possessions

She also explained how the LSAMP funds could be used: “The Ohio LSAMP Alliance partner institutions agreed that all funding from LSAMP will be provided to students in the form of stipends. This means that the students must participate in LSAMP programming in order to receive the funding.”

During the interviews, the evaluation team discovered that some sites paid stipends per activity while others initiated contracts with students who would receive stipends following completion of a prescribed number of pre-approved activities (see Appendices 1A and 1B for the approach used by each institution). A further complication was that the term “LSAMP Scholar” was also used by the partners to denote all students who met the three criteria listed above. Consequently, the OSU leadership began using “Level 1” to distinguish students officially active in LSAMP, and receiving stipends, from “Level 2” students, which included all those who qualified but were not actively enrolled in the LSAMP program nor eligible for stipends. However, other partners did not use these terms, which resulted in the need for additional information about how each partner defined the LSAMP Scholars at their institutions.
In the upcoming autumn term, IRC will administer a survey with a broader group of partner representatives that will provide quantitative measures of institutional activities and the Alliance overall. This report, based on the partner interviews, offers useful formative information about The Ohio LSAMP Alliance that can help the leadership and partners strengthen their activities and collaboration. Moreover, it provides relevant contextual information about the current status of implementation across the 11 partner institutions in the Alliance.

**Summary of Year 1 Activities**

The NSF award was issued effective September 15, 2013, and the OSU leadership team worked quickly to get everything in place so that all partners could begin recruiting and implementing activities with LSAMP Scholars. At the initial Steering Committee Meeting on November 21, 2013, Dr. Fink provided an overview of the grant requirements, explained the sub-award agreements that each partner needed to complete, described the evaluation and data collection plan, and encouraged the participation of "experts from each institution" in the following task forces:

- Articulation Agreement and Credit Transfer Task Force
- Mathematics Curriculum Review Task Force
- Cyber-Sharing Task Force
- Ancillary Study Task Force
- Ohio LSAMP Conference Task Force
- Community and Industry Partner Task Force

Dr. Fink also outlined the plan for ongoing communication that would consist of an annual Steering Committee Meeting, task force meetings, conference calls, and site visits. Additionally, she announced that the official kick-off of The Ohio LSAMP Alliance would take place on March 4, 2014.

By January 2014, all the contractual paperwork was in place so that grant funds could be distributed from OSU to the other 10 partner institutions. In addition to designing materials for the Alliance (logo, brochure, and the mentoring and diversity handbook), setting up the LSAMP website, and managing the grant in Ohio, OSU hired a Program Manager and successfully recruited 39 LSAMP Scholars by February 2014 with whom they initiated various activities that served as a model for the partners. The other 10 partners also began planning activities focused on recruitment, retention, and support of LSAMP Scholars. However, summer 2014 was the earliest that most partners began to have LSAMP Scholars actually engaged in programming. Thus, this report will focus on the progress that the partners have made in Year 2.
Year 2 Progress of LSAMP Partners

The partner interviewees gave numerous examples of their progress on the six objectives. Below are highlights by objective. The subheadings are from the logic model and evaluation plan; however, for this section of the report, the areas with the greatest degree of positive headway are listed first followed by those with a lesser degree of forward movement to date.

Objective 1: Fostering partnerships

Respondents gave encouraging examples of successful partnerships between the four-year and two-year institutions. Most of their efforts to date have focused on joint student activities such as internships, peer mentoring, and summer bridge programming (details are provided under Objective 3). Nevertheless, collaboration among the partners is moving forward and task forces are forging opportunities to strengthen the Alliance overall.

• Partner Collaboration

Through site visits and regional conference calls, the Alliance leadership has encouraged the partners to work together, and to foster connections with the community college partners during the early stages of LSAMP programming. A consistent message was, “We want to encourage more of that because it is very important for us to try to establish our community colleges on a pathway for our underrepresented minority students to get into four-year STEM programs.” To that end, The Ohio LSAMP Alliance has purposefully included a community college in each of the regional hubs: Sinclair CC with three universities (Central State, Wilberforce, and Wright State) in the Dayton area; Cleveland State and Cuyahoga CC in Cleveland; Columbus State CC with OSU in Columbus; and Cincinnati State CC with Miami University and the University of Cincinnati in the Southwest region.

The Alliance leadership also established different ways for the partners to track data and access resources through the Buckeye Box and the LSAMP website. It is anticipated that the upcoming LSAMP conference will provide an ample platform for partner collaboration and sharing (information and resources). While the Alliance leadership is optimistic about the burgeoning partnerships in evidence so far, it has set a high bar and acknowledged that, “It is not as good as we want it to be yet.”

• Task Forces

Several partners are actively assisting in the planning and execution of the upcoming July conference through the LSAMP Conference Task Force. The Chair of the Industry and Community Partners Task Force, Ken Simonson of the University of Cincinnati, has made it his goal to help Alliance institutions make strategic contacts with industry partners with whom they have established relationships in order to facilitate introductions regarding LSAMP. Using this approach, OSU has already successfully initiated partnerships with Kroger, Honda, Marathon, Proctor and Gamble, and others, and these provide a framework for the kinds of industry and community development arrangements that can be forged in support of LSAMP programming.

The evaluator adjusted the wording of each objective to a single line in an effort to make the report easier to read.
Several partner institutions have representatives on LSAMP’s Mathematics Curriculum Reform Task Force. This group, chaired by Dr. Nathan Klingbeil of Wright State University, has been especially active in addressing the pipeline issues that impede URM students from achieving in the STEM disciplines. Dr. Klingbeil advocates making the required material “more accessible and getting the bottleneck out of the way.” His efforts have resulted in the innovative course, Introductory Math for Engineering Applications [now known as EDR-1010], which he describes in this manner:

'It is the cornerstone of the required degree program for five of the engineering degree programs at Wright State. It is also a university general education and writing intensive, and it has electric lab and recitation components. Students write lab abstracts that go along with the physics-based labs. The course can be taken by computer science majors or any student interested in engineering degree paths. We have made the required curriculum much more accessible because we decoupled the prerequisite structure associated with traditional calculus."

The long-term goal of the Mathematics Curriculum Reform Task Force is “to see how much of this we can get spread out to the partner institutions,” said Dr. Klingbeil, adding:

'OSU has been a leader in terms of setting an example. They adopted EDR-1010 as a required part of their curriculum. They ran a pilot with 36 seats in the fall of 2014, as essentially, an early entryway into their engineering college for students who otherwise would have been on a wait list. That was very successful. They are going to run the class again next fall and our goal is that they institutionalize and expand that."

EDR-1010 has been widely implemented at Wright State University, and at Sinclair CC the course is part of their engineering transfer program. Cincinnati State CC liked the concept and the results: “Wright State was showing that it had better retention for students and better success. Given our population is a little more at-risk, we felt that it was a great course to have, so we could get better success for our students.” Consequently, Cincinnati State CC has adopted the same EDR-1010 that Wright State offers to its freshmen engineering students; it will become part of their new pre-engineering program starting in fall 2015.

Central State has requested evidentiary literature to share with their key stakeholders, and Dr. Klingbeil will present on the course to the Provost and faculty of Central State in the near future. A Central State representative agreed that, “It is important for engineering students to look at mathematics in an integrated fashion. They need to see how math will be used in their own field. The special course that Dr. Klingbeil has introduced would do essentially that.”

A Miami University interviewee stressed that realignment of course requirements for first-year students going into the sciences was urgently needed. She provided the following description of the situation:

'Right now, they are supposed to take Biology 1, Chemistry 1 and Calculus 1—all in their first semester. If they come from rural or inner-city schools that are underprepared, they cannot do that. They need somebody to tell them it is okay not to do that. Our biggest indicator of who passes Chemistry 1 is their Math Placement Score, so we need to get their math up to speed before they take any course in engineering or computer science—to make sure they have the math skills to succeed."

Dr. Klingbeil’s other innovation in math curriculum reform is reaching high school students with Engineering 1010 in an online, dual-enrollment course through College Credit Plus under a co-instruction model. This means that the actual course content, exams, homework, and grading structure are actually determined by university faculty, which gets around the requirement that the high school teacher have a master’s degree to teach the class. The course will feature Kahn Academy style videos and a laboratory structure. “We expect to roll it out in significant scale to as many high schools that want to do a co-instruction model, and then also to the community colleges.”

• LSAMP Website

Most Alliance partners have had a chance to navigate the LSAMP website and described it as “helpful,” “thorough,” and “a good portal.” Some have referred their advisors and public relations personnel to it as well. The partners were understanding of the fact that when the LSAMP website was initially developed, its pages were heavily populated with OSU LSAMP material “just to get it up and running.” A visitor would “have to go through a couple of links to realize it’s really a whole alliance.” They acknowledged the leadership team’s concerted effort to make the site represent the full Alliance through structural changes such as adding links to every institution in the Alliance and highlighting their respective LSAMP programming. They are responsive to requests for such information and recognize this ongoing, two-way process of exchange will require maintenance and contributions from every partner to keep the website fresh and relevant.

• Case Statement

All the partners were aware of the Case Statement on the LSAMP website, developed as a tool for partners to explain the LSAMP program to potential donors when seeking matching funds from potential community and industry sponsors. It was described as “well documented and informative.” Several had downloaded and shared it with the foundation, advancement, and public relations departments at their institutions. One respondent, cognizant of the university fundraising protocol and aiming for a coordinated effort with “credibility and structure,” related that they had set up a meeting with the Senior Associate Vice President for Diversity who was going “to pull together the development officers from the different colleges here that have LSAMP, and we’re going to take the Case Statement and go out as one university to raise funds for LSAMP.” Another interviewee reported using the Case Statement as a model for the developed institution-specific document, which leveraged another campus program in support of LSAMP. This individual was also aiming to schedule a meeting with the institution’s advancement department using the Case Statement as a springboard for fundraising purposes.

• Articulation Agreements

The Alliance has increased partner communications around this topic. For example, Cincinnati State CC reported that, “As a secondary offshoot of LSAMP, we are now finishing up an articulation agreement directly with Wright State University from our pre-engineering program to their engineering program, so in essence, in our conversations with all the partners, we have created another pathway for our students.” In future conversations, these two partners will be talking about the possibility of allowing the community college’s students to do research at Wright State under a co-op arrangement.
Objective 2: Heightening awareness & increasing recruitment of URM students in STEM

• Recruitment

All the partners have used the LSAMP brochure in their recruiting efforts. Most have modified it, as needed, to fit their student populations and distributed it widely at new student orientation events. As one partner described, “We have a table at every orientation during May, June, and July. We are able to see every incoming freshman that attends an orientation within those three months. They leave with an LSAMP flyer, a math learning center postcard, or a math placement flyer. They do not leave our table without anything in their hands.”

Partners have also leveraged their institutional structures to recruit LSAMP Scholars through mass emailing, postal mailers, and in-class presentations. For example, OSU communicates information about the LSAMP program in pre-enrollment materials that reach all admitted students at the Columbus campus (sent to about 15,000 incoming students). “So students who are looking at options in enrollment programs can be directed to our website and learn more about LSAMP. It also gives them the understanding that there is a larger STEM community for underrepresented students here at the university.”

Throwing a wider net is one way Cincinnati State CC is addressing the recruitment challenge. Their new pre-engineering program targets high school students aiming for a four-year degree but keen on first satisfying general education coursework at a two-year college. Designed to ensure “better transferability,” this pre-engineering track is only in its first year, but the partner anticipates that “as the pool grows, in essence, that program itself will be recruiting for LSAMP.”

Sinclair CC will also be throwing a wider net by making sure that their STEM advisor and lead curriculum advisor are on the watch for potential LSAMP students, and by reaching down into the pre-college pool: “Our summer weekend institute, which is a high school program, often includes a number of women and minority females—some of them are rising seniors. If nothing else, we connect with them and make them aware of LSAMP, so if they go to Wright State or Sinclair, they might be able to be recruited into the program at that time.”

Objective 3: Providing early & sustained programs for high school to college transition

• Early Arrival/Summer Bridge Programs

In a substantial feat of collaboration, three pairs of Alliance partners are collaborating on the provision of 2015 summer bridge programming to LSAMP cohorts. Six Cincinnati State CC LSAMP Scholars will attend the University of Cincinnati’s summer bridge; Sinclair’s LSAMP students will have seats in the one at Wright State; and Cuyahoga CC is aiming to send about 30 students to Cleveland State’s summer program. According to a University of Cincinnati representative:

_We in engineering had talked about this for years, but it wasn’t until LSAMP provided us the opportunity to implement. We’re confident it will put the Cincinnati State students in a position to get the necessary grades to transfer over to UC. So, we’re real excited about having community college students in a four-year bridge program. I think this is an innovative piece, not only for Ohio, but for other LSAMPs around the country._
Below are descriptions of partners’ summer bridge plans:

Sinclair CC was working to identify and fund several incoming, LSAMP-eligible engineering majors to participate in Wright State’s one-week, intensive math refresher designed specifically for engineering majors.

Cleveland State, just a mile from the Cuyahoga CC campus, invited Cuyahoga’s LSAMP Scholars to attend their math-intensive summer bridge program. Cuyahoga CC hoped to help staff the joint effort with a few of its own math tutors and instructors. While many Cleveland State students are full time and can stay in dorms during the summer bridge, Cuyahoga CC students will have to commute, but they will earn a $210 stipend for fully participating.

Miami University is focused on how they can improve their upcoming 2015 summer bridge program over the program they offered in summer 2014: “Our plan is to use input from our past LSAMP participants, and use them to help us carry it out. Sometimes, students speaking to students has a stronger impact than faculty. We will still have faculty involved, but we will supplement that with some of our current LSAMP students. I think their message to the incoming LSAMP students will be strong.”

Wright State’s summer bridge program is open to all students, but URM students receive full funding to participate, and according to the partner representative, “Once they are enrolled, I communicate with them about opportunities available for them including the mentor that they would have in the fall, and letting them know that if they need any help or guidance, they can come to our office. So, we are not just putting them in there, we are also making sure they are attended to.”

Twenty incoming freshman will attend OSU’s LSAMP summer bridge in August. This new program will include “Mathematics for STEM Applications,” taught by Lisa Abrams, who piloted the “Mathematics for Engineering Applications” course at OSU in fall 2014 (based on Dr. Klingbeil’s course described in Objective 1). OSU’s program will also include a course in “Integrated Sciences” to demonstrate how interdisciplinary approaches strengthen the scientific discovery process. Students will participate in interactive blended laboratories led by STEM faculty.

Last summer, several LSAMP Scholars took part in Columbus State CC’s bridge program for Choose Ohio First scholarship students, which accommodated up to 35 STEM students in engineering, biology, and chemistry.

• Advising

Interviews with the partners revealed a plethora of advising structures, from ad hoc advising by faculty and peers to regular and sustained advising with progress reports and data tracking of student performance. For the purposes of this section, the term “advising” may refer to college-assigned departmental advisors, faculty mentors, peer mentors, and/or program coordinators. There was extensive variation in the titles held by individuals who engaged with students in a spectrum of interactions considered advising—from counseling about courses and study habits, letting students vent concerns, discussing personal issues that could influence students’ well-being, and connecting students with cultural events and/or relevant opportunities. Aspects of faculty mentoring are briefly presented here, and in greater depth under Objective 5 since
faculty mentors play a key role in undergraduate research opportunities for LSAMP students. Partners revealed that advising is a multi-faceted endeavor that connects URM students to the larger college community and delivers a level of personalized attention and caring critical to reducing isolation, and effecting interventions that contribute to student success.

Wright State is an example of an LSAMP structure with combined peer mentoring, advising, and tutoring components. Under the moniker of Student Success Advising, the representative explained:

> We’re using the Bolinga Cultural Resources Center as a place where we can support these students and where we can recruit other STEM students. Our upper division students in engineering are becoming mentors and advisors, and this is new for us. We don’t want to overload them; so typically, each mentor works with one to three students. Any additional time is utilized for tutoring the student in lower level mathematics.

The advising structure at OSU is called Success Coaching and is intended as a complement to academic advising provided by faculty. Success Coaching supports academic integration into the university and entails advising on career skills and softer skills associated with professionalization and identity. For example, discussions with students may cover their “long- and short-term goals, time management, resources to pursue undergraduate research, doing better academically, getting involved on campus, developing their writing skills. We focus on having this identity-defining conversation where they learn a bit more about who they are, what they have to offer, and establishing their values.”

An interviewee at the University of Cincinnati gave a similarly comprehensive example:

> Students have academic progress reports for all their classes, a requirement that started with the Emerging Ethnic Engineers Program back in 1989. We just adopted the form for LSAMP, but students don’t just submit them and they just sit on a shelf. I take a look at the report for each class, at the professor’s comments and the grade the professor believes the student will receive at the mid-way point. I compare that to what the student had last fall, and if something is happening, we have a conversation. Is it academic circle work, do you need tutoring, have you gone to tutoring yet? Is it a writing issue? We try to figure out what we can do to help them improve their academic performance.

Student advising at the University of Cincinnati is also far ranging and free flowing, as the need arises said the representative: “When I have a conversation in my office, when I do the mentor support, you know, we’re always going to talk about academics, but I also want to know what’s happening at home, how things are going, and we may talk about something cultural as well.”

At Cleveland State, students have “extra eyes” on them making sure they are in the right courses and doing well, which is monitored by a first-year advisor assigned through the college, an LSAMP advisor/faculty mentor they meet with twice monthly, and meetings with the LSAMP coordinator. They also have a new academic tracking system called Starfish: “We can look at them as a whole and see if they have attendance issues, missed a quiz or something. Professors can flag students if they have a low grade, advisors can make notes in it and contact the student. It basically gives us a heads up on it.”
Miami University has three LSAMP advisors who meet with students during the summer bridge program and right after mid-term grade reports are issued when registration is beginning for the next term. This advising is in addition to students’ respective faculty advisors outside of LSAMP. One of their representatives described a typical conversation that might occur with a struggling LSAMP student:

Okay, you are about to sign up for next term. We want to make sure that if you do not think you can succeed at this class, you can drop it now without getting a grade and focus on the other classes you are doing better in. Then, we meet again to make sure that the student is either repeating the course they dropped and why they think they can succeed in it this time, and we counsel them about other classes that may help them succeed in the class they are repeating.

Advising is also having a positive impact on incoming freshman by preparing them for the rigors of college-level learning. As the Miami University representative observed, many freshman, who are accustomed to experiential, hands-on learning at the high school level, often struggle in large lecture classes: “It is really rough on them. I have heard from students that they just do not know how to take notes. They do not know how to focus their attention that long when it is not a direct conversation with them.”

• Workshops

The Alliance partners have offered a variety of workshops to help students make the adjustment to college life. Titles included *Reducing Stress during Midterms and Finals, Time Management, and Organizational Skill Enhancement*. Often the LSAMP coordinator leverages institutional resources already available through the campus resource and/or career centers. The partners also organized seminars specific to STEM and their LSAMP cohorts.

Cleveland State requires its LSAMP Scholars to attend at least two student enrichment workshops per semester:

*We actually utilize what is already offered by the counseling center and the wellness center. They do workshops nearly every week on things like active listening, note taking, studying for tests, anxiety, improving memory and concentration, and stress management. There are a couple of different groups that have STEM speakers so we are trying to share them all together throughout the semester.*

Cleveland State’s LSAMP Scholars also attended a TED talk in the area. In addition, they watched an OSU video over the break and took notes on it.

OSU’s offerings are tailored to students’ class year and vary with respect to the group served. For example, some of the workshops and other events are open to all OSU students. Others, however, are restricted to all eligible students (Level 1 and Level 2 LSAMP Scholars); some are limited to Level 1 only; and a few target particular groups within Level 1. Dr. Fink gave the following example:

*Workshops might be to help freshmen adjust to university life. When they are sophomores, they may be more involved with the undergraduate research that we want them to start doing by their junior year, so we have a variety of*

---

6 See [https://www.ted.com/talks](https://www.ted.com/talks).
workshops on that. By the time they are juniors, they might be more focused on applying to graduate schools and preparing for the GRE, so we align with that.

She added that, "The workshops are optional for some students and required for others depending on whether we think it is something they need at that point in their careers." In addition, LSAMP students at Columbus State CC have been invited and have attended workshops at OSU, including the “Résumé Workshop,” “Why Graduate School,” and “STEM Graduate Student Panel.”

Miami University organized a panel discussion with representatives from pre-professional clubs, and presentations by the Office for Undergraduate Research and the Career Services Office to discuss internships and summer research experiences. “We encouraged them to contact the career office about internships. This gets them thinking about how all this stuff they are learning in college is going to apply to their careers as scientists. We want them to start thinking of themselves as leaders.” The site coordinator has organized workshops on study skills and was planning a session on how to approach professors about working in their labs. The Miami University team was also incorporating some of the 12 workshops offered by the university’s career certificate program into their line-up of LSAMP meetings.

The University of Cincinnati has focused its sessions on preparing for graduate school and professional development workshops, including resume writing. Wright State has offered seminars on undergraduate research, resume writing, how to start a business, and had professionals speak to the LSAMP cohort about their respective research endeavors.

Although two community colleges (Cincinnati State and Sinclair) have not yet hosted workshops for their LSAMP students, their representatives intend to offer them in the next academic year. Sinclair CC’s faculty committee is currently brainstorming on workshops that they can develop that will best serve the demographics of their LSAMP cohort.

• Peer Mentoring

The program coordinator at OSU developed an exemplary peer mentoring program that several of the Alliance partners indicated they would like to replicate. In fall 2014, he presented on the program at the Louis Stokes Midwest Center of Excellence meeting in Chicago and also shared information about it with the partners at the November Steering Committee meeting. This model for peer mentor training involves matching LSAMP juniors with first year students and seniors with sophomores so they will be with them over two years as they progress through college. It is noteworthy that OSU’s peer mentoring has been constructed to ensure that it is of value to both the mentees AND the mentors:

In our training sessions we went over defining authenticity in the role of mentor. We discussed diversity, cultural competence, privilege, creative programming, and managing relationships. We had conversations just to make sure the peer mentor was gaining from the experience, as that is also part of our program. It is not just to have first-year students hearing the perspectives of students who have gone through the same coursework or linking them to undergraduate research, or how to connect with faculty and scholarships. It is actually a way for our peer mentors to reflect on their experiences. The questions I ask our junior peer mentors to think about when they are talking with their mentees is, “What do you know now that you wish you had known when you were at the same place and time as your mentee? What are they learning? How might they be able to apply this in demonstrating leadership?”
Frequency of meetings between peer mentor and mentee at OSU is assessed on an as needed basis and built into the student’s individual plan:

*The mentor might say, “I would like to meet with you three times this semester just to check in, make sure that you are supported.” Another might say, “Everything is going well. Let’s just meet once, but if you need anything else, go ahead and send me a request, and we will meet then, too.” About 80 percent of our students meet two or more times each semester with their mentors when we only require one time. That is by their choice.*

Since OSU does not yet have any LSAMP Scholars who are seniors to serve as peer mentors, this year’s sophomores have been receiving additional Success Coach meetings described in the preceding section on advising.

Cincinnati State CC has approached the peer mentoring piece from a different angle. When the first cohort of LSAMP Scholars finished the co-op research component through the University of Cincinnati, the community college staff arranged to have them talk, as a group, about the experience with the incoming second cohort. Recognizing how beneficial that was for both cohorts, the partner plans to continue this practice. In the fall, they will pair their experienced LSAMP Scholars with new ones identified through the summer bridge program in a structured peer mentoring relationship. This partner envisions compensating both the second-year peer mentor and the first-year mentee on a per-meeting or hourly basis.

**Objective 4: Increase the retention of first- and second-year URM students in STEM**

Supplemental instruction and tutoring, the primary activities associated with Objective 4, are expected to contribute to increased retention of first-and second-year URM students in STEM disciplines. For the purposes of this report, supplemental instruction and tutoring refer to the varied supports offered by the partner institutions that incorporate peer-assisted study sessions and tutoring in difficult gatekeeper courses such as calculus, chemistry, physics, and biology. Students who have already demonstrated high competence in the specified courses are paid or volunteer to provide supplemental instruction in regularly scheduled group sessions outside of class that help struggling STEM students with content, concepts, study strategies, and test preparation.

All Alliance partners offer on-campus drop-in resource centers where collaborative learning, study groups and/or supplemental instruction is available to students, including LSAMP Scholars. These institutional resources (such as Wilberforce’s Access Office, Central State’s Center for Student Opportunities, OSU’s Younkin Success Center, and the University of Cincinnati’s Learning Assistance Center) have professional staff and high-level student tutors that LSAMP Scholars can access in combination with LSAMP-specific tutoring support. However, because most of the LSAMP cohorts at the partner institutions are comprised of freshman and sophomore students, only a few of the partners have been able to implement a full-scale supplemental instruction program that pays LSAMP Scholars to be tutors and peer teachers.

First- and second-year LSAMP Scholars at OSU are required to participate in a minimum of three tutoring and supplemental instruction sessions through OSU’s Office of Diversity and Inclusion. Their three-tier tutoring program has paid one-on-one tutors to specifically work with students on coursework. They have the course syllabus, review the content for that week, and are well trained to address the students’ needs. However, when an LSAMP Scholar’s academic
performance reveals a higher level of need, they will increase the sessions accordingly. The program coordinator clarified: "These can be in the Office of Diversity and Inclusion or they could attend faculty office hours or use the Student Success Center’s free walk-in tutoring. Juniors may also use these tutoring resources, but they are not required as part of their agreement for their stipend unless we see some academic performance issues.”

Central State considers retention of their STEM students to be one of their most pressing short-term goals and stressed the positive results of engaging their senior LSAMP students in peer tutoring. One of their partner representatives reflected, "I can see in my own department when juniors and seniors get involved in tutoring, they are reaching our freshman and sophomores better, and we believe that is also aiding the retention of our STEM students.”

University of Cincinnati students are required, as part of their academic year contract, to participate either in supplemental instruction, tutoring, or academic coaching—whatever best supports them academically. This partner has also leveraged their academic writing center and math learning center in support of their LSAMP Scholars.

Twenty-two of the 25 LSAMP Scholars at Miami University were first year students so using them as supplemental instructors and tutors was not feasible this grant year. As part of wanting to “go above and do more” than leveraging the tutoring resources the university already had in place, they paid additional, qualified STEM students to provide guidance in chemistry, biology, and calculus to LSAMP Scholars at evening study tables.

At Cleveland State, supplemental instruction is provided by STEM Peer Teachers (SPTs)—two math majors and an education major major aiming to be a math teacher. However, only one of them meets the LSAMP Scholar qualifications. LSAMP Scholars must participate in at least 30 SPT sessions in each of the fall and spring semesters for Calculus I and II. The sessions provide a walk through and extra instruction in calculus to give students a “deeper understanding of the actual material.” An interviewee described the 30-session per semester requirement as “a little hard for students to do because the sessions are not built into their schedules at the moment,” but that is a structural change they aim to make in the coming year.

**Objective 5: Improving disciplinary socialization of URM students in STEM**

- Research

Six of the partners had LSAMP students actively engaged in undergraduate research in an effort to improve the disciplinary socialization of URM students, and the other partners are preparing to do so with their LSAMP programming. This section briefly describes these varied research opportunities and highlights partner insights related to this objective.

The University of Cincinnati has robust, ongoing research opportunities for its LSAMP Scholars and opened up additional research opportunities to LSAMP Scholars through its long-standing co-op program with Cincinnati State CC. This leveraging of existing institutional structures to accomplish the grant’s goals has proved beneficial for both partners. According to an interviewee:

>The University of Cincinnati needs technicians for research support in their labs all the time, so we thought, “Why not generate some interest in going into research? We have talented students who could do that.” It was meant to give them exposure to the four-year environment and to the instructors so they would
Having LSAMP funds pay the wages of the community college scholars for their full and part-time work in University of Cincinnati labs is seen as a double advantage in that “it saves [UC] money, and our students get work experience in their fields.”

Wright State has four LSAMP upper division scholars participating in undergraduate research during the spring and summer of 2015 (two at Wright-Patterson Air Force Base and two under faculty mentors in on-campus labs). Their research topics include lithium oxide batteries, synthetic aperture radar, biomedical imaging, and ceramics.

Two upper division LSAMP Scholars are currently involved in research at Miami University, but all of their LSAMP Scholars receive a list of labs that accept freshmen researchers. At monthly LSAMP meetings, scholars are encouraged to and guided on how to approach faculty with an undergraduate research proposal. According to a representative, “That way, campus labs and research centers have them lined up to be in the lab before the semester actually starts.”

At least 25 of OSU’s LSAMP Scholars have been involved in undergraduate research. The OSU Undergraduate Research Office has offered many workshops, which LSAMP students attend on topics such as finding research funding, choosing a project, and preparing for graduate school.

Central State LSAMP Scholars (sophomores and above) are working with faculty in the areas of manufacturing, engineering, chemistry, and water, typically on the research topic the respective faculty member has been pursuing.

At Cuyahoga CC, 20 percent of the current LSAMP cohort is actively involved in undergraduate research in the areas of wastewater management, renewable energy, energy saving devices, new technology, and wireless communications. This takes place on campus, as “many students take buses to come to school and it is sometimes a challenge to get them to just meet with faculty on the same campus. Asking them to go elsewhere would be very difficult.”

Although the Cleveland State LSAMP cohort was not yet participating in research, all scholars are expected to take a Research Methods course with the end goal of “having them write their own research proposal and finding a faculty mentor. After this course, they are one step closer to actually doing their own undergraduate research.” This partner intends to open up the Research Methods course to Cuyahoga CC’s LSAMP students by spring semester 2016.

• Biennial Ohio LSAMP Alliance Conference

Partners recognize that having their LSAMP Scholars participate in scientific conferences will contribute to the students’ professional socialization in the STEM disciplines. Columbus State, Cleveland State, Cincinnati State CC, Cuyahoga CC, OSU, Wilberforce, and Wright State reported that they are sending LSAMP Scholars to the Biennial Ohio LSAMP Alliance Conference in July. Most will use LSAMP funds to help their scholars with the cost of attendance. Although the conference dates conflict with the University of Cincinnati’s summer bridge program for their incoming second cohort, the partner is trying to identify “students from the first year, even though none of them have research experience yet, just to send them for the experience.” Both Miami University and Sinclair CC hope to send LSAMP Scholars to the July conference but were not definitive at the time of the interviews.
In terms of other conferences, Cuyahoga CC reported joining forces this year with the annual Student Success Symposium on campus, initiated by Choose Ohio First and the college’s internal honors program, instead of having a separate LSAMP symposium. LSAMP students will display their own posters at the event to invited students, faculty, and staff. The University of Cincinnati LSAMP team is looking to partner in some way with the NSF LEAF grant on their campus and having scholars attend the Advancement of Women in Science and Engineering conference.

**Objective 6: Providing pathways for smooth transitions from 2-year to 4-year institutions**

At this time, initiatives to ensure smooth transitions for scholars from two-year to four-year institutions are being addressed by the activities of the other objectives covered above. For example, the programs designed to strengthen students’ math skills, success in STEM, and participation in undergraduate research are expected to help them to do well following their transfer to a university. In addition, the cross-partner activities in which LSAMP Scholars at two-year institutions visit, take classes, and/or work at the four-year partner universities should contribute to their comfort and readiness upon transferring. Activities addressing Objective 6 will likely increase as LSAMP Scholars, who were primarily freshmen, become sophomores and more begin to transfer to four-year institutions.

**Important Emerging Lessons**

This section presents varied issues and important insights that may be beneficial to all the partners by helping them effectively implement two major components of the LSAMP grant—undergraduate research and faculty mentoring. Interviews with all the partners explored the extent of their efforts in these two areas, focusing on the scope, structure, and impact of research and faculty mentoring on LSAMP Scholars. Potential lessons for Year 3 are based on successful Year 2 examples described by several Alliance partners.

**Value of Research**

Beyond improving the socialization of URM students in the STEM disciplines, research opportunities have significant impact on student retention and professional development when the research opportunity is initiated at the appropriate time. Student readiness to engage in research is an attribute that distinguishes lower division scholars from upper division scholars. It is a weighty factor that, rightly so, influences when LSAMP Scholars are exposed to research. The Wright State partner observed:

> I don’t like to have students do research their first year because, number one, we want them to understand what research is all about. If [a freshman] was so good, then I would have them become what we call a “shadow,” which is more a lab observer than a researcher. I think sometimes, just having them in the lab to see what research is all about takes a bit of pressure off them in terms of what’s required. Then, at the junior or senior level, we can just plunge them in and they’re able to do what’s needed.

Cincinnati State CC and Miami University also do not involve their LSAMP Scholars in research during their freshman year. This is to ensure that students bring skills of value to the faculty they will assist and that the research experience will be relevant for the students. As the Miami University representative pointed out, “Students need to be at a certain level for them to do anything. You can have them washing dishes in the chemistry lab, but we want them to do
something more significant. There is a lot of undergraduate research going on here; it is an important effort, we just need to get these students tied into it when they are ready.”

Involving students in real research, once they have demonstrated readiness, is a critical aid to the retention of students in STEM majors. Of the four students doing research in Cincinnati State CC’s first cohort, three have said they want to go onto a four-year college, and the partner representative is certain that their experiences doing research “solidified that path for them.”

Active involvement in research with an attentive faculty mentor is especially effective in addressing “the sophomore slump” when the excitement of freshman year has dulled and students come to grips with the long haul, rigorous nature of majoring in a STEM discipline. In this regard, Central State employs the concept of apprenticeship to initiate their LSAMP Scholars into research. One of their interviewees provided the following background information:

We find it is in those early years that students tend to slide. So, as sophomores, or sometimes even as freshman, we engage them as undergraduate researchers—apprentices. In this way, we are seeing them not only in our classes, but after classes. They get to spend more time with faculty who engage them in research, and we believe this will contribute to the retention of our STEM graduates.

A University of Cincinnati representative also acknowledged the challenge of second year doldrums. This individual outlined a strategy that seems counterintuitive at first, but it apparently helped some of their LSAMP Scholars reenergize:

Students realize, after the first year, that they really need to focus on class work. They've heard a lot about organic chemistry and physics, so they really want to work this summer and save money so that when they take these challenging courses next year, they'll have the time to dedicate to it. I actually approve of that because I'd rather they do really well in these second year classes. We don't want them to be part of that sophomore slump. If that means you have to work the summer and save as much money as possible, and that's in your best interest, then that's what we'd like students to do, at least at the end of the first year.

The benefits of undergraduate research in terms of retention and disciplinary socialization are well illustrated by the following success stories. At Cincinnati State CC, one of their LSAMP Scholars, who had done research through the co-op program, was offered a job at the University of Cincinnati “because he had done great work and had made the contacts. They continue to pay him to finish the project he started even though his LSAMP funding, at that point, was over. In publishing their work, they acknowledged him as a part of the team that did the research in many publications.” A Wright State interviewee similarly shared an encouraging example of how working on actual research at the air force base motivated one of their LSAMP Scholars to begin actively mentoring others in the LSAMP cohort and how this student has helped “firm up that pipeline between our Right Step program and LSAMP opportunities.”

Value of Faculty Mentoring

The benefits of faculty mentoring to URM STEM students are at once measurable and intangible. Measurable benefits include increased access for the student to do research and learn about employment opportunities through the faculty member’s network of connections,
higher retention rates in the discipline, and better academic performance. The intangibles do not lend themselves to objective measures but are no less important to student retention and success because they often support the student’s emotional well-being and self-confidence. As discussed in the prior section on tutoring, advising, and peer mentoring, a Central State representative affirmed that mentoring happens in different contexts, both formal and ad-hoc: “When students are engaging in undergraduate research, as apprentices, it happens then with faculty, naturally. When our students are engaged in tutoring, mentoring is happening indirectly.”

Mentoring provides openings especially for nontraditional students to cement the kinds of supportive relationships with faculty critical to academic success. At Wright State, one such scholar was described as a “very high risk 29 year-old man who had been previously academically dismissed.” The partner representative, however, was impressed with the student and personally mentored him. When a research position opened up, he made sure to connect this student with that opportunity: “The amount of money we have for research support is very small. We can get one or two of these scholars in there at a time and that’s it, but he was one of them.”

Several partners pointed out that mentoring is already an integral part of their institutional structure, as every STEM student, including LSAMP Scholars, is automatically assigned to a faculty advisor in the identified major. At Central State, “It is the job of this faculty advisor to make sure students are taking the classes they need in the sequence they need and are on track for graduation. But, being a small school, we go beyond that responsibility and make sure to identify opportunities for our students in terms of career development.” A Miami University representative stressed that faculty mentoring also involves helping students “understand the level of effort they are going to have to put in to succeed and develop new study habits so that they will be successful not only in this course, but after that.” Cincinnati State CC leveraged “their co-op coordinators from that well-established program to function as mentors to their LSAMP cohort. LSAMP Scholars do talk to their co-op coordinator about what works and what does not. They did that a couple of times, and we had luncheons together.”

Several Alliance partners reported that finding faculty mentors for their LSAMP Scholars is one of their greatest challenges. This is especially true at the community college level, illustrated by this interviewee’s dedicated effort to recruit mentors:

Right now, we have mentors for every one of the students. But, we also have 13 new LSAMP students coming on board soon. I asked all the campus deans to help me try to identify faculty. They tried their best, and in the end, found one more faculty for me, so I got another student taken care of. Then, I reached out to a friend of mine, also a faculty member, and she was willing to pick up three students. I also recently hired a lab supervisor who has a master’s degree in engineering, so I kind of assigned the rest of the students to him, even though that’s really not his job, but he was gracious enough to help me out with that. I need to find more because I really cannot just assign them; this is voluntary, and the faculty really do not work for me.

One factor at play in the scarcity of faculty mentors is time:

All the administrators and faculty are very busy. We have a lot of committee meetings and other initiatives ongoing at the college, so everyone is working more than 110 percent. With all the LSAMP activities, it has been like begging people’s time. They want to help; I want to tell you that, they all wanted to help. Sometimes, they just have too much and they just cannot juggle more.
Respondents also mentioned economic concerns. One partner expressed the position that mentoring is part and parcel of the job of a college-level educator, and that offering faculty stipends as an incentive to engage in mentoring is inappropriate. Conversely, another partner readily acknowledged that faculty have financial realities that may compel decisions on the matter: “Faculty get paid to teach additional courses. Mentoring activities take time from that, and it is not a paid activity. So, it is very clear that teaching an extra course is more beneficial than mentoring some of our LSAMP students.”

Several of the partners were optimistic that the new flexibility with the funding allocation would ease the problem. Community college partners planned to direct some of their LSAMP funds to non-participant support in the form of release time or stipends for faculty mentors. A partner pointed out that having faculty formally released to engage in mentoring creates a mechanism for their accountability.

One of the University of Cincinnati representatives did not anticipate difficulties with finding enough mentors but instead expressed concerns about “making sure students are connected with the right mentors. We have a lot of faculty on campus, as you know, but you have to have the right person.” This consideration for making the right match speaks to issues of race and gender that some may be reluctant to discuss. Nevertheless, such aspects can impact mentoring relationships, and it is helpful when those in charge of mentoring programs create avenues for safe acknowledgement and exploration of these factors. One partner provided an example of how this sensitive subject might be handled. Sinclair CC has an Urban African American Mentoring Program (UAAMP) with a number of faculty that serve on both LSAMP and UAAMP, so they are exploring ways to work more closely with UAAMP and other campus organizations that serve the same targeted minorities as LSAMP.

The current reality is that lack of diversity in the STEM disciplines means there are not enough faculty mentors of color who can be assigned to all the incoming LSAMP Scholars. It is hoped that as the LSAMP grant and others with the same goals are implemented and sustained across the spectrum of higher education, the paucity of diversity will be ameliorated. In the interim, when faculty mentors of similar backgrounds to the URM students are not available, the partners are matching mentors with students based on STEM discipline, shared interests, and complementary communication styles.

A partner acknowledged that there are times when faculty mentors are unable to help students with personal issues that may arise. To maintain the trust developed through the mentoring relationship, it is important that faculty mentors recognize what they can and cannot handle, and that they have a clear, reliable process for referring the student to staff who can. One of the hallmarks of a well-functioning mentoring program is that it has supports in place not only for the student mentees, but also for the faculty mentors who are so giving of their time.

All partners agreed that their faculty are extremely experienced in their respective fields, and can be counted on to be excellent mentors. However, the dynamics of mentoring URM students entails knowledge in areas that faculty may not have explored such as implicit bias, getting a taciturn student to open up, and conversely, setting boundaries. The leadership is currently developing a “Mentoring and Diversity” handbook (with an accompanying online course) specific to the needs of The Ohio LSAMP Alliance. The course will include interviews, quotes, and videos of Ohio LSAMP faculty mentors, their best practices, challenges, and solutions. Once available, it will be shared with all the partners.
In the upcoming academic year, the University of Cincinnati plans to implement a training component for the faculty mentoring they put in place. The representative elaborated: “We’re reaching out to a faculty member in the College of Education whose portfolio includes mentoring. We’ll be looking to her to provide us with mentoring best practices as well as evaluating mentoring.” To that end, the partner said they will probably “require some type of written narrative or summary of the interaction with the students” from the mentor. They will expect the student to contact the mentor twice a month but will allow variation in the communication format: “One time will be face-to-face, and the other can be email, texting, or Skype—because as you know, with technology today, it doesn’t always have to be face-to-face.”

Dr. Fink fully supports an increased focus on faculty mentors at OSU, noting how valuable they are in the professional development of students and in giving students opportunities to present their research at professional meetings. She concluded, “I definitely want to work on learning more about our faculty mentors, recruiting them, and getting more data on them so we know which faculty we can recommend.”

Year 2 Challenges LSAMP Partners Are Facing

The partners have confronted several challenges in Year 2 in their efforts to implement the LSAMP grant, particularly in their efforts to increase the number of actively participating scholars and deliver programming that address all six objectives. These issues they have encountered are examined below by objective. Again, the subheadings are from the logic model and evaluation plan, but in this section, they are presented in order of the most pervasive and complex challenges (across the Alliance) followed by issues experienced by fewer partners and having lesser impact. In general, all the obstacles brought forward by the partners in this section are relevant in light of the overarching goals of the Alliance and for their potential to open communication among the partners on collaborative remedies.

Objective 1: Fostering a partnership

• LSAMP Task Forces

The purpose of the Articulation Task Force was to try to identify courses for which articulation agreements needed to be added, and thereby ease STEM students’ transition from community colleges to four-year institutions. Although a Columbus State CC representative did a commendable job surveying all the partner institutions to ascertain what agreements were already in place and what the partners thought were the biggest obstacles, Dr. Fink acknowledged that it has been difficult to get this initiative up and running: “The struggle is that I am not a transfer expert by any means, and so I have been trying to figure out who should take leadership in this area, who would know what they are doing.” At this juncture, Dr. Fink is focused on:

Finding the right people to head it up so we can do what we intended to do. And, if our community college partners want to use part of their LSAMP funding for non-participant costs, I would want that person they were funding to serve on the Articulation Task Force so that we could get someone who knows where better articulation agreements are needed and can help to improve student transitions.

7 The evaluator adjusted the wording of each objective to a single line in an effort to make the report easier to read.
On a related note, one partner mentioned providing the LSAMP leadership with the names of faculty at their institution who were willing to contribute their time and expertise to each of the varied task forces. However, only the LSAMP Conference Task Force contacted the faculty member who had expressed interest, and that individual subsequently got involved with conference planning. None of the other faculty members whose names had been submitted to the leadership by this partner were contacted. Although the oversight is understandable in light of the load each task force chair carries in trying to ramp up these broad-spectrum endeavors and the turnover in some of these positions, it represents a lost opportunity to expand faculty involvement in one of the grant’s dominant strategies.

- Ohio LSAMP Website

At the time of the interviews, at least five Alliance partners had not yet added a link from their respective institutional websites to the LSAMP website, but they recognized that this is a high priority. Indeed, having two-way links between The Ohio LSAMP Alliance website and each partner’s website enhances not only the free flow of information across the Alliance, and to interested parties, but also the cohesiveness and functionality of the Alliance.

- Case Statement

The case statement has been underutilized as a tool to assist the partners in seeking additional funding from industry and other entities, and that, according to the LSAMP leadership remains “a big thing that we need to do.” In Year 3 of the grant, the leadership hopes that “we will find more sources of funding and more partnerships and not just the funding, but contributions to our programming.”

Dr. Fink pointed out that she is striving to heed the advice of NSF Program Director, A. James Hicks “to leverage our LSAMP programming.” She has focused on his request for an Impact Statement describing plans for utilizing LSAMP funds in ways that will make the programming attractive to other funders such that businesses and others invest in the activities. One area in which OSU would especially like to obtain funding is for the continuing support of LSAMP Scholars to enable them to maintain their involvement as juniors and seniors. “We have so many students who have the potential to be funded and could be helped with LSAMP programming, but the stipend only goes so far.”

Dr. Fink’s other long-term goal is to get “additional funding that will help in the institutionalization of LSAMP programming.” However, she cautioned:

Industry support is huge for helping us get the programming underway, but I do not think we can rely on industry funding to keep it going because you never know when that is going to cease. Industry partners are very important in establishing the programming initially, but to keep it going long-term, it has to be institutionalized.

Objective 2: Heightening awareness & increasing recruitment of URM students in STEM

- Recruiting LSAMP Scholars

Alliance partner institutions have not, to date, shared best practices in terms of recruiting LSAMP Scholars nor developed collaborative recruitment strategies across the campuses, as the grant envisioned that they would. Nevertheless, all the partners have made sustained and
significant efforts to recruit eligible students into their respective LSAMP cohorts. For example, representatives from two community colleges (Sinclair and Cuyahoga) recounted:

We started with emails and our response rate to that was miniscule. Then we moved to hard mail, and our response rate to that has been, probably, five percent. Our next goal is to reach out to students, actually contact them in their math classes, and invite them to consider participating.

I get the institutional research office to send me a list of all the qualified students, and then I e-blast them to let them know about the program. Then I send them a reminder. Last year, I made a postcard to send to their homes directly.

However, some partners, especially the two-year colleges, have continually struggled with recruitment. This is reflected in fewer than desired active participants, cohorts dominated by one STEM major, and in the extensive effort required to recruit even minimal numbers of committed scholars. The issues affecting LSAMP Scholar recruitment vary widely from partner to partner, revealing unique combinations of demographic, perceptual, structural, and administrative challenges.

Recruitment is a pressing issue for Columbus State CC, which has six LSAMP students this academic year and one in the pipeline. Despite actively communicating with potential students through the college’s STEM club and other campus activities, recruitment has been low due to high student turnover rates, and the nature of the community college student. According to a partner interviewee:

A lot of our students take the bus, for example. We don’t have a group of students that can be funneled into activities on campus at any regular time. It’s very difficult for clubs at a community college to exist. Our students are not always fresh-faced 18-year-olds. They sometimes have other family obligations, so a lot of our students work part time. Even if they do get some kind of a scholarship or grant, it’s different for community college students.

Recruitment efforts at Cincinnati State CC illustrate how slim the pool of eligible scholars can be despite extensive outreach and initial student interest. They actively promoted the LSAMP program to a pool of 66 eligible STEM students: “Out of those 66, 16 said they were interested. Out of the 16, we had eight apply, and we were only able to verify and select four.”

Sinclair CC, with an LSAMP cohort of three students at the time of the interview, has formed a task force comprised of math and biology faculty to brainstorm on recruitment strategies. They were encouraged that their subsequent direct mail effort identified another three to eight eligible candidates. Their next step will be to pitch LSAMP in the classrooms.

The Cuyahoga CC representative observed that the LSAMP stipend is not as compelling to community college students who work full and part-time jobs: “The incentive for them to do this program is not that high because they could easily earn more than $1,000 on their own time.” Recruitment has not fared especially well when—due to campus-specific policies—students eligible for both LSAMP and scholarship programs such as Choose Ohio First have had to choose only one. The following examples from community colleges highlight this predicament:

We found out that when they are interested in both programs, they’re told they cannot “double dip,” So, when we tell them they have to choose one or the
other, they pick Choose Ohio First. It pays their full tuition. On average, the student gets $2000 compared to the $1000 that we’re paying.

Some of the students we recruited are also Choose Ohio First students, and they have a more steady way to go since their schooling is paid for by a state of Ohio scholarship. LSAMP students don’t have that particular advantage.

Perception is also an issue as one community college partner related: “An advisor who helps us with Choose Ohio First and LSAMP students said LSAMP is not something students see as an advantage necessarily. It almost looks like extra work for them to take advantage of the tutoring and mentoring. But, at the same time, it’s something they need to succeed.”

Potential recruits at two-year colleges, and the less resourced four-year colleges, who have shown interest in becoming LSAMP Scholars, may be unable to comply with the program’s rigorous participation requirements. As currently configured, the LSAMP grant may not have the attributes that best support non-traditional students. This means that some partners focus more intently on recruiting younger, traditional students, as Cincinnati State CC acknowledged:

The average age of our population is 28 years old, not like the traditional 18- and 19-year-olds coming in. Although that is the population we are targeting the most at this point, but certainly, as we grow, I would love to see more non-traditional students in the program. It is tough for our population—the older students have families and in some cases, the Associate’s Degree is their only interest. Maybe they just have a lot of commitments. Even then, it is a challenge.

At Wright State University, recruitment from a broad pool of STEM majors was stymied by a lack of “university wide coordination” resulting in a cohort that is “heavily saturated with engineering majors.” Partner representatives continue to make efforts to “have programming that solicits the involvement of students from the College of Science and Math also, not just engineering and Computer Science.” The issue may also be structural and administrative, as the engineering department has an institutional management person able to access information about every student, but “it is difficult to do the same thing in other colleges because they do not have that resource that allows for institutional management.”

Dropping out, or inactive status, is a corollary issue with recruited students for the reasons described above. Consequently, the dedicated outreach, recruitment, and retention work described by LSAMP site coordinators (often by faculty and staff without additional compensation) has been labor-intensive but not yielded the results desired by all the partners.

Although the recruitment challenges described above are multifaceted, several partners are certain that the recent change in LSAMP budget restrictions regarding non-participant support will help them address these issues. As one partner put it: “The non-participant support will make it a lot easier to get people to go out and do some of this hard work, that amidst all our other job responsibilities, is really hard to carve out time for.” Partners' tentative plans with some of the funding include release time for faculty directly involved in implementation, which will allow a reduced teaching load and “more time for recruitment, retention, adding an LSAMP component to our existing STEM Bridge Program, and helping students prepare their research for presentation at the July conference.” Another plans to redirect 40 percent of the LSAMP budget to support a part-time LSAMP coordinator, given that the grant point person has a full-time job managing activities across four campuses. Another partner will seek to direct non-participant funding to staff support and faculty release time. Dr. Fink has specified guidelines for
allowable expenses; however, given the unique needs of the community colleges and the four-year institutions with fewer resources (whose request for non-participant support is being allowed), she plans to be as flexible as possible and work with each on a one-on-one basis.

**Objective 3: Providing early & sustained programs for high school to college transition**

• Peer Mentoring

The amount of actual peer mentoring the LSAMP grant has generated to date is understandably low due to the fact that most LSAMP cohorts are comprised of first- and second-year students who themselves need mentors. For example, Cleveland State’s LSAMP cohort is comprised of freshman, so only STEM Peer Teachers (SPTs) who are not LSAMP Scholars can deliver the peer mentoring. “Although it is not officially part of their job, they are taking on that function.” The partner aims to adopt the OSU model when they have enough upper division LSAMP Scholars to mentor the incoming ones. The University of Cincinnati has similar plans and is likewise currently grooming their first-year cohort to provide the foundation for their peer mentoring initiative when members of this group become sophomores:

> We are looking to our partner, Ohio State, which has already developed an infrastructure for the peer mentoring piece. They are much further along than anyone else in the Alliance. But, we also have a campus mentoring program called PRIZE for underrepresented students, and we’re going to model LSAMP mentoring after that as well. That’s going to be an exciting piece because we have a group of students in this first cohort that would love to do peer mentoring.

Miami University’s peer mentoring component is “still kind of a work in progress.” With only three upper division students who just joined LSAMP this spring, their options are limited: “We think it is an important thing to do. We hope our first-year students when they are upper division will serve as mentors, but we need to find more help for them at this time.” The partner stressed that it “would be helpful to know how other members of the Alliance have shaped their peer mentoring programs and what kind of things happen in peer mentoring.” Currently, the LSAMP leadership at Miami University encourages its scholars to get involved in pre-professional clubs on campus where they are likely to receive some kind of peer mentoring.

Cuyahoga CC reported that the peer mentoring component has not worked well “because the college has made peer mentoring a college-wide initiative for all new students, regardless of LSAMP participation.” The interviewee added:

> Coordination of the peer mentoring is a huge challenge. Unlike tutoring and counseling that have physical places for students to go and earn their credits, peer mentoring does not have a physical place for the students to go to. If the peer mentor leader does not check-in with the scholars and vice versa, the setup does not work.

Consequently, this partner changed the peer mentoring format to a “monthly cohort mentoring and enrichment gathering” that the LSAMP coordinator leads.

• Bridge/Early Arrival Programs

The main obstacle for bridge programs has been related to available funding. OSU, for example, has found it more challenging than anticipated to fund their new LSAMP-specific summer bridge program, “because we are starting from scratch.” The partner had been planning to fold LSAMP Scholars into Ohio’s Science & Engineering Talent Expansion Program (OSTEP)
bridge program already in place. However, OSTEP was not successful in its efforts to garner alternative funding when its NSF funding ended: “We had to look for outside sources of funding and call on our academic department to help fund it, then start a whole new program, come up with a schedule, and find people to teach the classes.”

Central State had hoped to leverage funding from other sources to mount a bridge program for LSAMP Scholars in summer 2015, but that did not come through. Wilberforce expressed intent to use some LSAMP funds now available for non-participant costs to produce a one-week, math-intensive summer bridge program for their LSAMP cohort this summer. Similarly, the 2015 Columbus State CC summer bridge, which was first developed under OSTEP and has been maintained with institutional funding, may have its program content reduced from two weeks to one, since funding was uncertain.

- Workshops to help students adjust to university life

Cincinnati State CC and Sinclair CC have not yet hosted workshops for their LSAMP students, but intend to offer these in the next academic year. Sinclair CC’s faculty committee is currently brainstorming on developing workshops that will best serve the demographics of their LSAMP cohort.

Objective 4: Increase the retention of first- and second-year URM students in STEM

- Supplemental Instruction and Tutoring

As part of the LSAMP stipend agreement, most institutions are requiring students to utilize pre-existing supplemental instruction and tutoring resources available on campus. Nevertheless, a few had plans in which LSAMP Scholars would serve as supplemental instructors, tutors, and teaching assistants (TAs) involved in an activity for which they could receive stipends. However, partners attempting implementation with the initial cohort have encountered problems with the “supply” of available students, as the Wright State partner illustrates below.

Wright State University’s fledgling TA program envisions making wide use of TAs to provide supplemental instruction in two engineering courses (1010 and 1900), the Academic Advantage Program in physics, and in other first-year science courses. An agreement is also in the making with Dayton Regional STEMs and Dayton Public Schools to deliver EGR 1980, which focuses just on algebra: “The plan is to have LSAMP Scholars who earn high marks in EGR 1010, like the ones we are trying to train, be Teaching Assistants for the EGR 1980 classes in Dayton’s public schools in the fall.”

However, Wright State University’s only qualified TA will graduate this year, and the other LSAMP Scholars have yet to earn the grades required to be become TAs. The partner interviewee hopes the bridge program and other supports will remedy this issue: “We want to ensure when students come into the college of engineering, they are prepared, have a mentor, and get the right classes including EGR1010. We know that if they have mentors and support, they will get A’s and we will be able to make TAs out of that group.” The Wright State representative went on to acknowledge that, even with the supports currently in place, only one or two scholars are near qualifying as TAs. “Ideally, we want to have more than just one or two, but it is going to take some time before we get there…we want to make sure they are stable in their classes.”
Interestingly, at Central State University, where a few LSAMP Scholars actually are leading supplemental instruction activities, there has been some resistance to the idea of undergraduate TAs: “Some departments bought into the idea and were able to use LSAMP juniors and seniors as tutors, but some faculty still believe that undergraduates can’t teach undergraduates. Even though we show them these TAs are seniors who have done very well in those core courses.” The partner acknowledged the challenge is discipline- and course-specific, with wider utilization of the LSAMP TAs occurring in courses with natural science disciplines, while engineering is mostly resistant.

The Miami University representative added that finding upper division peer tutors in the sciences who have the time and inclination to tutor is another pressing issue: “These students are majoring in the hard sciences. They are more interested in doing the things that will get them into graduate school, like spending a lot of time in the lab, not in tutoring.” The partner noted that a structural change at the institutional level currently under consideration could alleviate this supply problem:

We need to actually house physics majors who want to teach physics in the physics department. Math already has math educators contained in the math department and they do not have as much trouble finding tutors because the math educators want that experience. So, having that change, if it does occur, will make it more likely that we will be able to find the tutors we need; those that want to tutor.

Cuyahoga CC also did not have LSAMP Scholars as paid supplemental instructors or tutors this year, but plans to have tutoring as a stipend activity for qualified LSAMP Scholars in the next academic year. To date, the community colleges and Wilberforce have leveraged established resources of their respective institutions to provide the supplemental instruction and tutoring that their LSAMP Scholars need to remain engaged in STEM majors.

As would be expected, due to the variation in students’ majors, classes, and levels of academic readiness, it has been difficult to deliver supplemental instruction to the cohort as a group. Miami University found that offering supplemental instruction to the whole cohort was not practical: “The range of first year classes these kids take is spread over seven departments and their preparedness level is so wide ranging. We had one freshman who started with Engineering Math 245 and another who did not even pass the requirements to take our first math course.” Similarly, Cleveland State initially planned to have the LSAMP cohort attend the SPT sessions together, but coordination proved challenging: “So sometimes one goes by herself. Then we have a group of five that move together from last semester to this semester with the same SPT.”

**Objective 5: Improving disciplinary socialization of URM students in STEM**

Columbus State CC, Sinclair CC, and Wilberforce University have not yet been able to provide research opportunities to their LSAMP Scholars in Year 2. They were, however, offering workshops to inform students about undergraduate research, often through campus STEM clubs and monthly scholar meetings, which qualify as LSAMP programming. The Wilberforce partner has identified key faculty and anticipates having LSAMP Scholars engage in research in physics and computer information sciences in the 2015-2016 academic year. Sinclair CC is aiming to place some of its advanced LSAMP Scholars in research opportunities at Wright State and Central State.
Objective 6: Providing pathways for smooth transitions from 2-year to 4-year institutions

Smooth transitions to universities will be critical given the demographics of two-year college students and the fact that many are non-traditional students (e.g., veterans, older, with family obligations, not fresh-faced 18-year-olds). Retention of LSAMP sophomores transferring into four-year colleges as juniors is a high priority. While the partners have been proactive in building summer bridge programs to facilitate the transition from high school to college, no partners have yet made concerted efforts to build connections to fortify the pathway for students making the transition from community college to a four-year university.

Other Challenges

Coverage of Student Pipeline Before and After Freshman Year

Several partners commented on challenges they perceived as inherent to the LSAMP grant structure, rather than specifically related to implementation of grant activities. The insights below are presented with the intention of highlighting aspects of the LSAMP grant that tend to hinder its success. Although it may not be feasible to change these, they provide information about obstacles faced by institutions and suggest remedies that may apply to future grant proposals.

Given that the NSF’s major goal with the LSAMP grant is to build pipelines of URM students and open blocks in the pipelines already in place, one interviewee offered this critique:

The types of activities supported by LSAMP are based on best practices and longitudinal studies; things that we know get students invested—spending on undergraduate research, right? Sending kids to conferences and making them professionals. Well, when the real goal is to increase the number of graduates statewide, the 3.5 million budget spread over 11 institutions over five years means you have only got a few kids doing meaningful research supported by the LSAMP program at any given time. There is absolutely no ability to move the needle with that. The money would be better spent on structural change. That is the stuff that moves the needle.

As evidence for this position, this individual provided the following example:

We had a National Science Foundation STEP grant that funded the engineering math course. As a result, we had a 209 percent increase in the number of degrees awarded to minorities over the course of our six-year STEP grant, which was about curriculum reform. It had nothing to do with trying to take care of minorities. It was about addressing fundamental barriers in the curriculum, and when you do that, you get an overwhelming impact on minorities because they are the students with the most to benefit from meaningful structural change. So, if the LSAMP goal is to have a much higher percentage of our graduates be underrepresented minority students, spending all the funds on stuff like research experiences is not going to move the needle.

Additionally, the focus on university-level initiatives restricts institutions’ ability to address the beginning of the pipeline. Specifically, the partner above added, “The real answer is to see if we can dip into, at the very least, the senior year of high school, but even all the way down to ninth grade and fix this problem way before the kids get here.” Another partner faulted the grant’s eligibility restriction dependent on race (without inclusion of economic need and gender) as a
factor contributing to the limited pool of possible recruits. The STEP grant, for example, did not restrict participation based on race/ethnicity.

Another Alliance partner offered his perception on essentially the same issue, but from a different angle: "I believe that quality is more important than quantity. In the writing of this program grant, we focused more on quantity and not quality." Referring to the number of partners, high benchmarks, and number of grant years, this representative reasoned:

> When you have such large quantities, then everything is being stretched very thin. So, if we could give up a little on the quantity and focus more on the quality, I believe that would be good. But, I understand the government wants to see a huge impact on the population with many of these programs and that’s why we have put such a large number of students in play."

Dr. Fink underscored the challenge of funding the other end of the pipeline: "How am I going to fund my juniors and seniors? I do not have an answer to that quite yet." OSU already had to face the gap in funding for juniors and seniors, as their first cohort began in spring 2014 and the grant’s focus is on freshmen and sophomores. This is certainly an issue that the other partners will also have to deal with as the grant proceeds.

The labor-intensive nature of the grant implementation and reporting responsibilities have at times been all-consuming. Although OSU is providing overall management, each partner needs a site coordinator to handle the day-to-day activities associated with the respective programming. Until recently, LSAMP funding was restricted to participant stipends only, which meant all support costs had to be absorbed by each institution. At the March 5th Steering Committee, Dr. Fink explained that community colleges could officially request to use up to 40 percent of their funding for approved expenditures associated with providing needed support to LSAMP programs (this was also extended later to the smaller, less resourced four-year institutions). Such responsiveness and efforts to address the needs of all partners should help the Alliance achieve its goals.

Despite such reflections on ways that the initiative could be enhanced, these respondents were committed to implementing the grant as currently configured. To illustrate, one concluded, “I just want you to know that I am not discouraged. I continue to do my best to find ways to help the students with this program.”

**Budget Issues and Institutionalization**

An unusual feature of The Ohio LSAMP Alliance is that the total budget was split equally among all 11 partners, regardless of institution size. The rationale for this across-the-board equity was that larger institutions, such as OSU, have more extensive infrastructure in which additional supports (tutoring, counseling, mentoring, and research opportunities) would be readily available to students through campus centers and student organizations. Although this decision may have encouraged buy-in from a diverse set of entities statewide, from a practical standpoint, as part of ensuring that the grant benefits as many eligible students as possible, it may make sense to redirect a portion of the unused funds to institutions that have large numbers of URM students. In addition to helping fund the research and peer mentoring activities of upper classmen, such a change in the fund distribution formula could help the Alliance achieve Objective 6, when LSAMP transfers will need additional support at the four-year institutions. Of course, pursuing “industry sponsorship for our juniors and seniors” is also part of the OSU plan.
Another avenue OSU has tried is to ask different academic departments, ‘If we provide LSAMP programming, can you provide the stipends?’” Dr. Fink reported that although The College of Food, Agriculture and Environmental Science was receptive, other departments indicated that undergraduate research should be covered through grant funding obtained by faculty members. Finally, Dr. Fink admitted that it might come to pass that once LSAMP Scholars become juniors, they will “need to find their own sources of funding [for undergraduate research through grant opportunities],” which would be a “good experience for them and excellent to put on their résumés.” Nevertheless, she “would like to be able to assure all upperclassmen that they will continue to receive stipends in their junior and senior years, even if they are not successful in being awarded external funding.”

Additional pressure to find alternate sources of funding is built into the structure of the LSAMP grant. As it matures to a “mid-level alliance,” funding is reduced because the assumption is that LSAMP programming has become incrementally institutionalized. To promote the formation of such institutional support, Dr. Fink is planning to establish an advisory board, or alternatively, utilize “the governing board we already have in place because these would be the people who could tell us more about funding from the institutions.” She anticipates putting advisory groups in place for both OSU and the Alliance overall to ensure that “The people who make the financial decisions are on board with what we are doing.” Dr. Fink also said that a likely candidate for internal funding is the “inter-institutional programming piece, especially between the community colleges and the four-year institutions, where community college students are doing research at the four-year institutions and getting funded by both institutions.”

Potential Areas for Action and Recommendations

The commentary, examples, and insights provided by the partners throughout the interviews gave rise to numerous suggestions and actions that The Ohio Alliance institutions may wish to pursue in Year 3 of the LSAMP grant. This material was synthesized into the following recommendations by the outside evaluator and these are presented below by objective. Where more than one subheading topic applies, these are ordered from most to less important.

Objective 1: Fostering a partnership

- Partner Collaboration
  
  ➢ Since the leadership has already organized communication by region, the next step would be to establish more of the one-on-one institutional collaborations evidenced so far between some of the four-year and two-year institutions. This effort should also ensure that the smaller four-year entities (e.g., Wilberforce) are matched with one of their “bigger neighbors.” Action through strategic “regional hubs” could facilitate inter-institutional meetings and promote joint activities between collaborating partners.

  ➢ Areas that are especially suitable for cross-Alliance collaboration include faculty mentoring of LSAMP Scholars, organizing webinars, joint videoconferences, training opportunities, speakers, and workshops for faculty and undergraduates. The leadership has already posted recordings of several OSU events to the website and Dr. Fink is encouraging partners to record their workshops and seminars so that their activities can also be included. Over time, a rich trove of official LSAMP resources could be readily available for scholar cohorts from all the campuses to view for stipend credit.
• Task Forces

- Invigorate the activities and output of the LSAMP Task Forces. Reach out to and follow up with faculty who have expressed interest in giving their time to specific task forces.

- Proactively pursue the feasibility of adopting the Introductory Math for Engineering Applications course [EDR-1010] at additional partner institutions.

• Ohio LSAMP Website

- The partners suggested the website offer more interactivity and content sharing. Examples of this include keeping an up-to-date calendar of upcoming LSAMP events at each institution and creating a platform where partners can upload video of STEM speakers and workshops that occurred on their respective campuses. One partner suggested that partners with more programmatic experience in peer mentoring share best practices for that component via the website. Another partner would like to see more “published resources on what works with underprepared populations.”

- Moving forward, the goal should be to build the LSAMP website into a destination portal. It will be important to continually update its pages with current information about LSAMP events, opportunities, and partner highlights.

Objective 2: Heightening awareness & increasing recruitment of URM students in STEM

• Recruitment

- Focus on innovative marketing angles unique to each partner. For example, a University of Cincinnati representative attributed their lack of recruiting challenges to their summer bridge program “that costs about $250. The parents knew that was a great deal because students did not have to pay for room and board. They didn’t really have to pay for anything. Books were included. We had trips with different companies and corporations, and so the $250 was really a great steal for those students.”

- Maximize social media and direct contact. When students have positive summer bridge and mentoring experiences through LSAMP, this connected generation is going to talk and tweet about it. “I would not underestimate the power of word of mouth,” noted a Cincinnati State CC representative. “All the students are doing a good job of telling their friends about the opportunity and wanting to participate, and that is helping us as well.” In addition to similarly stressing the value of word of mouth, Cuyahoga CC, which has successfully recruited over 50 LSAMP Scholars, found that mailings of postcard reminders to qualified students’ homes encouraged student buy-in.

- Consider rewarding stellar scholars among the LSAMP cohorts with the congratulatory designation of LSAMP Ambassador and groom them (training opportunity) to be speakers. LSAMP Ambassadors could then be fielded as program promoters and receive additional stipends for making presentations to potential college and high school recruits about the impact of their LSAMP experience.

- An LSAMP Ambassador or any LSAMP representative engaged in recruiting would be more effective with an engaging multimedia tool in hand that conveys the program’s benefits. Consider pooling resources to create interactive media tools such as an LSAMP PowerPoint or video that captures the essence of the Alliance and highlights
each partner’s programming. Design these media tools for broad use by any LSAMP representative scheduled to make a recruiting presentation to college freshman, high school students, and/or parents.

- One partner interviewee, who has been considering video recording interviews with LSAMP Scholars, eagerly embraced the idea of a jointly produced LSAMP media tool highlighting the best aspects of each partner’s program: “That would be great because then we could go to the website when we are doing a recruiting event and just pull up some of the examples.” Given the number of talented students studying film, communications, and marketing at the institutions that comprise the Alliance, partners could pool some funding and departmental resources to incentivize a student-led creative team to take on this project. A short film or PowerPoint presentation with high production values and content that showcases The Ohio LSAMP Alliance presents a fertile opportunity for partner collaboration and increased LSAMP enrollment across the Alliance.

**Objective 3: Providing early & sustained programs for high school to college transition**

- Peer Mentoring

  - The challenge in the peer mentoring piece appears to be a function of program maturity. In Year 2 of the grant, several partners did not yet have enough upper division LSAMP Scholars to tap for peer mentoring of the incoming cohort. Over the life of the grant, this should become a non-issue, as long as the effort to retain and ensure LSAMP participants’ continuous academic success remains strong and effective. Although the ideal would be to have LSAMP Scholars serving in this role, Dr. Fink noted that upperclassmen do not have to be LSAMP Scholars to be peer mentors, but they would not be eligible for the stipend. Nevertheless, this is an option for institutions where there are none or few LSAMP Scholar upperclassmen.

  - Until that critical mass is reached, partners are steering LSAMP Scholars to institutional sources for peer mentoring. This workaround appears to work well. An equally wise adaptation, under limiting circumstances, has been the implementation of cohort-to-cohort peer mentoring rather than an individually paired dynamic. LSAMP cohort discussions where peers in the same group mentor each other offer another effective approach. Although these students may be unable to help each other academically, the bonds they form through peer interaction within the cohort are equally powerful in reducing the stress and isolation of the first-year transition to college life.

  - Partners without peer mentoring programs are asking for guidance and ideas on this piece. It would be fruitful to dedicate an upcoming Steering Committee meeting specifically to the peer mentoring component. The OSU document outlining their peer mentoring structure is now available on the LSAMP website for partners to review. With OSU as a facilitator of a purposefully directed discussion, it is highly likely that motivated partners can identify and adapt aspects of peer mentoring they can scale to size or position for implementation in the near future. This is an area ripe for collaboration between partners, especially among the four-year institutions and the two-year colleges.

- Workshops to help students adjust to university life

  - Where geographically and logistically possible, invite and encourage LSAMP cohorts from partner schools to attend workshops, panel discussions and seminars across the
Alliance, for example, OSU’s STEM Student Resource Fair (held in January 2015) brought together diverse academic resources, faculty, and student organizations. Promoting such workshops and events through the LSAMP website would benefit all the scholars and diversify LSAMP programming.

**Objective 4: Increase the retention of first- and second-year URM students in STEM**

- **Supplemental Instruction and Tutoring**
  
  - Like peer mentoring, the difficulties with supplemental instruction are related to having enough LSAMP Scholars qualified to tutor and be supplemental instructors. As the partners continue to retain and train more scholars over the span of the grant, this issue is likely to resolve itself.
  
  - Another impediment to supplemental instruction is the resistance or doubt that some faculty expressed regarding the competency of LSAMP undergraduates to deliver the required instruction. Their objections may possibly derive from how the concept is packaged. For many professors, the term “TA” is likely synonymous with “graduate student.” Therefore, partners might want to consider consistently using the designation “SPT” (STEM Peer Teacher) instead of “TA” for LSAMP students who serve as supplemental instructors. Although only a name change, making the terminology uniform across the Alliance would give partners a common language when talking about this aspect of the grant internally, and equally importantly, when promoting LSAMP to interested outside parties. Moreover, faculty might be more receptive to the concept of having instructional assistance from a “SPT” rather than a “TA.”

**Objective 5: Improving disciplinary socialization of URM students in STEM**

- **Undergraduate Research**
  
  - Promote research opportunities for LSAMP Scholars across the Alliance. Connecting students with research openings beyond the home campus would benefit not only LSAMP Scholars at community colleges where research avenues are slimmer, but also the four-year partners. One of the University of Cincinnati representatives described such a scenario: “For students who come from the Columbus area or live near Miami or another LSAMP partner, it would be great to know what opportunities exist for LSAMP students on those campuses. So if a student needs to go home in the summertime because they can’t afford the rent, I could offer them an opportunity to do research at OSU or another campus nearer to home.” Although the logistics of such arrangements may be challenging, all the two-year partners are aiming to “give their students as much opportunity as possible to get the research experience that they themselves cannot provide.”
  
  - Ongoing dialog amongst Alliance members about facilitating research opportunities across the Alliance can produce structural change in information sharing that, when scaled up, will improve the research prospects for LSAMP students at every partner institution. On the micro level, this is already happening. Case in point, at the last LSAMP meeting, Cincinnati State CC and Miami University representatives discussed a particular student who had expressed interest in transferring to Miami. Consequently, Miami offered to help her with research and coursework on their campus this summer.
Consider creating an online module that LSAMP Scholars can access and get credit for viewing which focuses on professional development and disciplinary socialization in the STEM fields. Uploading recorded presentations and workshops on such topics will help ready students to engage successfully in undergraduate research.

• Faculty Mentor Training

- No partners currently provide mentor training to faculty involved with LSAMP Scholars, and some did not think such training was relevant or needed, given the extensive experience of their faculty mentors. The Alliance may wish to consider offering a faculty mentor training event in the next grant year that focuses on the unique concerns and perspectives of URM students in the STEM fields, especially in the areas of implicit association, unconscious bias, and micro-aggressions. A University of Cincinnati representative mentioned a colleague in their Education department with a specialty in this area. The director of the university’s campus mentoring program for URM students, PRIZE, would be another resource to tap, and there are numerous professional facilitators who specialize in college-related minority issues who could be utilized. Dr. Fink plans to encourage PRIZE to participate in the upcoming summer conference. She has invited the partner institutions to suggest topics and provide facilitators who can lead training sessions for faculty, staff, and students.

- Consider publically acknowledging in some way the dedicated work of faculty who volunteer to mentor LSAMP Scholars. Perhaps host an Alliance event that celebrates their success stories and facilitates collaboration among faculty mentors of different cultures across the partner institutions.

Objective 6: Providing pathways for smooth transitions from 2-year to 4-year institutions

- Objective 6 presents Alliance partners with a unique opportunity to shape the contours of the pathways that will keep non-traditional URM students in the STEM fields on the road to a four-year college degree. Two- and four-year Alliance partners can envision together the needed supports that will reinforce LSAMP transfers’ perseverance. Clearly, this is an area where well-honed articulation agreements are important, but the more imminent task to consider is what can be done right before and after these students transfer to ensure they are supported by the LSAMP Alliance. As one community college representative put it, “We want to make sure that we get to the students who are transferred to the University of Cincinnati and other colleges; we want to support them with programming and some special attention to help when the transfer happens.”

- Perhaps a graduated step process could be devised that involves incremental exposure to the university environment so that it is already a “known” for LSAMP Scholars by the time they transfer. An interviewee from a smaller institution advocated having “our students spend a semester at the larger institutions, internships, externships, summer experiences, labs, because, you know, we don’t have similar facilities.”

- Faculty exchanges might also be part of such a process that would help ensure that students at smaller institutions are equipped for a successful transfer experience.
Conclusions

The Ohio LSAMP Alliance partners were very attentive and thorough in formulating their answers to all the interview questions. This conscientiousness, reflective of the partners’ deep understanding of and commitment to the goals of the LSAMP grant, resulted in the illustrative examples of success stories, strategies, and challenges detailed throughout this report. Their well-considered responses provide a comprehensive picture of their continuing efforts to implement the activities that address the grant’s six objectives. The partners’ varied perspectives and suggestions offer a valuable road map for course corrections to the grant in the years ahead.

The Alliance is making solid progress on several of the objectives, specifically smoothing the transition from high school to college for URM students through summer bridge programs and support systems that are expected to increase retention of these students through tutoring, mentoring, disciplinary socialization, and research opportunities. Clearly, challenges remain in terms of recruiting scholars, increasing the number of research opportunities, and implementing more robust peer and faculty mentoring. Other structural and administrative challenges—embedded in the grant and/or the institutions themselves—pose unique obstacles requiring long-term solutions that may be outside the purview of the Alliance partners.

This report highlights broad areas for growth in Year 3 of the grant and includes several feasible recommendations that, if embraced by the partners with creative and collaborative vigor, can help address both short- and long-term challenges. These suggestions range from the concretely doable (such as uploading workshop videos to the LSAMP website and training scholars to be LSAMP Ambassadors) to the more fluid aims of increasing partner collaboration on action steps and developing community and industry relationships that will lead to institutionalization of programming.

It is ideal that the membership of The Ohio LSAMP Alliance is comprised of two- and four-year institutions of higher learning, reflecting a veritable cross-section of the state’s demographics and talent. As such, the 11 partners represent a dynamic merging of interests and efforts that stand to attract, retain, and educate large numbers of URM students in STEM fields. With continued commitment to collaboration across the Alliance, and particular attention paid to resource sharing with the community college partners, The Ohio LSAMP Alliance is poised to significantly expand its efficacy and impact in Year 3 of this important endeavor.
## Appendix 1A: Summary of Key LSAMP Activities by Institution – Four-year Institutions

<table>
<thead>
<tr>
<th>Four-year Institutions</th>
<th>Stipend Distribution</th>
<th>Bridge Program</th>
<th>Peer Mentoring</th>
<th>Undergraduate Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Central State University</td>
<td>Scholars doing undergrad research receive stipend; LSAMP tutors receive hourly wage.</td>
<td>No funding this year but aiming to have program next summer.</td>
<td>YES: “Indirectly” through tutoring.</td>
<td>YES: Via “apprentice” concept.</td>
</tr>
<tr>
<td>2. Cleveland State University</td>
<td>Scholars paid at end of semester for fulfilling at least 75% of contract.</td>
<td>YES: Modeled after established bridge program, Operation STEM. NEW with LSAMP: 1. For URM who place into calculus. 2. Cuyahoga CC students invited to attend.</td>
<td>YES: Through Stem Peer Teachers (SPTs).</td>
<td>IN PROGRESS: Students take “Research Methods” course. NEW with LSAMP: Course open to Cuyahoga CC students in Spring 2016.</td>
</tr>
<tr>
<td>3. Miami University</td>
<td>Scholars paid at end of semester for fulfilling at least 80% of contract.</td>
<td>YES: 4-day program in 2014 and 2015. Will include LSAMP 2014 attendees taking lead, along w/ faculty</td>
<td>Not yet. Cohort is mostly lower division students.</td>
<td>YES: Two upper division students</td>
</tr>
<tr>
<td>4. OSU</td>
<td>Stipend paid at end of semester for fulfilling contract.</td>
<td>YES: Will start in 2015</td>
<td>YES: Active in 2014</td>
<td>YES: 25 to 30 of LSAMP Scholars have done research.</td>
</tr>
<tr>
<td>5. University of Cincinnati</td>
<td>Stipend paid upon compliance with year-long academic contract that includes activities, tutoring, and minimum GPA.</td>
<td>YES: Program preceded LSAMP. NEW with LSAMP: Cincinnati State CC students invited to participate.</td>
<td>Not yet</td>
<td>Not yet</td>
</tr>
<tr>
<td>6. Wilberforce University</td>
<td>Stipend paid per activity.</td>
<td>No funding</td>
<td>Not yet</td>
<td>IN PROGRESS: Students participate in workshops designed to prepare them to do research. Placement expected in 2015-2016.</td>
</tr>
<tr>
<td>7. Wright State University</td>
<td>Stipend paid per activity.</td>
<td>YES: Students paid to participate in 1-week program in 2014 and 2015.</td>
<td>YES: Has 1:3 ratio.</td>
<td>YES: Four juniors are involved in research.</td>
</tr>
</tbody>
</table>

IRC for LSAMP
### Appendix 1B: Summary of Key LSAMP Activities by Institution – Two-year Institutions

<table>
<thead>
<tr>
<th>Two-year Institutions</th>
<th>Stipend Distribution</th>
<th>Bridge Program</th>
<th>Peer Mentoring</th>
<th>Undergraduate Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cincinnati State Technical and CC</td>
<td>Stipend paid as hourly wage when scholar is doing research. Others receive stipend per attendance at activities.</td>
<td>YES FROM PARTNER: Sending 3 to 4 Scholars to University of Cincinnati program.</td>
<td>Not yet</td>
<td>YES FROM PARTNER: Through co-op program at University of Cincinnati.</td>
</tr>
<tr>
<td>2. Columbus State CC</td>
<td>Scholars paid per hour for participating in tutoring, STEM Club, workshops, and meetings.</td>
<td>YES: Preceded LSAMP; open to any STEM student. May condense to one week in 2015.</td>
<td>Not yet</td>
<td>IN PROGRESS: Students participate in workshops designed to prepare them to do research.</td>
</tr>
<tr>
<td>3. Cuyahoga CC</td>
<td>Scholars receive stipend per semester upon fulfillment of 75% of activities (based on attendance and/or completion).</td>
<td>YES FROM PARTNER: Scholars will attend Cleveland State University summer bridge.</td>
<td>YES but institution-wide and not developed by LSAMP: Monthly cohort/group meeting format.</td>
<td>YES: In on-campus labs.</td>
</tr>
<tr>
<td>4. Sinclair CC</td>
<td>Stipend paid as hourly wage when scholar is doing research or tutoring. Others receive stipend per attendance at activities.</td>
<td>YES FROM PARTNER: Scholars will attend 1-week intensive math summer bridge at Wright State in 2015.</td>
<td>Not yet</td>
<td>IN PROGRESS: Students participate in workshops designed to prepare them to do research. Placement expected in 2015-2016.</td>
</tr>
</tbody>
</table>