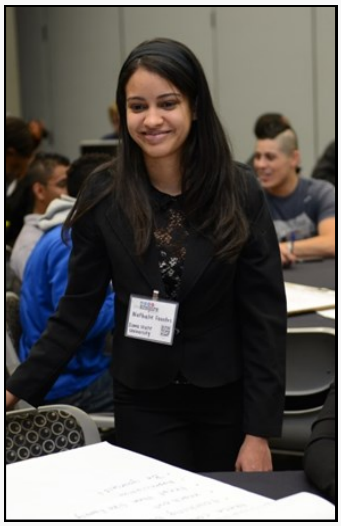
LSAMP inspire PROGRAM

IOWA ILLINOIS NEBRASKA

STEM Partnership for Innovation in Research & Education



Louis Stokes Alliance for Minority Participation — Iowa Illinois Nebraska

IMPACT REPORT

2011-2015

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Foreward

Hello from the heartland:

The Iowa, Illinois, Nebraska (IIN) Louis Stokes Alliance for Minority Participation is a Midwest STEM partnership for innovation in research and education (SPIRE). The IINSPIRE LSAMP alliance is committed to broadening the participation of underrepresented minorities in STEM education in the Midwest. The alliance is comprised of sixteen two-year and four-year colleges and universities, including: Iowa's three public state universities, five Iowa community colleges, six private colleges in Iowa, Illinois and Nebraska, and one tribal college in Nebraska. With NSF LSAMP support as a new alliance starting in 2011, significant new initiatives, partnering, and leveraging within and across institutions have led to progress on every campus. Alliance institutions are committed to providing an inclusive, supportive learning environment and preparing students academically and professionally for career opportunities in STEM, including graduate study. The alliance is dedicated to increasing the number of STEM baccalaureate degrees granted to underrepresented minority students, increasing individual student persistence, and enriching the student experience through evidence-based practices, innovative programming, continuous improvement, and research.

Since the start of the IINSPIRE alliance in 2011, the number of minority STEM baccalaureate graduates has increased from 177 to 305 in 2014-15. The number of minority STEM students enrolled has increased at each class rank at four-year institutions, and the number of minority students in STEM at community colleges has increased from 89 students in 2011-12 to 185 in 2014-15. These increases reflect efforts by institutions in the alliance focused on community-based recruiting; bridge programs and transitions; faculty engagement and inclusive pedagogy; student research opportunities, mentoring and training; and mentor training. IINSPIRE LSAMP has provided direct student support to over 200 students. Over 75 percent of these students have participated in summer and/or academic year research experiences. IINSPIRE LSAMP has collaborated with various NSF, HHMI, U.S. DOE, AURA and other programs to provide opportunities and programming for students. Students have presented their research at local research symposia, the IINSPIRE LSAMP Annual Conference, the LSMCE Annual Conference, and other national conferences. Regional partnering among alliance members has improved institutional practices and STEM pathways for minority students. The establishment and strengthening of partnerships between community colleges and four-year institutions has been a key impact.

The dedication of IINSPIRE LSAMP to program and national goals and to broadening participation in STEM is evident in this Impact Report. The accomplishments and commitment by all to collaboration, progress and sustainability will continue.

Dr. David Holger
IINSPIRE LSAMP PI
Associate Provost for Academic Programs and Dean of the Graduate College
Professor of Aerospace Engineering

Dr. Diane Rover
IINSPIRE LSAMP Alliance Director
University Professor of Electrical and Computer Engineering

Executive Summary

Colleges and universities in Iowa, Illinois and Nebraska joined forces in 2009 to address the demographic shifts and educational gaps in the Midwest given the increasing ethnic/racial diversity of the K-12 population. The IINSPIRE LSAMP Alliance was established in 2011 to grow the pool of college-ready, STEM-prepared underrepresented minority (URM) high school students; increase the number of URM students who choose STEM at institutions in the alliance; and improve retention at these institutions.

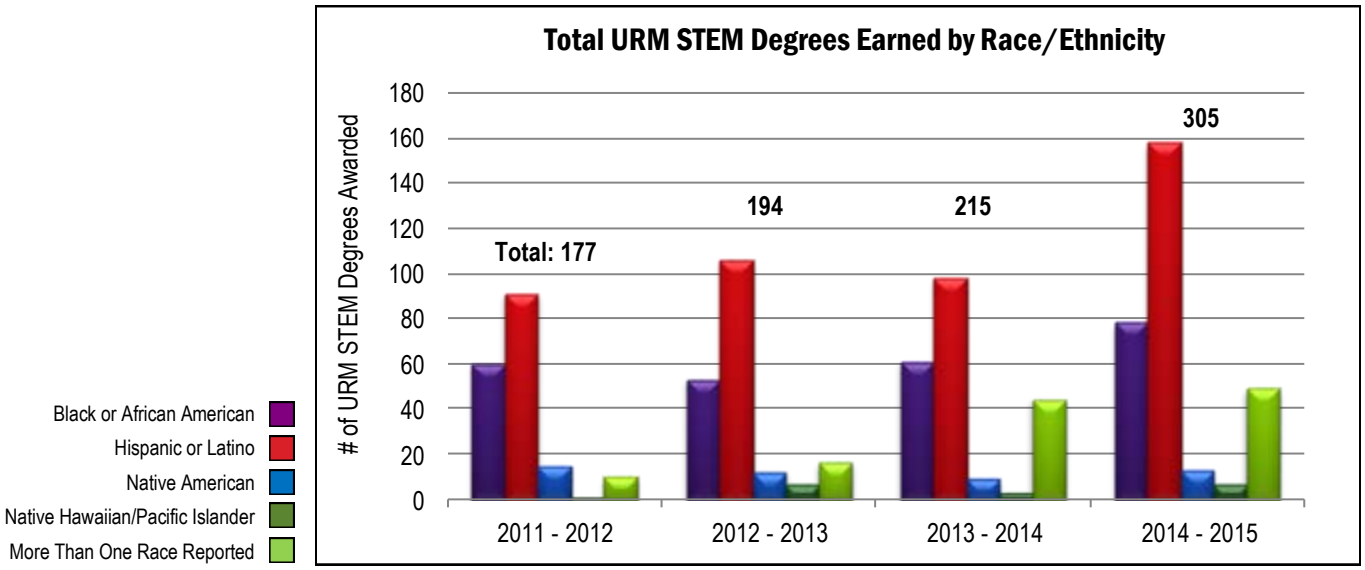
As of 2014-15, the IINSPIRE Alliance granted a total of 305 baccalaureate degrees to URM STEM students and was on track to double the number of graduates and reach its target of 350 as a new alliance. Figure 1 depicts the increase in baccalaureate degrees.

The IINSPIRE LSAMP alliance has gained momentum and is transforming the student experience and institutional support structures for URM STEM students. Campus-specific IINSPIRE Student Experience Models have been designed by campus leaders to address local needs and opportunities, leverage institutional resources, and adopt and share effective practices. Alliance leaders have acted on evaluation recommendations to improve programs. According to the 2015 external evaluation review done by Dr. Mariko Chang, programs and activities undertaken by the alliance appear to be positively received by students and are likely to increase the retention and graduation of URM students in STEM. Program activities are increasing student interest in STEM fields and careers; fostering increased confidence to seek new skills and academic opportunities to enhance their STEM learning experiences; and providing the social and academic support and role models to enhance persistence toward a bachelor's degree in STEM.

"I have benefited from the program financially and professionally. LSAMP has helped me network with my peers and other faculty/staff on my campus"

IINSPIRE institutions are committed to advancing the learning environment on their campuses for students In STEM, using the IINSPIRE Student Experience Model as a strategy for institutionalization and sustainability. An IINSPIRE Student Experience Model interweaves LSAMP-driven institutional activities, alliance-wide activities, and leveraged institutional/partner activities and resources to support the student experience from pre-matriculation through graduation. Moving forward, IINSPIRE LSAMP will further engage stakeholders and partners and enrich the student experience for hundreds of underrepresented students in STEM in the Midwest.

Figure 1. STEM bachelor's degrees granted to underrepresented groups by IINSPIRE LSAMP colleges and universities, 2011-15.



Project Overview

Since forming as a new LSAMP alliance in 2011, the Iowa, Illinois, Nebraska IINSPIRE Alliance and its members have implemented activities intended to:

- Inform stakeholders in Iowa, Nebraska, and Illinois about the IINSPIRE LSAMP Program.
- Increase awareness about STEM majors and careers among current alliance students.
- Collaborate with community-based recruiting models within the alliance.
- Assist students in transitions from high school to college and from 2-yr to 4-yr institutions.
- Facilitate faculty collaboration on inclusive pedagogy and mentoring practices.
- Connect and support students with mentored research opportunities.
- Organize research training experiences for alliance students to earn a research certificate.
- Provide training and resources for mentors.
- Leverage institutional resources and partnerships, use data to implement effective programs based on institution-specific needs, and use evaluation results to inform and improve practices.

Campus-specific IINSPIRE Student Experience Models have been designed to address unique needs and opportunities on each campus. The models include strategies that connect underrepresented minority (URM) STEM students with academic, social, and professional programming as well as undergraduate research experiences. The models also are linked with alliance-wide activities such as conferences and workshops.

Approaching five years as an alliance, IINSPIRE LSAMP has progressed into a strong STEM partnership for innovation in research and education. The alliance has pursued an overall goal to double the number of URM STEM baccalaureate graduates in the alliance to 350 graduates, to sustain the increases, and thus broaden the participation of underrepresented minorities in STEM education in the Midwest. As of 2014-15, the IINSPIRE Alliance granted a total of 318 baccalaureate degrees to URM STEM students. INSPIRE LSAMP has provided direct support to over 200 students as shown in Table 1. Most of these students have participated in summer and/or academic year research experiences.

Direct Participation in IINSPIRE LSAMP By Year

2011-2012	2012-2013	2013-2014	2014-2015
10	47	72	115

Table 1. Direct student participants in IINSPIRE LSAMP, 2011-15.

IINSPIRE LSAMP consists of sixteen two-year and four-year colleges and universities, listed below and shown in the sidebar on page 6.

Public state universities in Iowa: Iowa State University (ISU), University of Iowa (UI), and University of Northern Iowa (UNI)

Iowa community colleges: Des Moines Area Community College (DMACC), Eastern Iowa Community College District (EICCD), Hawkeye Community College (HCC), Iowa Valley Community College District (IVCCD), and Kirkwood Community College (KCC)

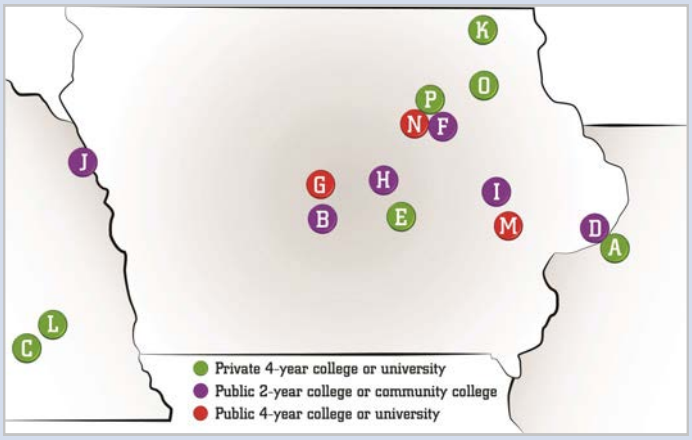
Private colleges/universities: Augustana College (IL), Doane College (NE), Grinnell College (IA), Luther College (IA), Nebraska Wesleyan University (NE), and Wartburg College (IA)

Nebraska tribal college: Little Priest Tribal College (LPTC)

The institutions range in size from under 1000 students to over 30,000. The institutions are geographically distributed in urban and rural locations across the three states and clustered in or near growing URM populations. Augustana College, the only institution in Illinois, is in the Quad Cities metro area near EICCD. Regional partnering among alliance members has improved institutional practices and STEM pathways for minority students. Doane College and Nebraska Wesleyan University, private four-year colleges in Nebraska, have interacted locally with Nebraska research universities while engaging fully with IINSPIRE alliance members and activities in Iowa. Two administrative networks oversee institutions in the alliance: ISU, UI and UNI are governed by the Board of Regents; and Iowa community colleges are linked through the Iowa Department of Education. All other alliance institutions are independent. There are articulation agreements among the Iowa Regents universities and the community colleges. Research universities in the alliance have provided summer research experiences for alliance students through centers, labs, and REU programs. IINSPIRE students from community colleges and baccalaureate institutions have participated in these opportunities.

Project Overview

Partnering between community colleges and four-year institutions has supported the transition for transfer students. Grinnell College serves the alliance by organizing faculty development workshops on pedagogy in collaboration with the Science Education Resource Center at Carleton College. Iowa State University, Hawkeye Community College and Des Moines Area Community College have hosted annual conferences for the alliance. Kirkwood Community College and DMACC have hosted student development workshops about REU's. Hundreds of students from across the alliance have participated in IINSPIRE-sponsored conferences and workshops. Alliance institutions have worked together, sharing and learning from one another and participating in planning, implementation, management and evaluation activities. As the alliance continues, members are committed to achieving the goals and outcomes across all institutions and enhancing the individual student experience for every IINSPIRE student. With continued attention to individual student retention and progression to graduation and expansion of evidence-based innovative strategies to enhance the student experience, substantial sustained increases in degrees granted in the alliance are foreseeable.



Alliance Institutions *(see map above)*

Each institution is led by a campus director.

A	Augustana College
B	Des Moines Area Community College
C	Doane College
D	Eastern Iowa Community College District
E	Grinnell College
F	Hawkeye Community College
G	Iowa State University
H	Iowa Valley Community College District
I	Kirkwood Community College
J	Little Priest Tribal College
K	Luther College
L	Nebraska Wesleyan University
M	University of Iowa
N	University of Northern Iowa
O	Upper Iowa University
P	Wartburg College

Objectives Moving Forward

- Implement and extend comprehensive, evidence-based, innovative, and sustained strategies to achieve LSAMP priorities, resulting in the graduation of well-prepared, highly-qualified students from underrepresented groups who pursue graduate studies or careers in STEM.
- Engage alliance faculty to support their mentoring of students, use of evidence-based and inclusive teaching practices, and understanding of URM STEM student success.
- Investigate research questions and collect data to study the effect of program activities, better understand URM STEM student success and institutional environment, inform and guide programmatic efforts, and contribute to scientific knowledge.
- Strategically manage the project within/across institutions and with partners, including alliance-wide activities that strengthen collaborative approaches and leveraged activities that promote synergistic approaches.
- Evaluate institutional and alliance program effectiveness and sustainability guided by outcomes.
- Improve educational pathways, partnerships, networking, and infrastructure that contribute to inclusive institutions and a diverse STEM workforce prepared to address societal needs.

Leveraging

IINSPIRE LSAMP is strategically leveraging institutional resources and partnerships. IINSPIRE members also work with industrial and governmental partners. Partners have a commitment to broadening participation in STEM and meeting state and national STEM workforce needs. Partners offer various types of opportunities and support to the program, including interfacing with local communities and state-level policies and activities, supporting K–12 outreach, and providing internships and other financial support.

IINSPIRE LSAMP STEERING COUNCIL

Back *(Left to Right):* Derrick Rollins, Adin Mann, Douglas Mupasiri, Brian Ritter, Jim Swartz, Kata McCarville, Lara Thoms, Juanita Limas. **Front** *(Left to Right):* Mary Darrow, Diane Rover, Kari Hensen, LeAnn Faidley, Sharmin Sikich, Cynthia Bottrell, Angela McKinney, Marta Gomez, Danielle Mitchell. ***Not Shown:*** Lori Scott, Brad Chamberlain, Al Martyn, and Richard Hichwa

Programs, partnerships and resources leveraged by alliance institutions are highlighted in the institutional profiles. A key leveraging strategy is the campus-specific IINSPIRE student experience at each institution. Each IINSPIRE-specific student experience, uniquely designed to incorporate campus-specific needs and opportunities, is intended to connect URM STEM students with academic, social, and professional resources; support programs tailored to student demographics, institutional context, and available resources; and also to leverage and enhance existing evidence-based practices. The models include strategies/programs such as STEM bridge programs, learning communities, academic support services, TRIO programs, transfer transition programs, undergraduate research experiences, and mentoring. A Student Experience Model at each campus interweaves IINSPIRE-driven institutional activities, IINSPIRE alliance-wide activities, and leveraged institutional/partner activities to support the student experience from pre-matriculation through graduation.

Institutional commitments, program and resource leveraging, and partnering are reviewed by the IINSPIRE LSAMP Governing Board. An External Partner Representative on the IINSPIRE LSAMP Steering Council meets with campus directors and provides leadership for external partner engagement with the alliance and institutions. Institutional teams vary by institution and include faculty, staff, and administrators who leverage local resources and programming to meet alliance goals. The alliance director and staff have conducted campus visits to meet with team members and the Governing Board member, and discuss progress, opportunities and challenges. The IINSPIRE LSAMP external evaluator has found that campus visits have facilitated greater leveraging: "Institutions report that it has helped them leverage resources and engage their institutional partners." Various partnerships and collaborations are identified in sidebars in this report. Some are specific to an institution, and some are at the alliance level. Each enhances the IINSPIRE student experience for URM STEM students participating in IINSPIRE LSAMP and supports goals and strategies of the alliance. Two partners integral to the program include the Science Education Resource Center (SERC) at Carleton College and the Association of Universities for Research in Astronomy (AURA). In addition, several centers, labs, and REU programs at research universities in the alliance have provided summer research experiences for alliance students. Some of these are supported in part by NSF, HHMI, NIH, US-DOE, USDA, and others.

Another key resource being leveraged by the alliance is knowledge about evidence-based strategies, including findings by researchers in the alliance and by others. Some of these findings have resulted from prior NSF support. For example, IINSPIRE team members from ISU and DMACC led an NSF STEP project that implemented and studied partnership program strategies and transfer student success in engineering. Alliance institutions are using findings about 2-yr/4-yr strategies from the ISU/DMACC NSF STEP project and the STEP grantees' community to develop or enhance partnership programs to engage community college students early and often in STEM majors at the transfer institution.

Featured Scholar

Jacob Torres
Biology
Augustana College

Jacob Torres is currently a junior at Augustana studying biology. While being an IINSPIRE LSAMP-funded research intern at Augustana, he has been able to gain valuable experience and perform research which has helped him grow as a scientist. After graduation, Jacob plans to continue on to graduate school to study a combination of genetics and entomology. He presented a research poster, "Analgesics From the Opium Poppy Plant." at the 2015 Celebration of Learning Student Research Symposium at Augustana College in May 2015.

Augustana College

Augustana College is a private, selective liberal arts and sciences college located in Rock Island, Illinois. The Fall 2014 undergraduate enrollment at Augustana was 2,501 including 74 underrepresented minority (URM) STEM students.

Impacts

Augustana has benefited from the IINSPIRE LSAMP goal of doubling URM STEM graduates by focusing efforts on student success and forging new initiatives. Augustana has seen a doubling in LSAMP-eligible enrollment in STEM majors from what it was at the beginning of the first grant, a rate of increase that exceeds the increased multicultural student population on campus. IINSPIRE LSAMP involvement at Augustana has enabled the following: 1) Recruitment, retention and success efforts for URM students are supported; and 2) Funding provides support and lowers barriers for students who are more frequently first-generation college students and with fewer financial resources for devoting full-time research during summers. Augustana has placed 16 students in undergraduate research experiences in the last 3 years: of these students, 3 have graduated with STEM degrees.

Student Experience and Leveraging

Augustana has made a number of structural changes to institutionalize student research, internships, and other opportunities as part of a larger integration with academic advising, vocation, and career pathways. Moving from decentralized, individually run programs to ones with a clear administrative home, partnered with faculty, facilitated connections with supporting offices and student involvement earlier in their careers and outside the minimum research requirements within majors.

Augustana directly supports student research efforts and reinforces a culture of research and creative scholarship. Specifically, the college supports student research and research-related travel and all students have access to "Augie Choice" funds that support high impact opportunities (research, internships, or study abroad). Students can pair these resources with IINSPIRE LSAMP funds to support research experiences that meet their career goals. The Student Research Office, opened in 2014, helps coordinate services and programs and leverages resources to benefit student success in STEM.

Augustana College

The CORE (Careers, Opportunities, Research, Exploration) Center oversees internal college funds supporting student/faculty research collaborations and student travel for conferences and research. CORE's Upper Mississippi Center mobilizes Augustana's resources to help communities solve sustainability challenges facing urban and rural working landscapes of the Upper Mississippi River and provides students in all disciplines opportunities for applied research and research internships, particularly in environmental sciences, geology, and biology. One objective of the center is to use a transdisciplinary approach to solving complex problems that combines interdisciplinary research that integrates the knowledge and perspectives from the humanities, social sciences, and natural sciences to create new knowledge and solutions. The center also aims to assist communities in solving the sustainability challenges they are facing and in doing so build enduring relationships between Augustana on the rural and urban communities of the Upper Mississippi region.

LSAMP IINSPIRE PROGRAM

Des Moines Area Community College

Des Moines Area Community College (DMACC) is a multi-campus institution in central Iowa with campuses, in Ankeny, Boone, Carroll, Newton, and West Des Moines, Iowa. DMACC's Fall 2014 enrollment was 23,526 including 62 underrepresented minority (URM) STEM students.

"The program has given me direction and motivation to pursue my goals of becoming an engineer. My campus director has been vital in my growth as a professional."

Impacts

Participation in the IINSPIRE LSAMP Alliance is improving DMACC's efforts to recruit, retain, and assist URM students majoring in STEM fields with successful transfer and ultimately graduation. DMACC's outstanding faculty, small class-sizes, and affordable tuition make starting a STEM career at a comprehensive community college an outstanding experience, particularly for first-generation college students, many of whom are served by other grant initiatives. In addition, the IINSPIRE LSAMP Alliance has strengthened DMACC's transfer pathways to partner colleges and universities which will increase graduation rates for URM students who are key to meeting future workforce needs in the State of Iowa. DMACC's participation in IINSPIRE LSAMP has resulted in the placement of 20 students in undergraduate research experiences both locally and nationally over the past 3 years; of these students, 7 have transferred to a 4-year institutions in STEM majors.

Student Experience and Leveraging

In addition to providing stipends to support research experiences, DMACC's IINSPIRE LSAMP student experience includes faculty mentoring, regular professional development, and active engagement in student leadership opportunities such as the Honors Program, TRIO Student Support Services, STEM Club, and Phi Theta Kappa Honor Society. DMACC's commitment to leveraging institutional resources towards URM STEM student success is also evident in their administrative approach. They have identified an IINSPIRE LSAMP team, led by their associate Dean of Arts and Sciences, which includes academic advisors, TRIO Student Support Services staff, STEM faculty coordinators, and the Director of Grants and Contracts. This team leverages IINSPIRE LSAMP funding by connecting students with related resources which target URM STEM success.

DMACC
DES MOINES AREA COMMUNITY COLLEGE

The **Latino/a Education Initiative Conference** is an annual event sponsored by Iowa State University School of Education's Community College Leadership Program (CCLP), The Office of the President, ISU Extension and Outreach, Iowa Valley Community College, and Des Moines Area Community College. It is a collaborative conference that convenes community college and higher education leaders and students around Latino/a student success in Iowa Community Colleges and 4-year institutions. National and regional experts share research-based practices and engage participants in discussion and planning focused on Latino/a student success in Iowa. Students are integral to the sessions and inform participants with their stories and testimonials.

Featured Scholar

Esdras Murillo
Electrical Engineering
Iowa State University

Esdras Murillo, an electrical engineering undergraduate student at Iowa State and a transfer student from Des Moines Area Community College, has participated in IINSPIRE LSAMP as a research intern and student leader. He has done award-winning work with Iowa EPSCOR energy researchers. He has won awards at LSAMP alliance and national conferences. His faculty and research mentors have commended his initiative and spoken with admiration about his student leadership. Despite challenges he has faced in his life and education, he is highly motivated to succeed and also to help others succeed. In the future, he hopes to use his education to develop a solar energy program for low-income families in his native Honduras. Through the experience and opportunities that IINSPIRE LSAMP has given him, he feels he has the knowledge and experience needed to help others.

Featured Scholar

Jordan Zonner
Biology
Doane College

Jordan Zonner, a junior at Doane College studying biology, has gained helpful insight about her career options as a biology major through the networking opportunities available through IINSPIRE LSAMP. Additionally, she was awarded a 2015 SACNAS Student Presentation Award for her research in computer/systems engineering. Attending the Louis Stokes Midwest Center of Excellence (LSMCE) Conference was an empowering experience for Jordan and has encouraged her to try and bring younger students with her to more conferences in the future. In addition to encouraging younger students to participate at conferences, she also motivates all students to attend IINSPIRE LSAMP meetings so they can hear from many individuals about a variety of opportunities .

Doane College

Doane College is a private, liberal arts and sciences college located in Crete, Nebraska. Doane's Fall 2014 undergraduate enrollment was 1,520 including 13 underrepresented minority (URM) STEM students.

Impacts

As a result of their participation in IINSPIRE LSAMP, Doane College has seen a strong upturn in URM student participation in research and also URM enrollment in STEM majors. This past summer seven URM students conducted research projects utilizing IINSPIRE LSAMP funding. This is more than triple the total number they have supported in the last four years. Four of these seven students started their research projects following their freshmen year at Doane. This past fall, seven students presented their research at national meetings including the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) conference where one of their students, Jordan Zonner, received a 2015 SACNAS Student Presentation Award for her research in computer/systems engineering. Doane has provided IINSPIRE LSAMP stipends to 12 students over the last 3 years; of those, 4 have graduated with STEM degrees.

Student Experience and Leveraging

The Doane IINSPIRE LSAMP student experience begins for incoming freshman with the Bridge to Science and Mathematics Program, before their regular course work begins in August. This program introduces URM students interested in STEM to potential majors and careers, companies that employ STEM graduates, college survival skills, and other resources on campus including STEM faculty and each other. Mentors are introduced during the summer bridge program.

Doane's TRIO funded Academic Support Center, Career Center, and Multicultural Programming Offices are all partners in providing support for IINSPIRE LSAMP students. The students and their mentors meet regularly to learn about research opportunities, plan travel to conferences, and support one another. Upper-class students have opportunities to serve as mentors, conduct research projects, attend training, and travel to conferences to present their research through IINSPIRE LSAMP funds.

DOANE COLLEGE

ANNAUL CONFERENCE AWARD WINNERS

Sharmin Sikich (Doane College) and Brian Ritter (EICCD) were presented with awards at the IINSPIRE LSAMP 2014-'15 Annual Conference in Ankeny, Iowa. Sharmin was presented the Excellence in Service Award. Brian Ritter was presented with an Excellence in Mentoring award for his work with undergraduate students participating in the Nahant Marsh Program. Both were nominated by their peers.

LSAMP IINSPIRE PROGRAM

Eastern Iowa Community College District

Eastern Iowa Community College District (EICCD) includes three community colleges in Clinton, Muscatine, and Davenport (Scott Community College). EICC's Fall 2014 enrollment was 8,143 including 62 under-represented minority (URM) STEM students.

Impacts

Eastern Iowa Community College District is focused on the following overall goals: 1) Grow the field of college-ready URM STEM high school students; 2) Improve student retention; and 3) Increase the number of URM student who choose STEM program/careers. Through their partnership with Nahant Marsh, EICC has placed 7 students in undergraduate research experiences in the first four years. One of these students was attending Luther College and participated in research at Nahant Marsh while at home for the summer through IINSPIRE. Three of these students have transferred to alliance institutions in STEM majors.

Student Experience and Leveraging

Through their participation in the IINSPIRE LSAMP Alliance, EICC has created a successful summer research and mentoring program for URM STEM students. Students have had the opportunity to participate in applied research, work with mentors, and participate in IINSPIRE LSAMP's Annual Conference. Through EICC's partnership with Nahant Marsh Education Center, URM STEM students have the opportunity to conduct applied research and work with external research partners to build efficacy as it relates to STEM.

The Nahant Marsh Education Center is a unique 265 acre preserve and education center that is overseen by Eastern Iowa Community Colleges. The preserve provides students with a unique opportunity to participate in applied STEM research. EICC also partners with the Quad Cities Chamber of Commerce on a Lumina Foundation Partnership for Attainment grant focused on the overall goal to increase the proportion of Americans with high-quality postsecondary degrees and credentials to 60 percent by the year 2025. Leveraging these resources strengthens our IINSPIRE LSAMP efforts in this region of Iowa and Illinois.

Featured Scholar

Jacob Veal
Electrical Engineering
University of Iowa

Jacob Veal is a junior studying engineering at the University of Iowa and is a transfer student from Eastern Iowa Community College. He participated in IINSPIRE LSAMP-funded research at Nahant Marsh while a student at Eastern Iowa Community College.

EASTERN IOWA COMMUNITY COLLEGES
CLINTON ♦ MUSCATINE ♦ SCOTT

NAHANT MARSH EDUCATION CENTER

Nahant Marsh is a 256 acre treasure nestled in Southwest Davenport. It is part of the 513 acre wetland complex that is bordered by the Mississippi River, Interstate 280, and Highway 22. Nahant Marsh preserve is one of the largest urban wetlands on the Upper Mississippi River. Nahant Marsh was used for skeet and trap shooting from the 1960's to the 1990's. Because of the lead left behind, the marsh was declared an EPA Superfund site and was cleaned up in 1999. After that time, the site was declared a preserve and educational center. The city of Davenport, the Nahant Board, Eastern Iowa Community College District, and River Action are all parts of Nahant Marsh.

Research is an integral part of Nahant Marsh. They are able to expand our knowledge of the ecosystems found here, which allows them to better this amazing natural area. Research projects also allow students to participate in exciting projects and gain hands-on experience in their field of study. They offer research opportunities in the fields of Wildlife Biology, Ecology, Animal Behavior, Botany, Hydrology, Chemistry, Genetics, Geology, Geography, Toxicology, and many more.

Featured Scholar

Queenster Nartey
Biological Chemistry
Grinnell College

Queenster Nartey is currently a senior at Grinnell College studying biological chemistry. While conducting research at Iowa State University with Dr. Derrick Rollins, she developed an app that will allow Type 2 diabetics to learn how certain changes in their diet or exercise could affect their blood glucose levels. By allowing people to see immediate results, they are more likely to take action which Queenster believes to be an important step in helping alter activities. Through her multiple research internships, networking, and attending IINSPIRE LSAMP events and workshops, she has been able to enhance her development and prepare her for future research in graduate school.

Grinnell College

Grinnell College is a highly selective private, liberal arts and sciences college located in Grinnell, Iowa. Grinnell's undergraduate enrollment for Fall 2014 was 1,670 including 34 underrepresented minority (URM) STEM students.

Impacts

IINSPIRE LSAMP activities have benefited Grinnell College on a number of fronts. The annual meetings have allowed their students to be exposed to a broader array of students from similar backgrounds and provided a broader support network. IINSPIRE LSAMP funds have supported additional research opportunities for students and additional training activities for students. Also faculty members have participated in pedagogy workshops, both as participants to gain knowledge of different approaches to effectively engaging students, but also as presenters. This has created an incentive to organize, evaluate, and articulate important science education reform efforts that have been implemented at Grinnell College. Grinnell has placed 11 students in under-graduate research experiences over the past 3 years using IINSPIRE LSAMP funds. Five of these students have graduated with STEM degrees.

Jim Swartz, Dack Professor of Chemistry at Grinnell College and IINSPIRE LSAMP Campus Director, is congratulated by President Obama.

Student Experience and Leveraging

Grinnell invites URM students who have an interest in science to a special pre-orientation week before classes begin. They have also invested in substantial curricular and pedagogical reform to better support and engage students from a variety of backgrounds in science and mathematics. In addition they have extensive peer mentoring and tutoring programs for first and second year students. These activities, supported by the NSF, Lilly Endowment Inc., and General Electric Foundation, are collectively known as the Grinnell Science Project (GSP). Now almost 20 years old, GSP received a Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring in 2011.
A current grant from the Howard Hughes Medical Institute is supporting an exploration of the barriers to success that affect second year science students and developing programmatic responses to those barriers. Leveraging these efforts strengthens Grinnell's IINSPIRELSAMP efforts towards URM STEM student success.

GRINNELL COLLEGE

Grinnell Science Project

The Grinnell Science Project (GSP) was honored in 2011 with the Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring, administered by NSF. The award recognizes GSP's efforts to increase the number of students from underrepresented groups who earn degrees in the sciences. GSP was created in 1992 in response to internal studies indicating that students from traditionally underrepresented groups often entered Grinnell with interest in science but aban-doned their goals when they were unsuccessful in introductory courses. "The true winners of this prestigious award are our science students," said Grinnell President and IINSPIRE LSAMP co-PI Raynard S. Kington. "The reputation of the Grinnell Science Project has been strengthened by their individual successes, and collectively by the dedicated Grinnell science faculty who mentor them."

LSAMP IINSPIRE PROGRAM

Hawkeye Community College

Hawkeye Community College (HCC) is located in Waterloo, Iowa. HCC's Fall 2014 enrollment was 5,291 which included 7 underrepresented minority (URM) STEM students.

Impacts

Participation in the IINSPIRE LSAMP Alliance has provided opportunities for Hawkeye students to participate in IINSPIRE LSAMP activities on the University of Northern Iowa (UNI) campus as well as to work with other alliance institutions on collaborative activities and expanding 2-4 year partnerships. One such activity was a Research Experience for Undergraduates (REU) prep workshop for students. In this workshop students learn about undergraduate research opportunities and the application process, connect with IINSPIRE LSAMP students, and learn how other students work, study, and succeed in STEM careers. Hawkeye students also participate in the IINSPIRE LSAMP Annual Conference for similar purposes. HCC hosted the Annual Conference in November 2014.

Student Experience and Leveraging

The IINSPIRE LSAMP student experience requires students to fulfill academic requirements in order to receive IINSPIRE LSAMP funds. These include academic advising, career planning, workshops, and field trips to area STEM-related businesses and higher education institutions. Hawkeye continues to focus on increasing the numbers of URM students enrolled in STEM transfer coursework and supporting those students towards successful STEM transfer and graduation.

HAWKEYE COMMUNITY COLLEGE

IINSPIRE LSAMP 2013-'14 Annual Conference

The IINSPIRE Louis Stokes Alliance for Minority Participation held its 2013-14 Annual Conference: *Building Community for Student Success in STEM* on **November 8, 2013 at Hawkeye Community College** in Waterloo, Iowa.

The IINSPIRE Annual Conference featured invited speakers and concurrent programs of interest to both students and professionals. Students, faculty and staff from alliance members and collaborators were encouraged to attend. During the event, a poster session and awards ceremony was held to honor outstanding mentors and students in the alliance.

Left: Poster session at the IINSPIRE LSAMP 2013-'14 Annual Conference. **Left:** Linda Allen (HCC) giving the welcome address at the annual conference Hawkeye Community College

Featured Scholar

Joshua Ostdahl
Mathematics
Hawkeye Community College

Joshua Ostdahl is studying mathematics at Hawkeye Community College. He plans to transfer to the University of Northern Iowa (UNI) and study Mathematics Education. Josh has been active in IINSPIRE LSAMP events, such as REU workshops, and college and business visits. External to IINSPIRE LSAMP he has demonstrated leadership as president of the campus STEM club.

Featured Scholar

Paul Faronbi
Chemical Engineering
Iowa State University

Paul Faronbi is currently a senior studying chemical engineering at Iowa State University. He is a two-year IINSPIRE LSAMP-funded research intern in multiple labs and has emerged as one of the student leaders among this group. He was voted as president of iResearch Club, which is a student organization supported by IINSPIRE LSAMP. His current research projects involve working on interdisciplinary research in peripheral nervous system regeneration.

Iowa State University

Iowa State University (ISU) is a public, research institution (R1) located in Ames, Iowa. ISU's Fall 2014 undergraduate enrollment was 28,893 including 1271 underrepresented minority (URM) STEM students.

Impacts

Iowa State has benefited from IINSPIRE LSAMP's goal of increasing URM STEM graduates by focusing attention on URM STEM student success and spear-heading new initiatives. ISU has seen an increase from 97 to 168 URM STEM graduates in the last four years. URM STEM enrollment at Iowa State has also steadily increased; all STEM disciplines have grown over this period, with engineering having the largest increase. Iowa State's success is due to a multifaceted approach involving various diversity and student support/ success programs administered through academic affairs, student affairs and each of the STEM colleges on campus (Agriculture and Life Sciences, Human Sciences, Liberal Arts and Sciences, and Engineering). ISU has placed nearly 80 students in undergraduate research experiences through IINSPIRE LSAMP from across the alliance. Forty-five currently enrolled students have done under-graduate research through IINSPIRE LSAMP over the past 3 years and 11 of these have graduated with STEM degrees.

"STEM occupations employ individuals who create ideas and applications that become commercialized and yield additional jobs. STEM fields overwhelmingly dominate other fields in generating new patents. STEM workers also contribute to the creation of innovation hubs—areas that usually include technology centers and research parks—that are important sources of economic activity." [1]

Student Experience and Leveraging

Iowa State develops and sustains comprehensive and holistic programming that supports student success. A multitude of programs are offered that benefit ISU IINSPIRE LSAMP students. For example, Science Bound is a pre-college program for URM high school students that attracts 95% of its partici-pants into STEM majors. APEX is a pre-matriculation bridge program for incoming minority freshman students. The APEX program now features college-specific programming for students in STEM (Agriculture and Life Sciences, APEX[A]; Engineering, APEX[E]; and Liberal Arts and Sciences, APEXLAS), which offer additional academic/ professional preparation for academic success. Iowa State partners with Iowa community colleges to offer the Admissions Partnership Program (APP), in which com-munity college students have access to academic advising,

U.S. DOE Ames Laboratory

The Ames Laboratory is a government-owned, contractor-operated national laboratory of the U.S. Department of Energy (DOE). It is unique among the DOE laboratories in that it is located on the campus of a major research university (Iowa State University). The Ames Laboratory shares IINSPIRE LSAMP's commitment to offering students and faculty STEM training opportunities and encourages students with diverse backgrounds to participate in internships with scientists through the Science Undergraduate Laboratory Internships (SULI), Visiting Faculty Program (VFP) and Community College Internships (CCI) programs. Numerous Iowa State University faculty participate in Ames Laboratory programs as mentors. Ames Laboratory is also active in K-12 outreach through annual middle school and high school science bowl competitions, which bring over 300 students to campus each year. These events are opportunities for IINSPIRE LSAMP to engage middle school and high school students and their teachers.

transfer planning, Iowa State housing, libraries, and career fairs before transferring to assist with their transition.

Iowa State is well known for the professional preparation of its students, draws hundreds of companies to career fairs each semester, and places thousands of students in paid internships. The six-month post-graduation placement for bachelor recipients in STEM exceeds 97% in engineering and ag/life sciences fields. Iowa State also operates a number of internationally recognized research centers that advance the integration of research and education and train a diverse STEM workforce, such as the NSF ERC Center for Biorenewable Chemicals (CBiRC) and the U.S. DOE Ames Laboratory. These and other centers, REU programs, the Honors Program, and faculty mentors create a vibrant undergraduate research environment on campus.

IINSPIRE LSAMP at Iowa State collaborates with these programs and has developed activities specifically for IINSPIRE LSAMP to create a flexible and engaging IINSPIRE student experience. Students begin their participation in IINSPIRE by joining a community of like-minded peers, in which they make connections and explore STEM research interests. They network with students, interact with faculty, and participate in professional development activities through the alliance annual conference, on-campus programs and events, and the iResearch Club. Students prepare for and participate in undergraduate research experiences at Iowa State and elsewhere, including international labs. Iowa State's programming provides a structured training experience in addition to research guided by mentors, culminating with a poster symposium. Students may attend regional and national conferences in the fall and spring to disseminate their research and get involved in professional communities. Students may continue to pursue research and internship opportunities, assist other students as peer mentors, and assume leadership roles. As rising juniors and seniors, students are guided to explore and prepare for STEM careers and graduate study.

IOWA STATE UNIVERSITY

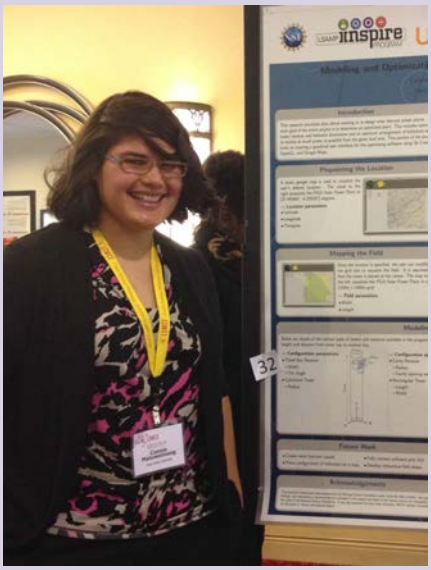
ISU Student Organizations & Learning Communities

Iowa State is consistently rated among the top learning community programs in the nation, and 75% of first-year students of color at Iowa State participate in a learning community.

Iowa State has over 800 student clubs and organizations, and each STEM college supports academic-related clubs and student chapters of various professional societies, such as MANRRS (Minorities in Ag, Natural Resources, and Related Sciences), SHPE/LSE (Society of Hispanic Professional Engineers and Latinos in Science and Engineering), SACNAS (Society for Advancement of Chicanos/Hispanics and Native Americans in Science), NSBE (National Society of Black Engineers) and NOBCChE (National Organization for the Professional Advancement of Black Chemists and Chemical Engineers).

The STEM colleges also have diversity programs that coordinate activities with Iowa State's Multicultural Student Affairs office, such as Multicultural Scholars Breakfast and Multicultural Transfer Visit Day. Various university-wide scholarship and academic support programs are available to undergraduate URM students, including the Carver Academy, Multicultural Vision Program, McNair Program, TRIO programs, and others.

Featured Scholar



Connie Maluwelmeng

Electrical Engineering
Iowa State University

Connie Maluwelmeng is a graduate of Iowa State University in electrical engineering and is a transfer student from the University of Guam. As an IINSPIRE LSAMP intern, she researched solar power during her at RWTH Aachen University in Germany. She believes through this experience, she was given the advantage of looking at things from different perspectives and different cultures. By having this experience abroad, she was also able to enhance her communication skills in order to help her future by understanding how to collaborate with international organizations. Her participation in IINSPIRE LSAMP events and other opportunities she has had at Iowa State have helped give her an advantage of understanding research through a global perspective. Connie currently works as a Delivery Planning Intern at Alliant Energy in Cedar Rapids, IA

Featured Scholar

Norma Granados
Mechanical Engineering
Iowa State University

Norma Granados is a junior at Iowa State University studying mechanical engineering and a transfer student from Marshalltown Community College. As a first-generation student, whose family emigrated from Mexico, Norma desires to be a good example for her younger siblings, as she is the first in her family to pursue higher education. Norma has been a consistent participant in several undergraduate research opportunities through IINSPIRE LSAMP during the academic year and summer terms. One of these research experiences resulted in her being listed as co-author of a published paper, "Microfluidic Organ-on-a-Chip Technology for Advancement of Drug Development and Toxicology." This has only added motivation for her to continue to pursue higher levels of education and to make her family proud for the many sacrifices they have made.

Iowa Valley Community College District

Iowa Valley Community College District (IVCCD) operates Ellsworth Community College in Iowa Falls, and Marshalltown Community College in Marshalltown. IVCCD Fall 2014 enrollment was 2,987, including 10 URM STEM students.

"Through the transition program they helped me prepare for college and they assured me that pursuing a STEM major is difficult but it is attainable "

Impacts
IVCCD's involvement in IINSPIRE LSAMP has resulted in a more focused effort to increasing the number of underrepresented minority students majoring in a STEM discipline. In order to meet this goal, IVCCD has worked to build pathways between high schools, community colleges, and four year institutions. It is IVCCD's goal to begin recruiting URM students at the high school level. By providing programming and creating networks for students, IVCCD is working to increase retention and graduation of the URM STEM students. IVCCD has provided direct support to 12 students in years 2-4 to participate in undergraduate research at ISU. Three of these students have transferred to Iowa State in a STEM major.

Student Experience and Leveraging
IINSPIRE LSAMP has provided research stipends to URM STEM students participating in research experiences at Iowa State University. IINSPIRE LSAMP students have participated in summer research through the Howard Hughes Medical Institute (HHMI) summer scholars program as well as other research programs at Iowa State over the past four years. In addition, these students have come back to IVCCD and presented their research posters to faculty, students, and staff which has assisted in recruiting students into the program. IVCCD will continue to focus on increasing the numbers of URM students enrolled in STEM transfer coursework and supporting those students towards successful STEM transfer.

Association of Universities for Research in Astronomy (AURA)

The Gemini Observatory on Hawaii's Mauna

The Association of Universities for Research in Astronomy (AURA) operates major astronomical observatories in Maryland, Arizona, New Mexico, Hawaii and Chile on behalf of the NSF and NASA. These observatories are the equivalent to the National Laboratories within the high energy physics community. Advancing diversity in STEM fields is a core value in AURA's broadening participation program and has been central to its long range strategic plan. Undergraduate college students serve an important part of a pipeline which will provide the next generation of scientists. Expanding opportunities in STEM fields for underrepresented minorities is a critical part of ensuring the best possible outcome. As a partner with IINSPIRE, AURA provides internship opportunities to IINSPIRE LSAMP students.

Kirkwood Community College

Kirkwood Community College (Kirkwood)) is located in Cedar Rapids, Iowa. Kirkwood's Fall 2014 enrollment was 14,268 including 37 underrepresented minority (URM) STEM students.

Impacts

Kirkwood's participation in the IINSPIRE LSAMP Alliance has brought increased attention and new initiatives to the college focused on URM STEM student success. Kirkwood's URM population has been increasing over the last 5 years by 15% while the URM STEM student population continues to be quite low at less than 2%; however, in the past year and a half, Kirkwood has seen the number of IINSPIRE LSAMP students grow from 0 to 22 students. They have also successfully placed their first six IINSPIRE LSAMP students in summer research experiences at the University of Iowa, Iowa State University, and California State University (Monterey Bay) during the summer of 2015. These students are returning sophomores who will mentor the new IINSPIRE LSAMP students and encourage them to participate in summer research experiences.

Student Experience and Leveraging

Kirkwood's student experience includes recruitment of students via The STEM Club and/or summer bridge programs designed to specifically encourage math skills prior to enrollment at Kirkwood. First year students are expected to participate in monthly IINSPIRE LSAMP meetings with the rest of the cohort as well as attend STEM Club meetings. IINSPIRE LSAMP students are encouraged to start applying for summer research positions during the first year at Kirkwood. In the Spring, first year students are encouraged to enroll in a lab methodologies course to acquire basic lab techniques and etiquette. After completion of summer research, students return to Kirkwood and serve as mentors and tutors to first year students. These mentors also provide leadership in the STEM Club. Students who do research are encouraged to present their work at regional and national conferences.

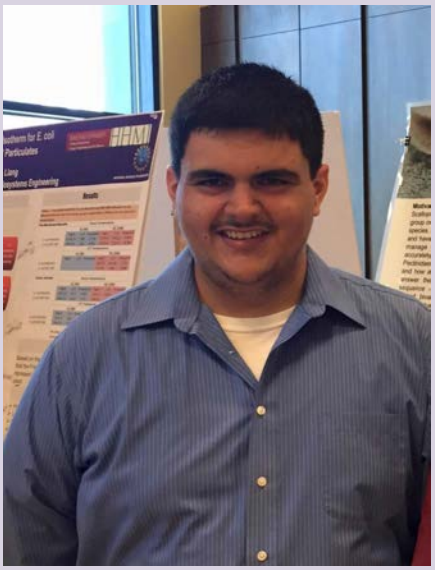
Kirkwood also is a recipient of a National Science Foundation S-STEM grant that provides scholarship funds and STEM programming for students with a 3.0 GPA or higher. Kirkwood IINPIRE LSAMP shares resources and programming with this grant to leverage efforts aimed at URM STEM student success.

Kirkwood
COMMUNITY COLLEGE

Iowa's Experimental Program to Stimulate Competitive Research (EPSCoR)

Iowa NSF EPSCoR provides support for key research areas at Iowa's Regents institutions, while establishing partnerships with the state's community colleges, private colleges, school districts, government agencies and industries. Iowa NSF EPSCoR has increased the participation of underrepresented groups in STEM fields through education and training. Iowa NSF EPSCoR provides undergraduate research opportunities and collaborates with other summer REU programs on campus.

Featured Scholar



Elias DeHaro
Mechanical & Aerospace Engineering
Iowa State University

Elias De Hara transferred from Kirkwood Community College and is studying mechanical and aerospace engineering at Iowa State University. As the first in his family to graduate high school and attend college, Elias is determined to attain a bachelors degree. During the summer of 2015, he conducted research at the Advanced Materials Processing Lab at Iowa State University. His research focused on the type of materials needed to withstand space travel. Additionally, he became a National Community College Aerospace Scholar through a NASA program. This has allowed him the opportunity to learn even more about space travel and upcoming missions. He uses his family, heritage and the desire to contribute to research as his main motivators to succeed in aerospace engineering.

Featured Scholar

Mateya Cleveland
Health Sciences
Little Priest Tribal College

Mateya Cleveland is a sophomore at Little Priest Tribal College majoring in Health Science, and has made the Dean's List every semester she has attended. She is an enrolled member of the Winnebago Tribe of Nebraska and upon completing her Associate of Science degree, plans to transfer to a 4-year college and pursue a health-related field such as Nursing, Paramedics, or as an X-ray Technician.

Little Priest Tribal College

Little Priest Tribal College (LPTC) is located in Winnebago, Nebraska. LPTC's Fall 2014 enrollment was 116 including 14 URM STEM students.

"Thanks to this program, my research interests have become reality via the funding and support given to me by this program"

In the early phases of IINSPIRE LSAMP, LPTC has focused efforts on classroom based research opportunities for their students. An example of this is of GPS mapping of recent sightings of mountain lions within the Winnebago community and literature research on mountain lions. Field trips were also made to a zoo and other habitats including nature centers. The students then gave a presentation to the Nebraska Academy of Sciences and the college's end of semester showcase for the community. From this foundation LPTC proposes to add formal and extended research experiences for students. Due to the nature of LPTC, students experience intensive one-on-one mentoring from all faculty and staff. LPTC has small class sizes, and deep relationships with students tied to tribal heritage and culture.

LITTLE PRIEST TRIBAL COLLEGE
"BE STRONG AND EDUCATE MY CHILDREN"

Science Education Resource Center (SERC) at Carleton College

The Science Education Resource Center (SERC) is a grant-funded office at Carleton College, founded to improve education in the Earth sciences and beyond. The center has engaged participants from more than 1,000 institutions of higher education, as well as K-12 curriculum developers and teachers, to create one of the world's largest collections of pedagogic resources. SERC has developed expertise with faculty learning communities linked to web-based spaces and demonstrated that sharing models for program structure with the community results in more successful programs.

SERC collaborates with Grinnell College and other HHMI grantees to share effective practices, institutional stories and supporting materials. Areas include: Increasing Persistence of Students in STEM (particular emphasis on students from underrepresented groups), Developing Inquiry Skills, Fostering Integrative or Interdisciplinary Learning, and Fostering Institutional Change.

SERC and IINSPIRE LSAMP have partnered to offer workshops for faculty and staff on evidence-based pedagogy relevant to student experience models. Workshop participants actively collaborate across institutions, creating materials, and building community capacity and connections. Working together, IINSPIRE and SERC collect, share and disseminate pedagogy resources via a web platform linked to the project.

LSAMP IINSPIRE PROGRAM

Luther College

Luther College is a private, liberal arts and sciences college in Decorah, Iowa. Luther's Fall 2014 undergraduate enrollment was 2,326 including 11 underrepresented minority (URM) STEM students.

Impacts

IINSPIRE LSAMP at Luther has focused on recruitment of URM to Luther, particularly those interested in STEM majors. Through these efforts, they have recruited 3-4 additional URM STEM students per year to the college and have intentionally involved these students in collaborative research projects with STEM faculty. This research has led to presentations at regional, national, and international research colloquia (including one at Oxford University, UK). Luther has provided undergraduate research experiences to 8 students over the past 3 years through IINSPIRE LSAMP funding; of these students, one did research at EICC's Nahant Marsh through the Alliance and 2 have graduated in STEM majors.

Student Experience and Leveraging

Luther's student experience emphasizes a scaffolding of experiences that begins in high school and continues through to graduation from Luther. This program includes: 1) Summer Science Seminars (partner: Office of Admissions). This is a six-day program for rising high school seniors that exposes them to a college lab and allows them to visualize themselves in such an environment upon graduation from high school. 2) College Science Enrichment Program (partner: Howard Hughes Medical Institute (HHMI) grant). This is a Ten-day pre-matriculation bridge program for incoming first-year STEM students. The program emphasizes laboratory and mathematical skills to encourage success in introductory STEM courses. It builds cohorts of students for support and study groups. 3) Research Internships I, II, and III (partner IINSPIRE LSAMP). Research experiences are available to high achieving students following their freshman year and build increasingly technical skills as the students progress to graduation. Professional research presentations are encouraged at regional and national conferences and supported by IINSPIRE LSAMP.

Throughout the entire experience, the TRIO achievement Program and Student Academic Support Center provide support to students towards URM STEM student success.

LUTHER COLLEGE

"They take time to get to know what you are doing and what your goals are and point you in the right direction. They are like using bumpers while bowling."

Center for Biorenewable Chemicals (CBiRC)

The Center for Biorenewable Chemicals (CBiRC) was founded in 2008 as an NSF Engineering Research Center focused on advanced manufacturing for sustainable biobased chemicals. CBiRC is housed in a $32 million research and teaching laboratory building that offers bench-scale biomass research facilities for fuels, chemicals, and energy. The building also features one-of-a-kind Biorenewables Education Labs. CBiRC provides undergraduate research opportunities and collaborates with other summer REU programs on campus.

Featured Scholar

Loren Rosas
Biology
Luther College

Loren Rosas is a senior at Luther College studying biology. He has participated in IINSPIRE LSAMP-funded undergraduate research at Nahant Marsh through Eastern Iowa Community College during his time at home over the summer.

LSAMP inspire PROGRAM

Featured Scholar

Edson deOliveira
Biology
Nebraska Wesleyan University

Edson deOliveira, a biology major at Nebraska Wesleyan University was awarded a Boren scholarship and with the assistance of IINSPIRE LSAMP, he has been conducting research in Rio de Janeiro, Brazil since September 2015 studying the Hantavirus. He is collaborating with Nebraska Wesleyan University faculty member Dr. Terry McGinn and Brazilian researcher Dr. Marcelo Weksler to detect this virus utilizing viral genome sequencing techniques on rodent populations. The goal of this research is to develop a rapid detection technique for the Hantavirus in potential outbreak situations. Through the assistance of IINSPIRE LSAMP, he has cultivated a diverse skillset and is one step closer to achieving his goal of becoming a cultural and medical ambassador working in the area of global health and infectious disease

Nebraska Wesleyan University

Nebraska Wesleyan University (NWU) is a private, liberal arts and sciences university in Lincoln, Nebraska. NWU's Fall 2014 undergraduate enrollment was 1,803 which included 7 URM STEM students.

> **"It has taught me how to collaborate well with others and to work independently in a research lab"**

Impacts
Summer research experiences on campus targeting and supporting LSAMP-eligible students have led to achievements beyond NWU for some of their IINSPIRE LSAMP students. One participant received the National Borne Scholarship for research and study in Brazil, where part of his experience involved research with an NWU faculty member on sabbatical. Another participated in the University of Nebraska Medical Center's "Summer Medical & Dental Education Program." Another student – who had begun her NWU enrollment with the HHMI SEA-PHAGES section of introductory biology assisted by NWU internal funds – went on to present her work at the national symposium in Virginia, and later was accepted into Nebraska's NIH-supported pipeline to biomedical research (the INBRE program conducted by the University Medical Center).

Student Experience and Leveraging
The NWU IINSPIRE LSAMP student experience capitalizes on opportunities for students of color in STEM to build identity and grow from meaningful out of class experiences as members of the science community. IINSPIRE LSAMP participants take part in student panels about science for NWU admissions events, they visit local middle school classrooms to share their enthusiasm for science, they mentor younger students entering NWU as part of the IINSPIRE LSAMP Summer Bridge Program, and they provide insight for others in monthly academic success workshops for science. Threaded throughout this model are opportunities to conduct undergraduate research and present research results regionally and nationally through IINSPIRE LSAMP. The success of this model stems from the dedication of the NWU IINSPIRE LSAMP core campus team. Above all, this model follows NWU's insistence on developing the academic and personal potential of each of its students.

NEBRASKA WESLEYAN UNIVERSITY

Institutional Development Award Program (IDeA) Networks of Biomedical Research Excellence (INBRE)

NWU is part of the Institutional Development Award Program (IDeA) Networks of Biomedical Research Excellence (INBRE) program in Nebraska. Supported by a $17.2 million National Institutes of Health grant, the program provides students with two years of research experience at nationally recognized research institutions. Students are required to present their work at a research conference all while gaining the necessary skill sets needed for graduate school.

University of Iowa

The University of Iowa is a public, research university (R1) located in Iowa City, Iowa. Fall 2014 undergraduate enrollment was 22,354 including 463 underrepresented minority (URM) students.

Impacts

Undergraduate research for IINSPIRE eligible students has provided students with opportunities to learn and grow as STEM scholars, participate as a member of a research team, and deliver research presentations both locally and nationally. The University of Iowa has provided IINSPIRE LSAMP stipends to 25 students participating in undergraduate research over the past 3 years; of these students, 9 have graduated with STEM degrees.

Student Experience and Leveraging

The University of Iowa's student experience leverages the Iowa Biosciences Academic (IBA). Through this partnership, IINSPIRE students have access to hands-on research opportunities that earn competitive wages, a faculty mentor, professional development workshops, career counseling, free tutoring (as needed) and a strong community of students, staff, and faculty that value diversity in the Biosciences. The IBA mission is to identify and train academically talented undergraduate underrepresented students with aspirations for a research career that involves a PhD in STEM areas. The partnership with IINSPIRE focuses primarily on the transition of students from the community colleges into the University of Iowa who aspire to do STEM related research. Leveraging the efforts and resources of IBA will augment the success of IINSPIRE LSAMP at the University of Iowa

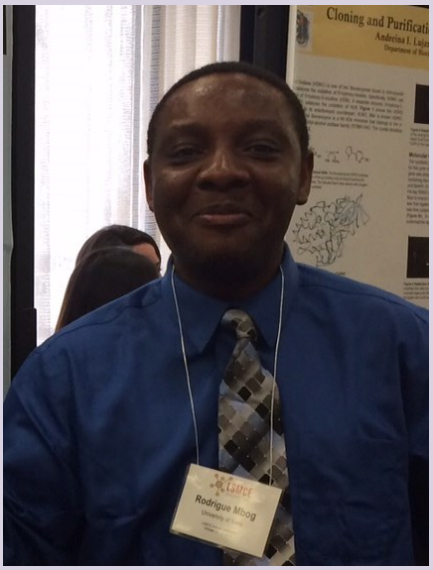
Other University of Iowa partners in this effort are the Center for Diversity and Enrichment (CDE) and the Iowa Center for Research by Undergraduates (ICRU). CDE is the umbrella office for the TRiO Student Support Services program, the TRiO Upward Bound program and the University of Iowa's Academic Support Services for URM students. The ICRU hosts bi-annual undergraduate research festivals which provide an opportunity for undergraduate researchers to present their work. These partners will work with IINSPIRE LSAMP co-leaders and students towards URM STEM student success.

THE UNIVERSITY OF IOWA

Sloan Center for Exemplary Mentoring

In 2014, the University of Iowa was awarded a three-year, $1.2 million grant from the Alfred P. Sloan Foundation to establish one of only five University Centers of Exemplary Mentoring (UCEM) in the nation. The centers are located at universities with proven records of educating underrepresented minority graduate students in STEM disciplines. Planned UCEM activities at the University of Iowa include: increased recruitment and outreach efforts; expanded mentoring programs for minority scholars; and development of year-round seminars, workshops, and social events to provide professional development opportunities to minority students.

Featured Scholar



Rodrigue Mbog
Neurobiology
University of Iowa

Rodrigue Mbog, a senior in neurobiology at the University of Iowa and a transfer student from Des Moines Area Community College, has participated in the IINSPIRE LSAMP program for 3 years. He is currently working with other UI IINSPIRE LSAMP students to create a student organization for STEM majors interested in research. Rodrigue presented research posters at both the 2014 and 2015 Louis Stokes Midwest Center of Excellence Conferences. He plans to attend graduate school and/or medical school, with the goal of getting an MD/PhD dual degree, or a PhD in biophysics or neurobiology.

LSAMP inspire PROGRAM

Featured Scholar

Jose Lopez
Biology
University of Northern Iowa

Jose Lopez is a junior at the University of Northern Iowa (UNI) studying biology. He is originally from Guanajuato Mexico and was brought to the United States at the age of five. He comes from a very humble family, and has lived all over Iowa attending more than 9 schools. He has always been fascinated by Biology and curious about everything. He was initially inspired by a High School science teacher to become a teacher, but has since decided to become a biologist. Jose had done IINSPIRE LSAMP-funded undergraduate research through the Summer Undergraduate Research Program (SURP) at UNI. His research project involved the Analysis of Ipomoea (morning glory) Margin, with faculty mentor, Dr. Julie Kang. His current goal is to become a professor and conduct his own research.

University of Northern Iowa

The University of Northern Iowa (UNI) is a public 4-year institution located in Cedar Falls, IA. UNI's Fall 2014 undergraduate enrollment was 10,142 including 103 URM STEM students.

Impacts
UNI has embedded their IINSPIRE LSAMP campus activities into the menu of activities supported by existing university infrastructure. This infrastructure includes units ranging from the Admissions Office in the Division of Student Affairs, to the Academic Learning Center in the Division of Academic Affairs, which provides both academic and other support services to IINSPIRE LSAMP students. This approach builds towards sustainability of IINSPIRE efforts and facilitates coordinated services and programming to support URM STEM success. UNI has provided IINSPIRE LSAMP stipends to 13 students in years 2-4. Of these students, 6 have graduated with STEM degrees.

Student Experience and Leveraging
UNI's student experience model requires students to attend one-on-one meetings with an advisor in the Academic Learning Center once per month, spend at least one hour with an assigned academic advisor or tutor for every credit hour of a STEM courses they are taking, and participate in professional and career development activities, ranging from preparation for the GRE, MCAT, and OAT (Optometry Admission Test) professional exams, writing and critiquing resumes, mock interviews, and visiting two graduate schools. UNI has found these interventions and support services to be highly effective in increasing student success.

UNI's IINSPIRE LSAMP student experience model leans heavily on activities that target URM students in TRiO programs, the STEM bridge program, the Jump Start Program, Upward Bound, and community colleges for recruitment and ongoing support. The model also leverages resources from the Iowa NSF EPSCoR project, especially to support the undergraduate research and URM STEM professional development and training objectives.

Iowa Governor's STEM Advisory Council

The Iowa Governor's STEM Advisory Council is a statewide STEM network that connects resources and people dedicated to building a strong STEM education foundation for all Iowans. It coordinates a variety of STEM initiatives, conferences, activities, and events with educational and community partners through six regional hubs. Alliance institutions are the hubs for three regions. Many partner institutions with IINSPIRE LSAMP work closely with the Iowa Governor's STEM Initiative. The council is committed to increasing STEM interest and achievement, including minority student STEM graduation rates in Iowa.

Upper Iowa University

Upper Iowa University (UIU), is a private, not-for-profit comprehensive university. UIU has a traditional, residential campus in Fayette, Iowa, and 19 -campus educational centers in the United States. In addition, UIU has educational centers in Hong Kong and Malaysia. UIU Fall 2014 undergraduate enrollment (Fayette Campus) was 1,024 including 24 underrepresented minority (URM) STEM students.

Impacts

UIU IINSPIRE LSAMP students have participated in NSF Research Experiences for Undergraduates (REU) programs, and have presented their own work at UIU Annual Student Research Showcases, Louis Stokes Midwest Center of Excellence (LSMCE) regional conferences, the Iowa Geographic Information Council 2013 Conference, and National Conference on Undergraduate Research (NCUR) 2013. Of the UIU LSAMP scholars, 100% have been retained. Of the seven LSAMP participants to date, four have graduated (two African-American men, with BS degrees in Environmental Science; one Hispanic man, with a BS in Mathematics-Information Technology; one African-American woman, BS in Biology). Seventy-five percent of graduates (3 of 4) have applied to graduate school in STEM. Eight new LSAMP participants have been identified in the Fall of 2015.

"I can email my professor or graduate student (mentor) whenever I have questions about research or grad school "

Student Experience and Leveraging

UIU's student experience model is focused around the faculty-student mentoring relationship. Key components include an early move-in family orientation, STEM-specific first year seminar classes, and a student portfolio of milestones and assessments focused on academic and professional development of IINSPIRE LSAMP students. Dr. Katherine McCarville received the first annual Excellence in Mentoring award at the IINSPIRE LSAMP Annual Conference in 2013. Additionally, several UIU faculty have attended IINSPIRE LSAMP professional development and 6 UIU faculty have mentored IINSPIRE LSAMP research scholars, thus increasing UIU's capacity to assist URM STEM students in achieving their educational and career goals.

UPPER IOWA UNIVERSITY
Established in 1857

Featured Scholar

Joseph Alanis
Mathematics
Upper Iowa University

Joseph Alanis is a graduate of Upper Iowa University and currently works as a Mathematics teacher at La Joya Independent School District in Texas. He is also enrolled in Harvard University of Graduate School of Education working to receive a masters in Mathematics Teaching (online).

LSAMP inspire PROGRAM

Featured Scholar

Isiah (David) Nieland
Biochemistry
Wartburg College

David Nieland graduated in May 2015 from Wartburg College with a degree in biochemistry. He participated in the IINSPIRE @Wartburg Program for 2 years and assisted the campus director with promotion and recruitment activities. He is currently pursing a graduate degree n biochemistry and molecular chemistry at Georgetown University.

Wartburg College

Wartburg College is a private, liberal arts and sciences college in Waverly, Iowa. Wartburg's Fall 2014 undergraduate enrollment was 1,614 including 40 URM STEM students.

Impacts
Wartburg College has focused its efforts on retention of URM STEM students due to high attrition rates in STEM majors. This is being accomplished through a new pre-orientation program as well as STEM faculty and peer mentoring. The STEM pre-orientation program includes community building, career and academic sessions, as well as an orientation to campus resources and introductions to STEM faculty. Early indications show that students felt more connected to campus and to each other after participating in this program. Following this pre-orientation, Wartburg continues to work with IINSPIRE students through professional workshops and events that build community with IINSPIRE LSAMP students. Wartburg has provided IINSPIRE LSAMP stipends to 15 students. Of these students, 4 have graduated in a STEM major.

Student Experience and Leveraging
Wartburg IINSPIRE LSAMP partners with a "Generation Orange" program designed to help first-generation students succeed. This program is funded through the Council of Independent Colleges' Wal-Mart College Success Program. Wartburg also supports a Director for Student Diversity Programs. This office develops and promotes multi-cultural programming and activities that build community and support URM student success.

Institutional, Industrial & Governmental Collaborators

- Accumold
- Ames Laboratory (U.S. DOE)
- Association of Universities for Research in Astronomy (AURA)
- Biological Materials and Processes Research Experience for Undergraduates (BioMAP)
- CBiRC NSF Engineering Research Center for Biorenewable Chemicals
- City of Moline, Illinois, Department of Public Works, Water Division
- City of Rock Island, Illinois
- EarthView Environmental
- Emerson Process Management, Fisher Controls Division
- GeneSeek
- Howard Hughes Medical Institute (HHMI)
- Iowa Center for Research by Undergraduates at the University of Iowa (ICRU)
- Iowa Experimental Program to Stimulate Competitive Research (Iowa EPSCoR)
- Iowa Governor's STEM Advisory Council
- Iowa Latino/a Initiative
- Lincoln Public Schools
- Microscale Sensing Actuation and Imaging Program (MoSAIc)
- Nahant Marsh Education Center
- Novel Chemical Solutions
- Rockwell Collins
- Science Education Resource Center (SERC) at Carlton College
- Southeast Nebraska Area Health Education Center (AHEC) at Doane College's School of Graduate and Professional Studies
- SROP - UI Summer Research Opportunities Program
- Summer Program for Interdisciplinary Research and Education- Emerging Interface Technologies (SPIRE-EIT)
- Sustainable Production and Distribution of Bioenergy for the Central USA
- University of Chicago, IL
- Vermeer

Community College Partnering

The establishment and strengthening of partnerships between community colleges and four-year institutions has been a key impact of the IINSPIRE LSAMP Alliance. Regional partnerships in the alliance involving community colleges have shown significant potential to improve institutional practices and STEM pathways for underrepresented minority (URM) students. For example, there has been joint programming among Hawkeye Community College, Wartburg College, and the University of Northern Iowa; among Des Moines Area Community College, Iowa Valley Community College District, and Iowa State University; and between Kirkwood Community College and the University of Iowa. All three public state universities have partnership programs with Iowa community colleges that engage students at their transfer institution before they intend to transfer. The overall strategy for transfer partnerships is to engage community college students with faculty, staff, and programs early and often while they are still at the community college. These points of engagement help students feel connected to their transfer institution, ensure students are taking classes that transfer into their anticipated major, and help to ease the transition from a 2-year to 4-year institution. The IINSPIRE LSAMP Alliance has initiated and facilitated a variety of programs focused on serving URM STEM community college students.

REU Preparation Workshop

Alliance community college leaders have organized and directed a Research Experiences for Undergraduates (REU) Preparation Workshop each of the last two years to help community college students understand, apply to, and prepare for undergraduate research experiences. This is a yearly workshop that introduces students to REU requirements, applications, and resources and guides students through the application process. Presenters have included faculty from ISU who manage REU programs as well as other presenters with expertise in resumes, personal statements, and REU recruitment processes. The workshop has been hosted by Kirkwood Community College and Des Moines Area Community College and attended by community college students from across the alliance.

ISU Howard Hughes Medical Institute (HHMI) Community College Program

The Iowa State University HHMI Project developed a program for community college students to visit ISU to work in faculty research laboratories. The eight-week summer program, which started in 2012, selects twelve URM students from Iowa Valley Community College District's Marshalltown Campus and Des Moines Area Community College who are leaning towards science or engineering bachelor's degrees. Students participate in math and science workshops and visit local industries. In addition, students are advised on careers, resume writing, university study skills, writing laboratory reports, community service, and leadership. IINSPIRE LSAMP partnered with the HHMI Project to provide staff support and administrative assistance in the development and implementation of program elements.

Research Innovation in Science Enrichment University Program (RISE-UP)

The Research Innovation in Science Enrichment University Program (RISE-UP) is a new IINSPIRE LSAMP-supported program at Iowa State University that builds on successful bridge and REU program practices within the alliance, including the ISU HHMI Community College Program. RISE-UP is a summer research and experiential learning program for minority community college students. Students participate in professional development activities that prepare them for transfer to baccalaureate degree programs in STEM while working alongside faculty on research activities. RISE-UP was first offered in summer 2015 with URM students from Des Moines Area Community College. Ongoing efforts are underway to grow the program to include students from other alliance community colleges.

STEM Seminars

Community colleges in the alliance held seminars throughout the academic year to introduce students to STEM career opportunities, promote resources for transfer, discuss internship/REU opportunities, and inform students about STEM majors and other information such as scholarships. The seminars also provided students time to interact with peers, form informal STEM learning communities, and network and build relationships with faculty. Faculty and staff from four-year institutions are guest speakers at these seminars.

ISU Multicultural Transfer Student in STEM Learning Community

The Multicultural Transfer Student in STEM Learning Community (M-STEM) is open to all multicultural transfer students in a STEM major who are new to Iowa State and interested in connecting with others in STEM fields. Students take part in a second-year success course designed to make connections with future STEM careers. They also participate in STEM career development events and job shadowing. This program grew out of interest expressed by IINSPIRE LSAMP URM students to have a URM STEM community once they transferred to ISU.

Annual Conference

> **"I have benefited from the IINSPIRE LSAMP program because I was able to attend the annual conferences and also other conferences"**

The IINSPIRE LSAMP Alliance convenes an annual conference hosted by one of the alliance colleges or universities. Three annual conferences have been held and highlights are given below. Faculty, staff, and undergraduate students are honored for their achievements at an awards session. Recipients of the Excellence in Service and Excellence in Mentoring awards are nominated by their peers. Students are presented monetary awards for best posters. The conference program offers sessions for students as well as faculty and staff.

IINSPIRE LSAMP 2012-'13 Annual Conference
Crossing the Bridge to Student Success in STEM
February 8, 2013 at Iowa State University

Keynote Speaker:
Adina Sterling, *Assistant Professor of Strategy, Washington University's Olin Business School.*
Stokes Award for Outstanding Service
Adin Mann, Emerson Process Management
Outstanding Mentor Award for Faculty/Staff
Kata McCarville, Upper Iowa University
Research Poster Awards
1st: Diane Fru, Iowa State University
2nd: Alexander Lodge, University of Iowa
3rd: Margaret Shirley, Iowa State University
Experiential Poster Awards
1st: Nicole Bradley, Iowa State University
2nd: Christopher Purches, Upper Iowa University
Student Choice Award
Gary Batres, Doane College

IINSPIRE LSAMP 2013-'14 Annual Conference
Building Community for Student Success in STEM
November 8, 2013 at Hawkeye Community College

Keynote Speaker:
Aurelio Curbelo,
Director of the Multicultural Programs ,
College of Agriculture & Life Sciences,
Iowa State University
Stokes Award for Outstanding Service
Jim Swartz, Grinnell College
Outstanding Mentor Award for Faculty/Staff
Katrina Williams, Iowa State University
Outstanding Mentor Award for Students
Esdras Murillo, Des Moines Area Community College
Jermaine Johnson, Iowa State University
Research Poster Awards
1st: Queenster Nartey, Grinnell College
2nd: Norma Granados, Marshalltown Community College
3rd: Crystal Jones, Iowa State University
Experiential Poster Awards
1st: Edgardo Diaz, Iowa State University
2nd: Hayley Vaughn, Upper Iowa University
3rd: Mary Nyaema, University of Iowa
Student Choice Award
Esdras Murillo, Iowa State University

IINSPIRE LSAMP 2014-'15 Annual Conference
Driving Discovery & Student Success in STEM
November 2-3, 2014 at Des Moines Area Community College

Keynote Speaker:
Dr. Raychelle Burks, *Postdoctoral Research Associate, Doane College*
Dr. Ruth Jones, *NASA/Marshall Space Flight Center*
Dr. Dara Norman, *Research Associate, National Optical Astronomy Observatory*
Stokes Award for Outstanding Service
Sharmin Sikich, Doane College
Outstanding Mentor Award for Faculty/Staff
Brian Ritter, Eastern Iowa Community College District
Outstanding Mentor Award for Students
Nathalie Fuentes, Iowa State University
Research Poster Awards
1st: Callie Espanto, University of Iowa
2nd: Mariama Carter, Iowa State University
3rd: Crystal Jones, Iowa State University
Experiential Poster Awards
1st: Erik Zorilla, Upper Iowa University
2nd: Michael Tingle, Des Moines Area Community College
3rd: Revay Stewart, Des Moines Area Community College
Student Choice Award
Brittnie Dotson,
University of Northern Iowa

IINSPIRE LSAMP Impact Data

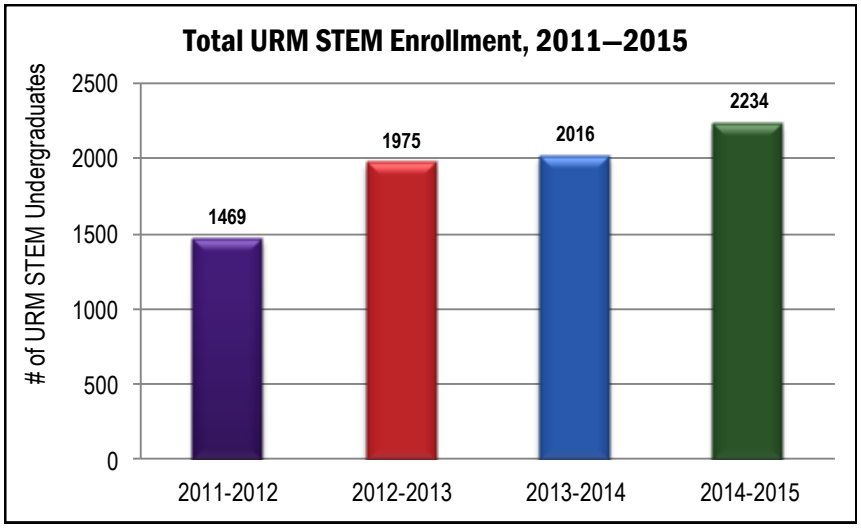


Figure 2. IINSPIRE LSAMP Total URM STEM Enrollment, 2011-15.

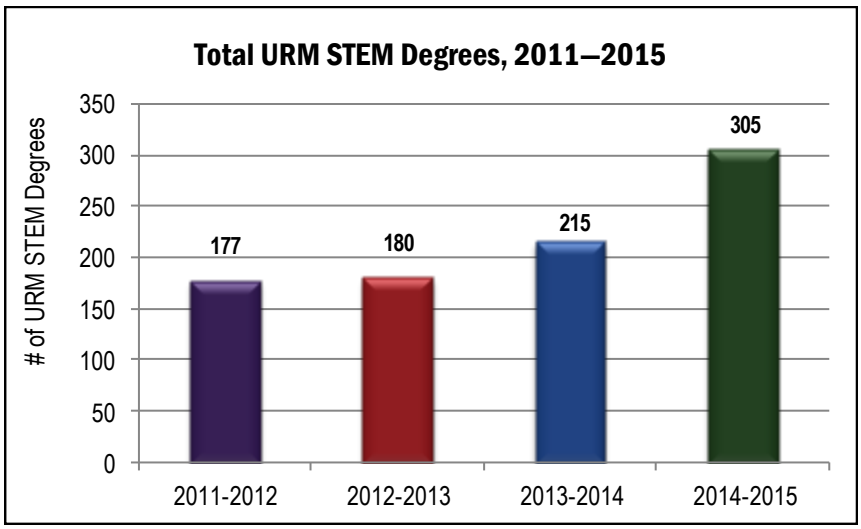


Figure 3. IINSPIRE LSAMP Total URM STEM Degrees, 2011-15.

Figures 2 and 3 above show the total number of URM students enrolled in STEM and receiving bachelor's degrees in STEM, respectively, in the alliance. The number of STEM bachelor's degrees granted to underrepresented groups (by race/ethnicity) in the alliance is shown in Figure 1 in the Executive Summary. The number of direct student participants in the alliance is shown in Table 1 in the Project Overview.

IINSPIRE LSAMP focused its 2014-15 (year 4) annual evaluation on student impacts. The external evaluator, Dr. Mariko Chang, and the internal evaluator, Dr. Mary Darrow, collected both qualitative and quantitative data from which to assess the effect of the program from the perspectives of campus directors and students. Based on interviews with campus directors and various data, Dr. Chang concluded: "The project has made significant progress in its ability to evaluate alliance, institutional, and student impacts moving forward."

Dr. Chang reported that programs and activities undertaken by the alliance appear to be positively received by students and are likely to increase the retention and graduation of URM students in STEM. Interviews with campus directors indicated that pro gram activities are increasing student interest in STEM fields and careers, fostering increase confidence by students to seek new skills and academic opportunities to enhance their STEM learning experiences, and providing the social and academic support and role models to enhance persistence toward a bachelor's degree in STEM. Specific student impacts cited include:

- Summer bridge/transition programs help students feel more comfortable on campus, foster a sense of community among students, and facilitate personal connections.
- Student participation in the alliance annual conference is a key source of motivation for students, helps them connect to other students from underrepresented groups, and provides role models that encourage students to continue in STEM fields.
- Research experiences help students engage in STEM, provide a sense of empowerment, and encourage interest in graduate school.
- Personal connections (with other students, the campus director, and other institutional partners) keep students engaged with the program.

IINSPIRE LSAMP Impact Data (cont.)

"Governors and education policy leaders have been working to strengthen science, technology, engineering, and mathematics (STEM) education throughout the states. STEM education boosts the competitive edge and innovative capacity of states and regions, which sustain economic growth. The immediate goals are twofold: Increase the proficiency of all students in STEM and grow the number of students who pursue STEM careers and advanced studies." [3]

Dr. Darrow developed and administered a new IINSPIRE Student Engagement Survey to ask students about conference participation, networking, and other activities. There were 95 responses (67% of those surveyed). Selected statistics include:

- 81% of research interns completed a research poster.
- Of those, 36% presented at the IINSPIRE Annual Conference, 12% presented at LSMCE, and 17% presented at another regional or national conference.
- 14% made an oral presentation at a regional or national conference.
- 91% of research interns said they had adequate mentoring in their research experience.
- 58% said that they had made between 1-4 professional connections through IINSPIRE LSAMP.

IINSPIRE LSAMP STEM INDICATORS OF IMPACT, 2011-15

209 Type I students in Years 1-4 (received stipends)

55 (27%) started their studies in a community college

8 (<1%) have dropped out

45 (22%) have graduated with a bachelor's degree in STEM

Of those who have graduated *(based on known information)*:

16 (36%) are enrolled in a STEM graduate program

13 (29%) are employed in the STEM workforce

Economic Impacts

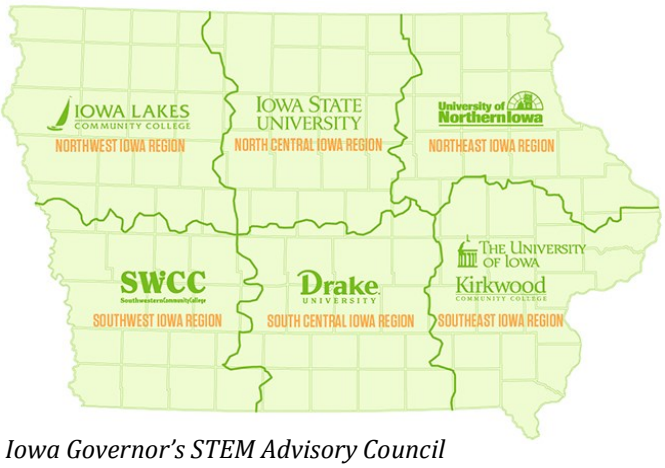
The economic impact of STEM education is the subject of numerous reports and initiatives by national, state, and governmental organizations, some of which are highlighted in the report.

The Iowa Governor's STEM Council motivated Iowa's STEM Initiative based on:

- STEM workers drive our nation's innovation and competitiveness and are central to our economic vitality.
- Over the past 10 years, growth in STEM jobs was three times as fast as growth in non-STEM related jobs.
- A critical talent gap in STEM exists.
- National goals, including expanding the number of students who pursue STEM careers, expanding the STEM-capable workforce, increasing women and minority participation in all STEM areas; and increasing STEM literacy for all.

Iowa's plan to grow the STEM workforce is built on a network across the state through six regional STEM hubs. These hubs promote STEM education and economic development, set and enact STEM-related action plans, identify scalable STEM projects, and deliver and grow STEM across the state. IINSPIRE LSAMP members are actively involved in these regional STEM hubs**.** This involvement contributes to workforce development in the state by supporting students' learning and skill development even before they get to college. For example, the regional hubs connect education and business to increase student interest and ability in STEM. The hubs host STEM festivals, where families engage in hands-on STEM activities offered by formal and informal K-12 educators, community colleges, businesses, and economic development organizations.

Iowa State University promotes economic growth in Iowa in a number of ways. The university provides business and technical assistance to existing companies, supports the creation of new companies, helps attract new companies and entrepreneurs to Iowa, creates intellectual property and helps move research ideas to the market, and contributes to workforce and entrepreneurial development. [5] The university's value proposition related to economic development is providing students with the technical, analytical, problem-solving, communications, and social responsibility skills required in today's workplace. Moreover, a diverse student body leads to a wide array of perspectives, capabilities, and ideas that enrich the learning environment.



Iowa Governor's STEM Advisory Council Regional STEM Hubs

ISU promotes economic growth in Iowa through its research and technology transfer, conducting basic research which is at the foundation of many innovations in the marketplace, and collaborating with companies on their specific research and development initiatives to help them introduce new products and services. The ISU Research Park is a 230-acre development just south of campus with more than 500,000 square feet of building space. Companies work with faculty and graduate students on research, tapping into and recruiting the graduate and undergraduate student talent pool and accessing university facilities. Engineering and technology firms and bioscience firms comprise the largest proportion of companies, reflecting the STEM strengths of the university.

Iowa State also collaborates with both private and public sector partners across the state on economic development. The public state universities all report annually to the state's Board of Regents about economic development.

IINSPIRE LSAMP is directly contributing to economic development, innovation, and prosperity in the Midwest by increasing the number and diversity of students majoring in STEM fields and pursuing STEM careers and advanced studies.

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Acknowledgments

The Iowa Illinois Nebraska LSAMP Alliance acknowledges the NSF LSAMP program directors, A. James Hicks, Tasha Inniss, and Martha James, for their leadership and guidance.

This report would not have been possible without the contributions of the IINSPIRE LSAMP campus directors, and we owe them our deep appreciation for all that they do on behalf of the alliance and their students. In addition, thank you to all IINSPIRE LSAMP colleagues and students for your outstanding work. We also appreciate the leadership provided by the IINSPIRE LSAMP Governing Board members as well as the co-PI's, Raynard Kington (Grinnell College), Kim Linduska (DMACC), Al Martyn (LPTC), and Frederik Ohles (NWU). We also acknowledge various support provided by our internal and external partners.

Special thanks are extended to the following individuals for their help in compiling, writing, editing, and designing the Impact Report.

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NATIONAL SCIENCE FOUNDATION
Louis Stokes Alliance for Minority Participation

Grant No HRD-1102461, August 2011-2016
This material is based upon work supported by the National Science Foundation under Grant No HRD-1102461. Any opinions, findings, and conclusions or recommendations expressed in this materials are those of the authors and do not necessarily reflect the view of the National Science Foundation.

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