STEM CONNECT

Southeast COMMUNITY COLLEGE

Western Nebraska Community College

NSF

2025

FINAL REPORT

This work was supported by the U.S. National Science Foundation through the S-STEM program under NSF DUE-1930211.

Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Design by **Augustyn Editing** | Photos on cover and pages 5, 12, 14 and 16 by **University Communication**

“STEM CONNECT was a better investment than many other programs I was part of because of how well the leaders impacted and affected the students in the program. It’s not a random commitment — they help students through multiple aspects of their education and college careers. Some programs have a regular meeting but no interaction outside of that. STEM CONNECT helped me through every aspect of my education — meeting classmates, advisors, faculty on campus, companies outside the university, and having support for financial aid, as well as support for my coursework as a whole.”

RONIT GANDHI

STEM CONNECT
FINAL REPORT

STEM Career Opportunities in Nebraska: Networks, Experiential-learning and Computational Thinking was made possible by a generous grant from the U.S. National Science Foundation (NSF). STEM CONNECT, as it is known, is a partnership among the University of Nebraska–Lincoln (UNL), Southeast Community College (SCC) and Western Nebraska Community College (WNCC) that offers scholarships and effective curricular and co-curricular activities that support students to academic success and degree attainment in science, technology, engineering and mathematics (STEM).

STEM CONNECT is funded by NSF's S-STEM program (refer to page 5). S-STEM is a Congressionally authorized program whose goal is to help maintain the global competitiveness of the U.S. by helping grow a well-educated STEM workforce. Because low-income students face special barriers to college access and success, Congress restricted the program to supporting academically talented low-income students.

At UNL, eligibility was restricted to students majoring in computer science, computer engineering, mathematics or software engineering or STEM CONNECT Scholars transferring from a community college partner. Because Nebraska community colleges do not specify majors for students in their academic transfer programs, SCC and WNCC accepted applications from any student whose academic program was focused on a STEM discipline. As part of the partnership, the UNL team guaranteed a STEM CONNECT scholarship to any student who joined the program at SCC or WNCC and transferred to UNL in good academic standing, intending to major in a STEM discipline.

At UNL, the principal investigators (PIs) for the grant are Jim Lewis, Aaron Douglas professor of mathematics; Brittany Duncan, Ross McCollum associate professor of computer science; Amy Goodburn, professor of English and senior associate vice chancellor and dean of undergraduate education; Petronela Radu, Leland J. and Dorothy H. Olson professor and chair of the Department of Mathematics; and Wendy Smith, Willa Cather research professor of mathematics and director of the Center for Science, Mathematics and Computer Education (CSMCE). Sally Ahrens served as project coordinator at UNL for the first two years of the grant; Rachel Funk filled that role for the past four years.

At SCC, STEM CONNECT has been led by Sandeep Holay, chair of the Mathematics Department at the time of the proposal; Carolee Ritter, dean of the Arts and Sciences Division; Misty Wehling, biology instructor; and David Reynolds, a physics and engineering instructor. Barbara Keating was the project coordinator at SCC for two years; Jodi Hoffman has served in that role for the past four years.

At WNCC, William Spurgeon led work on the proposal and then turned the grant over to Scott Schaub, Erandi Gunapala, Bill Loring and Nancy Resseguie. Schaub left WNCC in 2023, and Gunapala took over the lead role at WNCC.

Initially, STEM CONNECT Scholars were eligible for up to an $8,000 per year scholarship depending on their financial need as determined by the Free Application for Federal Student Aid (FAFSA). During the 2022–23 academic year, the PIs noted that many STEM CONNECT Scholars had significant financial need, even after receiving an $8,000 scholarship. The PIs sought and received permission from NSF to increase the maximum scholarship to $10,000 for the last two years of the grant.

The S-STEM solicitation states that "financial aid alone cannot increase retention and graduation in STEM" and expects grants to implement curricular and co-curricular activities that support students in the program. On each campus, STEM CONNECT offered seminars that brought in speakers who discussed topics such as succeeding in college, research and internship opportunities and STEM workforce opportunities (refer to page 5).

Each Scholar had a faculty mentor. By the second year of the grant at UNL, the more advanced STEM CONNECT Scholars were hired as peer mentors. The grant also offered tutors for math and computer science courses, especially when several Scholars took the same course.

The STEM CONNECT proposal was written in Spring 2019, awarded in Summer 2019 and officially began Oct. 1, 2019. The first cohort of Scholars began in Spring 2020, with 10 at UNL, six at SCC and six at WNCC. Consistent with the project's plan to recruit students near the start of their collegiate career, 17 were in their first year of college and five were second-year students. For Fall

2020, there were 15 new Scholars at UNL, 11 at SCC and four at WNCC. Starting in 2021, because of STEM CONNECT's emphasis on supporting students who transfer to UNL from a community college partner, recruitment at UNL was primarily designed to replace students who dropped out of the program.

Because most new Scholars at UNL in Fall 2021 were recent high school graduates, two STEM CONNECT seminars were offered, one for the continuing Scholars who began in Spring 2021 and a second seminar based on UNL's Husker Power curriculum. Husker Power introduced Scholars to available campus supports and activities and included explorations of personal identity and motivation, strategies for experiencing failure and getting outside one's comfort zone.

As the STEM CONNECT grant draws to a close, it is clear that STEM CONNECT has had a significant impact on the Scholars it supported. For example, at UNL there are 42 STEM CONNECT graduates with a composite GPA of 3.629. Of the graduates, two have won NSF Graduate Research Fellowships. Eleven Scholars are still actively pursuing their degrees at UNL with two scheduled to graduate in Fall 2025 and one in Spring 2026. The others are recent transfers from SCC or WNCC.

Pay it forward

As STEM CONNECT Scholars began to graduate, it became clear that graduates were interested in staying connected to STEM CONNECT. In particular, alumni wanted to participate in panels sharing advice about making the most of one's college experience, finding jobs and their experiences in the STEM workforce or graduate school. The first panel in Spring 2024, featuring Caleb Marcoux, Brandon Ramos and Abigail Seibel, received positive feedback, so another panel was held in Spring 2025. This time it was a joint UNL-SCC panel and featured Santiago Giraldo (pictured top right), Michael Sanders, Dennis Startsev and Hadley Susie. The graduates emphasized the importance of building connections through internships and research. When it came to their current jobs, panelists shared tips for money management and their job responsibilities to give undergraduates a preview of life after college. Susie reminded Scholars to have a balanced approach to college: "Be there to study and learn, but also be there to have fun."

NSF S-STEM program

NSF's S-STEM (Scholarships in Science, Technology, Engineering, and Mathematics) program was established in response to the American Competitiveness and Workforce Improvement Act of 1998, to meet the national need for a globally competitive STEM workforce. The program uses H-1B visa application fees to fund scholarships for American college students pursuing a degree in a STEM discipline. To boost economic mobility, the act specified that the scholarships should support academically promising low-income students. Recipients must be U.S. citizens, permanent residents, nationals or refugees as defined by the Immigration and Nationality Act.

Seminar topics

Over the years, a variety of different speakers and activities were presented at STEM CONNECT seminars. At UNL, talks included speakers from Google, NASA, Sandia National Laboratory and Oak Ridge National Laboratory. Eric Eager, who earned his Ph.D. in mathematics at UNL, discussed how he used his training as an applied mathematician to solve quantitative problems for collegiate and National Football League teams. Other presentations included an industry panel and a panel of STEM CONNECT alumni reflecting on their undergraduate education. In addition to seminars held on campus, field trips were held to local businesses including Duncan Aviation, Hudl and Monolith. Refer to the SCC and WNCC sidebars on page 6 for information on their seminars and activities.

Southeast Community College

The NSF-sponsored STEM CONNECT grant at Southeast Community College (joint with UNL and WNCC) concluded Aug. 31, 2025. During the six-year period of this grant, SCC awarded scholarships to STEM-intending students and offered its Scholars over 70 seminars, which included talks given by the STEM faculty at various institutions as well as industry professionals. Industry tours, career workshops and networking activities with the Scholars from the other institutions also were offered.

The grant funded the development of four new Computer Science courses and three new Math courses and provided limited funding for the development of the curriculum for the new Data Science program, as well as funding for the SCC faculty to learn about UNL's Online Education Resources (OER).

The scholarship recipients included students from the academic transfer program (who showed interest in pursuing degrees in mathematics, computer science, physics, engineering and biotech); the CIT program; and the Energy Generation program. Among the recipients of these scholarships, 27 transferred to UNL to pursue four-year degrees (15 of them graduated with an associate degree), and another 26 graduated. Seventeen are continuing their education at SCC.

One key aspect of the SCC program was mentoring. STEM CONNECT Scholars received individual mentoring from Sandeep Holay, Misty Wehling and David Reynolds. Several of SCC's Scholars attended local and national S-STEM meetings, such as the NEBMATYC Conference at the SCC campus and the S-STEM Scholars and PI Meeting held in Chicago (refer to page 15).

Escape room activities

Feedback from Scholars indicated interest in having more opportunities to interact with peers during seminars. In response, Rachel Funk, UNL's STEM CONNECT project coordinator, designed an escape-room-like activity where teams of Scholars used mathematics and computer science knowledge to break into a briefcase. Feedback was quite positive, and the activity contributed to a sense of belonging in STEM. In later semesters, two Scholars who were peer mentors, Michael Sanders and Abbey Bowers, each developed and led a seminar "break-in" activity. Later, Funk and Sanders wrote an S-STEM REC blog about their activities: **https://sstemrec.aaas.org/blog/break-in-seminar-activities-to-break-down-barriers/**

Western Nebraska Community College

For Western Nebraska Community College, scholarship recipients included non-traditional students and students in the academic transfer program. Among the recipients, eight transferred to UNL, and another 15 transferred to other four-year colleges. The most recent cohort is continuing its education at WNCC.

As a part of STEM CONNECT, WNCC offered over 80 seminars on topics ranging from professional development and networking to various STEM-related challenges and opportunities. Scholars had the opportunity to learn from and interact with university researchers, scientists from national labs, industry professionals and entrepreneurs (some of whom were UNL and WNCC alumni). Scholars participated in tours to research facilities such as NIST, UNL labs, CSU SPUR (pictured below), engineering firms and local industries. All of these experiences led to 10 internships for STEM CONNECT Scholars at some of these facilities.

STEM CONNECT enabled some WNCC Scholars to attend academic and professional events across the country, such as the Consortium for Computing Sciences in Colleges, the NEBMATYC Conference, the PyCon US Conference and the Robotics Expo. Two Scholars were selected to attend the NSF S-STEM Scholars and PI Meeting in Illinois in November 2024. Some Scholars also joined field trips to Denver and Lincoln. These experiences reflected the program's commitment to broadening Scholars' exposure to STEM fields and fostering professional growth.

WNCC Scholars received individual mentoring from Scott Schaub, Erandi Gunapala and Nancy Resseguie. This mentorship included helping Scholars with their class schedules, career planning and internships. Two of the WNCC senior students (Elli Winkler and Kacey Fleenor) also provided peer mentoring through WNCC's tutoring center. Another component of the grant was curriculum development. During the grant period, WNCC faculty worked with UNL and SCC in developing Computer Science courses.

ABBEY BOWERS

For Lincoln, Nebraska, native Abbegail (Abbey) Bowers, a fascination with how the world works began early. “I was interested in why the world does what it does and how things change,” Bowers said. As a child, she would take things apart and put them back together in attempts to understand how the world worked. Her curiosity was encouraged by her “biggest advocate,” her dad, and strengthened after she won first prize at a science fair.

After graduating from Lincoln Southwest High School, Bowers attended SCC. She credits David Reynolds, an S-STEM co-PI at SCC, for encouraging her to apply to STEM CONNECT. “I thought it would be a great resource to help me succeed in my computer science and mathematics courses,” Bowers said.

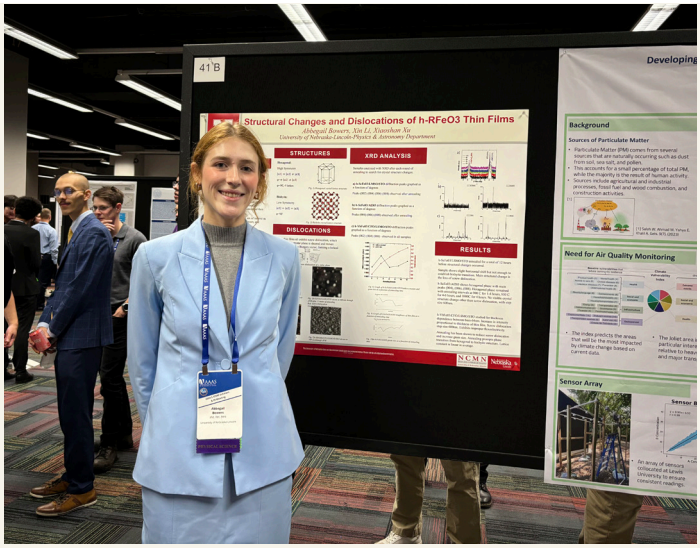
At SCC, Bowers participated in a multi-year geology research project, analyzing 150 different minerals for “The Wards National Science Mineralogy Kit.” Her work involved grinding, polishing and examining minerals under a microscope to create a spectral library. The project confirmed her interest in STEM research and helped land a research position at UNL after she transferred.

At UNL, Bowers majored in physics. At times, Bowers doubted her ability to succeed, saying it took her longer than her peers to understand, but, for Bowers, physics is a passion — one well worth the effort. “In my electrodynamics class my professor talked about physics like it’s a love story. It’s just amazing,” Bowers said.

Bowers stressed the importance of STEM CONNECT in facilitating her transition to UNL and feeling she belonged in physics. “We’re given resources and tutoring that other places don’t offer,” she said. “My mentors helped me find internship positions and helped me with imposter syndrome.”

In 2022–23, Bowers received UCARE funding for her work with Dr. Xiaoshan Xu in the FerroThinFilms laboratory. Her research, “Structural Changes of Annealed Scandium Ferric Oxides,” won an award at UNL’s 2023 Student Research Days. In Summer 2023 she joined a group of eight students selected for a Nebraska Center for Energy Sciences Research internship.

“Abbey’s passion for science is infectious. It’s clear that she’s a strong researcher, but beyond that she’s shown a passion for bringing other STEM students into the fold” said Dr. Rachel Funk, STEM CONNECT project coordinator.



Abbey Bowers was one of eight Scholars selected to attend the 2024 S-STEM Scholars and PI Meeting in Chicago. Bowers gave a presentation about her research during a Scholar poster session.

Bowers was a peer mentor for STEM CONNECT and said: “I supported students by maintaining constant communication with them throughout the semester. I also created a science-themed Escape Room involving different STEM applications — not only math, but engineering and chemistry. It forced students to work together to achieve the goal (to escape). It was very successful, and I like how the peers got to know each other more.”

When working with community college transfer students, Bowers stressed the importance of research in her journey — including starting early at the community college level. “The research I have done gave me a competitive edge in my classes, as I already have some idea of hands-on application. I also learned that building a fruitful network is important.”

Bowers discussed the importance of early exposure to research at the 2024 Nebraska Mathematical Association of Two-Year Colleges Conference (refer to page 15). During her presentation, Bowers gave an overview of her unique and varied research experiences to share a specific message to other community college students: that they can and should engage in research at the community college level.

Bowers graduated from UNL in December 2024. She started a Ph.D. program at Boise State University in Fall 2025. Her long-term goals center on research and discovery. “I’m not quite sure what I will do [as a career],” Bowers said, “all I know is I really enjoy working with big machines and doing research.”

EXPERIENTIAL LEARNING AT UNL

In 2021, UNL adopted an experiential learning graduation requirement for all students who began their UNL education in Fall 2022 or later. While several definitions of experiential learning exist, the core idea is that students learn by actively connecting what they are learning in the classroom to a real-world setting and reflecting on their experience. UNL's website describes nine types of experiential learning opportunities including education abroad, fieldwork, case or project-based learning, internship or research.

All but four of the 42 STEM CONNECT Scholars who graduated from UNL had entered UNL prior to Fall 2022 and thus were not required to have an experiential learning experience. Despite this difference, all 42 Scholars had a college experience that satisfied the new requirement.

Case for Project-Based Learning

Nebraska's School of Computing and most other majors in the College of Engineering were already offering courses that easily qualified as experiential learning under the case or project-based learning category, as well as internship courses that qualified for college credit. Indeed, since at least 2018–19, all students majoring in computer science, computer engineering or software engineering take a senior design course and work in teams to provide a solution to a problem "pitched" by a business or organization. The School of Computing concludes the academic year with a project showcase event where teams present their solutions. The best teams and students are recognized with awards — Platinum or Gold for teams and Rockstar awards for individuals. Twenty-one of the 42 STEM CONNECT graduates have taken two or more senior design courses as part of their computer science, computer engineering or software engineering major.

Kendry Arrazcaeta Duray (pictured on page 9, top right) and his team were especially successful with their project KYNE-TV ATSC 3.0 Virtual Channel and App, which responded to a pitch from Nebraska Public Media. The team customized the RUN3TV app to align with Nebraska Public Media's goals, including delivering a modern viewing experience, collecting viewership data and increasing engagement through local news and on-demand content. Duray and his team received one of two Platinum Team Awards in 2025. In addition, Duray was recognized with a Rockstar Award.

In 2023, Arielle Monson was product manager for THE IP IS IN, which won a Gold Award, and Monson won a Rockstar Award. Monson's team responded to a pitch from the UNMC Global Center for Health Security. The team built an online software application to provide timely and comprehensive consultative services for small and rural hospitals across the nation.

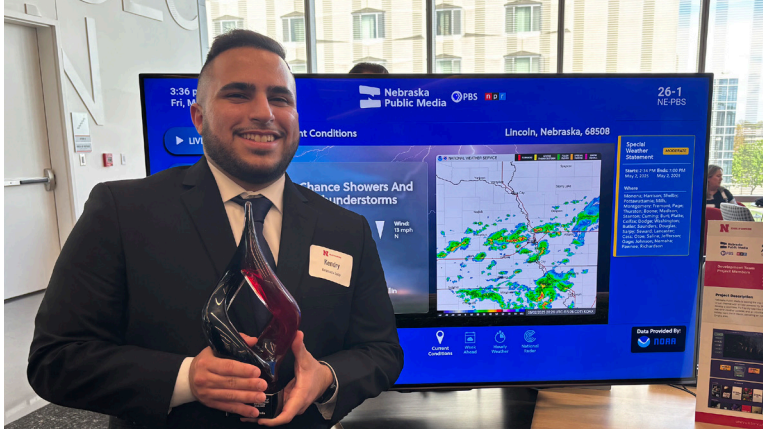
In the Department of Mathematics, most students satisfy the experiential learning requirement by taking Math 435: Math in the City. Development of the course was made possible by an NSF award (0941132) to STEM CONNECT co-PI Dr. Petronela Radu in 2009. The course is a research experience where teams of students model mathematical problems faced by a local industry or organization with the client. Eleven of the 42 graduates have taken Math 435. In 2022–23, Scholar Gabe Payson worked with a team (pictured on page 9, top left) to build a model for predicting home prices using methods from machine learning as a group. They concluded that their linear model was more accurate than the one used by the local assessor's office. In the next semester Payson improved this model, supported by funds from co-PI Dr. Brittany Duncan's grant (which she set aside for STEM CONNECT students). Payson gave a talk about his research at the April 2023 MATH125 conference, which included staff from the Lancaster County Assessor's Office.

Undergraduate Research

Slightly over half the 42 graduates participated in an undergraduate research experience (REU) to supplement their undergraduate coursework. Nine graduates were offered an REU in the NIMBUS Lab with Duncan. Ronit Gandhi and Dennis Startsev had the opportunity to work in Dr. Tomáš Helikar's biochemistry lab following a talk Helikar gave in a STEM CONNECT seminar. Makens Altidor and Raoul Nya participated in research funded by an NSF LSAMP grant.

Mathematics major Grace Farson used game theory as part of her research for the National Strategic Research Institute. Farson and six fellow students briefed U.S. Strategic Command leaders on their research.

Dakota Andrews, Abbey Bowers, Jack Murphy, Spencer



Schmidt and Cleve Young conducted undergraduate research under the guidance of individual professors. Evin Rasho and Hadley Susie had study abroad experiences, while Mohammed Sbai, Schmidt and Young had the opportunity to participate in summer REUs at other campuses. In addition to research experiences at UNL, Clara Perez conducted research at the University of Southern California.

Internships

At least 16 graduates had one or more internships with businesses or government agencies. Examples include:

- Benesch (Shawn Shonerd);
- Crete Carrier (Santiago Giraldo);
- Garmin (Alex Ventura);
- Hudl (Kendry Arrazcaeta Duray, John Delfosse, Michael Sanders and Matthew-Kurtis Thomas);
- Huffman Engineering (Clara Perez);
- Jentis (Evin Rasho);
- LiCOR (Philip Chohon);
- Myelin Solutions (Caleb Marcoux);
- Microsoft (Nicole Livingston);
- National Oceanic and Atmospheric Administration (Abigal Seibel);
- Nebraska Strategic Research Institute (Grace Farson);
- Nelnet (Kaleb Buck and Arielle Monson);
- Northrop Grumman (Alex Ventura); and
- Union Pacific (Abigail Seibel).

Senior Design Awards

Team Awards

Platinum Award: Kendry Arrazcaeta Duray, Squad Lead/Product Manager

Gold Award: Arielle Monson, Product Manager

People's Choice Award (second runner-up): Caleb Marcoux, Squad Lead/ Development Manager

People's Choice Award (second runner-up): Brandon Ramos, Squad Lead/Dev. Manager

Rockstar Awards

2025: Kendry Arrazcaeta Duray, Peter Morales, Alex Ventura

2024: Nicole Livingston, Matthew-Kurtis Thomas (Honorable Mention)

2023: Arielle Monson, Michael Sanders, Abigail Seibel, Kaleb Buck (honorable mention)

2022: Caleb Marcoux

– Nebraska School of Computing

The NIMBUS Lab

Co-PI Brittany Duncan is both an NSF CAREER (Faculty Early Career Development Program) Award winner and the co-director of the NIMBUS (Nebraska Intelligent Mobile Unmanned Systems) Lab. Dr. Duncan also has a special interest in supporting undergraduate research. Because of the NIMBUS Lab and Duncan's support, 13 STEM CONNECT Scholars have had the opportunity to conduct undergraduate research in computer science.

This total includes 10 STEM CONNECT Scholars who have graduated from UNL, two students who were at WNCC at the time they began working in the NIMBUS Lab and one who was a student at SCC.

The first opportunity was the result of a REU site award to Duncan and her colleagues in the NIMBUS Lab. While REU site awards normally select students from a national pool of applicants, in 2021 the NSF Directorate for Computer and Information Science and Engineering offered a special opportunity for REU Supplement awards to offer research opportunities for S-STEM Scholars. Duncan received funding for four additional participants in her REU: Santiago Giraldo, Brandon Ramos, Mohammed Sbai and Hadley Susie. Several of the students received a drone license through this REU. Giraldo, who participated after his first year at UNL, said, "The atmosphere is like no other lab. Even though I didn't have any experience, they were super welcoming. I was able to collaborate with others in the lab and make great connections." In Summer 2022, STEM CONNECT Scholars Joann Jones (WNCC), Midia Yousif (SCC) and John Delfosse (UNL) were able to work in the lab, followed by UNL students Jayden Carlon, Clara Perez and Abigail Seibel. STEM CONNECT PIs used grant funds to enable three additional students, Kendry Arrazcaeta Duray, Maya Wilson and Josiah Andrews, to have research experiences there.

RONIT GANDHI

Ronit Gandhi grew up in Omaha and graduated from Millard West High School. A first-generation student, Gandhi was in the first cohort of STEM CONNECT. In four years, he earned 160 credits with majors in biochemistry and mathematics and a minor in chemistry. But that only tells part of his story.

Gandhi's initial interest in STEM, like many Scholars, was homegrown. "I didn't always love math," said Gandhi. "Very early in my life, my parents set a strong precedent for the subject. Rather than playing the normal roadtrip games, my parents would print packets of math problems for my brother and me to do. Although it annoyed me at the time, I found myself developing a strong interest in identifying the hidden patterns in math. It wasn't long before I noticed these patterns applying to other sciences, such as Chemistry. By the time I was in high school, I was set on going to college for Chemistry and Math."

After one year of college, Gandhi became a research Scholar in the INBRE (IDeA Networks of Biomedical Research Excellence) program, studying pancreatic cancer in Dr. Michel Ouellette's lab at the University of Nebraska Medical Center (UNMC). Later, through STEM CONNECT, he met UNL's Dr. Tomáš Helikar and began working in his lab, first in the "wet lab" (i.e., working directly with chemicals and biological material) and then contributing to NSF-funded research on modeling the human immune system using Boolean models of previously discovered metabolic pathways. Gandhi said he was treated more like a Ph.D. student than an undergrad — designing experiments, coming in on his own time: "That sense of independence, it's game-changing."

Participation in the Department of Mathematics' Directed Reading program led to an honors thesis in mathematical biology advised by biology professor Dr. Clay Cressler. His thesis used Markov chains to estimate gene flow and genetic drift. As an undergraduate, Gandhi gave talks about his research at various meetings including UNL Research Days, an INBRE conference in Nebraska, an IDeA Central Region Zoom Conference and the Mathematical Association of America's Mathfest 2022.

Gandhi worked as a tutor and learning assistant in math courses and created workshops through the Center for Transformative Teaching. He also served as president and treasurer of Pi Mu Epsilon, the mathematics honor society, and as an ambassador in the Department of Biochemistry.

Ronit Gandhi appreciated the variety of research experiences he had as an undergrad, including working in a "wet lab" (as shown here).

"I love the unexpected overlaps between fields," Gandhi said. "Early on, you are shown how chemistry matters in biology and math is the basis for physics, but you are rarely shown the interesting ones. Like using math to understand why cells are shaped the way they are or understanding how simple redox reactions create the batteries we use on a daily basis. I want to spend my life studying these overlaps."

Gandhi credited STEM CONNECT with helping him refine this interdisciplinary focus. "STEM CONNECT completely changed my life path," he said. "Studying math redefined my interests and helped me choose a path that fits me better — STEM CONNECT introduced me to a new field of science and showed me how to navigate it."

Gandhi, recognizing the value of mentorship in his own path, became a peer mentor for the STEM CONNECT program. "With my experience as both a mentee and mentor, I feel that I have grown so much through my time in the program," he added.

Gandhi is now pursuing a Ph.D. in biostatistics at UNMC with advisor Dr. Lynette Smith. He has used his mathematical modeling skills as a consultant for several projects at UNMC — using statistical models to improve ER turnaround times or to investigate patient responses to treatment at different Nebraskan hospitals. "I've kept busy," Gandhi said. "If I listed every project, I would be here for hours."

Gandhi's long-term goal is to work in the pharmaceutical industry. Looking back on his undergraduate education, Gandhi's advice is: "Take advantage of every opportunity that comes your way, even if it's outside your field. Despite my STEM majors, I ended up joining an advertising research grant for two years. That kind of branching out can open unexpected doors later."

IMPROVING STEM EDUCATION

A goal of NSF's S-STEM program is to improve the education of future STEM workers. As part of STEM CONNECT, leaders looked for opportunities to leverage curriculum improvements at the partnership institutions, both for the immediate benefit of Scholars during the life of the grant and for future STEM majors at UNL, SCC and WNCC. This report outlines three such efforts.

Nebraska Open Access Materials Workshop

For over a decade, UNL's Department of Mathematics has been developing and using free online resources for Precalculus, Calculus and Linear Algebra courses. As part of its partnership with SCC and WNCC, STEM CONNECT leaders at UNL reasoned that by sharing these resources with Nebraska's colleges, including community colleges, they could minimize the challenges STEM majors experience when transferring from a community college to a four-year college — while also helping lower the cost of college.

To support this effort, STEM CONNECT and UNL's math department hosted the Nebraska Open Access (NOA) Materials Online Workshop in July 2020. The online part of the workshop was made necessary by the COVID-19 pandemic. While the key audience was faculty and graduate students from UNL, SCC and WNCC, the workshop was open to educators from other Nebraska institutions. Participants included faculty from Central Community College, Metropolitan Community College, Northeast Community College and the University of Nebraska at Omaha (UNO). The workshop leaders were UNL faculty Nathan Wakefield and Joshua Brummer, as well as Karina Uhing, who had just completed her Ph.D. at UNL and accepted a position with UNO.

One goal of the workshop was to create an NOA Mathematics Community of Practice that would support efforts to develop and use open education resources (OER) at Nebraska institutions. The workshop included effective practices for active learning, innovative technology to support math instructors, data management to communicate the impact of OER and becoming a departmental change agent.

Following the workshop, faculty from WNCC explored the implementation of the NOA materials in College Algebra, and two faculty from SCC worked on using the NOA materials in College Algebra and Calculus I.

The 2024 Curriculum Development Retreat

In June 2024, STEM CONNECT organized a Curriculum Development Retreat with participants from UNL, SCC, and WNCC as well as Northeast Community College, Metropolitan Community College, Nebraska Indian Community College and the University of Nebraska at Kearney. The goals of the retreat were to discuss computing and mathematics curriculum and its transfer, as well as to support postsecondary faculty across Nebraska to form partnerships centered on developing shared course objectives for computing and mathematics (including data science). These goals were critical for transfer students who can face hurdles when trying to get credit for prior coursework or when faced with differing expectations of content covered in specific courses.

This retreat built on a multi-year effort to strengthen inter-institutional partnerships supporting transfer students. STEM CONNECT faculty Bill Loring (WNCC), David Reynolds (SCC), Brittany Duncan (UNL) and Leen-Kiat Soh (UNL) formed a faculty learning community to develop and revise introductory computer science courses that would transfer across their institutions. Loring, Reynolds and Duncan met biweekly for a year and a half to share ideas, while Soh focused on course revision at UNL and provided context on how UNL teaches computer science.

The success of their partnership led Loring and Reynolds to continue meeting to address challenges unique to their contexts. Conversations with former students showed that students who did not transfer to UNL needed support adapting to multiple programming languages (i.e., that they encountered in the workforce or at other universities). Through trial-and-error, Loring and Reynolds revised their courses using an "interleaving" approach (refer to example below), which allows students to compare languages on a frequent basis, making it easier to understand how different languages are formatted.

	Python	Java	C++
Topic 1	Week 1	Week 3	Week 6
Topic 2	Week 2	Week 4	Week 7
Topic 3	Week 3	Week 5	Week 8
⋮	⋮	⋮	⋮

Continued on page 12

From page 11

The retreat was led by Alisha Bevins, a recent Ph.D. and new professor of practice at UNL who was partially supported by STEM CONNECT during her graduate education. Bevins modeled the retreat after the process that the original group of faculty followed once they began meeting together. Organizers hoped that it would largely serve as a speed-line, which in real time took around a year to get up and running. Topics included creating common learning outcomes, assessment, classroom learning activities, transfer pathways, non-traditional instruction, retention and continuing the partnerships. Bevins is leading research efforts to report on this successful partnership between UNL, SCC and WNCC.

"The collaboration was like none I've experienced," said one attendee. The retreat worked to enforce one broad message: Transfer partnerships, even if tenuous in the past, can become positive. As another community college faculty attendee shared, "This has been a much friendlier transfer conversation with UNL [...] than I've experienced in the last 20 years."

Mathematics for Machine Learning and Data Science Workshop

STEM CONNECT overlapped with a period during which UNL was developing a data science major. In Spring 2024, STEM CONNECT co-PI Petronela Radu, who was also chair of the UNL Department of Mathematics, recognized that one of her postdocs, Animesh Biswas, had significant knowledge of the mathematics used in machine learning and data science. But he had just accepted a job at another institution. This transition led to a plan where STEM CONNECT and the Department of Mathematics would co-fund a workshop called Mathematics for Machine Learning and Data Science.

The workshop was offered to STEM CONNECT Scholars and to faculty and graduate students at UNL and SCC. For three weeks, Biswas offered the workshop each weekday, and participants offered feedback on how best to teach the topics — and what it would take to make the material accessible to a wider audience with less of a background in mathematics. Following the workshop, Biswas used the feedback to revise his curriculum materials and design a course that has since been offered several times at UNL.

Parts of this article were adapted from an article by Bevins, Duncan and Soh of the Nebraska School of Computing.

NSF PROSPECT

STEM CONNECT Co-PI Wendy Smith leverages lessons learned from STEM CONNECT to lead one of S-STEM's first research hub grants, studying how S-STEM scholarships and support systems help low-income community college and transfer students succeed. Funded by NSF, the PROSPECT S-STEM (Collaborative Research: Practices and Research on Student Pathways in Education for Community College and Transfer Students to STEM; DUE-2138084, 2138058, 2138120, 2138074, 2138066) grant has brought together over 20 geographically diverse institutions to share and improve transfer practices, including an emphasis on building thriving partnerships among associate-granting and bachelor's-granting institutions. All of the PROSPECT partners are involved in an S-STEM project entailing universities and community/technical colleges. Several STEM CONNECT faculty have been involved in PROSPECT, including Co-PI Brittany Duncan, senior personnel Leen-Kiat Soh and SCC PI Sandeep Holay. Other UNL faculty engaged with PROSPECT are Mindi Searls and Chris Varney.

PROSPECT participants and leaders met at the 2024 S-STEM Scholars and PI Meeting in Chicago.

CLEVE YOUNG

"It's fair to say that STEM CONNECT played an instrumental part in my ability to be in graduate school now," shared Cleve Young, currently a doctoral student in UNL's Department of Mathematics. Young said STEM CONNECT helped him connect with math professors Jim Lewis and Yvonne Lai, his undergraduate thesis advisor. Both were critical in supporting and encouraging Young.

Growing up, Young, a member of the Winnebago tribe, did not see himself as someone who would go to college. However, after several work accidents including falling through insulation on a roof and losing an ankle, it was the birth of his daughter, Hailey, that motivated Young to start college at Wayne State College at age 29. A College Algebra course rekindled his interest in mathematics and he transferred to UNL, a 90-minute commute from his home in Blair.

To afford college, Young supplemented his STEM CONNECT scholarship with several jobs like food delivery and shared housing with his brother. He also tutored for STEM CONNECT and worked as a math counselor, learning assistant and undergraduate teaching assistant for the math department.

Dennis Startsev, another STEM CONNECT graduate, said Young was "a great friend, great mentor and tutor. Cleve never hesitated to guide me through difficult proofs and served as my mentor in our advanced proof course."

Young pursued undergraduate research with Lai on several NSF-funded projects, including MODULE(S^2) and the Algebra Project grant. In Summer 2022, Young participated in a REU at Washington State University. While there, he met several Native American professors and began to consider graduate school as a way to create opportunities for other Native American students in mathematics.

Young was concerned with the cost of graduate school. Lewis and Lai urged Young to apply for an NSF Graduate Research Fellowship. Guided by several faculty in mathematics, Young became one of five UNL graduates to receive an NSF fellowship in 2023. The $37,000 fellowship has enabled Young to attend graduate school at UNL while financially supporting himself and Hailey.

"As the first in my family to attend graduate school, which would not have been possible without the support, motivation and purpose provided by those closest to me, it is perhaps the best opportunity to begin to change the narrative of our family and show that we are capable of greater things," Young shared.

PHOTO CREDIT: GRACE KOVAR

Now a graduate student, Young is part of the Department of Mathematics's Graduate Student Advisory Board, leading social events to build community among the graduate students. He also has worked with Professor Jack Jeffries organizing Math Circles for Nebraska high school students.

Young has established bridges connecting UNL to his Winnebago tribe with the help of Jeffrey Johnson, a high school math teacher from Winnebago Public Schools. Young shared, "It has been a truly life changing experience to come back to the tribe that was always accepting of me and to give back. Every time we go back and the students remember us from previous semesters or years, I gain confidence that between that and eventual visits to Math Day, students from Winnebago will soon be attending UNL, with at least part of the reason being our visits and mathematical activities."

For Young, STEM CONNECT's academic and extracurricular guidance was as impactful as the financial assistance: "I wouldn't be where I am today if it weren't for the incredible mentors and friends that I made in my journey."

Young advised future students to "not leave things on the table," to seek out and ask for opportunities. "No one is an island, and I would really recommend you don't try to be."

RESEARCHING HOW TO SUPPORT SCHOLARS

STEM CONNECT researchers conducted annual focus groups (Years 1-5) and in-depth interviews with select Scholars to identify the salient factors influencing Scholar persistence in STEM. One theme stood out: students' desire to belong. That sense of belonging — reinforced through a community built of leaders, mentors and Scholars — has been central to Scholar success.

Each Scholar in the program had an assigned STEM faculty mentor in addition to the support provided by project leaders and peer mentors. Research showed that mentors helped Scholars in the following areas.

Navigate key transitions in their collegiate experience:

- Examples include helping Scholars obtain transfer credit for courses and helping them adjust to proof-based mathematics courses.

Identify and obtain opportunities in research and industry:

- Mentors helped Scholars "get a foot in the door" by sharing or creating opportunities for Scholars to engage in research on campus or to connect with an industry mentor.

Develop a professional identity:

- Examples include supporting professional travel, inviting Scholars to panels, including students in research, and affirming their belonging in STEM.

Succeed academically and emotionally:

- Mentors also provided emotional and affective support for Scholars, in response to mental health concerns shared by Scholars.

As one Scholar shared, STEM CONNECT leaders "got me a tutor but also prioritized my mental health and made sure that I was getting into therapy. I think all those things together created a community unlike anything else in my college career."

Scholars appreciated having mentors to talk to who had similar experiences and goals as them. One said "having real-world experience helps, but he also likes the things that I like." Another shared how their mentor, who was also a woman, gave valuable feedback on how to navigate a male-dominated field: "[She] provided insight from her own experience to navigate the challenges that I faced along the way."

The project also encouraged Scholars to build a community with one another, reinforced by peer mentors and tutors. One Scholar said: "The financial support made it possible for me to focus more on school, alleviating worries about how I would pay for school, and allowing me to cut back on work. The support system [was] crucial to my success. I had a network of driven peers in similar classes and majors that I could turn to for help; not only were peer tutors helpful, but also having a connection with people who had taken the same professor and knew the hurdles I was facing made me feel like I belonged."

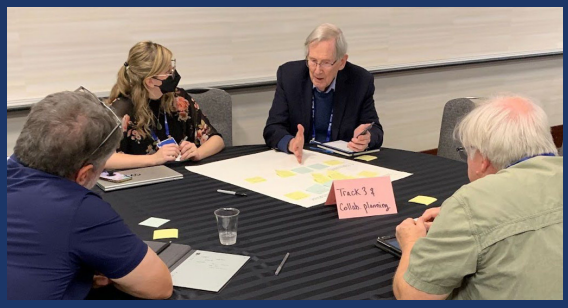
Project research also identified major hurdles faced by Scholars in pursuit of a degree. For example, Scholars, especially those who transferred from a community college, often accumulated more credit hours than needed for graduation. This resulted in additional financial strain and time to degree. STEM CONNECT tried to counteract this by emphasizing early degree planning and direct conversations about transfer pathways.

Publications

Funk, R., Goodburn, A., Gunapala, E., Holay, S., Lewis, J., & Smith, W. (2024, November). Fostering & Leveraging Connections to Support Scholars. 2024 S-STEM Scholars & PI Meeting. AAAS. Chicago, IL.

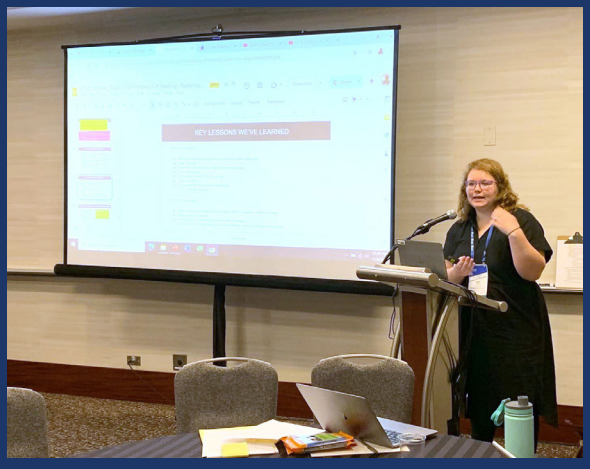
Funk, R., & Lewis, J., & Pai, L., & Cristobal, J. B., & Rader, B. (2024, June), Board 185: "Someone has Invested in Me to Do This": Supporting Low-Income Students to Persist in STEM Through a NSF S-STEM Grant. Poster paper presented at 2024 ASEE Annual Conference & Exposition, Portland, Oregon.

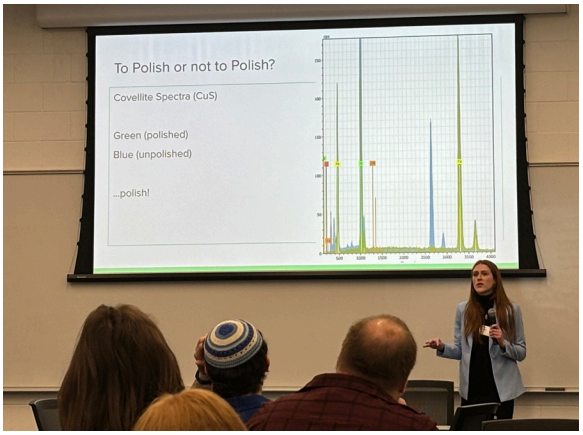
Funk, R., & Pai, L. M., & Cristobal, J. B. (2024, June), (WIP) Persistence in an S-STEM project: Understanding the Intersectional Experiences and Identities of Women in Computing. Paper presented at 2024 ASEE Annual Conference & Exposition, Portland, Oregon. 10.18260/1-2--46410



2024 S-STEM Scholars and PI Meeting in Chicago

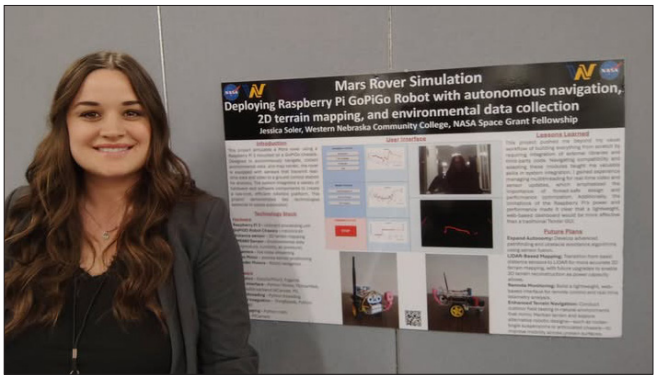
Eight STEM CONNECT Scholars were selected to attend the 2024 S-STEM Scholars and PI Meeting in Chicago. The Scholars represented each of the three partners, as well as a wide variety of disciplines. Scholars included two students from WNCC, one student from SCC and five students from UNL. Out of the five students from UNL, three were transfer Scholars from SCC and one was a transfer Scholar from WNCC. While there, Scholars participated in multiple professional development, including a career and graduate school fair. Scholar Abbey Bowers also gave a presentation about her research during a Scholar poster presentation session. Four faculty also attended the meeting to run a workshop, “Fostering and Leveraging Connections to Support Scholars” for other S-STEM PIs, based on lessons learned from STEM CONNECT (pictured below is presenter Rachel Funk and, above, Jim Lewis talks to attendees of the talk). Following the meeting, Scholars from UNL and SCC shared about their experiences and resources they gathered with other Scholars during a special joint seminar. *Unfortunately, due to a historic snow storm, STEM CONNECT faculty and Scholars from WNCC could not travel to the meeting.*





NEBMATYC Conference

The 2024 Nebraska Mathematical Association of Two-Year Colleges Conference was hosted by Southeast Community College in Lincoln. SCC PI Sandeep Holay organized a special session on STEM. STEM CONNECT Scholar Abbey Bowers (pictured above) gave a talk about the importance of early exposure to research. Afterward, STEM CONNECT students, faculty and staff from UNL, WNCC and SCC met for dinner, where UNL students who previously transferred from a community college offered advice about what to expect when transferring to UNL.



WNCC Scholars attend Boston Robotics Summit and Expo

WNCC Scholars learned about a world of opportunities beyond the Nebraska Panhandle in Spring 2025. Bill Loring and three WNCC STEM CONNECT Scholars, James Avera, Kacey Fleenor and Jessica Soler (pictured above), attended the Boston Robotics Summit and Expo. The Robotics Summit and Expo brings together more than 5,000 developers focused on building robots for aerospace and defense, healthcare, logistics, manufacturing and other markets. Students met and networked with professionals in the career area they were going into.

ABIGAIL SEIBEL

As a first-semester student, Abigail Seibel applied for a STEM CONNECT scholarship hoping to learn more about STEM in the university and to get connected to a mentor. Enter Brittany Duncan, co-director of the NIMBUS Lab (refer to page 9). They met over coffee and then walked around campus. Seibel surmised that Dr. Duncan took a keen interest in her because they had similar interest in water science and technology. Duncan's mentorship boosted Seibel's confidence in her pathway through STEM. In addition, Seibel was introduced to undergraduate research in the NIMBUS Lab, an opportunity that later resulted in Seibel being the team lead for her Senior Design Project.

Duncan also helped Seibel find other mentors including computer engineering professor, Jeff Falkinburg, who instilled a love for field programmable gate arrays, tiny circuits you can install software on. Seibel shared that both professors "allowed me to be bold, innovative, and to be continuously striving. In moments where I was stuck, I knew I had support and that my success was deeply cared about."

Seibel contacted Dr. Ellen Briggs, one of the authors of a paper Duncan had her read, and this led to an invitation to work at the University of Hawai'i one summer.

"Because of Dr. Duncan, I was exposed to what research labs are like, and what professionals expect in the real world. This gave me a huge advantage when looking for internships. I would have never known about the Hawai'i internship if I hadn't had a mentor who encouraged me to find community in other scientists and engineers."

Duncan said, "One of the most fulfilling moments in mentoring Abby was in chatting with her about options for internships and job opportunities. She was always self-motivated and clear on possible paths, but helping her to understand the impact of her decisions and the potential future benefits of certain choices was amazing."

Seibel credits her mentors for other opportunities such as a Machine Learning Internship with Union Pacific and an Ernest F. Hollings Scholarship from the National Oceanic and Atmospheric Administration (NOAA).

Seibel was inducted into UNL's Innocents Society, the Chancellor's senior honorary society whose

membership is based upon academic achievement, leadership and service. At her hooding ceremony, Seibel chose to share the stage with Duncan because "she wholeheartedly lives in the manner of an Innocent. She advocates for women in STEM, making sure that just because of gender, someone is not disqualified, and ensures that the brightest minds have a seat at the table."

Seibel graduated with a degree in computer engineering, She now works at ZTR as a software developer.

Seibel credits the power of programs like STEM CONNECT to demystify the STEM field and the careers one can pursue. The seminars and panels revealed to Seibel fields that she had never known.

Brittany Duncan (center) with Abby Seibel and other UNL students at the Innocents Society Hooding Ceremony.

BUILDING A COMMUNITY

STEM CONNECT has been much more than a scholarship program. On each campus, the STEM CONNECT seminar has helped build a community of Scholars who support one another. This article offers profiles of some of our Scholars.

Frederic Bekoo Minko

Frederic Bekoo Minko won what is known as the Green Card Lottery (the odds are one in 200 to 400) in 2018 and followed his brother who had moved to Lincoln the previous year. Bekoo Minko graduated from high school and earned some college credit in his native Cameroon. He was awarded a STEM CONNECT Scholarship and attended SCC for the 2020–21 academic year. Plans to attend UNL were put on hold when Bekoo Minko was he was offered an opportunity to join the U.S. Army Reserve and give back to his adopted country. Bekoo Minko returned to UNL for Fall 2022 and is pursuing a degree in electrical engineering. Civil war in Cameroon made it hard to obtain documentation of his high school diploma and college coursework, but his perseverance and help from several faculty and staff at UNL resolved those problems. Bekoo Minko credits Lincoln's Cameroonian community for motivating him to pursue his degree at UNL, and the STEM CONNECT leadership at both SCC and UNL with helping him transition back into academia. Bekoo Minko, who will graduate in December 2025, said "Hopefully in the future, even if I'm not rich, if I have $5,000, I'll help a student struggling to pay school fees. Somebody did that for me, why not do that for someone else?"

Joann Jones

Joann Jones was supported by STEM CONNECT at WNCC for only one year (2021–22) but the program has had a profound impact on her career. A non-traditional student, Jones balanced her studies with her responsibilities as a wife and mother. Jones praised her husband and children for supporting her and noted that her 12-year-old son was inspired by her dedication: He was inspired to apply to the STEM program at West Point Academy, and he spent a week in New York learning about STEM. Jones credits WNCC PIs Scott Schaub and Erandi Gunapala for mentoring her and encouraging her to continue her education after graduating from WNCC.

In Spring 2022, STEM CONNECT leaders at WNCC brought their Scholars to UNL for a visit where they met faculty from computer science and engineering. UNL co-PI Brittany Duncan invited Jones to return in Summer 2022 to participate in an undergraduate research experience in the NIMBUS Lab (refer to page 9). That experience developed her data analysis skills and sparked her interest in the field. In August 2022, Jones was hired by WNCC as an instructional technology coordinator, a position that was later upgraded to instructional technology specialist. Jones also has earned a certificate in data analytics at Colorado State University. Currently, Jones is finishing a master's degree in computer information systems with a concentration in data science at Bellevue University.

Cong Nguyen

Cong Nguyen was a college graduate and audit assistant in Vietnam before moving to the U.S. and Lincoln in 2020. A cousin advised Nguyen to pursue a degree in computer science and cybersecurity:

"I remember him telling me that no matter how AI evolves and replaces jobs, fields related to people's health and safety will always need human oversight. In cybersecurity, it's especially difficult to replace human expertise with AI — at least for now."

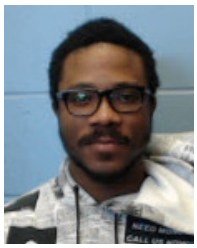
Nguyen went on to say "I have a big family that has supported me since the first day I moved to the U.S." Nguyen also credits Peter Morales, a STEM CONNECT Scholar who also attended SCC, for mutual support while they both pursued a computer science degree. They met in UNL's CSCE 156 and eventually took 10 courses together.

"Thanks to STEM CONNECT, I've had the chance to meet and become good friends with someone I can trust, work well with, and comfortably share my thoughts," he said. During his senior year, Nguyen worked as a TA for CSCE 156, offering an opportunity to help other students build a strong foundation so they can do well in future classes. Graduating with Distinction in May 2025, Nguyen is excited to continue his path into cybersecurity work.

Continued on Page 18

From Page 17

Raoul Nya



Raoul Nya was a STEM CONNECT Scholar at SCC who later transferred to UNL to study computer engineering. SCC then hired Nya as a peer tutor for STEM CONNECT Scholars taking mathematics and chemistry courses. "I guide them through challenging concepts and help them solve problems. I also help them build some study strategies and skills." But Nya's support extended beyond tutoring. As a transfer student, Nya recognized the barriers that transfer students often face. He said, "I help them understand the expectations of their new courses and the gaps that you need to bridge. I help them with that bridge." Nya found that in serving other Scholars he also was supporting his own personal growth: "My first language is French. When I first started, I struggled with how to communicate with students, how to transmit the knowledge that I have. Being a peer tutor has boosted my communication and leadership skills because I learned how to adapt to different learning needs."

Alan Ouderkirk

Alan Ouderkirk, a Scottsbluff, Nebraska native, and his twin brother, Adam, were part of the first cohort of WNCC Scholars. Ouderkirk described the WNCC STEM CONNECT community as small, but tight knit. The WNCC seminars helped Ouderkirk realize how expansive the reach of STEM was in the industry. "Technology is a big part of everything in STEM... granted, it's everywhere now. But I didn't realize how much technology was involved in other aspects of different careers," he said.

Ouderkirk always liked working on computers and playing video games. He was a "big problem solver," especially when helping his parents or grandmother fix something technical around the house. This problem-solving aspect of STEM drew him in, but the seminars broadened his horizon of how problem-solving could be.

As first-generation college students, Ouderkirk and his brother felt immense pride as they walked across the WNCC graduation stage together. After graduation, he worked as a computer analyst and help desk support at Regional West Medical Center in Scottsbluff. After two years, he took a telecom position working on the phone system, mobile devices and servers. Most recently, he joined the University of Nebraska Panhandle Research Extension and Education Center as an IT senior workstation support associate. In this role, he is back to working with computers on a college campus. In addition, he is taking courses to obtain different certifications for working with networks and security.

STEM CONNECT was pivotal to Ouderkirk's career path. Ouderkirk and other Scholars from rural backgrounds exemplify the need for reaching out to these communities. They need support to see themselves in STEM careers. "[STEM CONNECT] brings new connections, especially for rural students who may not know a lot of people in STEM. It opened doors for us. It offered opportunities and ideas," Ouderkirk said.

Along with financial support helping him pursue something he could not afford otherwise, the program was pivotal in opening the doors for him and other students from rural Nebraska.

Clara Perez

Clara Perez, a graduate of Omaha Burke High School, credits her father for always encouraging her to keep learning and constantly improving herself. "He taught me that just because others try to define what I can or can't do, doesn't make it true," Perez said. "That mindset helped me see my minority identities simply as part of my background, not a boundary to what I can achieve in STEM."

Perez began college as a software engineering major having been told prior experience wasn't necessary. She quickly realized most of her classmates had been coding for years. "As one of the few women, and the only Latina in the room, I began to doubt whether I belonged," she said. Perez felt lost until she had an appointment with Ann Koopman, then-advisor in the Nebraska School of Computing: "Ann took the time to truly listen. She helped me reframe my thinking: changing direction wasn't quitting."

Perez switched to computer science and eventually added a business minor, a decision she considers pivotal. "That knowledge helps me better understand the systems behind the industries I work in, and how business decisions influence everything from politics to personal finance," Perez said.

Through STEM CONNECT, Perez began to build a true sense of community. She attended an S-STEM Scholar Conference and felt part of a larger STEM community. "Although I'm introverted, I enjoyed connecting with other students from across the country, learning about their research, and exploring a new city," she said. "The conference helped me build friendships and allowed me to network with graduate programs, and even make an important connection at my dream school."

Perez gained hands-on experience through research with UCARE, McNair and the NIMBUS Lab, exploring everything from drones to data analytics. "What stood out the most was realizing how interdisciplinary computer science can be. It helped me see how user experience, cognitive processes, and data can come together to solve real problems," said Perez, who is featured on the cover of this final report along with Brandon Ramos.

Mentorship was a key piece of Perez's journey. She names Brittany Duncan and Husker Power's Lori Romano as

two of her biggest supporters: "Lori didn't come from a STEM background, but she validated my experiences as a first-generation student and helped me see my own progress and potential. Her mentorship was grounded in genuine care, and it left a lasting impact on both my confidence and personal development."

In her final semester, Perez joined a micro-internship to redevelop Huffman Engineering's website — despite never having built a full site before. The experience led to a summer internship and eventually, a full-time role. "Huffman Engineering has a supportive, growth-oriented community," she said. "Their tagline, making ideas work, perfectly reflects both what we do and why I've always been passionate about STEM."

Looking back, Perez says STEM CONNECT was a game-changer. "The program helped me earn my computer science degree, and inspired me to pursue a graduate program. Grants like STEM CONNECT support students and unlock their potential to create real-world impact. Continued funding for these programs is an investment in future innovators."

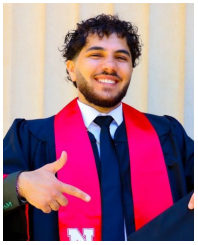
Brandon Ramos

Brandon Ramos, a native of Scottsbluff, Nebraska, found his first enjoyment of engineering while working with his grandfather, an engineer, learning about tools and mechanics and building with his hands. His grandfather "insisted on getting out there and figuring it out on your own," Ramos shared. Ramos participated in the UNK-UNL 2+2 program for his Bachelor of Science in computer engineering, spending his first two years at UNK and the final two at UNL, where he was a STEM CONNECT Scholar.

Ramos participated in research in the NIMBUS Lab, receiving mentorship in his STEM journey. For Ramos, mentorship is crucial in helping students stay and succeed in STEM. "Most people who drop out or switch to another major can succeed in STEM, but need a mentor," Ramos said. At UNK, Ramos mentored students when he served as an TA. Ramos recalled one student who came to him wanting to drop her Calculus 3 course. He was able to motivate her to give both the class and herself a chance. Because of his mentoring, she finished the course.

Ramos saw the value of a community like STEM CONNECT: "If one person is struggling in a course, then others who have taken the course should help out." In his final semester before graduation, Ramos found that he could "pay it forward" by helping Scholars with their computer science courses. He drew upon his own struggles and the support he would have wanted at the time. Ramos is now pursuing a Master of Science in computer engineering while working as a technical solution analyst at Oracle.

Evin Rasho



After graduating from Lincoln North Star High School, Evin Rasho attended SCC where he was awarded a STEM CONNECT Scholarship and then transferred to UNL where he graduated with Distinction and double majors in software engineering and data science. "STEM CONNECT helped me realize that there are a lot of things that I can do to make myself stand out," said Rasho, who spent one summer studying in Austria doing an internship with the software company Jentis. He also engaged in STEM education research and attended several professional conferences. He also made connections with the Asian Community and Cultural Center and served as a peer mentor for Yazidi youth. Rasho graduated from UNL in May 2025 and now works as a technical analyst at Cooper Nuclear Station.

In Summer 2023, Michael Sanders (right) took a trip to Boston and visited with fellows Scholar Mo Sbai, who was enjoying a summer research experience at Harvard. Sanders and Sbai are pictured with the statue of John Harvard, the founder of Harvard.

Michael Sanders

Michael Sanders grew up in North Omaha and graduated from Omaha Central High School. Sanders says that he was always interested in technology and that, in math and science classes, he always wanted to understand the "why" behind the processes he was learning. Sanders credits his football coach and high school math teacher, Bryan Calder, for helping him develop critical-thinking mentalities both in sports and classes and for helping Sanders and his classmates see that it was OK to make mistakes.

Continued on Page 20

From Page 19

At UNL, Sanders majored in computer science and was a member of the first cohort of STEM CONNECT Scholars that began meeting in Spring 2020. Among the benefits he found in STEM CONNECT was connecting with others who shared his interest in computer science. "STEM CONNECT gives the blueprint on how important community is and how beneficial it was for everyone involved," Sanders said.

He doesn't like to be restricted, so Sanders said he learns as much as he can about a variety of different subjects. Evidence of this approach to life is seen in Sanders' minor in art in addition to his degree in computer science and minor in mathematics.

In addition to his classwork, Sanders was also a senator in the Association of Students of the University of Nebraska and he was president of Brother2Brother, a student organization that connects minority men on campus and cultivates an environment that provides mutual support. He noted that he doesn't see many African Americans in the computer science field and that he wanted to be part of changing that. Sanders also had several internships including one at Hudl and another at Bose.

Starting in Fall 2022, Sanders served as a STEM CONNECT peer mentor until his graduation in December 2023. As part of this role, he created an escape room activity and led it for one STEM CONNECT seminar. Later, Sanders and Rachel Funk wrote an S-STEM REC blog about the activity (refer to page 6).

Sanders currently works as a mobile QA engineer at Bose.

Dennis Startsev

For Dennis Startsev, one STEM CONNECT seminar changed everything. A math major at the time, Startsev was inspired by Dr. Tomáš Helikar and his research on the human immune system. Helikar pitched different opportunities for students in his lab and afterward Startsev expressed his interest. He was able to work in Helikar's lab for two years as an undergraduate while adding biochemistry classes to his math coursework. Now he is a Ph.D. student in Helikar's lab, developing mathematically rigorous, biologically relevant models of human immune cells.

Startsev was born in Lincoln to Russian parents who were UNL students and small business owners. Shortly before Sept. 11, 2001, his parents returned home for a visit. They faced challenges renewing their green cards, which resulted in Startsev growing up in Russia. After high school, he took advantage of his U.S. citizenship and returned to Lincoln for college, following his sister who had returned a year earlier.

Startsev worked as a delivery driver and started college at SCC. In Fall 2020 he transferred to UNL. Startsev was interested in both mathematics and biology, but thought he needed to choose one as his major. "I believed that I was talented in mathematics, and it relied less on language. I chose mathematics," he said. The importance of English re-emerged when Startsev began taking proof-based math courses. He met with STEM CONNECT PI, Jim Lewis, who identified that a language barrier was the issue rather than Startsev's lack of mathematical understanding. Lewis arranged for another STEM CONNECT Scholar, Cleve Young, to be his math tutor. Startsev described Young as someone who "speaks math as fluently as most people speak English." Startsev stressed that this support helped him overcome language barriers.

> "I came to the U.S. with only $1,000 to my name. My sister agreed to let me stay in her apartment for a short period of time. Our parents couldn't help us financially, so we were on our own."
>
> Dennis Startsev

Beyond research and academics, Startsev cherished his time spent as a language TA at UNL and a mentor for STEM students at SCC. Startsev is not shy when it comes to crediting STEM CONNECT for where he is now: "The STEM CONNECT program at UNL has been the single most important influence on my growth as a scientist. Through its rich network of mentors, workshops and research opportunities, I discovered my passion for bioinformatics and biomathematics. The experience left me feeling grateful, motivated and genuinely excited about my future in STEM."

Alex Ventura

Alex Ventura, a computer engineering major, joined STEM CONNECT at UNL in Spring 2022 and graduated in Spring 2025 with a perfect GPA. Ventura worked as a learning assistant for lower-division computer science courses, as well as tutored for STEM CONNECT. Ventura said that what appealed to him about being a learning assistant was the ability to connect one-on-one with students. You get to "talk with students and help them out, similar to how learning assistants have helped you in the past," Ventura said. He successfully procured two internships as an undergraduate. The first internship with aerospace company Northrop Grumman resulted from participation in UNL's career fair. The following year he accepted an internship at Garmin, which turned into a full-time job offer upon graduation. Ventura said the most helpful component of STEM CONNECT was getting paired with his faculty mentor Dr. Jeff Falkinburg. Ventura valued the biweekly, one-on-one meetings with Falkinburg, who would share about his experiences both in academic and non-academic spaces. Learning more about Falkinburg's experiences helped him better understand his role in his internship at Northrop Grumman.

“Students need a program like STEM CONNECT that brings people of different interests, backgrounds and experiences together to open their mind to that diversity of problems. You cannot innovate technology to solve something you may not know exists.”

ABIGAIL SEIBEL

STEM CONNECT SCHOLARS

This list of Scholars, by institution, notes the students who were successful at that institution or are continuing their education as the grant ends.

University of Nebraska-Lincoln

Shahwan Alchomer
Makens Altidor
Teo Andrade
Dakota Andrews
Josiah Andrews
Lawand Anwer
Kendry Arrazcaeta Duray
Michael Bean
Frederic Bekoo Minko
Abbegail Bowers
Nataliya Brana
Kaleb Buck
Jayden Carlon
Philip Chohon
Eric Corrado
Byron Cruz
John Delfosse
Lucy DePooter
Grace Farson
Ronit Gandhi
Santiago Giraldo
Octavious Gonzalez
Nicole Livingston
Emmanuel Lopez Mateo
Caleb Marcoux
Arielle Monson
Peter Morales
Alexander Muenster
Jack Murphy
Cong Nguyen
Raoul Nya
Gabe Payson
Clara Perez
Long Pham
Brandon Ramos
Evin Rasho
Gideon Ray
Kaleb Reiser
Michael Sanders
Mohammed Sbai
Spencer Schmidt
Abigail Seibel
Ali Shlaibah
Shawn Shonerd
Sawyer Smith
Dennis Startsev
Hadley Susie
Matthew-Kurtis Thomas
Tu Tran
Alex Ventura
Maya Wilson
Cleve Young
Midia Yousif

Southeast Community College

Hana Adam
Kegan Akins
Makens Altidor
Noori Al Tameemi
Shahwan Alchomer
Bryan Bailon-Colindres
Frederic Bekoo Minko
James Berg
Kabir Bhakta
Harlie Blas
Jordan Blythe
Abbegail Bowers
Mavrik Bruns
Crishley DeLon Herrera
Dante Diaz-Lamas
Angeline Efouba Ateba
Demostin Ewougouo
Zach Foyt
Reme Funkey
Stacy Gallegos Garcia
Rayonna Gearhart
Ezra Gurney
Seth Hartig
Stephen Harwood
Nathan Herroon
Kali Ignace
Elsa Johnson
Hunter Johnson
George-Michael Kalogeras
Gedeon Kembe
Nori Khalaf
Benjamin Lahey
Tate Larson
David Leverett
Joyce Linka Takam Magne
Michaela Loebel
Kenfack Ledeufack Loic
Thomas Markussen
Jeremy Montoya
Peter Morales
Rudi Murphy
Phillipe Musau
Victoire Letissia Nana Noundou
Cong Nguyen
Anaelle Nimpa
Lionel Sebastien Noulawe
Raoul Nya
Long Pham
Nyamuoch Puok
James Ramsey
Evin Rasho
Gideon Ray
Kaleb Reiser
Gabriella Renteria
DeAnthony Rothwell
Susanne Rott
Mohammed Sbai
Daniel Silva Turro
Shawn Shonerd
Andrew Soliz
Matthew Thomas
Jared Thomas
Brittany Thompson
Tu Tran
Boston Workman
Julianna Yachimowicz
Midia Yousif

Western Nebraska Community College

Rosalinda Acevedo
Augustus Allred
Josiah Andrews
James Avera
Rachel Conner
Kacey Fleenor
Xayvian Gonzales
Octavious Gonzalez
Jace Heimerman
Rebekah Holtmeier
Jacob Jackson
Shelby James
Joann Jones
Ansonia McIntire
Talor Morava
Austin Neeley
Aidan Newberry
Jacob Nicholes
Owen Osmera
Adam Ouderkirk
Alan Ouderkirk
Gracey Perez
Shayla Ramirez
James Shelby
Nicolas Smith
Jessica Soler
Braeden Struempler
Matthew Tavenner
Kade Thunderbull
Sarah Trook
Maya Wilson
Elli Winkler

STEM CONNECT LEADERSHIP

University of Nebraska-Lincoln

Jim Lewis, Aaron Douglas Emeritus Professor of Mathematics
Brittany Duncan, Ross McCollum Associate Professor of Computer Science
Amy Goodburn, Professor of English, Senior Associate Vice Chancellor of Academic Affairs and Dean of Undergraduate Education
Petronela Radu, Leland J. and Dorothy H. Olson Professor and Chair of the Department of Mathematics
Wendy Smith, Willa Cather Research Professor of Mathematics and Director of the Center for Science, Mathematics and Computer Education (CSMCE)
Sally Ahrens, Project Coordinator (2019-2021), CSMCE
Rachel Funk, Project Coordinator (2021-2025), CSMCE
Allan Donsig, Professor of Mathematics
Leen-Kiat Soh, Professor of Computer Science
Bonita Sharif, Associate Professor of Computer Science

Southeast Community College

Sandeep Holay, Mathematics
Carolee Ritter, Dean of the Arts and Sciences Division
David Reynolds, Physics and Engineering
Misty Wehling, Biology
Barbara Keating, Project Coordinator (2019-2021)
Jodi Hoffman, Project Coordinator (2021-2025)

Western Nebraska Community College

Erandi Gunapala, Mathematics
Bill Loring, Information Technology
Nancy Resseguie, Mathematics
Scott Schaub, Physics
William Spurgeon, Information Technology

ResultED

John Sutton, Evaluator
Carla Sutton, Evaluator

Special Thanks

As we reflect on the six years of the STEM CONNECT grant, the Leadership Team at each campus wants to express our thanks to the many faculty and staff whose support helped make STEM CONNECT a success. We also offer our thanks to the speakers and panelists who shared their knowledge about STEM, college and the world of work after graduation. Finally, we thank our NSF Program Directors for their guidance.


Brittany Duncan


Rachel Funk


Amy Goodburn


Erandi Gunapala


Jodi Hoffman


Sandeep Holay


Jim Lewis


Bill Loring


Petronela Radu


Nancy Resseguie


David Reynolds


Wendy Smith


Misty Wehling

STEM CONNECT

Computer Science & Math

UNIVERSITY of NEBRASKA–LINCOLN

BY THE NUMBERS

$3.58M
NSF S-STEM grant award amount

14
Peer mentors

47
Faculty mentors

53
UNL Scholars

67
SCC Scholars

32
WNCC Scholars