Dear Science Bound Friends and Supporters:

It is truly an honor to be a part of the educational adventure our Science Bound students and scholars are on. They are proactive. They are committed. They are leaders. They are dreaming bold – and taking charge of their dreams through action.

Dream Bold, our 2022 – 2023 school year theme, ignited many students, families, and staff to take a new look at what is possible. In Lupita Nyong'o’s Oscar-winning speech, she said, "No matter where you're from, your dreams are valid." As our youth explore who they are and where they want to be, Science Bound is there, thanks to your support, empowering, and calling on these talented youth to Dream Bold. They are our future.

As we reflect upon the past year, we share this annual report with you. We have so much to celebrate because of each of you, our partners, teachers, students/scholars, families, and staff!

Milestones and gratitude from this past year:
- Hosted high school & ISU scholars/families on campus for our 1st ever "All District Honors Banquet"
- Our 2023 high school graduating class was the largest class to date (page 10)
  - 96% entered directly into a college or university after high school
  - Largest 1st-year class to enter ISU – 57 SB scholars; 4 accepted other scholarships
- 100% of the scholars completed summer ASTEM opportunities
- We hosted 276 scholars in summer ASTEM programs
  - 79 scholars participated in our residential programs on campus (page 9)
- 1st SB Saturday that included families on campus, more than 800 in attendance (page 15)
- A strong team of 8 full-time staff members, 3 graduate students/semester (page 16)
- New grant awards and partnerships – 2 National Science Foundation awards and 2 United States Department of Agriculture awards
- Social media reach (page 17)

"I Will" continue to encourage and empower our young people to Dream Bold, aim high, and achieve greatness. How are you dreaming bold?

Sincerely,
"The Iowa State University Science Bound program is nationally recognized for preparing young people in grades 8-12 for academic success in post secondary ASTEM fields. Strong partnerships with business and industry companies in the communities of Des Moines, Marshalltown, Denison and Osceola provide opportunities for nearly 500 young people annually to explore ASTEM careers. Science Bound truly exemplifies the land grant mission of Iowa State University."

Dr. Marlene Strathe
Emeritus Professor and Director
Science Bound Board President

DREAM BOLD

Science Bound, established in 1990, is Iowa State University’s pre-college through college program to increase the number of Iowa youth who pursue degrees and careers in the fields of agriculture, science, technology, engineering, and mathematics (ASTEM), as well as education. We engage middle and high school students from Denison, Des Moines, Marshalltown, and Osceola (Clarke County), Iowa. Students begin the nine-year program during the summer before eighth grade and continue through to college graduation.

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FOUNDATIONS

Science Bound extends an invitation to more than 125 eighth-graders each year, offering them an opportunity for personal growth, leadership development, and a solid foundation for their future. Once committed to Science Bound, students participate in the following key experiences:

MIDDLE SCHOOL

➤ New Family Meeting. Each district hosts a meeting for students and families to come together to learn about Science Bound and what the journey ahead would be if they join the program.

➤ Orientation. An initial gathering for all districts, where students connect and build community, as well as begin to develop their Science Bound identity.

➤ Algebra Champions (in the Des Moines district). A math program that teaches fundamental math concepts that students can use in coming years.

➤ After school meetings. Led by Science Bound teachers, these sessions foster peer and teacher support while working to complete the program requirements.

➤ Environmental Sciences & Goal Setting Retreat. A memorable experience where 8th-graders explore environmental science and set goals in partnership with the Des Moines Y Camp.

➤ “Nothing Less Than Success” Science Fair. Perhaps the most important component of the 8th-grade program. Students complete a research project following the scientific method and present their research to community and industry partners/judges.

➤ Reflective Essay. The final requirement for our 8th-graders is the completion of a 2-3 page essay, reflecting back on their experiences and how that has shaped their career interest.
FOUNDATIONS

Upon successful completion of the 8th-grade program, students are invited to “crossover” into the high school program during a ceremony where they receive the coveted Science Bound t-shirts, and are officially Science Bound scholars. Scholars continue to participate in after school meetings and more:

HIGH SCHOOL

- **Oral Justifications.** An opportunity for scholars to reflect on their journey through Science Bound and practice public speaking skills.

- **Career Exploration Projects.** Choosing a career is one of the most important decisions scholars make. Each year scholars select an ASTEM or education career, research it, talk with professionals, and complete a project.

- **Summer ASTEM Experiences.** Scholars are required to continue their learning by completing at least 40 hours of programming over the summer. Science Bound hosts a number of programs or scholars are welcome to find opportunities within their community.

- **General Requirements.** Attend at least 75% of the Science Bound programming and earn a GPA of at least 3.0 each semester.

- **Science Bound Saturday Visits (8th-12th grade).** Iowa State faculty, clubs, and students provide various ASTEM experiences for pre-college students and scholars on the Iowa State campus.

- **Countdown 2 College.** Program developed to support senior scholars and their families make the transition from high school to college.

- **Shadow Day.** Juniors and seniors are paired with ASTEM or education students at Iowa State and follow them throughout their day to see what it’s like to be in college.
Clarke Community

Four years ago, we formalized the partnership between Hormel Foods, Clarke Community Schools, and ISU Science Bound, which established Science Bound’s fourth school district. This year, we are celebrating a fully matured program (8th – 12th) and our first class of high school seniors who will graduate having earned a full-tuition scholarship to Iowa State University this Spring, 2024.

Science Bound has been purposefully building opportunities for all school districts to build community and meaningful connections with their peers. This year, Clarke 8th-grade students and high school scholars participated in several inter-district opportunities, such as:

1) Science Fair Workshop – 8th-grade students visited North High School in Des Moines to learn more about selecting a research topic, creating a poster, looking at examples of successful projects, hearing from experienced Science Fair presenters, and having a little fun, too!

2) Countdown 2 College – scholars attended a C2C meeting in Des Moines, which provided an overview of the upcoming requirements/opportunities, college application supports, scholarship guidance, and general financial aid (FAFSA) updates.

This year’s ASTEM topic is close to Clarke’s lead high school teacher’s heart – “Exploring lab instruments and equipment.” As a chemistry teacher, bridging the scholars’ classroom exploration of instruments, glassware, and lab equipment to the Iowa State campus, where they can see it in action, was a bonus. While on campus, the scholars learned about making scientific glassware and the art of glassblowing. This field trip allowed the scholars to expand their knowledge, explore unique careers, and have a deeper sense of college life.

Scholar Spotlight: LUCERO RÍOS

“To me, Science Bound means having a safe place. Science Bound has been with me since 8th-grade and along the way there has been an undeniable family connection,” says Ríos. “This program has pushed me to become independent and has motivated me to be the best version of myself.”

Lucero Ríos is a senior at Clarke High School and is grateful for the support system Science Bound provides. She plans on coming to Iowa State next year to major in architecture.

By the Numbers (2022-2023)

HS Retention Rate: 91%
Honorees with GPAs of 3.5 or Above (Grades 9-11): 77%
Number of Teachers: 4
Denison

The Denison Science Bound high school program is one of our largest programs and, quite frankly, furthest away! These two factors led us to intentionally focus on how we can introduce additional ASTEM opportunities and increase support for their weekly programming. In the 2022-2023 school year Dusti Ingles (Agriculture Education, PhD student) and in the 2023-2024 school year Rachel Murphy (Biochemistry, PhD student) brought their ASTEM passions into the weekly after-school programming for our scholars.

Continuing their learning over the summer, 100% of our high school scholars completed summer hours. They took part in our residential programs on the Iowa State campus, volunteered in the community, or joined the Monona County youth extension program – 4-H swine – an animal husbandry program that culminated with showing swine at the county fair.

The Denison Middle School Science Bound program has been focused on fulfilling the requirements of the Science Bound 8th grade program. The Society of Chemistry Undergraduate Majors (SCUM) gave a scientific demonstration to generate excitement for the Science Fair and the students completing their experiments. It was a wonderful way to kick off Science Fair season, and upon presenting their research, each student earned an award for their project.

Scholar of the Year:
JONATHAN VALLE

“Science Bound has had a major impact on my educational journey. To me, participating in Science Bound is like investing into yourself: the more you get involved the more you’ll get out of it. By being in Science Bound, it helped me realize the importance of higher education. It convinced me that I should strive for a degree in something I enjoy.” says Valle.

Jonathan Valle is a first-year student at Iowa State, majoring in mechanical engineering. He plans to go into biomedical device development after graduation.

By the Numbers
(2022-2023)

- HS Retention Rate: 95%
- Average Spring 2023 GPA (Grades 10-12): 3.61
- Number of Teachers: 3
- Graduate Student Assistant: 1
Des Moines School District (DMPS) comprises 6 high schools and 10 middle schools, so you can imagine this school district is vibrant and eventful. Some highlights include: career and science fair projects, senior scholarship signing days, and 100% of our scholars completed summer program hours! These hours include more than 120 scholars participating in Learn & Earn (L&E), a four-week math program at North High School. Spotlighing our AP Statistics L&E course, Principal Financial Group joined each Friday of the program to bring real-world examples to the scholars. Additionally, they supported a trip downtown to Principal’s headquarters! Scholars from this course continue to extend their learning by participating in the Actuarial Foundation’s ‘Modeling the Future Challenge’ with the support of actuaries from Principal.

Unique to DMPS is Algebra Champions, a summer program that kicks off an 8th-grade student’s journey into Science Bound and enhances their foundation in math. More than 90 incoming 8th-grade students participated. The impact of this program is shown by the pre- and post-tests given, which yielded an average score improvement of 350%. A new feature this year was collaborating with Iowa State University’s Masters of Arts in Teaching (MAT) for math and science educators. These preservice teachers provided exciting lessons for the students.

By the Numbers (2022-2023)

**HS Retention Rate:** 94%
**Average weighted GPAs (Grades 9-12):** 3.63
**Honorees with 100% Participation (Grades 9-12):** 79
**Number of Teachers:** 44
Marshalltown

Each Iowa community we serve is uniquely driven towards success, and the Marshalltown Science Bound program consistently shines through all that comes their way. This year, high school scholars demonstrated their curiosity for ASTEM through an engineering challenge – bridge building. Balsa wood and engineering principles allowed groups of students to design, build, and test bridge structures for durability and strength. Without knowing, this unit became a metaphor for the program in 2022-2023. Building bridges: 1) they successfully completed the bridge-building challenge; 2) family units were established for the scholars, ensuring that experienced scholars can informally mentor younger students while building community to bridge the transition into high school and set them up for success; and 3) strength was exhibited through the ups and downs.

We honor Science Bound teacher champion and pillar to the Marshalltown Science Bound community, Theresa Theis (pictured below). Mrs. Theis served as a Science Bound teacher for 14 years and her legacy will carry on through these scholars. This report is in loving memory of her.

Scholar of the Year:

DENISE MONTEALEGRE

Denise graduated from Marshalltown High School in Spring 2023. She is majoring in Mechanical Engineering and says Science Bound helped her identify her career path. “The career exploration projects and Science Bound Saturdays have helped me explore different fields in engineering to choose my major.” She also mentions the support she has found in Science Bound.

“Ever since I can remember, Science Bound has been supporting me through my educational journey... It is an amazing program filled with outstanding support, caring mentors, and numerous connections,” says Montealegre.

By the Numbers
(2022-2023)

- HS Retention Rate: 93%
- Honorees with GPAs of 3.5 or Above (Grades 9-12): 21
- Honorees with 100% Participation: 25
- Number of Teachers: 6

Summer 2023 Highlights:

- 16 scholars visited the USDA in Ames for VetBound. They looked at parasites, performed a chicken necropsy, and learned about traditional and specialized farming techniques.
- 22 scholars participated in residential programs on Iowa State's campus, including 4 scholars who were selected, through a national application process, to experience AgDiscovery.
- Marshall County Extension office provided opportunities for scholars to extend learning and mentoring of younger students throughout the summer.
Summer Programs

Scholars entering 10th through 12th grade are required to complete 40 ASTEM enrichment hours. Scholars can take part in programs that Science Bound offers, or seek out opportunities on their own within their communities. We have scholars find opportunities at the Blank Park Zoo, Science Center, County Extensions, job shadows, and many more! This year, 100% of scholars completed their hours.

CYBOUND/PROJECT SEED

6- and 10-week research experience for high school and college scholars. Scholars are paired with research faculty at ISU and actively participate in a research project culminating with their participation in ISU’s Summer Research Symposium.

LEARN & EARN (L&E)

This year, Learn & Earn was hosted at North High School. There were five accelerated math classes, and one Language Arts class. Classes were led by seven pre-service teachers, and five teaching assistants. More than 120 students signed up to participate in the program.

AGDISCOVERY

For 5 years, Science Bound hosted Iowa State’s AgDiscovery program which provides opportunities for youth to learn about careers in Agriculture, Veterinary Medicine, Animal Science, and more! Students live on the ISU campus and learn from professors, USDA scientists, and local agricultural producers. Participants gain experience through hands-on labs, workshops, and field trips. For the summer of 2023, we hosted 16 participants (4 Science Bound scholars from Marshalltown High School).

FRESHWATER

FRESHwater, established 2023, was held to expose youth to the Water and Wastewater field. The program was a great success with 20 high school students from across Iowa coming together for a week long residential program. The goal is both to strengthen workforce development in the water field while also bringing in people from diverse backgrounds.

PAPAYA

This summer program is a collaboration with Al Éxito and Science Bound. Summer 2023 centered on ‘Space’ - taking, making, and exploring. Scholars created a physical space on campus, learned to confidently occupy space, and explored space by reaching beyond the earthly plane into the cosmos. Featured were faculty in aerospace engineering and design.

AMAIZING ROOTS

During this five-day residential program scholars gained hands-on experience with microscopy, phenotyping, and basic coding using maize (corn) roots. Scholars carried out a research experiment, collected and analyzed data, and presented a poster on their work.
2022-2023 High School Graduates

DENISON
Ashley Aragon
Kelly Arriaza
Adrian Barros
Leonardo Flores
Alexander Garcia
Andy Garcia-Parra
Sofia Guzman
Brian Ibarra
Jazmine Iglesias
Kimberly Lara
Esther Marquez
Wilnuse Riphin
Jonathan Valle
Anahi Velasco
Jesse Velasquez
Adrian Velazquez-Nieto

EAST
Jawad Ali
Heidy Artero-Quijano
Bwanne Aaron Ciimban
Nallely Fuentes
Andrea Garcia-Palacios
Leena Gomez
Selena M. Gonzalez
Kareyna Holmes
Galilea Lechuga-Barragan
Amare Lee
Nathan Reyes
Nataesia Smith
Jayden Sorter
Jimena Valdez-Hidalgo

ROOSEVELT
Alexander Flores-Alonzo
Maawa Ismail
Arianna Jackson
Brandon Miron-Lopez
Maya Ryan
Leilani Simmons
Roman Whitfield

VIRTUAL CAMPUS
Keila Almendarez-Rodriguez

LINCOLN
LaQuan Cowell
Helen Estrada
Maryfer Hernandez
Alexis Ibarra
Brandon Ramos
Jasmine Reyes-Cosmen
Tarminta Sonkalley
Robert Stonehocker
Juan Terrazas
Jevon Thompson

MARSHALLTOWN
Yessenia Alvarez Zamora
Lizeth Castillo
Cesar Corona
Sebastian Gutierrez
Leticia Herrera
Joel Hueso
Alexis Ibarra-Mora
Denise Montealegre
Manuel Peña
Leslie Rangel
Seth Smith
Meah Yoemans

NORTH
Diego Correa
Emily Delgadillo
Gael Garcia
Victor Jimenez
Daizy Martinez-Soto
Samuel Murillo
Alexandra Santibanez
Makhani Scearcy

HOOVER
Hifaa Adam
Kaananika Asoode
Immanuel Carroll
Tristan Dang
Daniela Pintor-Mendoza
Troy Skinner

COLLEGE-GOING
96% of 2023 high school graduates entered college directly after high school. 61 enrolled at Iowa State (57 on Science Bound and 4 on MVP). Two are entering the military and one is on a gap year.

75% First Generation Pell-Eligible
Scholars who meet program requirements earn a full-tuition scholarship to Iowa State for an ASTEM or education program of study.

First-Year & All Scholar Retreat. Yearly gatherings for all Science Bound Scholars to build community.

First-Year & Second-Year Seminar. Supports and prepares scholars for a successful transition into college, and provides professional development opportunities.

Academic Success Program. Provides extra support to scholars through regular meetings with Student Program Coordinators (SPCs), calendar planning workshops, and more to ensure a successful semester.

One-on-One Meetings. First-year scholars meet with SPCs to ensure their transition into college goes well and to develop a relationship with SB staff.

Scholar Breakfasts. Monthly, the staff cooks for the scholars which provides time for an informal check in and community building.

SB Scholar Leaders. ISU scholars have the opportunity to give back through working pre-college events. This past year we had over 100 scholars participate!

Late Night Study Sessions. Scholars enjoy food, activities, and prizes!
“SCIENCE BOUND HAS CREATED MY HOME AWAY FROM HOME HERE ON CAMPUS & ALLOWS ME TO COMMUNICATE & BUILD RELATIONSHIPS WITH OTHER SCHOLARS WHO HAVE THE SAME GOALS AS ME!”

-JAYDA ANAYA-NEGRETE, SPRING ‘24 ISU GRADUATE

ISU SCHOLAR SPOTLIGHT

Adan Delgadillo

“Science Bound has supported me in many ways. Educationally, they showed me that it is possible for someone like me to receive higher education. They prepared me to be ready for academic mishaps and how to overcome them. Professionally, Science Bound helped me conduct myself with confidence in a room and to companies.” says Delgadillo.

He also shares his favorite Science Bound memory. “My favorite Science Bound memory has to be when I help out during Science Bound Saturdays or other events. It feels like a full circle moment seeing those younger than me and it reminds me how far I have come.”

Adan is a second-year scholar at Iowa State University, studying civil engineering. He has already interned as a land surveyor, conducting topographical surveys and staking construction sites. This summer, he will intern as a field engineer for Kreamer North America, in Colorado. After graduating, Adan plans to work as a civil engineer.
Science Bound Alumni

Class of 2023

Lowdan Ali
Genetics

Aida Almanza
Kinesiology & Health

Gloria Almendarez
Industrial Engineering

Luis Avila
Management Information Systems

Felipe Bautista Salamanca
Software Engineering

Katherine Berber-Solis
Global Resource Systems

Justyne Crawford
Biology

Valeria Cruz
Genetics

Alejandro Cuevas-Rosas
Management Information Systems

Kimberly De Avila Sanchez
Animal Science

Cindy Delgado Parra
Biology

Elizabeth Flores
Kinesiology & Health

Jaden Fox
Kinesiology & Health

Caren Fuentes Chavez
Biology

Diana Hernandez Huerta
Animal Science

Gabriella Hernandez
Biology

Erik Jaime
Kinesiology & Health

Tariq Martin
Industrial Technology

Ricardo Ortega
Materials Science & Engineering

Fatima Perez-Negrete
Nutritional Science

Jessica Ramirez Solis
Kinesiology & Health

Eduardo Robles
Computer Engineering

Xavier Robles
Civil Engineering

Edwin Rojas
Kinesiology & Health

Sandibel Sandoval
Mathematics

Jocelin Sharfnejda
Kinesiology & Health

Junice Sibley
Biology

Miguel Vazquez-Espinoza
Construction Engineering

Graduate Degrees

Josiah Crawford
Civil Engineering B.S., Business Administration M.B.A.

Kendell Jackson
Information Systems & Business Analytics M.S.

ISU Alumni

281 science bound graduates have earned degrees from ISU with 76% in STEM & education.

2000 First ISU Graduate
2023 281 Cumulative Graduates

3 living and working abroad
- The Netherlands
- New Zealand
- South Africa

"Science Bound helped me explore different careers during my college years, which opened my opportunities as a professional."

- Marlie Quintero, SB Alumni ’13
FALL 2023 | BY THE NUMBERS

PRE-COLLEGE PROGRAM

497 pre-college students in 8th through 12th grade and their families served by the Science Bound program.

- Denison: 76
- Marshalltown: 62
- Clarke: 47
- Des Moines: 312

51 teachers working in 22 schools across 4 partner school districts.

TEACHERS

6.7 years average number of years returning teachers have been part of Science Bound.

- Six teachers have been with the program for more than 10 years.
- Two teachers have been with the program for more than 27 years.

13 new teachers to the Science Bound program for the 2023-2024 academic year.
FALL 2023 HIGHLIGHTS

Science Bound Saturday.

In a historic Science Bound milestone, on September 30, we welcomed more than 800 members of the pre-college Science Bound community to Iowa State’s Central Campus. This event coincided almost exactly 100 years after Jack Trice’s iconic “I Will” letter was read aloud for the first time, commemorating his legacy. Students and families took time to write “I will” statements, setting intention for the year.

It boasted programming for both families and students/scholars including faculty and student ASTEM sessions, an ISU scholar panel, Al Éxito Family event, discussions with the Directors of Multicultural Student Success, and a visit from Cy!

This event would not have been possible without the 65 ISU Science Bound scholar leaders who helped with the event.

Industry Visit.

Science Bound scholars were invited by Syngenta to come experience their Slater, Iowa site and explore opportunities within their company. 19 Des Moines high school scholars joined us.

It was hands on, information packed, and wonderfully highlighted how the agriculture industry recruits multidisciplinary talent to accomplish their work. Scholars rounded out the day with a build challenge and earned swag for their efforts and asking questions.
CELEBRATIONS

ISU Staff. We have welcomed four new team members to the Science Bound staff! Each of the 8 staff members bring expertise and a shared mission of supporting students pre-college and beyond.

New Grants and Partnerships. Science Bound has been fortunate to develop 4 new partnerships with faculty at our university thanks to two NSF and two USDA funded awards. Some highlights include the creation of a new summer AP Biology L&E course for Summer 2024, establishing a direct connection with the Master of Arts in Teaching (MAT) program at ISU, and connecting to Climate-Smart farming technologies.

OUR STAFF

Director: Dr. Alexis Campbell

College Program Manager: Brandon Leake
Pre-College Program Manager & DMPS High School: Jocelyn Drzycimski (Spanish support)

Student Program Coordinators:
Aura Baquero Casab: Clarke and Denison Program (Spanish support)
Erica Malloy: Iowa State Program
Alyssa Montero: Marshalltown & DMPS Middle School Program (Spanish support)

Program Assistant: Matt Detweiler, Fiscal Liaison and General Program Support

Administrative Assistant: Kristi Fulton

Graduate Students: Lawrion Anderson, Brandon Daniels, Dusti Ingles, Henry Mbih, Rachel Murphy, Dan Scanlon
CONNECT WITH US!

@ISUSCIENCEBOUND

TOTAL FOLLOWERS 1,256
We gained 723 followers across all platforms this year!

TOTAL ENGAGEMENT 3,668
Engagements include likes, comments, and shares on posts.

TOTAL IMPRESSIONS 20,369
An impression is when a post is visible in a social feed. This is how many people saw the Science Bound brand across platforms!

For the most up-to-date happenings at Science Bound, be sure to follow us on social media!

FACEBOOK
@isussciencebound

INSTAGRAM
@isussciencebound

LINKEDIN
Science Bound
Thank you!
Science Bound would like to sincerely thank these partners for their sponsorship of our program.
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