ASEE AMERICAN SOCIETY FOR ENGINEERING EDUCATION

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Building Bridges to Success: A Thriving Program

Ms. Labrisha Nicole Mabry, Mississippi State University

Labrisha Mabry is a recent graduate of the University of Southern Mississippi. She received her baccalaureate degree in Computer Engineering. While attending the University of Southern Mississippi, she held a plethora of positions including President of Louis Stokes Mississippi Alliance for Minority Participation (LSMAMP), Vice President of Women in Science and Engineering (WISE), and she served as President ambassador of the School of Computing Sciences and Computer Engineering at Southern Miss. Labrisha also tutored students in the computer engineering curriculum and mentored students along the way. While possessing a burning passion to help others in STEM related fields, she now serves as the Student Diversity Coordinator in the Bagley College of Engineering at Mississippi State University.

Dr. Mahnas Jean Mohammadi-Aragh, Mississippi State University

Jean Mohammadi-Aragh is the Director of Diversity Programs and Student Development for the Bagley College of Engineering and Associate Professor in the Department of Electrical and Computer Engineering at Mississippi State University. Through her interdependent roles in research, teaching, and service, Jean is actively breaking down academic and social barriers to foster an environment where diverse and creative people are successful in the pursuit of engineering and computing degrees. Jean's efforts have been recognized with numerous awards including the National Science Foundation Faculty Early Career Development award, the American Society for Engineering Education John A. Curtis Lecturer award, and the Bagley College of Engineering Service award. Jean earned her B.S. and M.S. in computer engineering from Mississippi State University, and her Ph.D. in engineering education from Virginia Tech.

Ms. Lorena Andrea Benavides Riano, Mississippi State University

Lorena Benavides-Riano, originally from Colombia, is a first-year Engineering Ph.D. student at Mississippi State University. In July 2020, she completed her bachelor's degree in Environmental Engineering at the National University of Colombia. After graduation, Lorena worked as a research assistant investigating the effects of development projects on environmental parameters and rural communities in Colombia, South America. Lorena has also been part of initiatives that promote access to high-quality education, gender equality, and environmental protection. Lorena recently started her doctoral studies at Mississippi State University, where she serves as a graduate assistant in the Office of Diversity Programs and Student Development at the Bagley College of Engineering. Currently, Lorena is interested in learning more about Diversity, Equity, and Inclusion and how to increase the participation of underrepresented students in engineering.

Title slide includes:

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Overview of Engineering Summer Bridge

Goal: Supporting student growth in academics, community, and life skills as they transition to University.

Description: Established in 1995 the program includes mathematics, chemistry, and programming courses, an industry-driven multi-week engineering team research project, industry tours, teambuilding activities, and learning skill development. There is no cost to participate

Photo of Summer Bridge Participants 2023 – Courtesy of Ergon, Inc.

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Office of Diversity Programs and Student Development

In this slide, we will be giving a brief discussion of what the Mississippi State University Engineering Summer Bridge is. Our program supports student growth in academics, community, and life skills as they transition from high school to university life. We promote the participation of underrepresented students to provide them with the right tools for their freshman year and prevent dropouts in the early stages of engineering. Our goal is to provide an environment where all students experience a sense of value in their academic process and professional development.

Description of the Program

Five Weeks

Provide Experiences in

Academics

Hands-on

Community

Life Skills

Engineering Project with Sponsor Company

- Scope based on a real engineering problem.
- Work along with engineering managers.
- Engineering labs

Meaningful Outcomes

- Exposure to research opportunities, COOP, internships, student organizations .. etc.
- Acquire skills to adjust to college life.
- Develop a sense of belonging
- Find purpose and persistence in engineering.

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Like many bridge programs, our program seeks to improve academic readiness and success for incoming engineering students. However, our novel approach is to expand on hands-on experiences through labs and the final engineering project. In those settings, students can see the connection between what they learn in school and how it is used in industry. The laboratories enable students to link the content of the courses and labs with the applicability of what they can do as engineers. The purpose of designing a program with strong company involvement is to show students from the different engineering disciplines the connection between the academy and professional life. Hence, they can feel more motivated to pursue an engineering degree. In other words, our participants have a small disclosure of what an engineer does in the real world. Throughout the development of the program, our sponsor is constantly engaged in the planning, execution, and closing phases by helping design the project and labs with topics similar to those they would give to a Coopthe different engineering disciplines the connection between the academy and professional life. Hence, they can feel more motivated to pursue an engineering degree. In other words, our participants have a small disclosure of what an engineer does in the real world. Throughout the development of the program, our sponsor is constantly engaged in the planning, execution, and closing phases by helping design the project and labs with topics similar to those they would give to a Coop student.

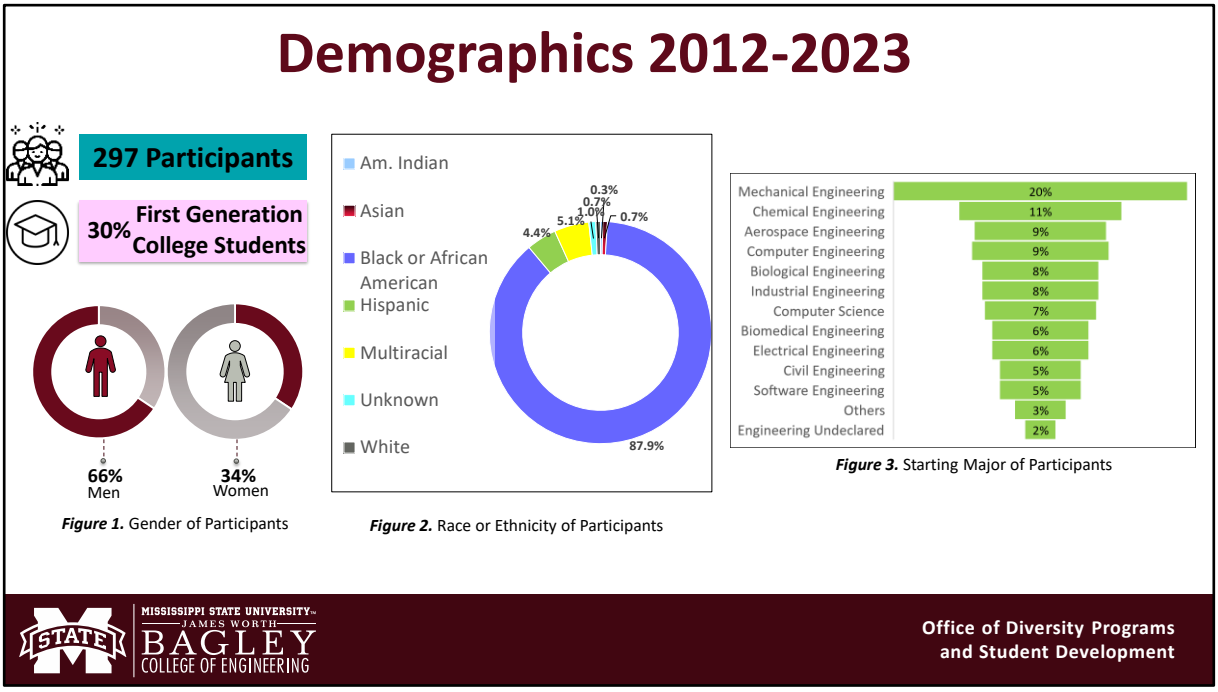


Figure 1. Gender of Participants

Figure 2. Race or Ethnicity of Participants

Figure 3. Starting Major of Participants

The Summer Bridge program has been in place since 1995, and the data we will be using in this presentation is being pulled from records from 2012-present. This slide demonstrates the demographics of the summer bridge program at MS State.
There have been 297 students participating in the program, and 30% of the participants are first-generation college students. The gender of the participants have been 66% male and 34% female. Through our program, we have helped students from diverse backgrounds, specifically African-American communities with 261 participants, which is approximately 90%.

Significantly, Black students participating in our Bridge program are retained and graduate at higher rates than students who do not participate in Bridge.

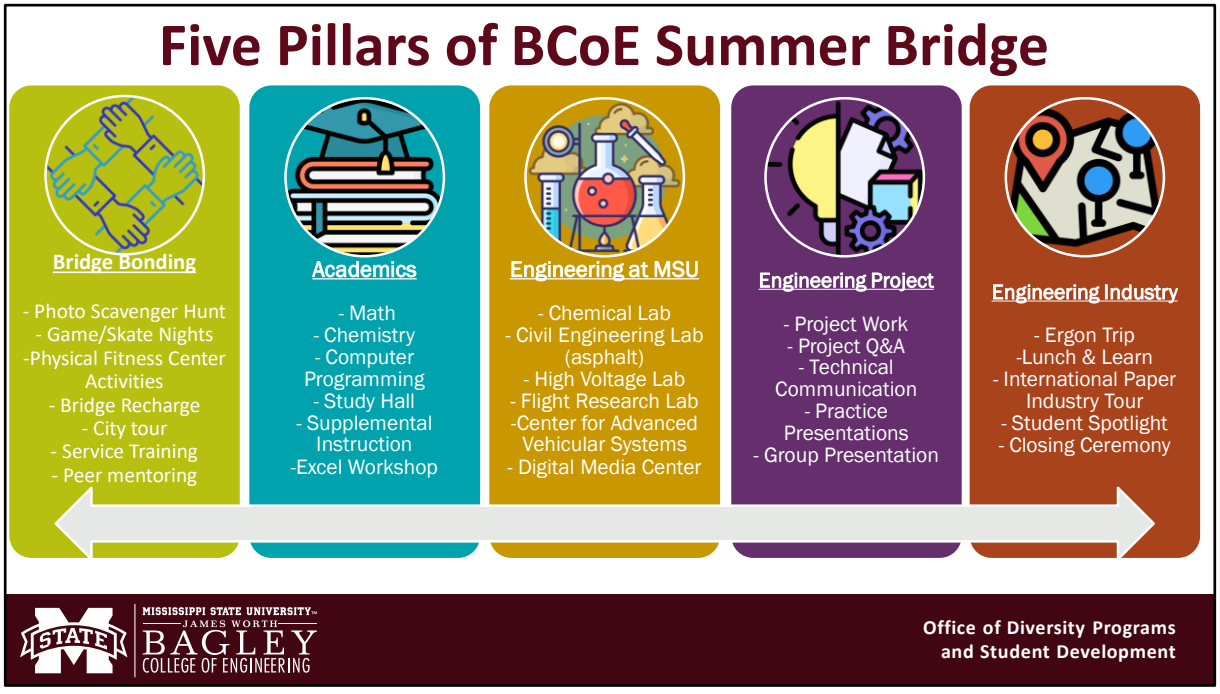
Since our program has been on-going to so long, we are starting to see children of previous Bridge participants entering the program. This past summer, we had two such “second-generation” participants. Listening to the stories from the parent and aunt who had participated was powerful. They attributed our Bridge program to their graduation and subsequent employment in engineering. They were so happy that their children were getting the chance to participate too!

We have also had much younger siblings of prior participants participate, and the stories of

impact for their siblings are powerful and form much of the motivation for the sibling to participate.

Our quantitative data do not fully capture the powerful impact the Bridge program is having on diverse and underrepresented students, and that is one place we are working to improve. But it is clear from the anecdotal stories we hear from alums and parents that the Bridge program is one of the primary reasons that our University is retaining and graduating Black engineers at higher rates National averages.

So, what is it about our program that makes it so successful…



In this slide, we will explain how our program is structured. The five pillars of our program promote the holistic development of our students. Taking this approach, we want to give our students an idea of the performance of engineers in labor work; therefore, they will start to construct an identity and engage with engineering as a profession and our campus. We will discuss what integrates each core and the skills they will gain by participating in the program.

Bridge Bonding: This pillar helps students relate to each other's experiences and challenges, making it easier for them to empathize and offer support. They may have faced similar obstacles and can provide practical advice based on their own experiences. We also have bridge students who are well into their engineering academic journey to help guide the bridge participants as they move along throughout the month-long process. We hope the participants can feel more comfortable opening up to peers and start building a community for their academic journey.

Academics: This pillar provides our students with an introductory experience regarding each subject. Therefore, they have previous knowledge of the subjects and can perform well to start their academic year.

Engineering MSU: This pillar provides an overview of all the resources available on campus for student development. By participating in the labs and tours, we intend for the students to feel that they belong to our campus and are aware of the endless opportunities to develop their best selves.

Engineering Project: Along with the academic content, our program focuses on hands-on experience. The students must conduct a real-life project carefully selected with our sponsor. Nevertheless, they have support and guidance during the process, so they are accompanied and guided. Our objective is to provide a real engineering case where they can apply the acquired knowledge in the program.
Engineering Industry: This pillar promotes engagement between academia and industry. In this core, the students are permanently in contact with engineers and can see them working on real challenges.

Components of Summer Bridge

Bonding

- Community service Outreach event at Starkville's J.L. King Community Center to introduce children to engineering
- Bonding activities (Skate, Movie Nights, Sanderson Center, and Bridge Dinners)

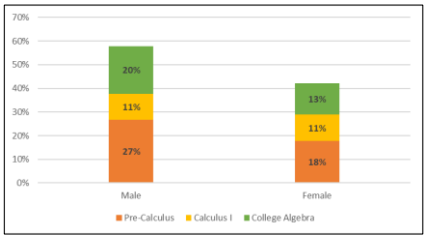


Figure 4. Math enrollment of Participants 2022 and 2023

Academics: Mathematics

- General Math course → Preparation for Math Placement Exam
- College Algebra
- Pre-Calculus
- Calculus I

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Office of Diversity Programs and Student Development

Bonding: Community service is also an important thing we implement in our program. Engaging in community service can lead to personal growth and development. It provides opportunities to develop empathy, compassion, and a deeper understanding of the challenges faced by others. It also helps individuals gain new perspectives and broaden their horizons. For our most recent community service project, the bridge participants got involved by helping introduce young adults and children to engineering by using snap circuits.

Mathematics: Although our program focuses on different subjects (chemistry, programming), We want to give mathematics a special highlight since it is crucial across all engineering programs. The mathematics courses we offered helped aid the bridge participants' success by allowing them to earn a math credit over the summer to put them ahead in the engineering curriculum. As far as the "General Math" course, we offer this non-credit course to help students strengthen their math skills, and they take a placement exam and are placed into a course to head start their academic career. Depending on the student's performance on this exam, they will either be placed in college algebra, pre-calculus, or calculus. Our program has proven improvement in bridge participants' grades in Calculus and the following courses.

Components of Summer Bridge

Engineering Research Project

- Engineering laboratories
- Creation of a 3D model of a tank.
- Interaction with Ergon engineers on campus and on-site.
- Final Presentation and Recognition.

Engineering @ Industries & MSU

- Tour to several industries (Paragon Technical Services, Ergon Refining Inc)
- MSU Research laboratories
  - Raspet Flight Laboratory,
  - The Center for Advanced Vehicular Systems
  - the Digital Media Center's Maker Space
  - the High Voltage Laboratory.

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Office of Diversity Programs and Student Development

Engineering Research Project: For the 2023 Summer Bridge Cohort, the participants were tasked with building an asphalt tank, sponsored by Ergon. This gave participants a chance to have hands-on experience and teamwork, enhance their problem-solving skills, and enhance their technical skills. When it comes to engineering projects, it allows students to learn concepts from a theoretical point of view, but hands-on experiences help students retain and reinforce the information they have learned.
Allowing participants to work in teams helps them learn their abilities as well as those of others. This also helps them learn to work with others from diverse backgrounds, allowing them to communicate effectively. Engineering projects involve complex problems with various sections that utilize science, technology, engineering, and mathematics. This allows students to break down problems into sections and analyze and develop solutions based on the information they are given.

Engineering @ Industries & MSU:
Engineering (industry) trips give participants the chance to be exposed to how engineering works in industry. These tours helped to show bridge participants how all engineering disciplines work together in order for a project to come to fruition.
Additionally, We explore different facilities around campus. Here are some characteristics of our labs:

- Raspet Flight Laboratory is a historic, nationally recognized leader in the field of

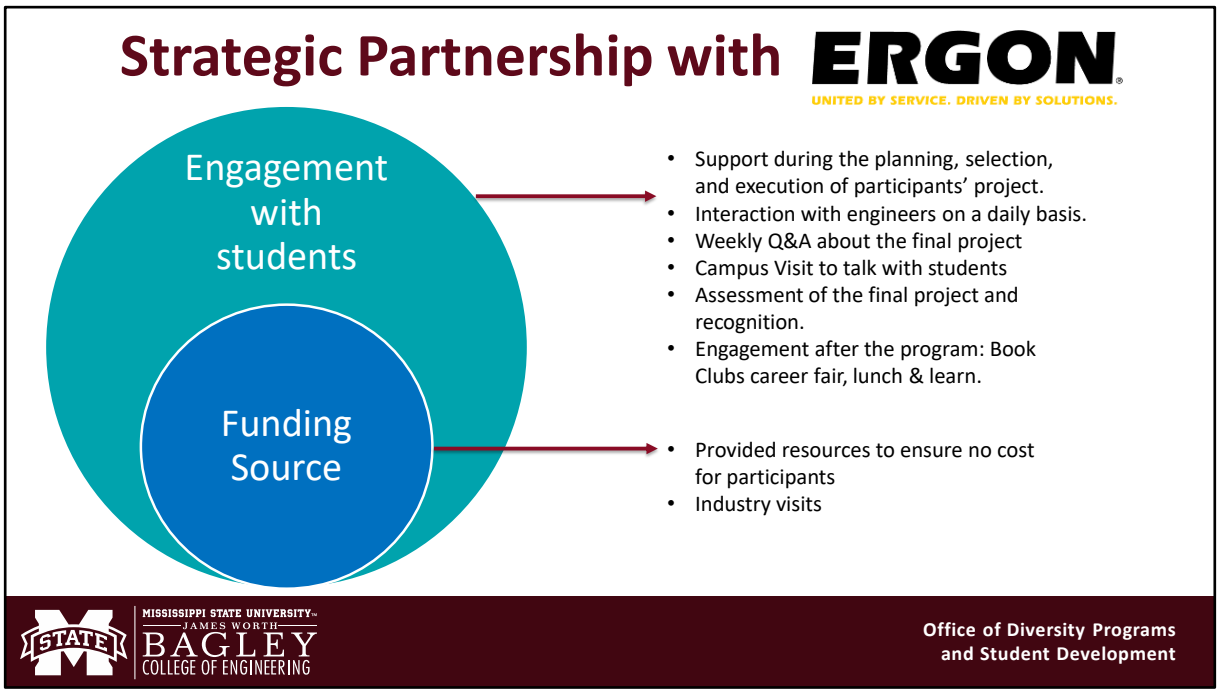
experimental aviation research.

- The Center for Advanced Vehicular Systems is committed to exploring solutions to complex problems in areas such as autonomous vehicles, materials science, high-performance computing, advanced controls, and human-machine interaction.
- The Digital Media Center empowers MSU students, faculty, and staff to develop skills in design, production, creation, and editing. We provide a collaborative space for teaching and learning, the latest technology and equipment, and the help you need to use them.
- The High Voltage Laboratory at Mississippi State University serves as an independent, non-industrial university center for high-voltage engineering. The laboratory focuses on high-voltage research, evaluation, and education.

Director of Diversity Programs and Student Development y visiting the mentioned labs. We want to show our students the research opportunities that they can be part of and the process to apply if they are interested.

These pictures demonstrate our participants doing different hands-on engineering activities in their engineering labs.

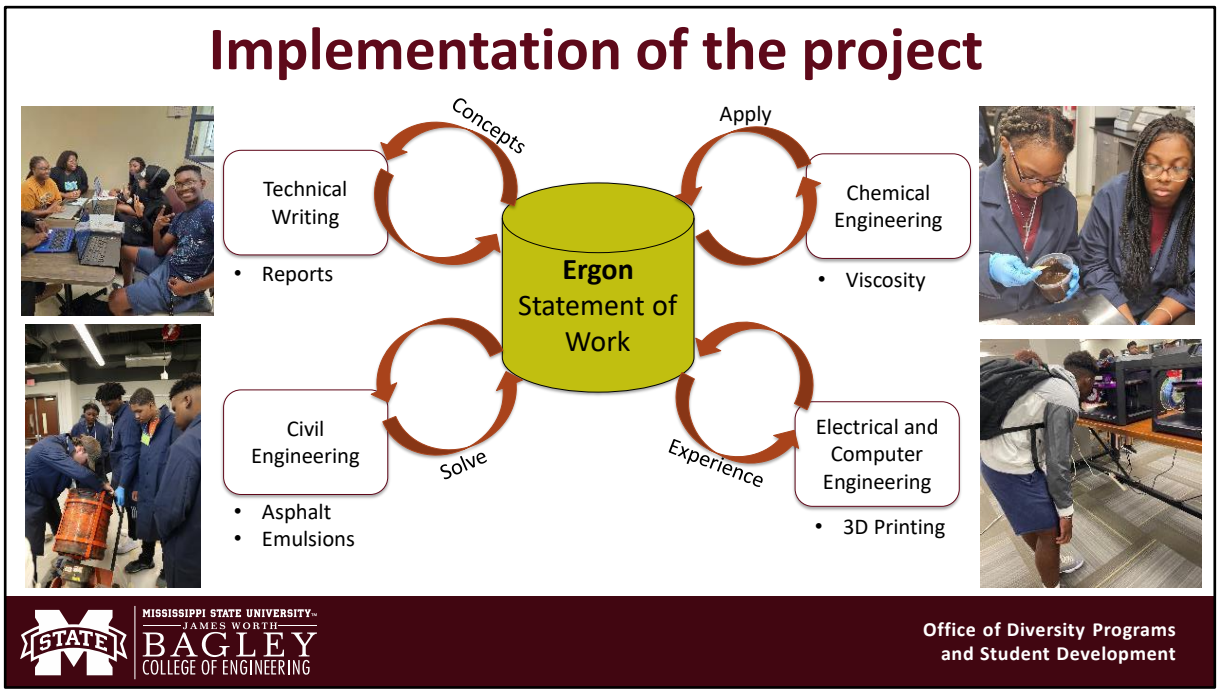
In our summer bridge program, we try our absolute best to implement a hands-on learning environment. Hands-on learning is important because it engages individuals actively in the learning process. Instead of passively absorbing information, they are actively involved in the task or activity. This active engagement can lead to better understanding and retention of information. It is proven when people physically interact with materials or concepts, they are more likely to remember and understand the information. Actively engaging with information, whether through discussions, hands-on activities, or other interactive methods, promotes better understanding and retention. When individuals actively participate in the learning process, they are more likely to remember and apply the information. It also encourages thinking outside the box and exploring new ideas. When individuals participate actively, they are more likely to contribute diverse perspectives and come up with creative solutions to problems.



Since 1995, we have had several different companies sponsor Summer Bridge. Initially, these industries were funding sources for the program. They provided sponsorship that allowed participants to attend Summer Bridge at no cost. But recently, we have grown the sponsorship into a strategic partnership. More than a funding source, our current partnership with a Mississippi-based Ergon, provides interaction with working engineers on an almost daily basis. Ergon engineers are involved in the planning, selection, and execution of the project. We connected our engineering lab activities on campus with concepts that would scaffold the ideas that summer bridge participants needed to learn to complete their projects.

A well-diversified organization, Ergon is engaged in a number of industries related to the refining and marketing of specialty oils, asphalt, thermoplastic resins, petrochemicals, propane, and the necessary infrastructure to support those businesses. Ergon is the sponsor of Summer Bridge at Mississippi State University and has been sponsoring the bridge program for 2 years worth of committed funding through Ergon.

Ergon is very involved when it comes to bridge and even after the program ends in the summer. During the summer bridge, they host weekly Q&A panels for the participants to ask questions regarding their project. Employees from Ergon even come to give talks to encourage the participants along the way. After bridge is done, Ergon hosts a book club that gives students a chance to get their hands on a book that promotes personal growth and development for an engineering student at MSU.



In this slide, we will elaborate on the collaboration with engineering departments to help the project come to life. Everything starts when our sponsor, in this case, Ergon, provides a statement of work about a project similar to one they will give a coop student. For example, this year, each team had to design a tank for a certain volume of asphalt. Once the scope of the project is determined, we reach out to MSU's different departments to see what experiences they can provide that help the students understand concepts for the development of their project. Because we are looking for hands-on education, most of the concepts are taught in laboratories, where students can learn while doing and experimenting with the materials. Once the formation process is done, the participants apply the acquired knowledge to their projects, always with the guidance and support of the engineers at Ergon. The general idea is to learn the concept and then reapply it to the project.

Description of student work:

For our summer 2023 cohort project, students had to identify a location where they could place a new tank that complied with a design volume. To achieve this, they had to comprehend the viscosity concept and support the selection of a mixture of asphalt among the three options provided in the statement of work that would be stored in the tank. During the civil engineering labs, students learned the chemical and physical properties of the asphalt's viscosity in order to select the mixture and the pump based on engineering

criteria and environmental conditions at the site. Additionally, the Excel workshops taught them how to track data and support decisions based on evidence. Likewise, Electrical and Computer Engineering Deparments delivered lectures about 3D printing and recent innovations in engineering design. Each group was expected to bring a 3D small-scale model as a visual display for the final presentation.

As part of the program closure, students presented their work to Ergon engineering managers, who evaluated the projects based on the proposals' accuracy compared to the company's technical standards. In this regard, the program offered support through our technical communication group, which helped with tips for public speaking and technical writing. Every resource taken into account creates a meaningful experience for participants where they can put into practice what they learn during the program as well as developing technical and soft skills.

Assessment

133 Graduated from MSU
(45% Graduation Rate)

109 from the Bagley College of Engineering

16 Attended Graduate School

- Annual Scholar Surveys
  - What program aspects do students find valuable?
  - How does the program contribute to personal development and student success?
- Research
  - *Re(engineering) student success: constructing knowledge on students' experiences in engineering education programs to encourage holistic student success.* (Williams,2023)
  - *Impacts of summer bridge program participation on the retention of first-time Black students at public land-grant universities in the southeastern region.* (Brumfield, 2024)

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Office of Diversity Programs and Student Development

We have annual surveys of all student participants that evaluate the program's effectiveness after their participation. With the results, we assess our program and take the feedback to improve it for next year. The perspectives of our participants are very important. Therefore, with their comments and answers, we design better approaches to constantly improve the summer bridge program. At the moment we do not count on any pre-assessment data, but we plan to start measuring students' perceptions before the program to understand student growth and goal attainment. Additionally, we also have graduate students who are researching support structures and programs like Summer Bridge. Two recent students, Shaylin Williams and Marcus Brumfield, have specifically investigated research questions focused on the summer bridge at Mississippi State. The sum of those efforts has led to successful graduate engineering students from underrepresented communities who have joined the labor force and graduate school. In this slide, we will provide a summary of the studies that have been conducted on our students.

*The data for the graduation rate is updated to 2021. The summer bridge participants of 2022 and 2023 are currently enrolled in an engineering degree.

These are the perspectives from students who have participated in our Summer Bridge program. This feedback helps us keep tabs on the things we need to keep implementing and the things we may need to change. Overall, it is always refreshing to hear from the participants when it comes to their experience regarding the summer bridge program.

During the last two years, we have received very positive feedback about the program. From the students' perspective, we have not received much feedback on what aspects of the program to improve. In the assessment, students expressed appreciation for the majority of bonding and academic activities. Nevertheless, we have identified some areas for improvement, such as study halls. In the following bridges, we want to potentiate study skill development through study techniques and time management strategies that allow students to structure their assignments. Another aspect to improve is the experience of instructors. We had times when the instructors had more experience in K-12 teaching than in university teaching. However, we identified that students engaged more with instructors with college teaching knowledge. In this regard, we are constantly looking for this relevant experience in our hiring process.

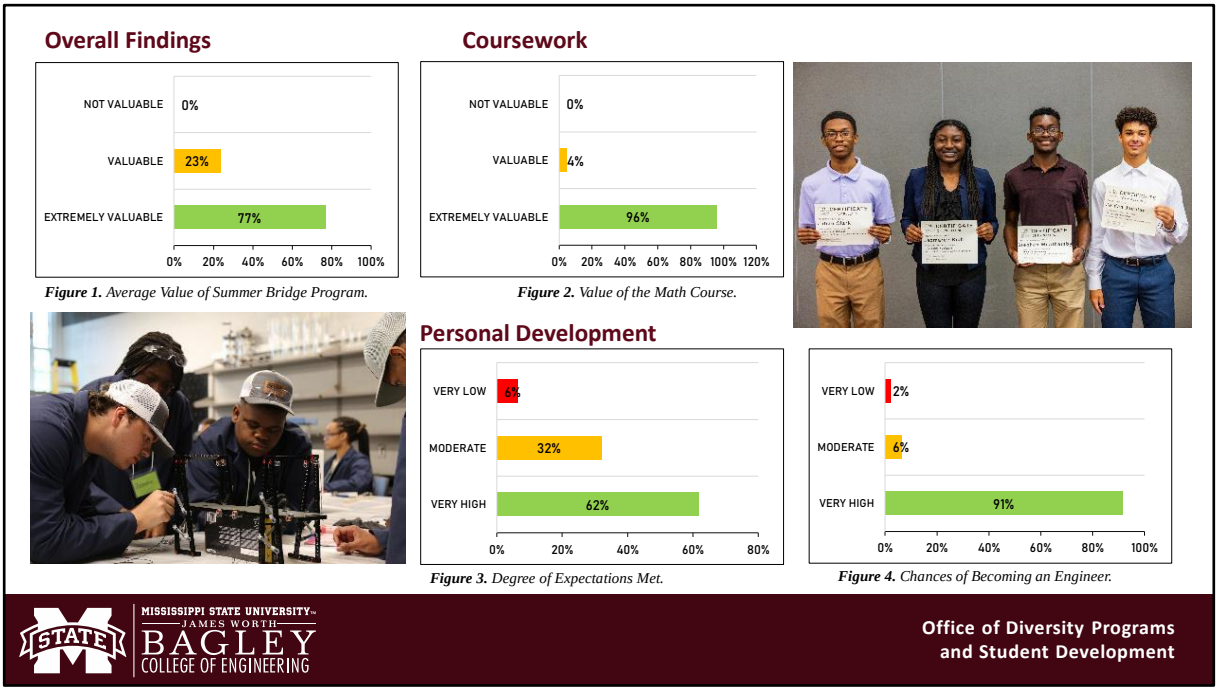

Figure 1. *Average Value of Summer Bridge Program.*

Figure 2. *Value of the Math Course.*

Figure 3. *Degree of Expectations Met.*

Figure 4. *Chances of Becoming an Engineer.*

This slide demonstrates how valuable our summer bridge participants found in their experience, coursework, and personal development. From the data that is being presented, seventy-seven percent (77%) of bridge participants found the overall experience extremely valuable. Overall, the participants are content with the program, and the survey indicates that improvement is perceived in academic and personal development.

The design of the current assessment is divided into: the value of the program, the value of academic coursework, personal and professional development, and the perception of skills improvement after participating in the program. For the current presentation, we want to provide an overall rating of the program as well as a sample of the results of each section of the survey. The graphs intend to show the holistic achievement of our program, as students did not just feel more prepared for courses but also acknowledged the contribution to skill development and ultimately their intentions of pursuing an engineering degree.

Skills

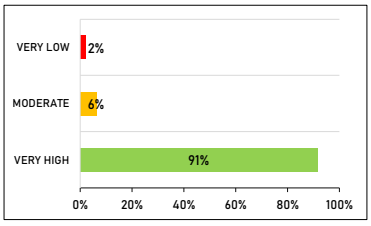

Figure 1. *Increase in Math Skills.*

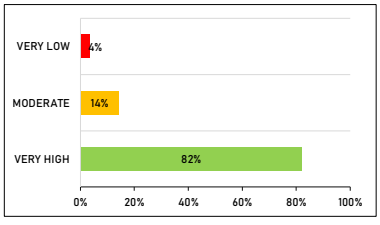

Figure 2. *Increase in Communication Skills.*

Improvements

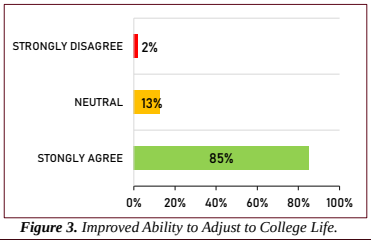

Figure 3. *Improved Ability to Adjust to College Life.*

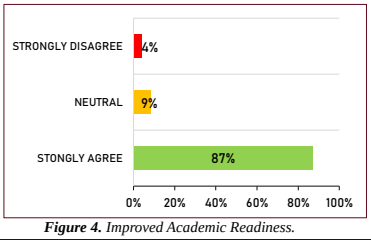

Figure 4. *Improved Academic Readiness.*

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Office of Diversity Programs and Student Development

This slide shows the data that was pulled from previous as well as recent assessments regarding how bridge participants viewed the growth of their skill set in various categories. These categories include math skills, communication skills, adjustment to college life, and improved academic readiness. The majority of the participants found the summer bridge program very beneficial when it came to enhancing and growing their skill set. By presenting this data, we want to focus on how the program cultivates professional and personal skills. Consequently, students can develop a great sense of community and belonging and increase the retention rate of underrepresented communities at Mississippi State University. We want them to feel prepared and motivated to initiate their academic journey and make the transition smoothly to their first year in engineering.

Most Recent Improvements

- Enhance strategic partnerships that incentivize student and company involvement
- Classes for credit incentive students
- Opportunity to engage after participating in the program as a counselor
- Track students' well-being during the fall semester and activities
- Counseling
- Scholarships

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Office of Diversity Programs and Student Development

We will conclude our presentation by talking about recent improvements, not just for our students but also with our strategic partners. Here are some aspects where we have seen improvements:

Strategic Partnerships: Our goal is to guarantee no cost of participation for our students. In the Bagley College of Engineering, it is important to eliminate financial barriers but also bring novel experiences into engineering practice. In this direction, we seek allies who share this vision and want to engage in the design and execution phases of the program. This partnership brings an industry view of engineering practice. Traditionally, bridge programs are led by faculty members and engineering departments. Even though this approach works, we are investing in bringing practical connections to industry in order to make the program more meaningful to students. This vision has been the result of reflection on our program, where we conclude that by engaging our sponsor beyond the funding source, we can improve the bridge program and keep it updated to meet the necessities of engineers in the workforce.

Classes for credit: The decision on whether to offer credit for the courses taken during the program has been widely discussed during the past few years. The main goal of the academic pillar is to prepare incoming students for college life and keep them motivated to learn engineering principles. Credits have been a great stimulus for students, but they can

also affect their GPA if they do not perform well. The previous versions of the program implemented courses with a final placement exam that determined credits based on student performance on the test. However, this approximation could be biased just to test-taking skills and did not recognize the work throughout the program and the achievement of learning goals. The aforementioned scenarios led us to conclude that classes should be offered for credits, but with close supervision of students' performances. In the case that students are underperforming, we can withdraw them from classes without affecting their GPA. This is a safety measure to reduce dropouts in the early stages. The use of this resource depends on the case of each student and should be analyzed by a committee of academic counseling.

Opportunity to engage: The peer mentoring program, after participating in Summer Bridge, has proven to help students get connected to the university community and underrepresented communities. The objective of mentors is to provide a role model for incoming students, hence they can see the successful experiences of students who have navigated similar paths at the university. At the same time, mentors keep connected with Summer Bridge and contribute to enriching the program through guidance and support for new cohorts. After that, the program mentors and participants continued communicating and creating a supportive community.

Track students' well-being and counseling: Our mission does not end until the culmination of the program. We provide guidance throughout the academic semesters. Our office has a team dedicated to tracking students' necessities and challenges in college life. They have a safe space to address their questions or concerns, and at the same time, they can engage in activities, such as book clubs, where students highlight and talk about DEI concerns. We have an open-door policy where our coordinator is always willing to help students find the right resources and overcome any challenge that they might face at MSU.

Scholarships: Currently, our office is working with other departments to provide scholarships specifically made for graduating from Mississippi State University's summer bridge program. Our focus is to keep in contact with the students after summer bridge and support them as much as we can, so they can succeed and become engineers.

Thank You!

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Office of Diversity Programs
and Student Development

Thank you and closing slide of presentation.

This slide is used for questions and closing.

Building Bridges to Success: A Thriving Program

Labrisha Mabry

Diversity Coordinator

Lorena Benavides-Riano

Engineering Education PhD Student

Jean Mohammadi-Aragh

Associate Professor and Director

SUMMER BRIDGE

MISSISSIPPI STATE UNIVERSITY
JAMES WORTH BAGLEY COLLEGE OF ENGINEERING

Overview of Engineering Summer Bridge

Goal: Supporting student growth in academics, community, and life skills as they transition to University.

Description: Established in 1995 the program includes mathematics, chemistry, and programming courses, an industry-driven multi-week engineering team research project, industry tours, teambuilding activities, and learning skill development. There is no cost to participate

Photo of Summer Bridge Participants 2023 – Courtesy of Ergon, Inc.

Description of the Program

Five Weeks

Provide Experiences in

Academics

Hands-on

Community

Life Skills

Engineering Project with Sponsor Company

- Scope based on a real engineering problem.
- Work along with engineering managers.
- Engineering labs

Meaningful Outcomes

- Exposure to research opportunities, COOP, internships, student organizations .. etc.
- Acquire skills to adjust to college life.
- Develop a sense of belonging
- Find purpose and persistence in engineering.

Demographics 2012-2023

297 Participants

30% First Generation College Students

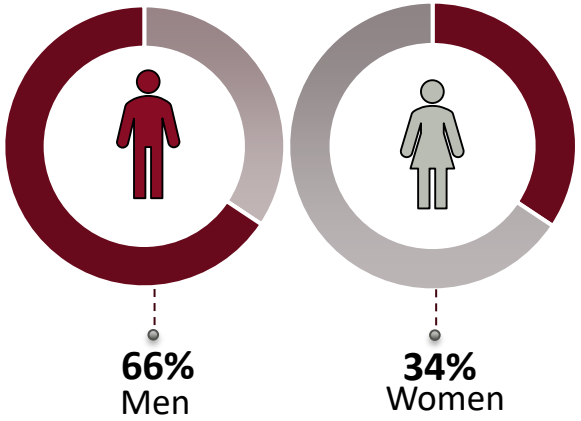


Figure 1. Gender of Participants

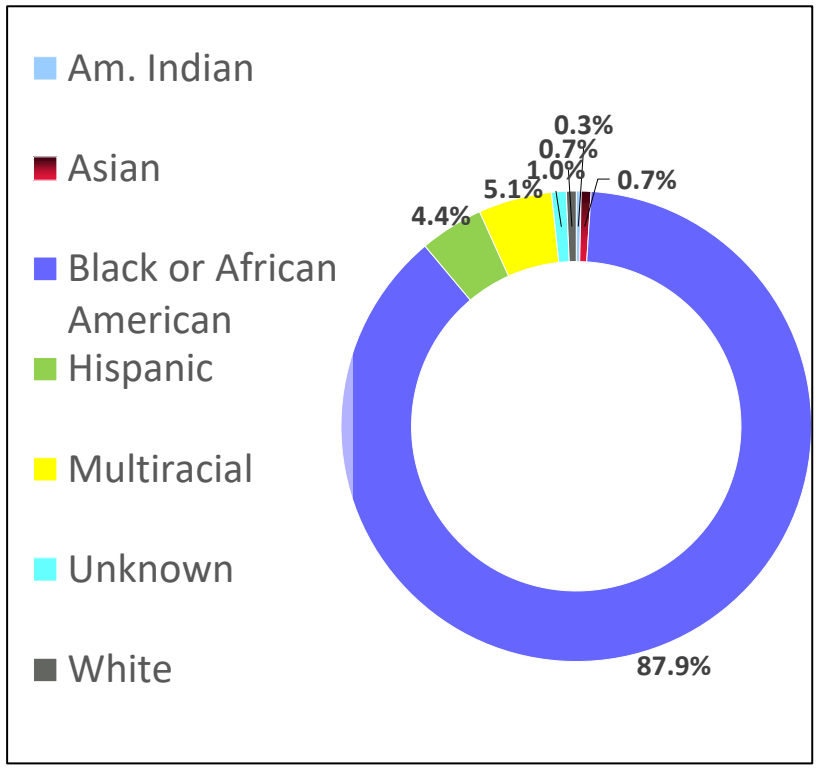


Figure 2. Race or Ethnicity of Participants

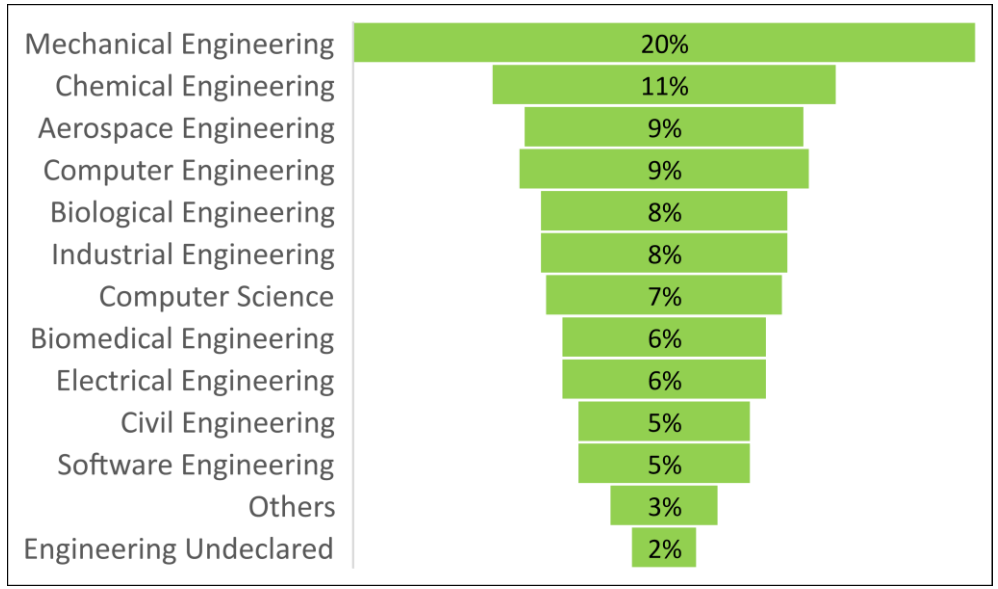


Figure 3. Starting Major of Participants

Five Pillars of BCoE Summer Bridge

Bridge Bonding

- Photo Scavenger Hunt
- Game/Skate Nights
-Physical Fitness Center Activities
- Bridge Recharge
- City tour
- Service Training
- Peer mentoring

Academics

- Math
- Chemistry
- Computer Programming
- Study Hall
- Supplemental Instruction
-Excel Workshop

Engineering at MSU

- Chemical Lab
- Civil Engineering Lab (asphalt)
- High Voltage Lab
- Flight Research Lab
-Center for Advanced Vehicular Systems
- Digital Media Center

Engineering Project

- Project Work
- Project Q&A
- Technical Communication
- Practice Presentations
- Group Presentation

Engineering Industry

- Ergon Trip
-Lunch & Learn
- International Paper Industry Tour
- Student Spotlight
- Closing Ceremony

Components of Summer Bridge

Bonding

- Community service Outreach event at Starkville's J.L. King Community Center to introduce children to engineering
- Bonding activities (Skate, Movie Nights, Sanderson Center, and Bridge Dinners)

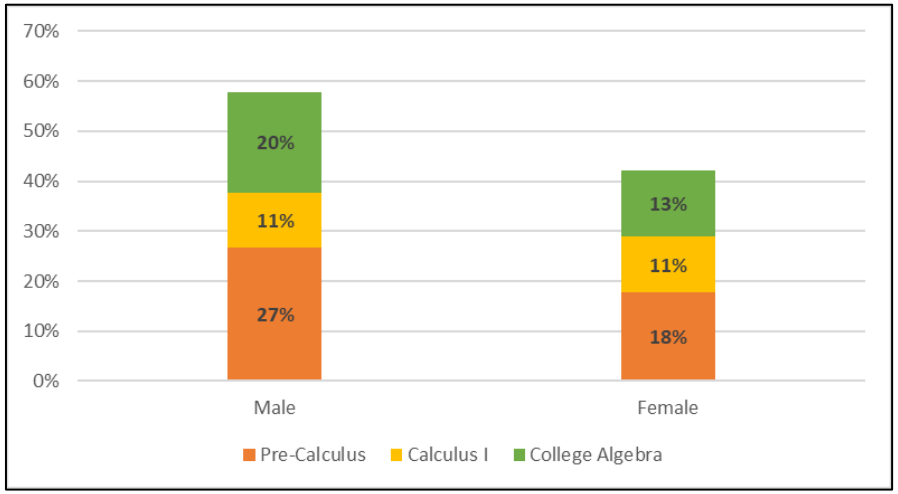


Figure 4. Math enrollment of Participants 2022 and 2023

Academics: Mathematics

- General Math course → Preparation for Math Placement Exam
- College Algebra
- Pre-Calculus
- Calculus I

Components of Summer Bridge

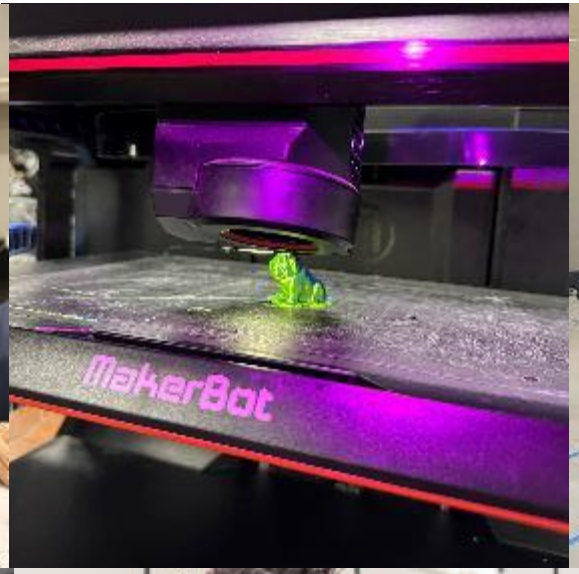
Engineering Research Project

- Engineering laboratories
- Creation of a 3D model of a tank.
- Interaction with Ergon engineers on campus and on-site.
- Final Presentation and Recognition.

Engineering @ Industries & MSU

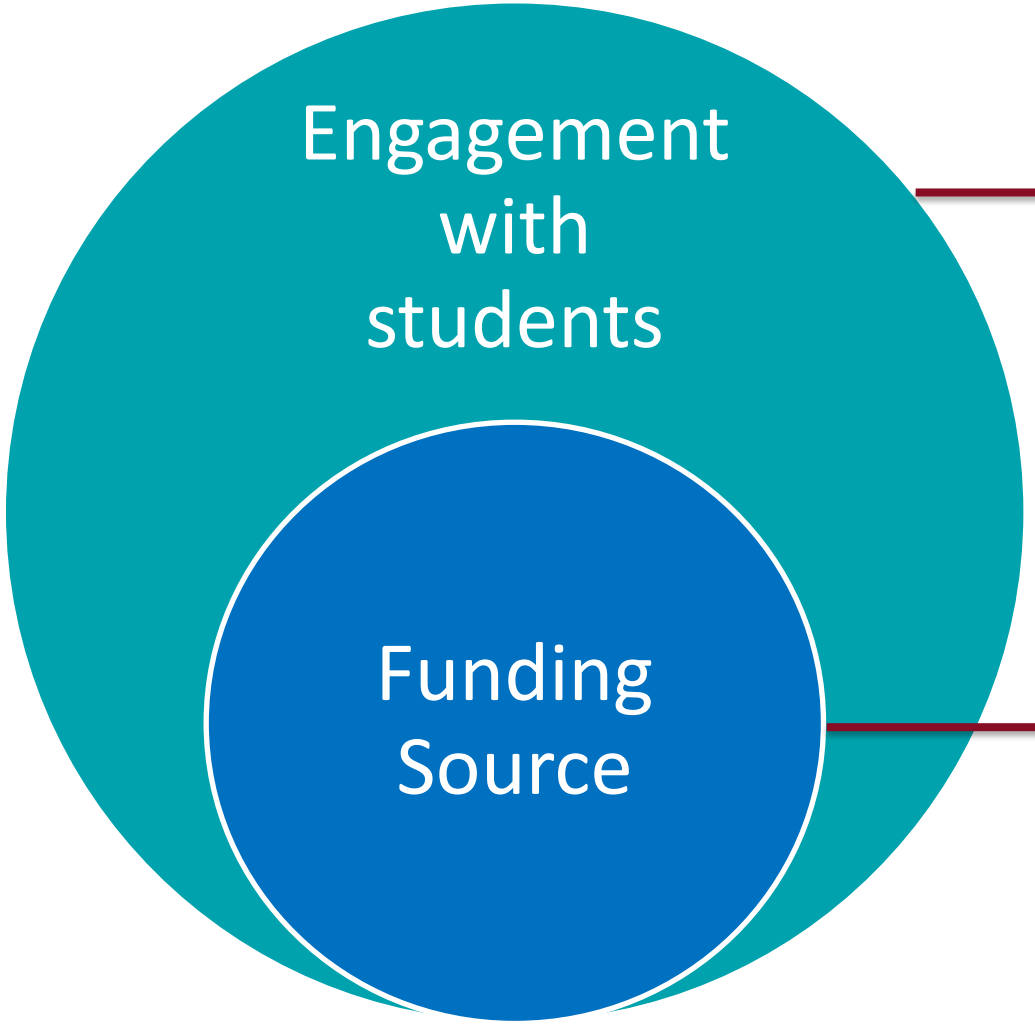
- Tour to several industries (Paragon Technical Services, Ergon Refining Inc)
- MSU Research laboratories
  - Raspet Flight Laboratory,
  - The Center for Advanced Vehicular Systems
  - the Digital Media Center's Maker Space
  - the High Voltage Laboratory.

Hands On



Strategic Partnership with ERGON

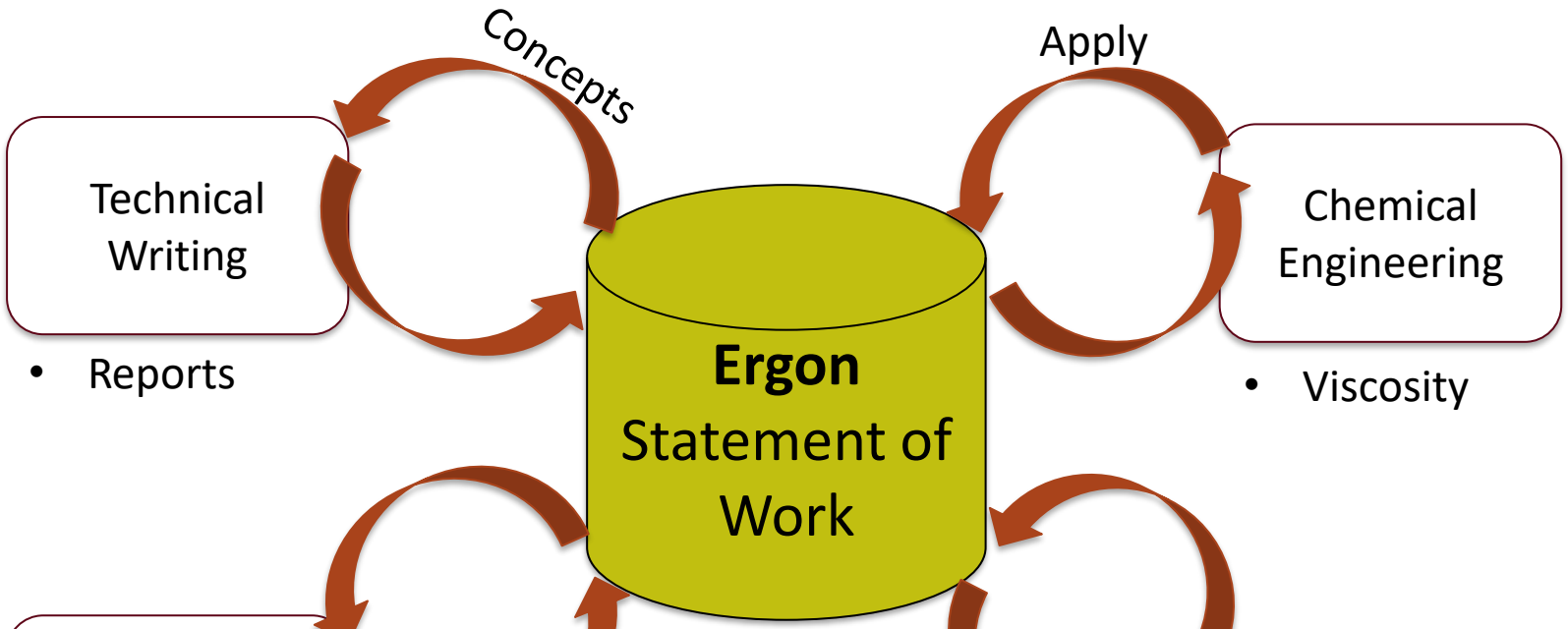
UNITED BY SERVICE. DRIVEN BY SOLUTIONS.



- Support during the planning, selection, and execution of participants' project.
- Interaction with engineers on a daily basis.
- Weekly Q&A about the final project
- Campus Visit to talk with students
- Assessment of the final project and recognition.
- Engagement after the program: Book Clubs career fair, lunch & learn.

- Provided resources to ensure no cost for participants
- Industry visits

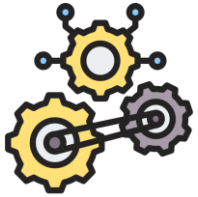
Implementation of the project



Assessment

133 Graduated from MSU

(45% Graduation Rate)



109 from the Bagley College of Engineering

16 Attended Graduate School

- Annual Scholar Surveys
  - What program aspects do students find valuable?
  - How does the program contribute to personal development and student success?
- Research
  - *Re(engineering) student success: constructing knowledge on students' experiences in engineering education programs to encourage holistic student success.* (Williams,2023)
  - *Impacts of summer bridge program participation on the retention of first-time Black students at public land-grant universities in the southeastern region.* (Brumfield, 2024)

Perspectives and Recent Assessment 2022 & 2023

"I think that it was an overall positive experience for me as I learned more about college life at MSU and the engineering industry."
-Oliver

"Helped greatly with growing accustomed to college living."
-Sophia

"It helps you bond with other students and other actual engineers."
-William

"I really enjoyed getting a glimpse of college life and learning more about engineering."
-Liah

"Being able to see what college life would be like."
-Henry

"The change to talk to different companies and learn from them."
-Charlotte

Overall Findings

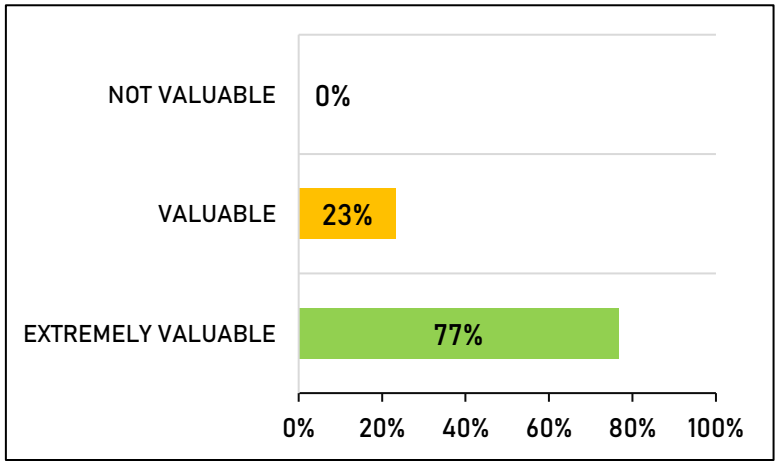


Figure 1. *Average Value of Summer Bridge Program.*

Coursework

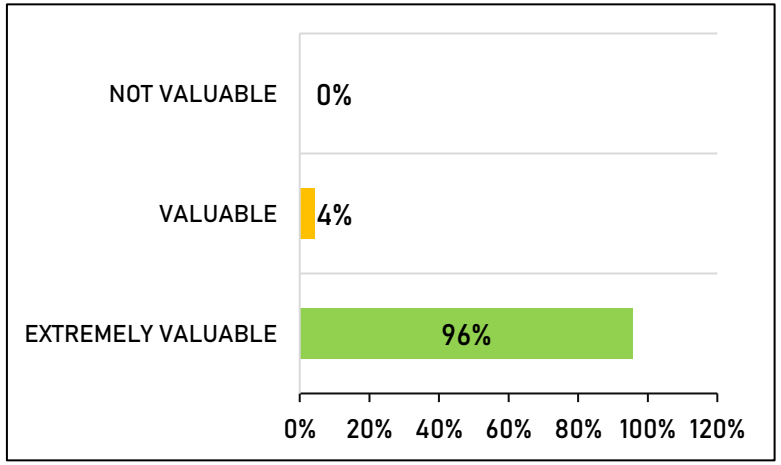


Figure 2. *Value of the Math Course.*

Personal Development

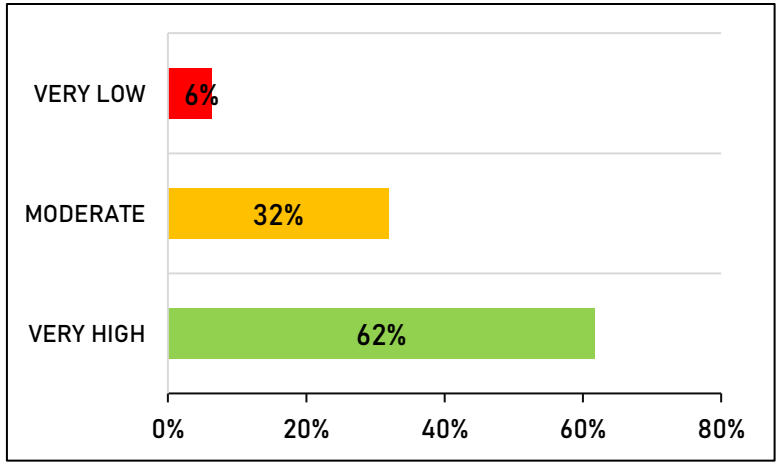


Figure 3. *Degree of Expectations Met.*

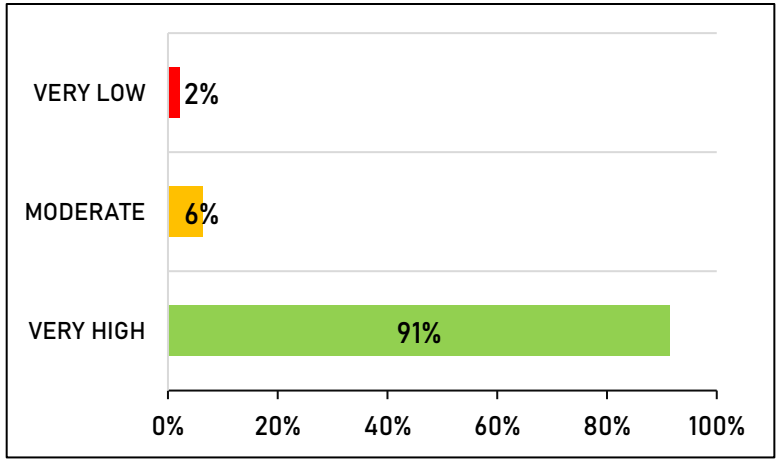


Figure 4. *Chances of Becoming an Engineer.*

Skills

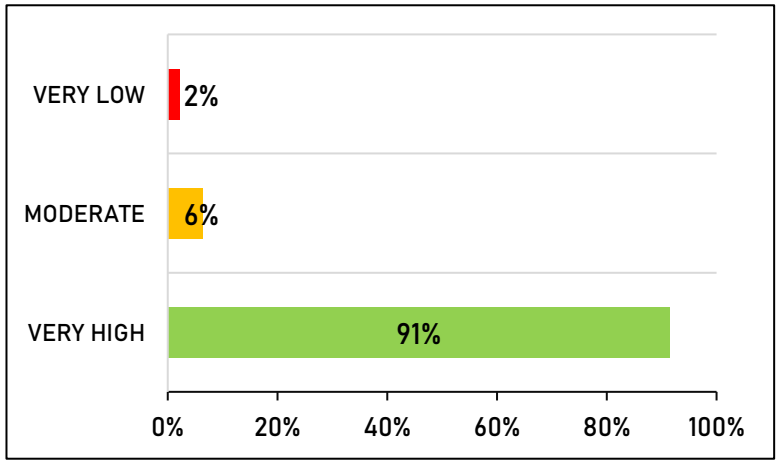


Figure 1. *Increase in Math Skills.*

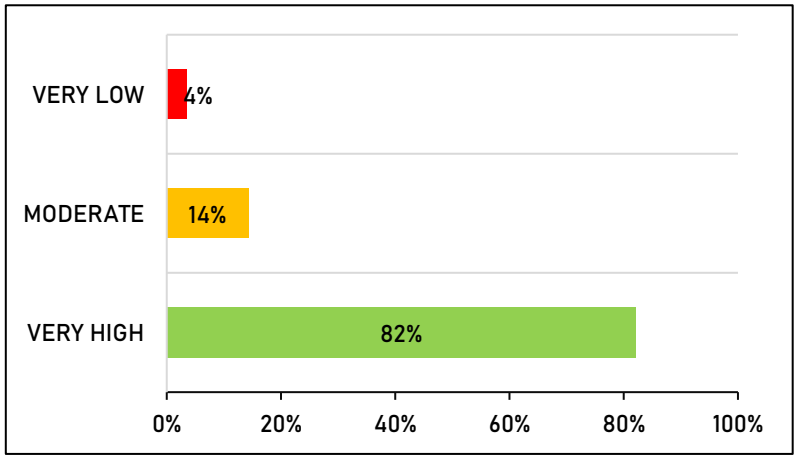


Figure 2. *Increase in Communication Skills.*

Improvements

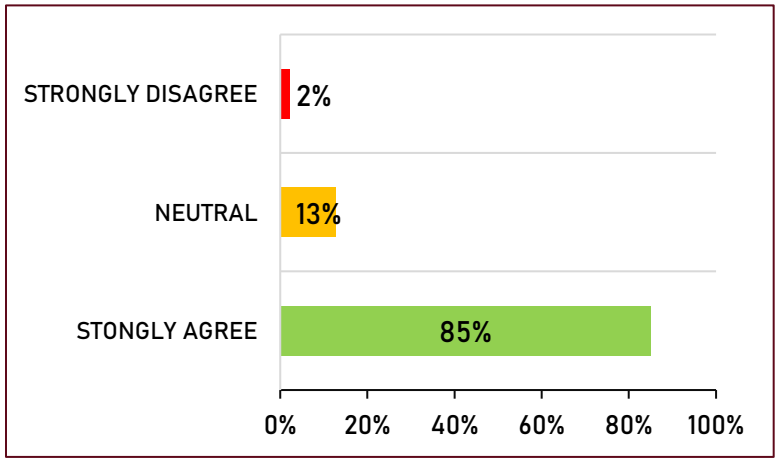


Figure 3. *Improved Ability to Adjust to College Life.*

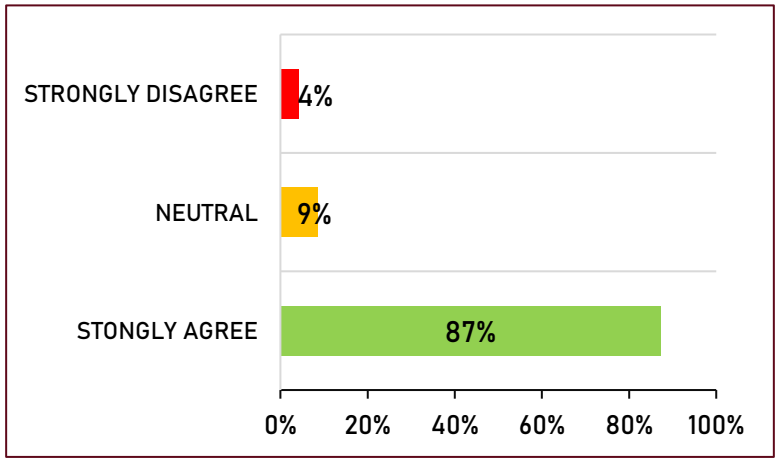


Figure 4. *Improved Academic Readiness.*

Most Recent Improvements

- Enhance strategic partnerships that incentivize student and company involvement
- Classes for credit incentive students
- Opportunity to engage after participating in the program as a counselor
- Track students' well-being during the fall semester and activities
- Counseling
- Scholarships

Thank You!

Questions?

SUMMER BRIDGE

Be You @ BAGLEY