Evaluation Highlights for the 2025 madiSTEM Conference at James Madison University

About the Conference:

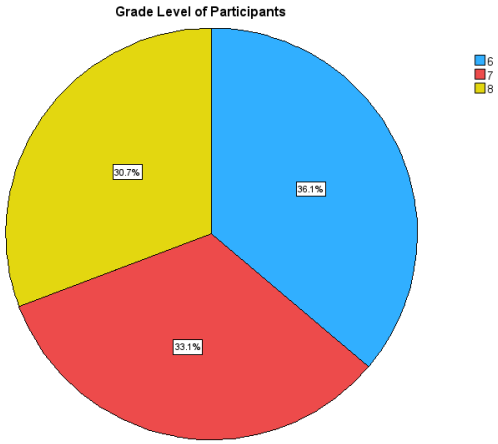
The madiSTEM Conference at James Madison University is an annual STEM (science, technology, engineering, and mathematics) conference designed for young women in grades 6-8. The 2025 madiSTEM conference involved 188 student participants in grades 6-8, approximately 160 JMU student volunteers, 4 current and alumni student panelists (for each panel), and about 50 adult volunteers. Each year, the conference program includes two keynote addresses, around 20 hands-on student workshops on a wide variety of STEM topics, and lunch with JMU students from STEM majors. The purpose of madiSTEM is to foster and support young women's interest in STEM fields, to increase their awareness of STEM career opportunities, and to empower them to see themselves as future participants in these fields and careers.

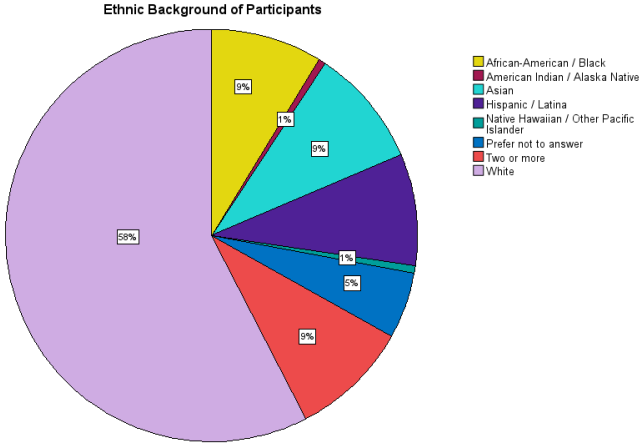
More information about the 2025 madiSTEM Conference at James Madison University can be obtained by visiting the conference's website (`https://www.jmu.edu/mathstat/madistem/index.shtml`) or emailing the conference directors at `madistem@jmu.edu`. The 2025 conference was directed by Dr. Celes Woodruff, Ms. Colleen Watson, and Dr. Mike Lam.

Acknowledgment: The conference organizers thank Dr. Prabhashi Withana Gamage for conducting the statistical analysis that forms the basis of this report.

Demographics:

Of the 188 student participants at the 2025 madiSTEM Conference, 172 participants completed the conference pre-survey. Demographic data is based on these 172 participants.





- **25.6% of student participants** reported that they **participate in science, math, or computer activities (other than madiSTEM) outside of school** with 1.7% of student participants reporting that they participated in all three types of activities. 50.5% of the student participants reported that they are not currently involved in science activities but are interested in doing so. 36% of the students who participated reported that they are not currently involved in math activities, but are interested in doing so. 38.4% of the student participants reported that they are not currently involved in computer activities, but are interested in doing so.

Feedback on the Conference Experience:

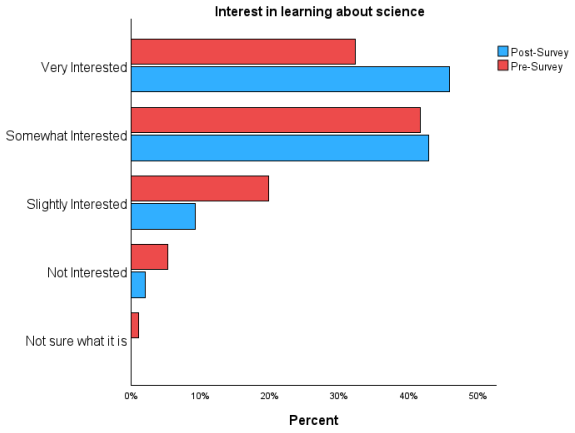
108 student participants and 16 adult participants completed the post-surveys at the end of the conference.

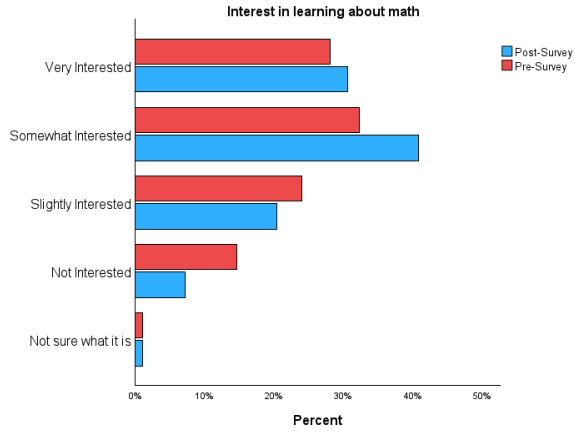
- **97.1% of student participants** and **93.4% of the adult participants** reported that they **loved or liked the overall experience**.
- **64.1% of student participants** reported in the post-survey that they **are interested in attending madiSTEM next year**. 11.1% of the students reported that they loved to, but they are going to exceed the age limit. madiSTEM is designed for students in grades 6-8.

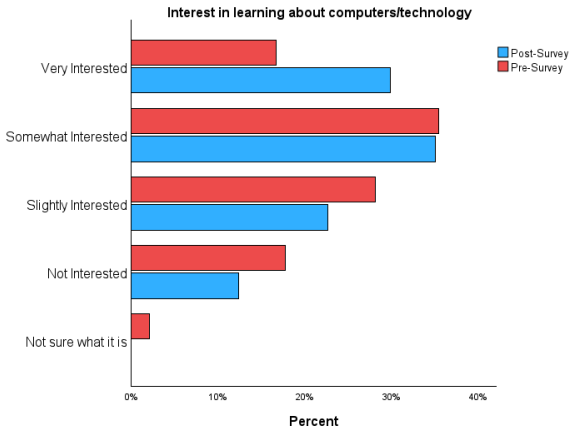
Selected Comments from Adults on the Post-Survey Regarding Their Opinion about the Conference:

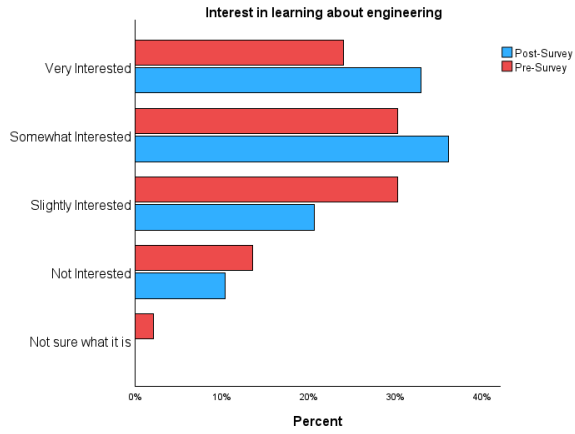
- *"The keynote was amazing - talking about setbacks, community college, life outside of work etc. loved hands on aspect of cone snail and what's inside workshops."*
- *"I loved that everything was hands on. My daughter really enjoyed the whole conference."*
- *"I attended workshops with my daughter. She was in cohort E. I loved the hands on nature of the workshops. They were very engaging. My favorite part was the afteroon keynote speaker. She is an awesome speaker and I think really connected with the audience. Hearing questions the students were asking was great too."*
- *"Hands on activities. Opportunities to show possibilities for future studies."*
- *"Great speakers, great workshops."*
- *"It was well organized. Gave students autonomy in a safe environment."*
- *"Super organized, Really appreciate so many volunteers. Super inspiring for kids. Signs Really helped. Lunch was super nice appreciated. Loved the keynotes. Loved hands on workshops."*

Interest in Learning More about STEM Topics:





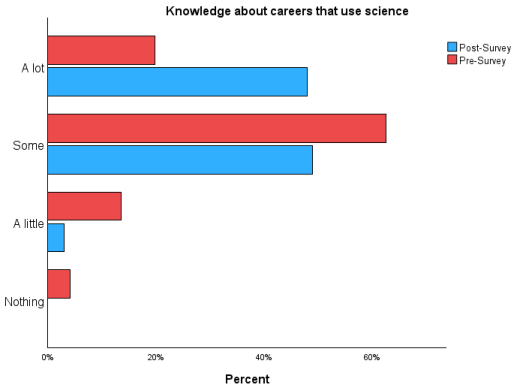




- 25.3% of the participants who reported a level of interest below "Very interested" in all of these areas reported a higher level of interest in **at least one** of these areas.

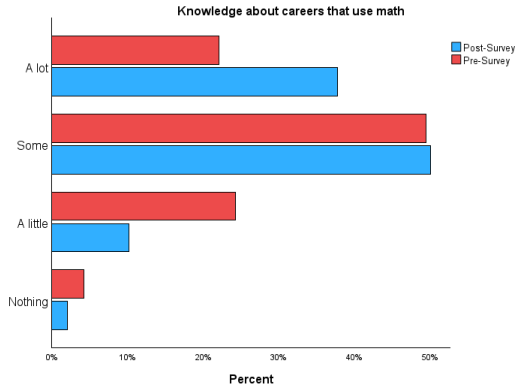
Changes in Knowledge about STEM Careers:

On both the pre- and post-surveys, student participants were asked to rate their knowledge about careers that use each of the following areas: science, math, computers/technology, and engineering. All of the percentages below are based on the student participants who answered these questions on both surveys.



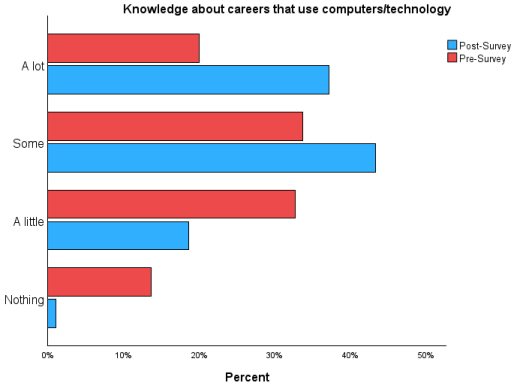
After attending madiSTEM, **43.2% of the student participants** reported a **higher level of knowledge** about **careers using science**.

53.9% of the participants who reported a level of knowledge below "A lot" on the pre-survey reported a higher level of knowledge on the post survey.



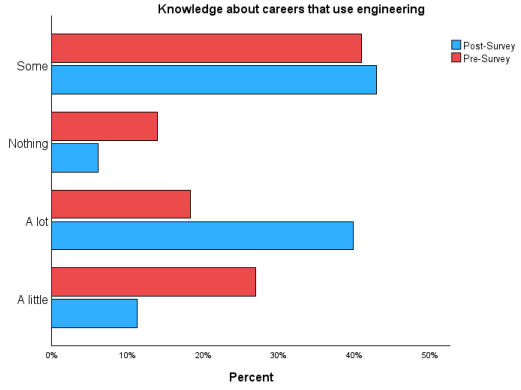
After attending madiSTEM, **36.2% of the student participants** reported a **higher level of knowledge** about **careers using math**.

46.6% of the participants who reported a level of knowledge below "A lot" on the pre-survey reported a higher level of knowledge on the post survey.



After attending madiSTEM, **47.3% of the student participants** reported a **higher level of knowledge** about **careers using computers/technology**.

59.5% of the participants who reported a level of knowledge below "A lot" on the pre-survey reported a higher level of knowledge on the post survey.



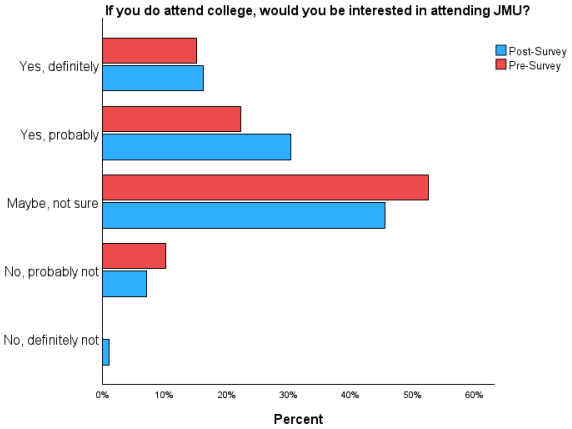
After attending madiSTEM, **43.5% of the student participants** reported a **higher level of knowledge** about **careers using engineering**.

53.3% of the participants who reported a level of knowledge below "A lot" on the pre-survey reported a higher level of knowledge on the post survey.

Changes in Interests and Perceptions:

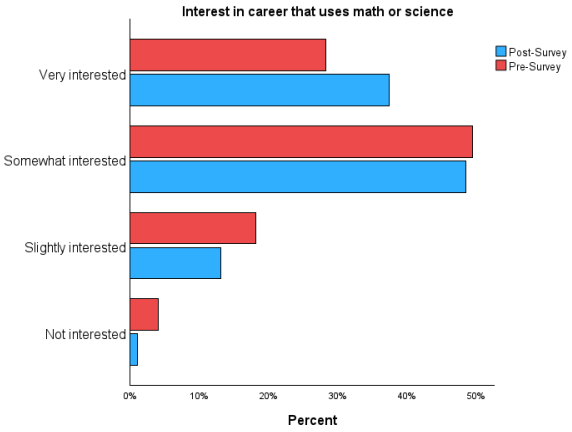
On both the pre- and post-surveys, student participants were asked to rate their interest in attending James Madison University, their interest in a career that uses math or science, their confidence in their future success in a career that uses math or science, and their interest in learning more about each of a list of topics (science, math, computers/technology, and engineering). All of the percentages below are based on the student participants who answered these questions on both surveys.

Interest in Attending JMU:

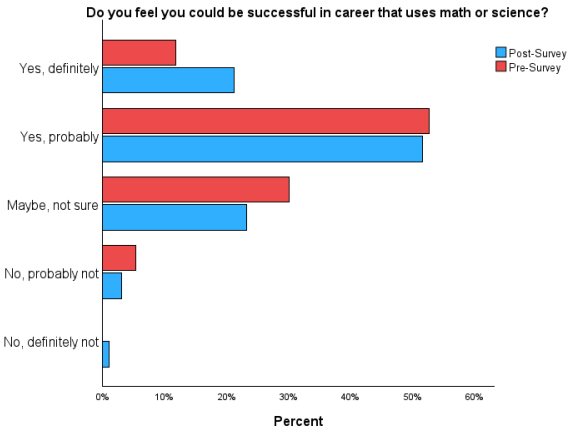


19% of the participants who reported a level of interest below "Yes, definitely" on the pre-survey reported a higher level of interest on the post-survey.

Interest and Confidence in STEM Career:



36.6% of the participants who reported a level of interest below "Very interested" on the pre-survey reported a higher level of interest on the post-survey.



34.1% of the participants who reported a level of interest below "Yes, definitely" on the pre-survey reported a higher level of confidence on the post-survey.

Selected Comments from Students on the Post-Survey about How Participating in madiSTEM Changed Their Thinking About Their Career Plans:

- *"I had no idea that you could have this much fun doing this stuff! I definitely want to be in a job that uses STEM when I grow up."*
- *"It opened up my mind to new careers I did not even think were possible."*
- *"It gave me more ideas and made me realize how interesting stem is and can be."*
- *"That girls can be anything."*
- *"It made me realize there are a lot more careers out there that I could do."*
- *"everything you do has STEM in it."*
- *"It made me realize there is many more careers to do then I first thought."*
- *"I think this was a lot of fun. Now I want to do more STEM stuff."*

Follow-up Actions and Changes in Perceptions and Interest One Month after madiSTEM:
Adults who registered student participants for madiSTEM received an online survey invitation approximately one month after the conference. 54 parents and guardians responded and provided information about 63 student participants.
Since attending madiSTEM,

- **96.2%** of these students had **talked with their parent/guardian about what they had learned** at madiSTEM,
- **69.2%** of these students had **expressed increased interest in a career that uses math or science**,
- **63.4%** of these students had **expressed increased confidence with regard to their potential for success in a career in math or science**, and
- **55.9%** of these students had **expressed interest in taking additional math or science classes** in the future.

In addition, parents reported the degree to which their children had recently done any research to learn more about STEM topics or careers.

- **55.7%** of these students researched topics/careers in **science**;
- **38.4%** of these students researched topics/careers in **mathematics**;
- **41.2%** of these students researched topics/careers in **computers or technology**; and
- **24%** of these students researched topics/careers in **engineering**.

Selected Comments from Adults on the One-Month Follow-up Survey:
Parents and teachers reported any changes in student perceptions or interests in math or science since attending madiSTEM.

- *"Told me that she has greater interest in STEM since Madistem and has taken an interest in more science and technology focused tv shows and books. Has an increased interest in a career in graphic design (over illustration.)."*
- *"Yes, there was an improvement in curiosity and application of concepts to daily life."*
- *"My daughter loved the day and was very excited to tell us all about it. She definitely wants to go back next year. She has still (recently) expressed anti-math sentiment. She does seem a little more interested in science - I think seeing connections between things she likes and science was helpful (soap making)."*
- *"Yes! She finally saw the "fun" side of math/science and how to apply it as a career that would be "not boring"."*
- *"My daughter has been excited about coming back to the STEM camp. When I first signed her up, she was hesitant because nothing looked that "interesting" to her, but now she wants to try doing coding and making things at home."*
- *"my daughter has been interested in engineering and architecture; however, after madiSTEM she has been very interested in archaeology and anthropology. She has also talked a lot about the keynote speaker about medical supply innovation."*