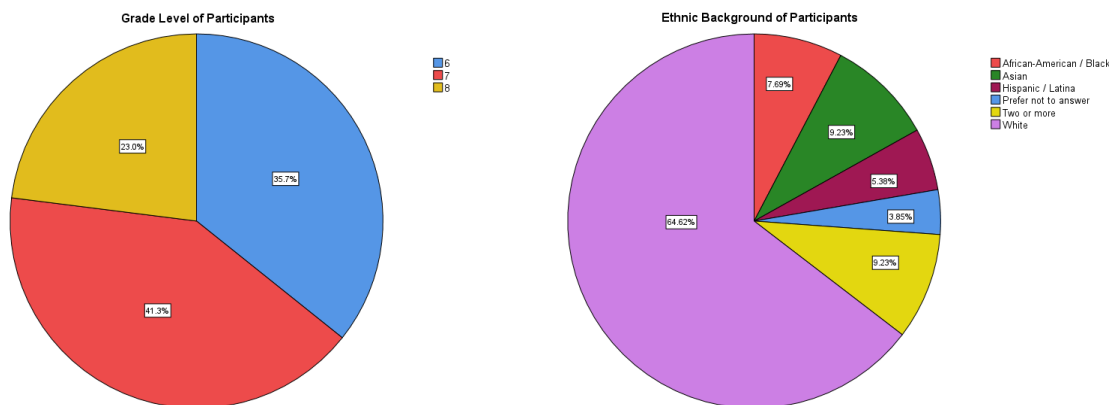


Evaluation Highlights for the 2023 madiSTEM Conference at James Madison University

Demographics:

Of the 133 student participants at the 2023 madiSTEM Conference, 130 participants completed the conference pre-survey. Demographic data is based on these 130 participants.



- **36.15%** of student participants reported that they **participate in science, math, or computer activities (other than madiSTEM) outside of school** with 3.84% of student participants reporting that they participate in all three types of activities. 51.54% of the student participants reported they are not currently involved in science activities, but they are interested in doing so. 31.54% of the student participants reported they are not currently involved in math activities, but they are interested in doing so. 42.31% of the student participants reported they are not currently involved in computer activities, but they are interested in doing so.

Feedback on the Conference Experience:

Post-surveys were completed by 127 student participants and 24 adult participants at the end of the conference.

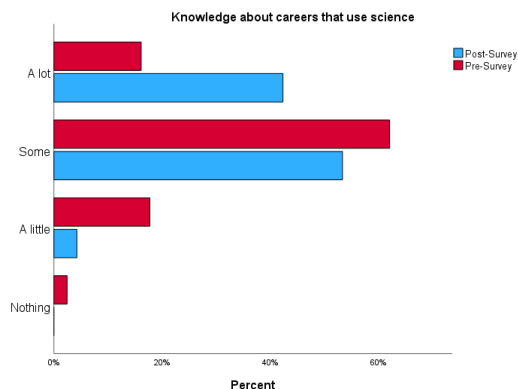
- **95.2%** of student participants and **100%** of adult participants reported that they **loved or liked the overall experience**.

Selected Comments from Adults on the Post-Survey and One-Month Follow-up Survey:

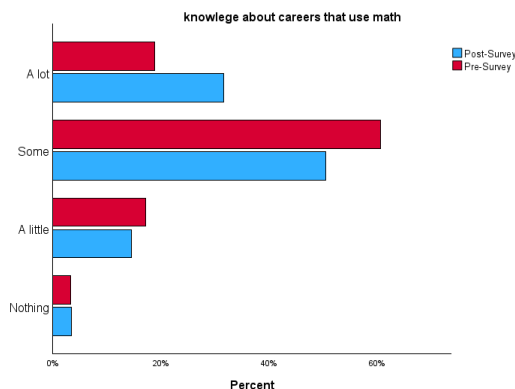
- *“Hands on experiences & great role models.”*
- *“So thankful for all the volunteers and professors who shared their time & expertise with us. Great experience!”*
- *“An excellent conference! Really great student sessions and conversations with both the faculty and students.”*
- *“She really enjoyed it, and she had a lot of great things to say especially about the student volunteers.”*
- *“In each workshop, the presenters did a great job sharing possible career paths for the students.”*
- *“As a teacher myself I was very impressed with the probability workshop “Beating the odds”. Even as an adult, I will take what I learned back to my courses.”*
- *“I love the exposure it gives my child. It has helped her to see the possibilities and how they are obtainable for her. Very encouraging. Loved the hands on activities to the STEM applied. Wished we could do more.”*

Changes in Knowledge about STEM Careers:

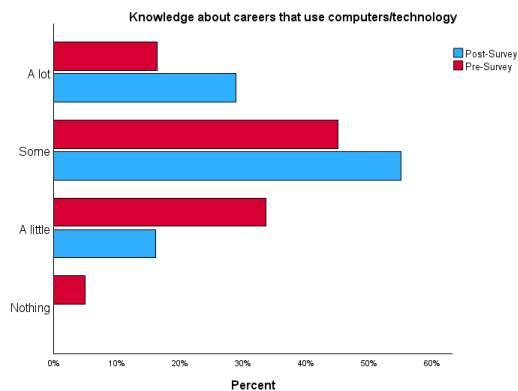
On both the pre- and post-surveys, student participants were asked to rate their knowledge about careers that use each of the following areas: science, math, computers/technology, and engineering. All of the percentages below are based on the student participants who answered these questions on both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



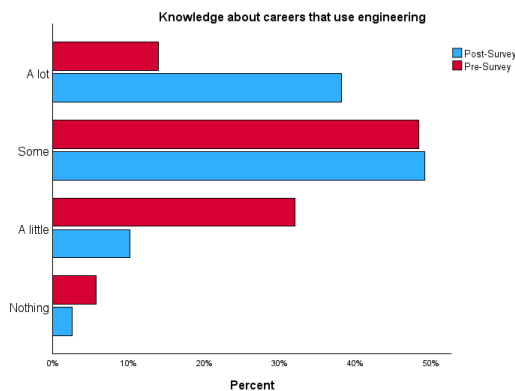
53.1% of the participants who reported a level of knowledge below “A lot” on the pre-survey reported a higher level of knowledge on the post survey.



34.7% 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.



53.1% 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.

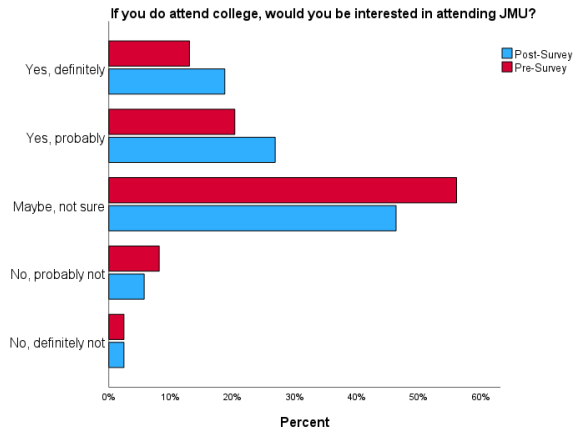


60.4% of the participants who reported a level of knowledge below “A lot” on the pre-survey reported a higher level of knowledge on the post survey.

Changes in Interests and Perceptions:

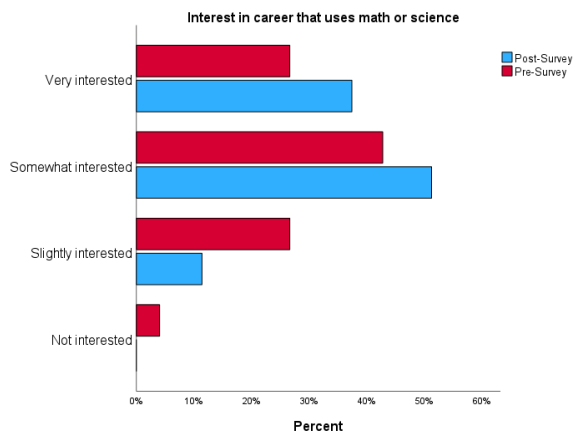
On both the pre- and post-surveys, student participants were asked to rate their interest in attending James Madison University, their interest in a career that uses math or science, their confidence in their future success in a career that uses math or science, and their interest in learning more about 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:

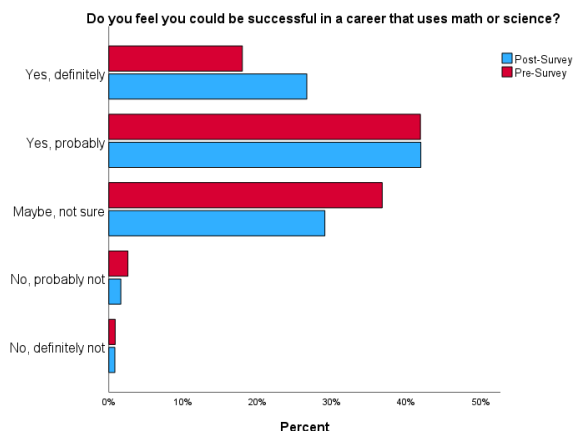


28.3% of the participants who reported a level of interest below “Yes, definitely” on the pre-survey reported a higher level of interest on the post-survey.

Interest and Confidence in STEM Career:

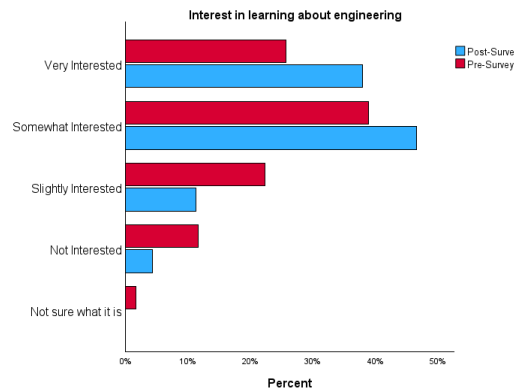
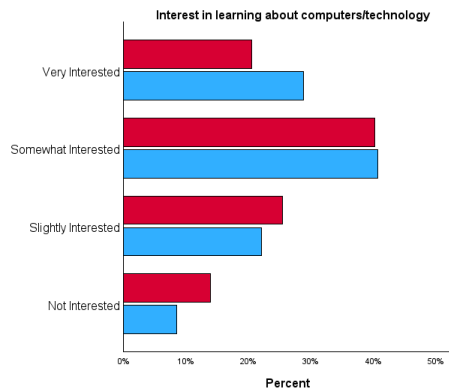
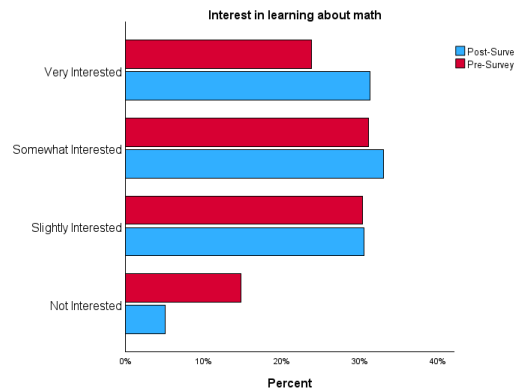
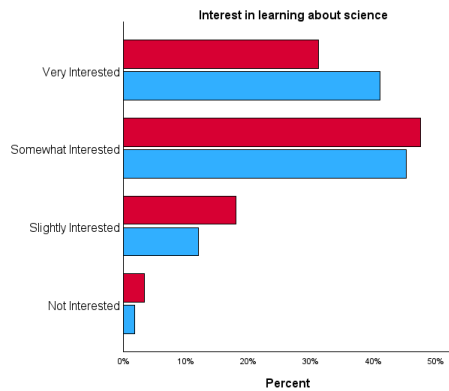


47.8% of the participants who reported a level of interest below “Very interested” on the pre-survey reported a higher level of interest on the post-survey.



31.3% 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.

Interest in Learning More about STEM Topics:



- 61.48% 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.

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

- *“It made me feel more confident in possible going into a stem career.”*
- *“It made me realize that there are a lot of careers in stem it can actually be fun.”*
- *“We coded in scratch I wanted to be a coder.”*
- *“It let me understand how helpful it can be even in everyday life.”*
- *“physics has now entered the picture for me, I never considered it until the physics demo, this has been amazing thank you! =D”*
- *“I realized that science and math can be more interesting than I thought at first.”*
- *“These workshops interested me a lot in engineering and computers compared from earlier.”*
- *“Science seems a lot cooler now.”*

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. 39 parents and guardians responded and provided information about 40 student participants.

Since attending madiSTEM,

- **97.4%** of these students had **talked with their parent/guardian about what they had learned at madiSTEM,**
- **87.2%** of these students had **expressed increased interest in a career that uses math or science,**
- **71.7%** of these students had **expressed increased confidence with regard to their potential for success in a career in math or science,** and
- **56.9%** 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.

- **43.6%** of these students researched topics/careers in **science;**
- **29.0%** of these students researched topics/careers in **mathematics;**
- **31.6%** of these students researched topics/careers in **computers or technology;** and
- **31.6%** 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.

- *“My daughter was excited to see so many other girls participating and interested in STEAM fields. I see increased confidence in her to pursue those areas.”*
- *“Her eyes were opened to the opportunities with STEM. She thought the heart workshop was cool and she loved the physics demo.”*
- *“She wanted to sign up for the STEM Academy at school.”*
- *“Much more interest in career opportunities after high school.”*
- *“The first thing my daughter said when I picked her up was, “I never knew Math could be fun!” PreAlgebra was a struggle this year for my 6th grader, but she’s decided to take it again for 7th grade, knowing that it will be easier the second time through. She’s also decided to pick Physics over Life Science for 7th grade. I love that she wants to try these more challenging classes. You’ve inspired her and now you have a new JMU fan.”*

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 2023 madiSTEM conference involved 133 student participants in grades 6-8, approximately 30 parents and teachers, approximately 130 JMU student volunteers, and more than 40 JMU faculty and staff 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 2023 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 2023 conference was directed by Dr. Celes Woodruff, Ms. Colleen Watson, and Dr. Mike Lam.

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