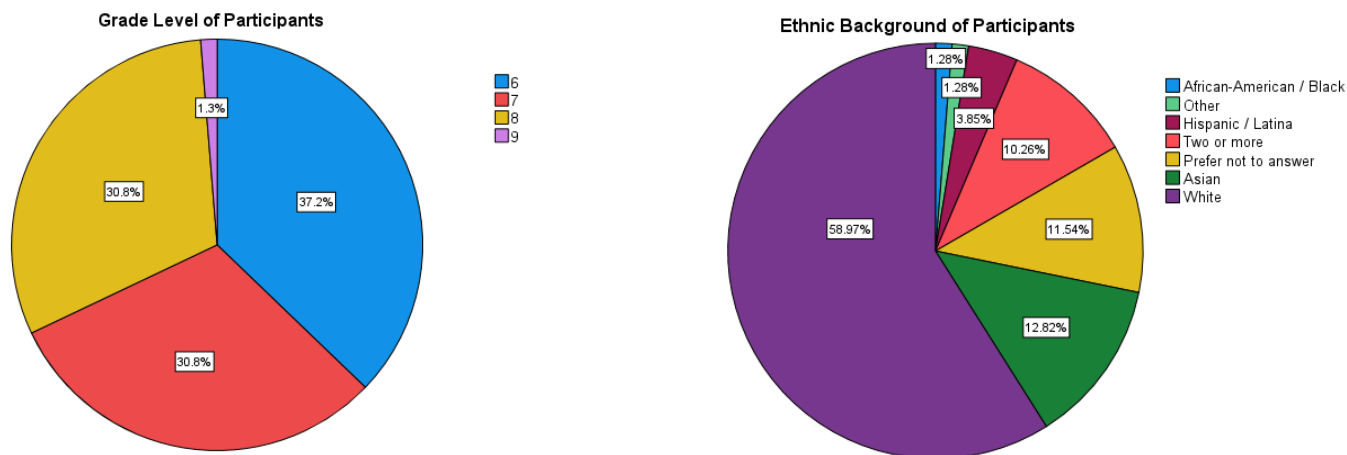


Evaluation Highlights for the 2022 madiSTEM Conference at James Madison University

Demographics:

Of the 111 student participants at the 2022 madiSTEM Conference, 78 participants completed the conference pre-survey. Demographic data is based on these 78 participants.



- **48.7% of student participants reported that they participate in science, math, or computer activities (other than madiSTEM) outside of school** with 7.7% of student participants reporting that they participate in all three types of activities. 39.7% of the student participants reported they are not currently involved in science activities, but they are interested in doing so. 41.0% of the student participants reported they are not currently involved in math activities, but they are interested in doing so. 46.2% 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 79 student participants and 9 adult participants at the end of the conference.

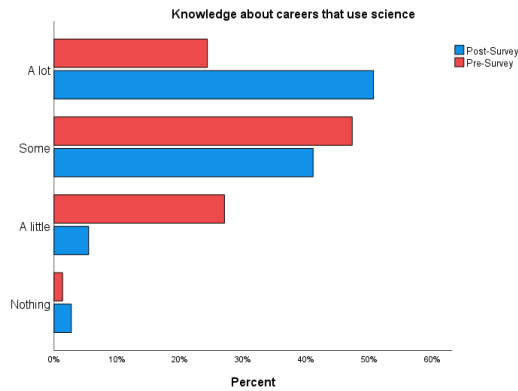
- **98.7% of student participants and 100% of adult participants reported that they loved or liked the overall experience.**

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

- *“It was well organized, the workshops were very informational, and the speakers provide a real picture of what you can do with stem career. The volunteer students were so helpful kept the girls engaged.”*
- *“Very hands on. Appreciate the effort to have women leading workshops giving students leadership opportunities.”*
- *“My daughter loved participating in madiSTEM. She found it interesting and fun. As soon as she got home she asked if she could go again next year. Thank you!”*
- *“The enthusiasm shown by all contributors. Several truly excellent and age/education appropriate experiences. Wonderfully organized.”*
- *“madiSTEM was a great experience for my daughter. She already has a deep interest in STEM subjects. The JMU setting gave her additional incentive. The facilities were new and modern. It really piqued her interest in attending JMU to further her STEM education.”*
- *“Our Student Volunteers were fantastic! They encouraged our girls showed great leadership as well as maturity, great examples.”*

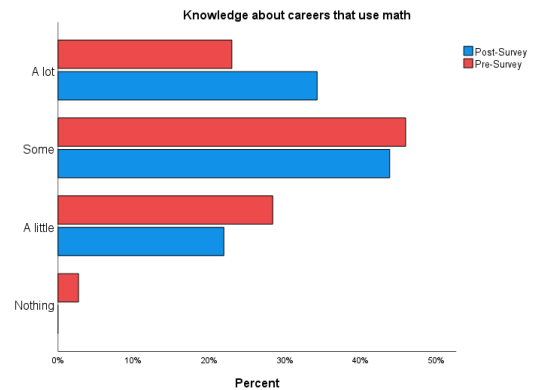
Changes in Knowledge about STEM Careers:

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 turned in consent forms and answered these questions on both surveys.



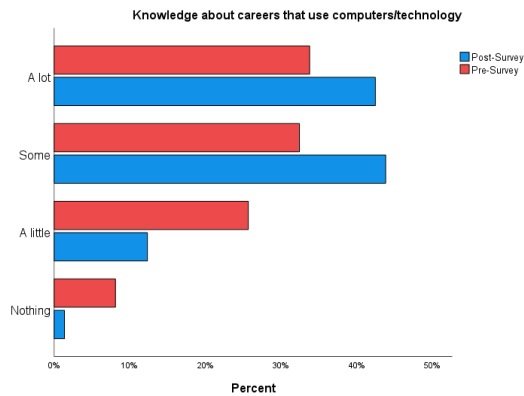
After attending madiSTEM, **47.9% of the student participants** reported a **higher level of knowledge about careers using science**.

63.6% 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.



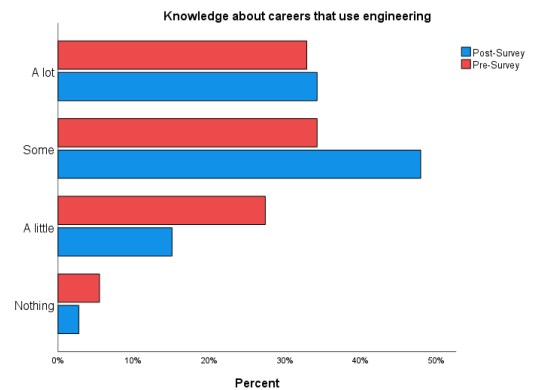
After attending madiSTEM, **37.0% of the student participants** reported a **higher level of knowledge about careers using math**.

47.4% 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.



After attending madiSTEM, **38.4% of the student participants** reported a **higher level of knowledge about careers using computers/technology**.

57.1% 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.



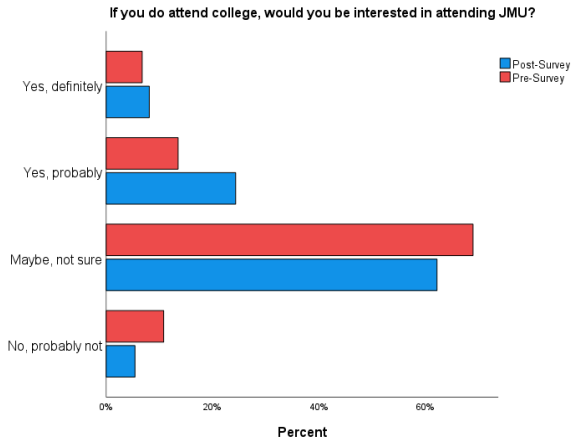
After attending madiSTEM, **34.7% of the student participants** reported a **higher level of knowledge about careers using engineering**.

51.0% 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 turned in consent forms and answered these questions on both surveys.

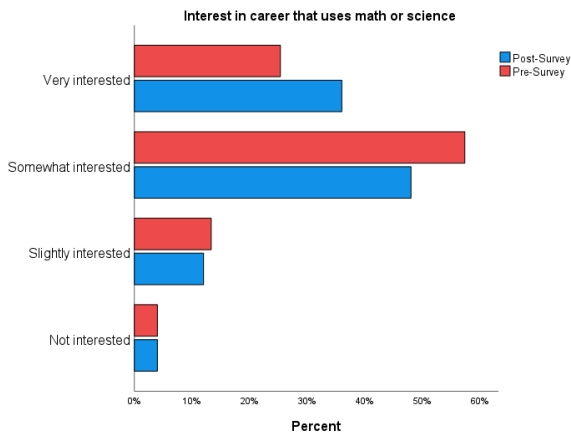
Interest in Attending JMU:



After attending mediSTEM, **20.3% of the student participants** reported **increased interest in attending JMU**.

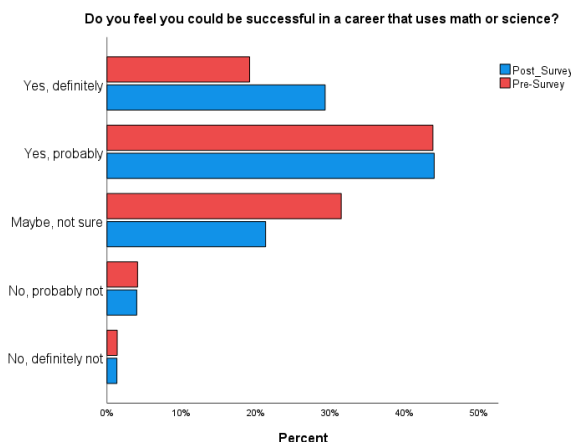
21.7% of the participants who reported a level of interest below “Yes, definitely” on the pre-survey reported a higher level of interest on the post survey.

Interest and Confidence in STEM Career:



After attending mediSTEM, **18.7% of the student participants** reported **increased interest in career that use math or science**.

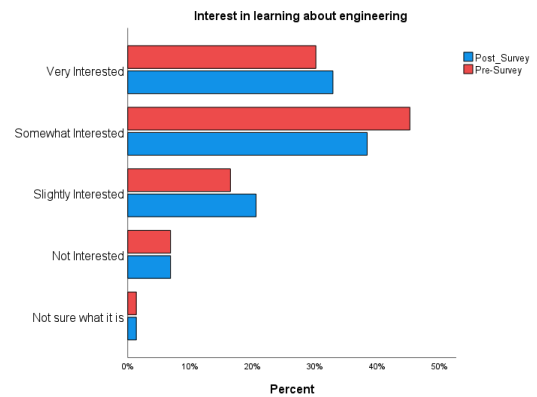
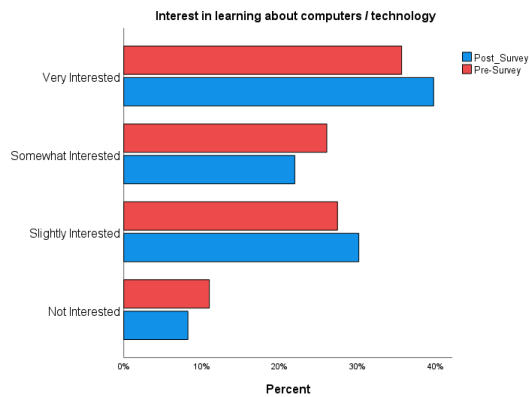
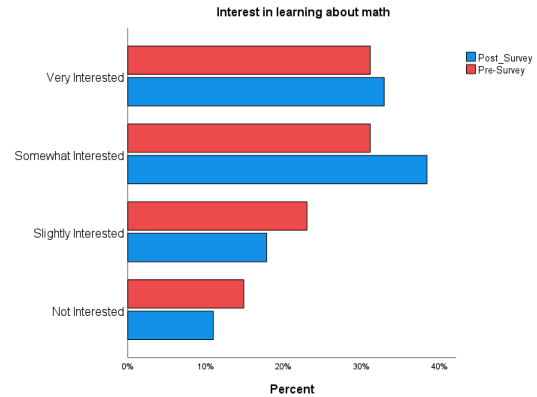
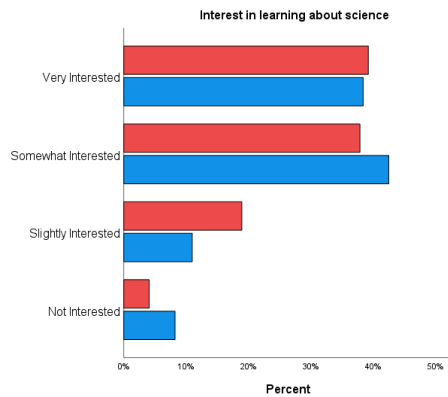
25.0% of the participants who reported a level of interest below “Very interested” on the pre-survey reported a higher level of interest on the post survey.



After attending mediSTEM, **28.8% of the student participants** reported **increased confidence that they could be successful in a career that use math or science**.

35.6% 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:



- After attending madiSTEM, **46.6%** of the student participants reported a **higher level of interest** in **at least one** of these areas.
- 50.0% 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 understand things that I thought were really difficult better. and made me interested in being a scientist.”*
- *“It reminded me of how much I love engineering and puts the taught [sic] of it as a career back into my mind.”*
- *“I have my mind set on a career, but today taught me more about team work.”*
- *“Participating in the activities helped me learn more about different STEM topics and I got to experience spending a day with girls that have my similar interests.”*
- *“It made me realize that I like a lot of things in STEM, and that it’s really fun!”*

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. 27 parents and guardians responded and provided information about 32 student participants.

Since attending madiSTEM,

- **96.3%** of these students had **talked with their parent/guardian about what they had learned** at madiSTEM,
- **70.3%** of these students had **expressed increased interest in a career that uses math or science**,
- **74.0%** of these students had **expressed increased confidence with regard to their potential for success in a career in math or science**, and
- **60.0%** 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.

- **67.7%** of these students researched topics/careers in **science**;
- **33.3%** of these students researched topics/careers in **mathematics**;
- **53.9%** of these students researched topics/careers in **computers or technology**; and
- **34.6%** 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 their children's/students' perceptions or interests in math or science since attending madiSTEM.

- *“I think she understands engineering more and what it entails.”*
- *“MadiSTEM influenced her willingness to join her coding class.”*
- *“she would like to attend JMU in science department.”*
- *“She knows more about things she liked, and things she did at the conference she didn't enjoy. Both are equally valuable.”*
- *“She is more persistent when working on projects or prepping for exams/quizzes.”*
- *“Their interest in science was encouraged.”*

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 2022 madiSTEM conference involved 111 student participants in grades 6-8, approximately 23 parents and teachers, approximately 100 JMU student volunteers, and about 30 JMU faculty and staff volunteers. Each year, the conference program includes two keynote addresses, more than 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 2022 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 2022 conference was directed by Drs. Katie Quertermous, Cassie Williams, and Celes Woodruff.

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