



Women *in* **STEM**

Science, Technology, Engineering, & Mathematics

2022 Evaluation Report

November 2022



Since 2014, the Northwest Ohio Center for Excellence in STEM Education at Bowling Green State University's College of Education and Human Development has coordinated the Women in STEM event. This report provides a summary of the activities and findings regarding the evaluation of the November 2022 Women in STEM event. The event was held on November 1, 2022, at Bowling Green State University. This report summarizes the following information:

- Event attendance
- Event activities
- The quality of the event
- The impact of the event

Event Attendance

An approximate total of 445 people attended this high-energy event, including 30 teachers/chaperones, 34 session presenters along with 32 co-presenters, 4 staff/12 volunteers, and 333 participating students.

333 students from 16 different schools in northwest Ohio attended the event. One to two chaperones from each school attended with the students. Grant funding from The Anderson's, Columbia Gas, the McMaster Family Foundation, PPG, and Lubrizol provided sponsorship for the event, along with the BGSU College of Education and Human Development. Listed below are the schools that participated in the November 2022 event.

- Bowling Green Middle School
- Bryan Middle School
- Calvert Academy
- Carey Middle School
- Chase STEMM Academy
- Eastwood Middle School
- Gateway Middle School
- Hawkins STEMM Academy
- Hicksville Middle School
- Hull Prairie Intermediate
- Marshall STEMM School
- McKinley STEMM School
- Spencerville Middle School
- Toledo Islamic Academy
- Van Buren Middle School
- Washington Junior High



Event Activities

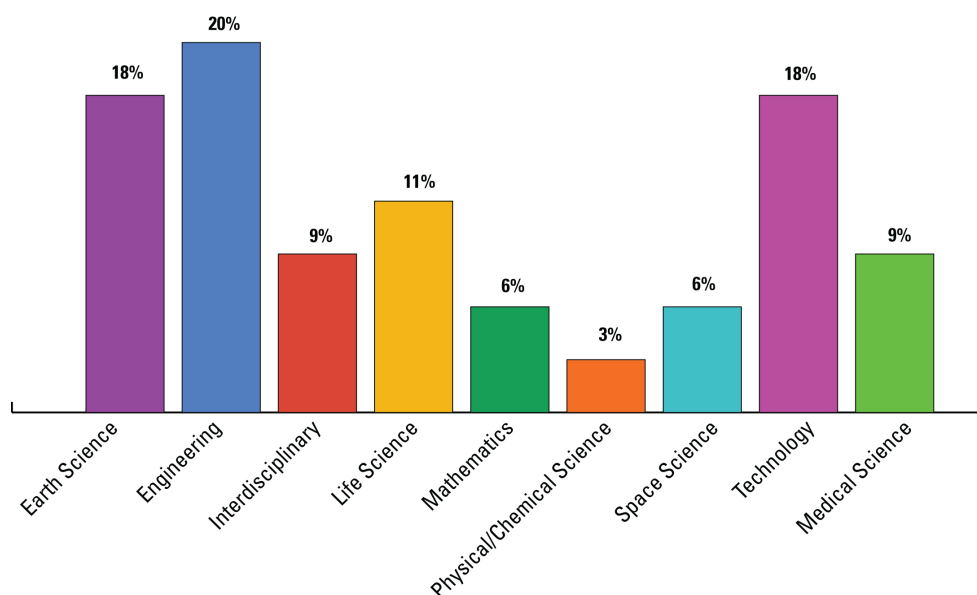
The schedule of the November 2022 event is illustrated below. Students attended a keynote speaker presentation by Lydia Denton, (a teen inventor whose personal challenges inspire her creations), three content sessions, lunch at the BGSU Social House Dining location, and a closing activity complete with a visit from the BGSU mascots, Freddie and Frieda Falcon, before being dismissed.



8:30 AM - 9:00 AM	9:05 AM - 9:45 AM	9:55 AM - 10:40 AM	10:50 AM - 11:35 AM	11:45 AM - 12:30 PM	12:40 PM - 1:25 PM	1:35 PM - 2:00 PM
Check-in and Welcome	Keynote Speaker Lydia Denton	Session 1	Lunch (students split)	Lunch (students split)	Session 4	Closing Remarks & Admissions Raffle
			Session 2 (students split)	Session 3 (students split)		

Students participated in sessions with their school groups throughout the day at different locations around campus. The students attended three out of forty-five possible sessions during the event. The types of the November 2022 sessions are shown below, followed by a listing of the presentation titles.

Women in STEM Sessions by Topic



Women in STEM Presentation Titles

- Marble Machines
- History Einsteins: Using STEM to Solve History's Mysteries
- The Great Lakes and Humans in their Watersheds are Interconnected
- Making Music with Code
- Coding Fun with Ozobots
- Transporting Natural Gas - Engineering
- Have Seeds, Will Travel
- How Do Animals Use the Sun, Stars, and Earth Magnetic Field to Navigate
- Building STEM Skills One Block at Time
- How to Monitor Earth from Above
- Be a CreatAR! Let's Dive into Augmented Reality!
- Let's Get Unruly with Splats!
- Application of Conservation Careers and Principles
- Microscope Mysteries
- Women Light Up the Room
- How do Variables Impact Motion?
- Adaptive Clothing- Making Fashion Accessible for All
- Forensic Science and Careers in Forensics
- An Interactive Session with the Anatomage Table
- Tessellations, Mathematics, and Art
- Colors in the World of Remote Sensing
- Toledo Zoo Careers and Conservation
- Problem Solving: The Math Camp Experience
- Building Our Seats at the Table: Women in the Trades, Architecture, Engineering and Design
- Lunar Landing
- Construction in Motion
- Phun with Pharmacy!
- Cybersecurity for Everyone: Understanding Modern Cryptography with CryptoScratch
- Mars Map: Learning About the Features, Rovers, Landers, And the Women That Helped Mars Exploration
- Leading the World's Sustainable Energy Future



"I liked how we got to do hands-on stuff and how we got to work together. Also, I learned in the 1st lesson how to use a coding calculator which I had never done before until today."

"I liked learning about different science fields and getting to do hands-on activities. Everyone was very enthusiastic!"

"Women in STEM made me more interested in my science career in the future and overall, more interested in the science subjects."

"My favorite was forensic science, but I liked them all."

"My experience at Women in STEM was very fun. I know now more about STEM and what it truly is about after today. I really enjoyed the pharmacy session."

"I really enjoyed the real-life experiences and the hands-on activities."

From the Teachers/Chaperones' Perspective

A total of 25 teachers/chaperones completed the evaluation survey after the event. Overall, they felt positively about this year's event and the many aspects that go into implementing a positive and impactful experience for attendees. Most respondents chose "excellent" when rating the aspects of the event such as session presentations, keynote speaker, and session topics. Some of the respondents wrote about their experience at Women in STEM, as well as their perception of the impact of the event on students' interest in and understanding of STEM.

The following are some responses:

"Activities were engaging and fun! Especially liked math camp!"

"Keynote speaker was excellent!"

"My students didn't want to stop working on the hands-on activities. As a teacher that is the best way to measure engagement!"

"We have attended for 3 years and the sessions this year were the best!"

"The format exposes young female scientists to various activities and applications of concepts they may not get at school."

"Great way to build confidence."

"This was a great opportunity for students to expand their world."

"It helps students better critically think and reflect on themselves."

"Possibly allow choice for sessions"

"Provide post-STEM day activities for teachers, researching STEM topics/careers"

From the Presenters' Perspective

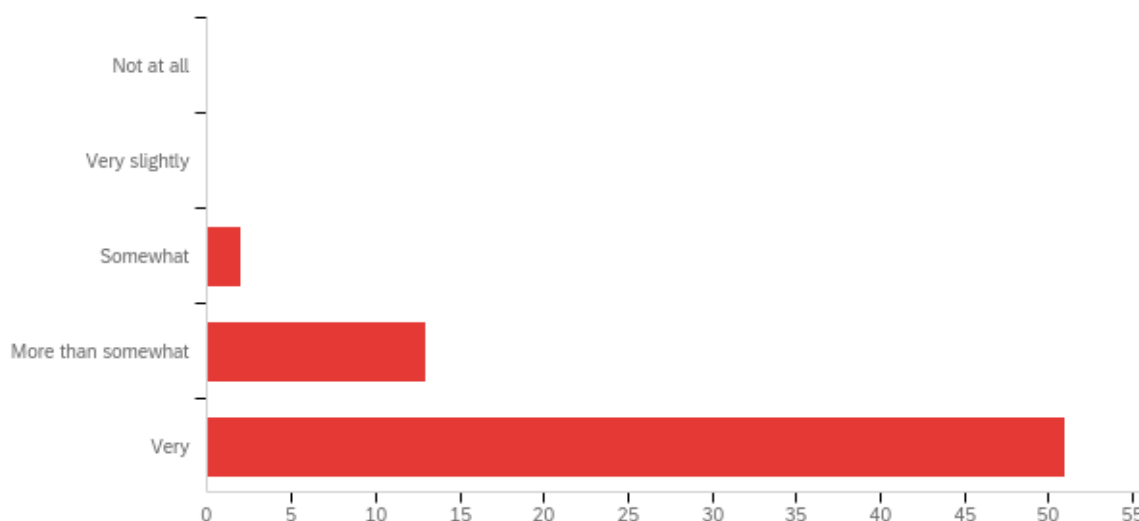
A total of 66 presenters and co-presenters completed the online evaluation survey after their participation in the event.

Questions asked were:

How many years (counting this one) have you been involved with Women in STEM? Almost half of the respondents indicated that this was their first or second year participating in Women in STEM, indicating that staff recruitment efforts to include new presenters appears to be working well.

The presenters responded very positively when asked about the event overall with most rating "Length of sessions/time available for presentations" and "Overall organization of the event" as "excellent" or "good".

As a presenter at Women in STEM, how worthwhile was your participation? 77.27% said "very" worthwhile, as indicated by the chart below.



Lastly, presenters were asked: *As a Presenter, what is your perception of the impact of Women in STEM on students' interest in and understanding of STEM?*

Respondents written answers are below:

"It seems to me the girls are exposed to things they may not otherwise have the opportunity to experience or if they do, they don't attend because they have a preconceived idea about a particular topic. These sessions help breakdown those barriers. The girls seem to have new interest as they leave."

"Every time I have done this event the excitement of the girls and they're willingness to participate as middle school students is uplifting. The girls always seem like they have a lot of fun and get to experience a wide variety of things."

"I think this is such a great event to demonstrate to young women how they can create and be involved in STEM careers or have an interest in the STEM field."

“Students who attended were excited and got great hands-on experience with different fields of science and technology.”

“Students seeing female professionals in leadership roles; learning about all the possibilities for a career; being exposed to new ideas; shows girls how to persevere, work cooperatively, be curious.”

“It gets them interested. It shows them things in STEM that they haven't been exposed to before and hopefully pathways they can take.”

“It's a great opportunity for students to see real women in a variety of real STEM careers and to be able to interact and ask questions.”

“I think it is a great opportunity to allow girls to have fun and explore science in a unique environment. I think it does inspire girls to think more about STEM fields.”

“I think everything we can do to help these young women on their career paths is important. I also love being the 'nontraditional' STEM career presenter to help them understand you can use those STEM skills in many ways.”

“Amazing to have the opportunity to talk to girls about careers that have typically been a male field in natural gas and oil.”

“I think the event has a significant impact on the students that participate in this event. It gets them exposed to various fields they can get involved in and the activities help grab their attention and get them excited about STEM fields.”

“My goal is to always get the students to think outside the box about careers that use STEM skills daily but might not be traditional STEM areas (like museum work, food service, art, music). I also try to get them to see how technology has been changing over the centuries and it isn't just computers and phones.”

“It was 37 years ago that I was that 8th grade girl coming to Women in Science. I'm still interested!”

“I like that the students get to see a broad range of STEM careers and meet the actual women that work in each field. It sounds like the students have been selected by their schools to attend which generally means they are interested in the topics being presented.”

“I believe the day provides exposure and inspiration in areas the girls may not have the opportunity to engage in back at school.”

“From my experience, Women in STEM plays a significant role in developing girls' interest in and identity as scientists and engineers not only by exposing them to a variety of career options but by providing in person experiences with women in STEM careers. One girl, while completing the Marble Machine activity with us during our session expressed how the activity reminded her how much she enjoyed and her prior experience doing robotics at school.”



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For more information and photographs from the event, please see the Women in STEM at BGSU website at: <https://www.bgsu.edu/nwo/programs/women-in-stem.html>