

2015 Evaluation Report

November 2015



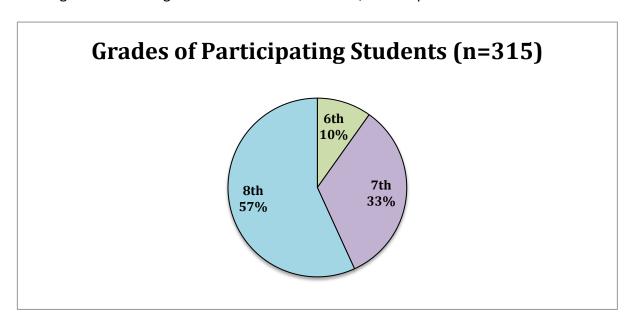
This report provides a summary of the activities and findings regarding the evaluation of the 2015 Women in STEM event. The event was held on November 6, 2015 at Bowling Green State University. This report summarizes the following information:

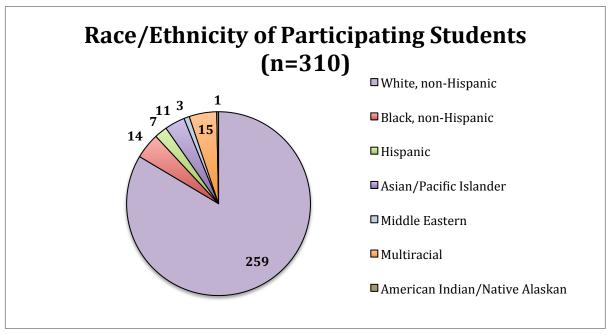
- Event attendance
- Event activities
- The quality of the event

- The impact of the event
- Recommendations for next year

Event Attendance

A total of 487 people attended the event, including 43 chaperones/teachers, 54 session presenters, 58 staff/volunteers, and 332 students. The figures below illustrate the distribution of the participating students who completed the evaluation and identified their grade level and race/ethnicity. The majority of the girls were in 8th grade and identified as "white, non-Hispanic".





Students from 20 different schools in northwest Ohio and southeast Michigan attended the event. Approximately two chaperones from each school attended with the students. The box below shows the schools that participated in the 2015 event.

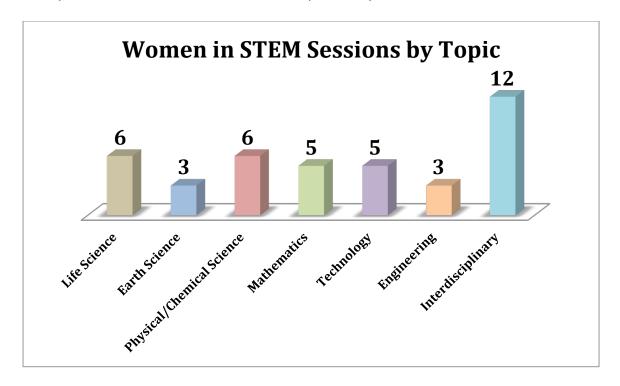
Amherst Junior High	Monroeville Elementary
Anthony Wayne Junior High	Northwood Elem./High
Arbor Hills Junior High	Pandora-Gilboa Middle
Arlington Local	Perrysburg Junior High
Bowling Green Middle	Robinson Elementary
Eastwood Middle	St. Joseph School
Edgerton Jr./Sr.	Thirkell Elementary-Middle
Fassett Junior High	Timberstone Junior High
Hicksville Middle	Toledo School for the Arts
McCord Junior High	Upper Sandusky Middle

Event Activities

Women in STEM was coordinated by the Northwest Ohio Center for Excellence in STEM Education at Bowling Green State University for the second year in a row. The schedule of the 2015 event is illustrated below. Students attended a keynote address, two content sessions, and a closing activity with Imagination Station before being dismissed at 2:15 PM. The keynote presentation was sponsored by Texas Instruments and featured MIT Engineer Emily Calandrelli, who is the producer and host of FOX's *Xploration Outer Space*. Additional sponsors of the 2015 event included BP and John Deere.

8:40 AM –	9:00 AM –	10:10 AM –	11:15 AM –	12:20 PM –	1:25 PM –
9:00 AM	10:00 AM	11:05 AM	12:10 PM	1:15 PM	2:15 PM
Check-in and Welcome by BGSU President, Dr. Mary Ellen Mazey	Keynote Address by Emily Calandrelli	Session 1	Lunch (students split) Session 2 (students split)	Lunch (students split) Session 3 (students split)	Closing Remarks, Admissions Raffle, Imagination Station Presentation

Students were kept in their school groups throughout the day. The students attended two out of forty possible sessions during the event. The types of the 2015 sessions are shown below. The number of sessions increased from twenty-seven in 2014; additionally, five mathematics presentations were included this year where none were included in the previous year.



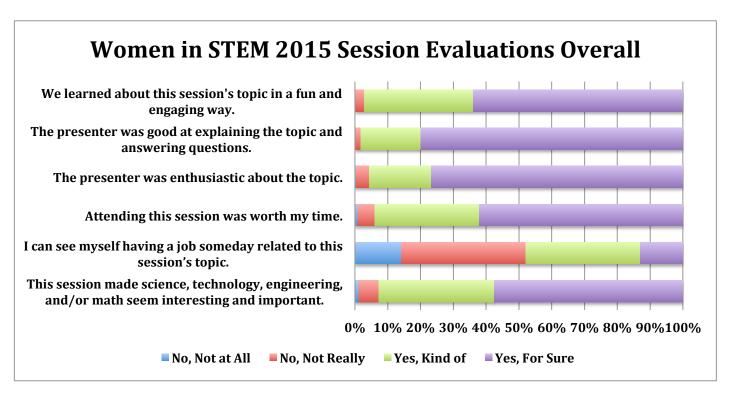


Quality of the Event

The quality of the Women in STEM event was determined by examining evaluation responses from all participations: students, presenters, and chaperones/teachers. Presenters' thoughts about the events were documented using an online post-event survey (Appendix A). Students' and chaperones' thoughts about the event were documented using session-specific evaluation surveys (Appendix B) and an overall program evaluation survey (Appendix C – students and Appendix D – chaperones).

From the Students' Perspective

Students completed an evaluation survey for most sessions they attended. All together, 592 session evaluation surveys were submitted for 36 unique sessions. Students were generally very positive about the sessions. They believed that the presenters were high-quality, the sessions were engaging and worth their time, and the sessions made STEM seem interesting and important. Students agreed most with statements about the quality of the presenters (good at explaining the topic and answering questions; enthusiastic about the topic), and agreed least with the statement, "I can see myself having a job someday related to this session's topic". The figure below illustrates the students' overall survey responses for all sessions where evaluations were collected.

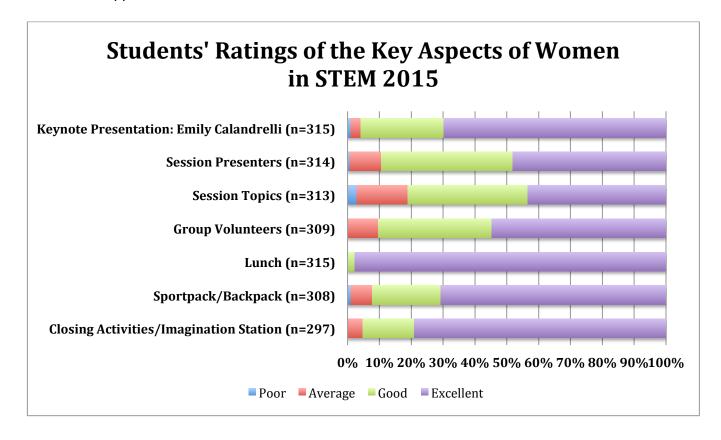


Although all sessions had a positive average rating, some sessions were (inevitably) better received than others. Individual session evaluation data was sent to each presenter. The table in Appendix E lists all main presenters for the sessions. Some presenters conducted two sessions; the session evaluations from both sessions were combined for their overall rating. This information should be considered when inviting and deciding on presenters in the future. The presenters who did not turn in their session evaluation sheets are reported at the bottom of the list as no data is available to evaluate their session.

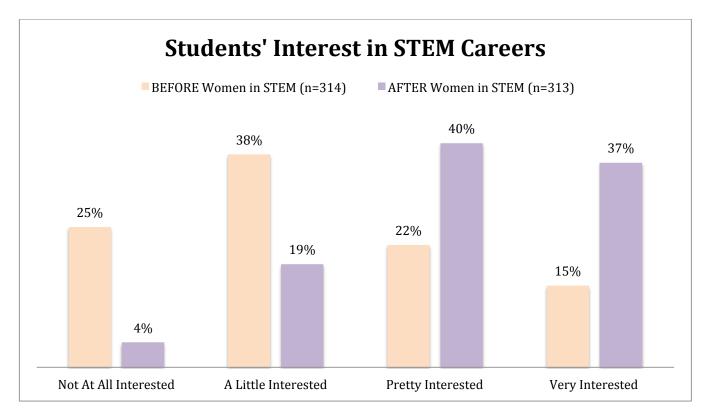
Students' written comments were also positive for the most part. The figure below is a word cloud created from the students' written comments. The size of a given word corresponds with its frequency within the students' comments. Therefore, the more times a word appears within the comments, the larger the word will be in the word cloud. As seen below, words such as "liked," "fun," "hands-on" and "interesting" were common among the students' comments.

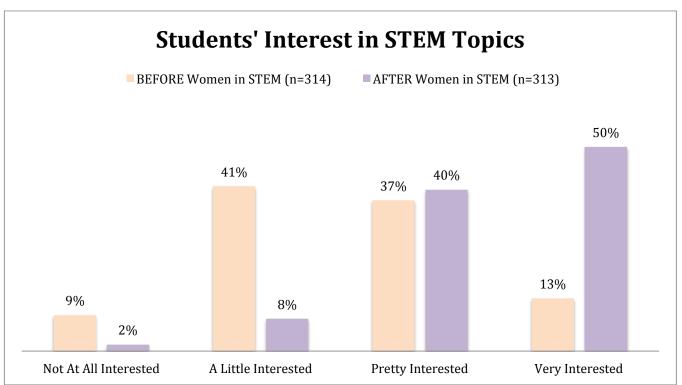


A total of 315 students completed the overall evaluation survey after the event, for a total response rate of 98%. Students' perspectives on the different aspects of the Women in STEM program are displayed below; overall, they felt very positively about this year's event and the many aspects that go into making the complete programmatic experience for attendees. A breakdown of student ratings by school is available in Appendix F.



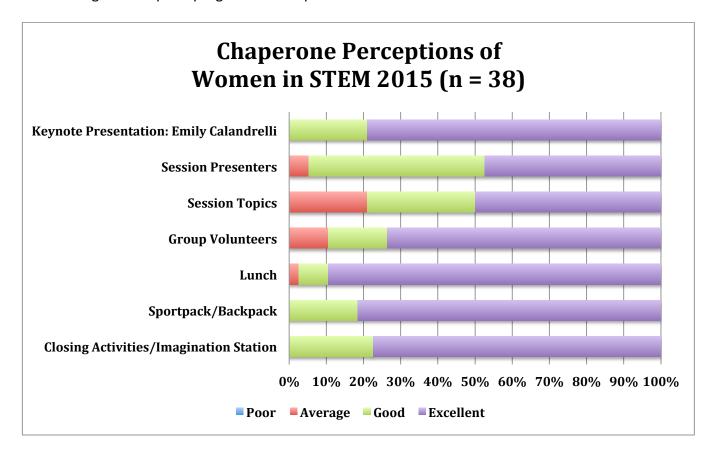
On the overall evaluation, given at the end of the event only, students were asked to identify their interest in "STEM Topics" and "STEM Careers" before attending and after attending Women in STEM. Their self reported data is below. After Women in STEM, 77% of the students reported being "Pretty or Very Interested" in STEM careers and relatedly 90% reported being "Pretty or Very Interested" in STEM topics. Appendix C contains the overall evaluation survey that was given to students and contained these questions.





From the Chaperones' Perspective

A total of 38 chaperones completed the overall evaluation survey after the event, for a total response rate of 88%. Chaperones' perspective of the different aspects of the Women in STEM program are displayed below; overall, they felt very positively about this year's event and the many aspects that go into making the complete programmatic experience for attendees.

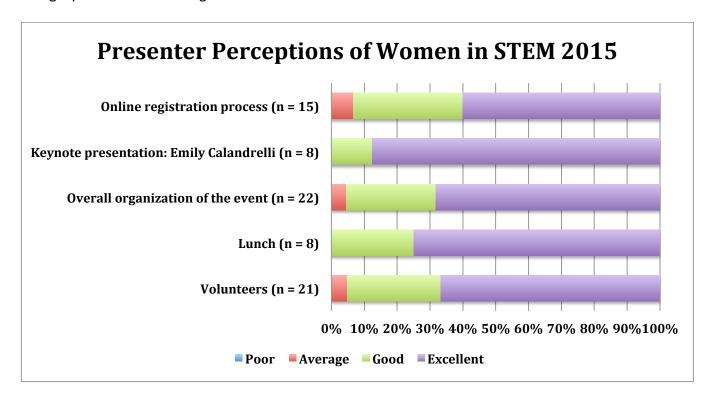




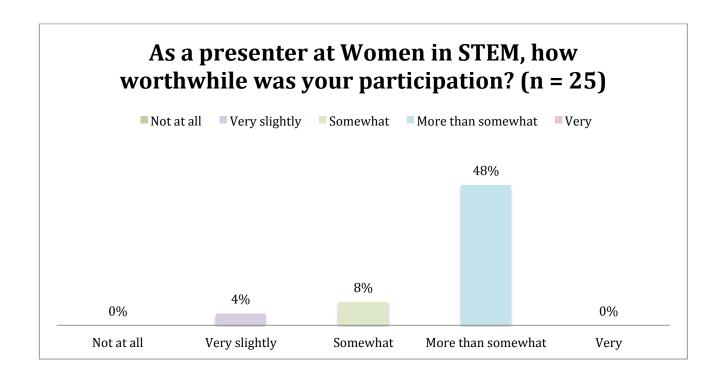
From the Presenters' Perspective

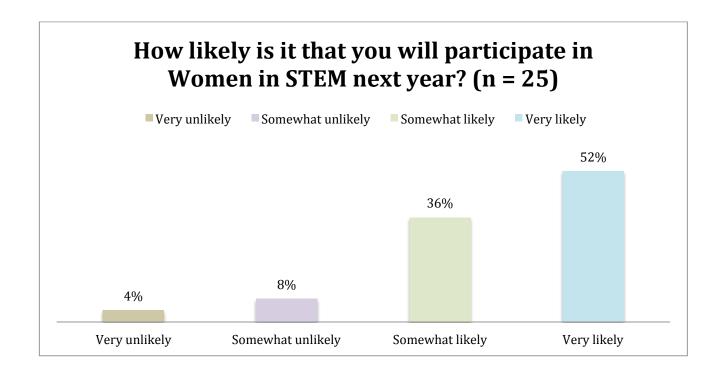
Twenty-five presenters completed the online evaluation (response rate of 46%). The majority (56%) of the respondents indicated that this was their first year participating in Women in STEM, indicating that staff recruitment efforts to include new presenters appears to be working well.

Presenters were also asked to rate several aspects of the Women in STEM program. Their responses are detailed below. The majority of respondents noted that they did not take part in the keynote presentation or lunch, which accounts for the low response rate in these categories on the chart below. Overall, the presenters responded very positively about the event overall with the majority rating each category as "excellent" or "good".



Additionally, presenters were asked to rate the extent to which their participation was worthwhile. Most presenters (56%) reported their participation to be worthwhile and 88% indicated that they were likely to participate in future Women in STEM events. Their reasoning mostly revolved around the importance of getting girls engaged in STEM; serving as potential role models for the girls, the organization of the event, and the fact that the girls in their sessions seemed interested in what was being presented. The charts on the following page display the overall responses from the presenters regarding their participation this year and in the future.





Impact of the Event

The chaperones, and presenters who completed the overall evaluation surveys believed the event was most successful in exposing students to STEM topics and careers of which the students may not have otherwise been aware. A few survey respondents observed an increase in students' interest about a particular topic. Some of the survey respondents wrote:

- Inspiring great way to show different branches of STEM fields and describing it as an adventure. I am so grateful for the opportunity to come! – Chaperone
- This has helped some of my group to decide if a career in these fields would be of interest. Great enthusiasm from presenters. Chaperone
- It's a wonderful opportunity to bring girls who may not be looking at STEM careers to see how exciting they can be, and how much of a variety there really is out there. Chaperone
- This is what our students need! It is the exposure all students should receive to STEM! –
 Chaperone
- The impact was a strong message of women CAN & DO work in STEM jobs. Chaperone
- In my opinion (as a male) it gives the girls more confidence in fields that are predominately male driven. It is also eye opening to new ideas or careers too. Chaperone
- The topic seemed new to most of the students, and it is always good to present young women with female role models. – Presenter
- The opportunity to illustrate to these young women how important it is to get people interested in conservation and wildlife is valuable. They readily interacted, were interested in the topic, and ones who were reluctant in the beginning became more engaged as the presentation progressed.
 Presenter
- I love expressing my passions in the STEM field, and seeing the girls echo or have interest in STEM fields is very rewarding. Presenter
- It was a great way for us to show there are alternative types of careers that use math and science all the time (like museum work) but aren't strictly STEM related. Presenter
- Our impact serves as an important reality check for girls to understand what is possible for their future in a positive atmosphere. – Presenter
- I think it helps show them all the options and opportunities and benefits that are available to them if they pursue STEM. It also helps boost their confidence and improved their exposure. – Presenter

Recommendations

The following recommendations are made based on the feedback from the evaluation surveys and input from project staff:

- Continue with a paper "overall" evaluation survey at the end of the day for students and chaperones. This year, chaperones and students were asked to complete a paper evaluation and doing this as a paper form at the end of the day resulted in a near 100% response rate. While collecting paper copies of the evaluation survey requires more time for data entry, it ensures that almost all students and chaperones will be heard from, allowing for more feedback about the event.
- Return to a schedule that includes three content sessions for shorter time periods. Chaperones especially felt that the sessions were too long and with the girls only getting two sessions, they aren't exposed to as many STEM opportunities and presenters. Additionally, a shorter keynote address would allow for more session time in the schedule. Students also heavily commented that they "wish they had more than two sessions".
- Shorten the overall schedule for the day. Several schools were not able to arrive in time for the welcome and missed part of the keynote, limiting their overall exposure to the event. Additionally, several schools had to leave early and missed part of the closing ceremony and demonstrations from Imagination Station. Due to the distance of some schools from BGSU, it would be beneficial to shorten the overall schedule to allow schools to arrive by 9:00 AM and depart by 2:00 PM without missing any programmatic features.
- Allow schools to select their top picks for session themes. Several chaperones and students commented that they wanted to be able to select which sessions they attend. While it is not entirely feasible for schools to select the exact sessions they attend, it would be worth considering adding a section to the registration to allow schools to order the session themes by interest for their group (i.e. first, second, third, fourth choice, etc.).
- Consider restricting the age group down to only one grade level or two grade levels. Several students
 made comments relating to having attended in the past or feeling the session topics were meant for
 younger/older students. Restricting the age/grade of the girls who attend would reduce the number of
 girls who attend for multiple years, allowing more new girls to get into the program each year.
 Additionally, presenters commented that it was difficult to prepare their presentation for such wide age
 range and restricting the age/grade of attendance would allow presenters to target their presentation to
 that age range and be more beneficial for the girls.
- Provide more guidance to presenters regarding the age/grade of the participating girls. Related to the above recommendation, several presenters indicated that they would have benefited from more guidance on how to prepare for the girls in their session. Additionally, more guidance and support for first time presenters about the type of presentation they should create would help the presenters create more hands-on, interactive presentations which will more thoroughly engage the girls in their STEM topic.

Appendix A

We Hope You Enjoyed the 2015 Women in STEM Event at BGSU! Members of the Women in STEM committee are always seeking ways to improve future events. The best way to do this is to find out what participants think of the event, and use their comments and suggestions to make future events better. Please take a few minutes to complete the following evaluation survey and tell us what you thought about the 2015 Women in STEM event. We appreciate your cooperation! Thank you for your assistance in improving Women in STEM.

Presenters: Please Tell Us	What You Th	nink								
How many years (counting this o	ne) have you b	een involve	d with Won	nen in STE	M?					
One (this is my first year)										
C) Two										
C) Three										
C) Four										
Five or more										
TWO OF MORE										
Please rate the following aspects of Women in STEM 2015.										
	Poor	Average	Good	Excellent	This doesn't apply to me					
Online registration process	0	0	0	0	0					
Keynote presentation: Emily Calandrelli	0	0	0	0	0					
Organization of student groups	0		0	0	0					
Overall organization of the event	0	0	0	0	0					
Lunch	0	0	0	0	0					
Volunteers	0		0	0	0					
As a presenter at Women in STE Not at all Very slightly Somewhat More than somewhat	M, how worthw	/hile was yo	ur particip	ation?						
O Very										
Please briefly explain why you think so.										

As a Presenter, what is your perception of the impact of Women in STEM on students'							
interest in and understanding of STEM (science, technology, engineering, and							
mathematics)?							
How likely is it that you will participate in Women in STEM next year?							
Very unlikely							
Somewhat unlikely							
Somewhat likely							
Very likely							

we want to know About Your Women in STEW Exp	Derience
Please describe your experience at Women in STEM 2015 in yinclude the parts that you liked as well as those that you didn	
What suggestions do you have for next year's event? Is there want to see kept or removed? Is there anything you would ch	
THANK YOU VERY MUCH FOR YOUR COOPERATION!	

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Appendix B

Presenter:

Title:

Women in STEM 2015 Session Evaluation

Time: Room:			
	carefully. Then, circle the one no right or wrong answers. We	•	•
We learned about this	s session's topic in a fun and o	engaging way.	
No, Not at All	No, Not Really	Yes, Kind Of	Yes, For Sure
The presenter was go	od at explaining the topic and	d answering questions.	
No, Not at All	No, Not Really	Yes, Kind Of	Yes, For Sure
The presenter was en	thusiastic about the topic.		
No, Not at All	No, Not Really	Yes, Kind Of	Yes, For Sure
Attending this session	was worth my time.		
No, Not at All	No, Not Really	Yes, Kind Of	Yes, For Sure
I can see myself havin	g a job someday related to th	nis session's topic.	
No, Not at All	No, Not Really	Yes, Kind Of	Yes, For Sure
This session made scie	ence, technology, engineering	g, and/or math seem interest	ting and important.
No, Not at All	No, Not Really	Yes, Kind Of	Yes, For Sure

<u>Please use the space below</u> to tell us what you thought of the session in your own words. You can write about the things you liked the best, the things you didn't like, and/or your thoughts about the topic or the presenter.

Appendix C

Women in STEM 2015 Overall Evaluation

Thank you for attending the 2015 Women in STEM at BGSU! We are glad you were part of this event!

Please take a few minutes to answer the following questions and tell us what you thought about the event. We appreciate your cooperation! Thank you for your assistance in improving Women in STEM. School: _____ Grade:____ 1) Please rate the following aspects of Women in STEM 2015. **Excellent** Poor Average Good Keynote Presentation: Emily Calandrelli **Session Presenters Session Topics Group Volunteers** Lunch Sportpack/Backpack Closing Activities/Imagination Station 2) How interested in STEM (science, technology, engineering, and mathematics) topics were you before and after attending Women in STEM? Choose the options below that describe you best. Not At All A Little Prettv Verv Interested Interested Interested Interested Before Women in STEM, I was: After Women in STEM, I am: 3) How interested were you in having a career in STEM before and after attending Women in STEM? Choose the options below that describe you best. Not At All A Little **Pretty** Verv **Interested Interested Interested Interested** Before Women in STEM, I was: After Women in STEM, I am: 4) Please use the space below to describe your experience at Women in STEM 2015 in your own words. You can include the parts that you liked as well as those that you didn't like. 5) Which of the following best describes the way you define your racial/ethnic background?

| Middle Eastern | American Indian/Native Alaskan | Multiracial

Appendix D

Women in STEM 2015 Overall Evaluation

Thank you for attending the 2015 Women in STEM at BGSU! We are glad you were part of this event!

Please take a few minutes to answer the following questions and tell us what you thought about the event. We appreciate your cooperation! Thank you for your assistance in improving Women in STEM.

Chaperone Status: Select one of the following.				
Teacher: Parent/Guardian: School	Administr	ator: Oth	ier:	
1) Please rate the following aspects of Wor	nen in ST	TEM 2015.		
	Poor	Average	Good	Excellent
Keynote Presentation: Emily Calandrelli				
Session Presenters				
Session Topics				
Group Volunteers				
Lunch				
Sportpack/Backpack				
Closing Activities/Imagination Station				
, c				

3) As a chaperone, what is your perception of the impact of Women in STEM on students' interest in and understanding of STEM (science, technology, engineering, and mathematics)?

Presenter	Session Title	Session Topic	Total # of Responses	We learned about this session's topic in a fun and engaging way.	The presenter was good at explaining the topic and answering questions.	The presenter was enthusiastic about the topic.	Attending this session was worth my time.	Average Session Rating
Manu Aggarwal	Ultrasounding Your Future in Veins, Laser Medicine and Beyond	Technology	39	3.8	3.9	3.8	3.5	3.8
Beth Ash	Rates of Chemical Reactions	Physical/Chemical Science	10	3.9	4.0	3.5	3.5	3.7
Anne Bullerjahn	Dissection Fun	Life Science	21	3.7	3.2	2.8	3.7	3.4
Lauren Broddrick	Girls Geared Up: STEM Careers in the Metroparks	Earth Science	10	3.9	4.0	3.9	3.8	3.9
Emily Calandrelli	Getting Creative with Science - and Helping the World!	Engineering	14	4.0	4.0	4.0	4.0	4.0
Jadwiga Carlson	aMAZEing robots – students program robots to solve a maze	Mathematics	21	4.0	3.5	3.5	4.0	3.8
Kate Dellenbusch	Telling Time by the Stars	Physical/Chemical Science	19	3.8	3.9	3.7	3.8	3.8
Marilyn DuFour	The Other Water Cycle: Exploring Careers in Public Utilities	Interdisciplinary	40	3.2	3.6	3.4	3.0	3.3
Andi Erbskorn	The Science of History	Interdisciplinary	44	3.5	3.8	3.8	3.5	3.7
Denise LaFleur	Fun with pH	Interdisciplinary	19	3.7	4.0	3.8	3.1	3.7
Lynda Geoffrion	The Game of Life – Business Edition	Interdisciplinary	31	3.5	3.7	3.8	3.5	3.6
Kimberly Gonzales	Engineering and Coding at Texas Instruments	Engineering	41	3.7	3.7	3.9	3.7	3.8
Lorie Gottwald	"Beyond Skin Deep: Life as a Dermatologist"	Interdisciplinary	11	3.6	3.9	3.9	3.9	3.8
Danyal Harris	O-I: Owens Illinois - World's Leading Maker of Glass Containers. Learn how to "read" a bottle!	Physical/Chemical Science	19	3.2	3.9	3.8	3.5	3.6
Ashlee Haynes	BGSU Herpetarium	Life Science	Not Collected	N/A	N/A	N/A	N/A	N/A
Karen Karl	STEM in Building and Design	Interdisciplinary	22	3.3	3.5	2.9	3.3	3.3
Jeremy Klosterman	A Crystallographic Journey into the Atomic World of Pencils and Diamonds	Physical/Chemical Science	17	3.5	3.8	3.8	3.4	3.6
Abby Knowles	Smartphones Powered by Marshmallows!	Technology	16	3.9	4.0	4.0	3.9	4.0
Pamela Menchaca	Wildlife & Nature in Wood County	Earth Science	19	3.9	3.9	3.9	3.7	3.9
Stephania Messersmith	Chemistry and Forensic Science	Physical/Chemical Science	Not Collected	N/A	N/A	N/A	N/A	N/A
Marcia Miller	Math Doodles	Mathematics	33	3.6	3.7	3.7	3.6	3.7
Paul Morris	Why does my apple turn brown? Are all apples the same?	Life Science	Not Collected	N/A	N/A	N/A	N/A	N/A
Holly Myers	Green Roofs	Interdisciplinary	14	3.5	3.9	3.8	3.4	3.7
Alexis Ostrowski	Kitchen Chemistry	Physical/Chemical Science	16	3.9	4.0	4.0	3.9	4.0
Matt Partin	Careers in Marine Biology	Life Science	10	3.5	3.8	3.5	3.6	3.6
Gwynne Rife	STEM careers in Ocean Sciences	Life Science	15	3.1	3.9	3.9	3.1	3.5
Heidi Rudolph	Simulations, and spreadsheets and data , oh my!" ?!?!?!	Technology	14	3.6	3.8	3.8	3.6	3.7
Corrinne Sullivan	Is this game really fair?!	Mathematics	30	3.7	3.8	3.9	3.4	3.7
Donna Trautman	Interactive Digital Environments and Print Technology	Technology	Not Collected	N/A	N/A	N/A	N/A	N/A
Lori Trent	STEM - Start Today Envisioning More!	Interdisciplinary	17	3.7	3.8	3.8	3.8	3.8
Erica VanNortwick & Amanda Murphy	Introduction to Solar Industry	Interdisciplinary	10	3.7	3.7	3.8	3.6	3.7
Daryl Walters	Fossils of Ohio	Earth Science	19	3.6	3.8	3.8	3.7	3.7

Women in STEM 2015 Student Ratings by School

School	Total # of Responses	Keynote Presentation: Emily Calandrelli	Session Presenters	Session Topics	Group Volunteers	Lunch	Sportpack/ Backpack	Closing Activities/ Imagination Station	Average Overall Rating
St. Joseph	21	3.81	3.67	3.95	3.86	4.00	3.95	4.00	3.89
Pandora-Gilboa	16	3.88	3.75	3.81	3.69	4.00	3.63	3.81	3.80
Perrysburg	19	3.79	3.63	3.42	3.68	3.95	3.95	3.79	3.74
Anthony Wayne	18	3.89	3.50	3.50	3.44	4.00	3.78	3.78	3.70
Arbor Hills	10	3.60	3.70	3.40	3.60	4.00	3.70	3.80	3.69
Hicksville	10	3.60	3.40	3.20	3.60	4.00	4.00	3.80	3.66
Edgerton	19	3.89	3.42	3.21	3.53	4.00	3.79	3.68	3.65
Eastwood	11	3.64	3.36	3.45	3.55	4.00	3.55	3.82	3.62
Northwood	20	3.75	3.60	3.55	3.40	3.95	3.80	2.70	3.54
TSA	19	3.95	3.47	3.42	3.42	4.00	3.74	2.79	3.54
Bowling Green	30	3.67	3.13	2.70	3.13	4.00	3.60	3.97	3.46
Robinson	5	3.20	3.00	3.40	3.20	4.00	3.40	4.00	3.46
Arlington	20	3.90	3.05	2.75	3.40	4.00	3.70	3.20	3.43
Timberstone	10	3.50	3.60	3.30	3.30	4.00	3.60	2.60	3.41
Thirkell	6	3.17	3.00	3.67	3.33	3.83	3.00	3.83	3.40
Fassett	26	3.38	3.42	2.88	3.08	3.92	3.19	3.58	3.35
Upper Sandusky	14	4.00	3.14	3.07	3.43	4.00	2.14	3.64	3.35
Monroeville	2	4.00	3.00	2.00	3.50	4.00	4.00	2.50	3.29
Amherst	20	3.00	2.65	2.35	2.75	4.00	3.35	3.55	3.09
McCord	19	3.11	3.26	3.00	3.26	3.89	2.89	2.11	3.07

1 = Not At All Interested

2 = A Little Interested

3 = Pretty Interested

4 = Very Interested