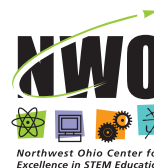


# 2014 ANNUAL REPORT



Prepared by the Northwest Ohio Center for Excellence in STEM Education



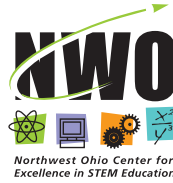
We wish to thank the following for their support of the 2014 STEM in the Park!

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**Community Sponsors**

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## What is STEM in the Park?

STEM in the Park is a free community event coordinated by the Northwest Ohio Center for Excellence in STEM Education (NWO) at BGSU that was created to get people of all ages excited about STEM (Science, Technology, Engineering, and Mathematics). The ultimate goals of STEM in the Park are to improve attendees' knowledge and interest in STEM and STEM careers and to increase attendees' awareness of STEM-related organizations and events in our community. STEM in the Park features dozens of interactive STEM activities facilitated by higher education institutions, pre-K-12 educational agencies, community non-profit organizations, and local businesses. People attending the event enjoy free food and can visit as many STEM activity stations as they desire. The event operates based on the generosity and talent of STEM professionals, businesses, and organizations in northwest Ohio.

The significance of STEM in our lives is easy to see: A rapidly growing population and ever more complex systems of human interaction demands creativity and innovation to solve the important social, economic, health, and environmental problems we face everyday. STEM is an essential part of that problem-solving process, and is therefore more important than ever as we continue to face greater and more complex problems. STEM in the Park seeks to contribute to STEM education by providing opportunities for adults and children to explore the many aspects and applications of STEM in their lives.

The fifth annual STEM in the Park event was held in the Perry Field House at Bowling Green State University (BGSU) on Saturday September 27, 2014. The attendance again increased from the previous year, with a total of 3,850 attendees, exhibitors, and volunteers/staff. This year's event also grew the number of activity stations, featuring 114 engaging hands-on STEM activities. The 2014 STEM in the Park event was presented by BGSU, Lubrizol Foundation, BP, and Verizon with community support from John Deere, Thayer Family Dealership, Tony Packo's, Spectra Group Limited, Bill Rowles Youth Foundation Fund of the Toledo



## 2014 STEM in the Park by the Numbers

Total Participants: **3,850**

Expected 2015  
Attendance: **4,000**

Hot Meals Served: **3,225**

Activities: **114**

Event Volunteers: **775**

Sponsors: **19**





Community Foundation, BG Community Foundation, Wal-Mart, and Dura Magnetics, and general support from Cooper Tire, Kroger, Meijer, SSOE, Spark! Learning Perrysburg, and Giant Industries. In-kind donations were provided by The Cookie Jar, Biggby Coffee, Carolina Biological, and Bostdorff's Greenhouse.

## Who Comes to STEM in the Park?

A total of 3,850 people (including volunteers and exhibitors) attended STEM in the Park in 2014, which is almost 600 more (about a 9% increase) than the previous year's attendance. The growth in attendance at STEM in the Park has been staggering since its inception in 2010. Attendance has increased by an average of 23% each year, and this year's attendance was more than double the attendance at the first event. The table below displays the attendance information at STEM in the Park events from 2010 to 2014.



*STEM in the Park Attendance from 2010 to 2014*

STEM in the Park attendance	2010	2011	2012	2013	2014
<b>Total Attendance</b>	<b>1,614</b>	<b>1,711</b>	<b>2,681</b>	<b>3,287</b>	<b>3,850</b>



*“This was our first year attending STEM in the park and I was so impressed! First of all I can't believe it was free to get in and free lunch. The set up was awesome, the staff/students were so knowledgeable and my 6 year old daughter had so much fun! We will be attending next year.”*





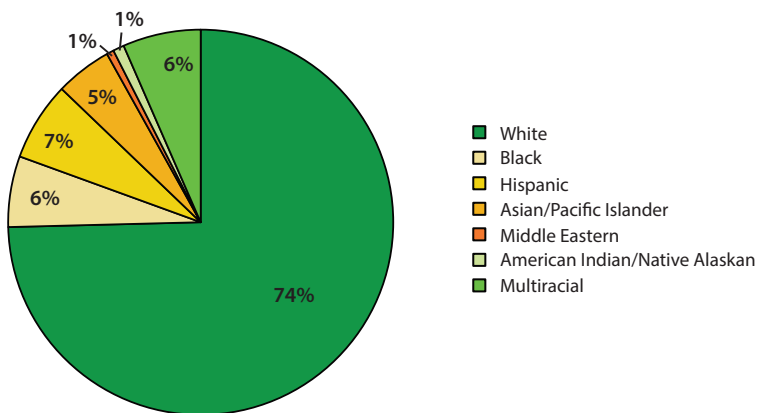
## STEM in the Park Activity Highlight



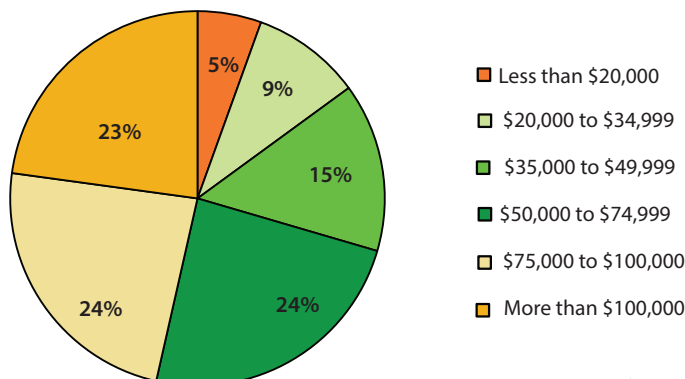
### Create a Butterfly Larva Necklace

NWO continued its commitment to increasing attendance among low-income and at-risk children by providing transportation grants to and from the event for groups of students from Toledo Public and Sandusky City school districts (the primary barrier for participation from this group). The STEM in the Park staff will remain committed to reaching even further within our region to provide this opportunity in the future. The demographic information collected from the registration and evaluation survey are presented in the figures below.

#### Racial Identity of Children Attending STEM in the Park (n=1,579)



#### Annual Household Income for Families Attending STEM in the Park (n=254)

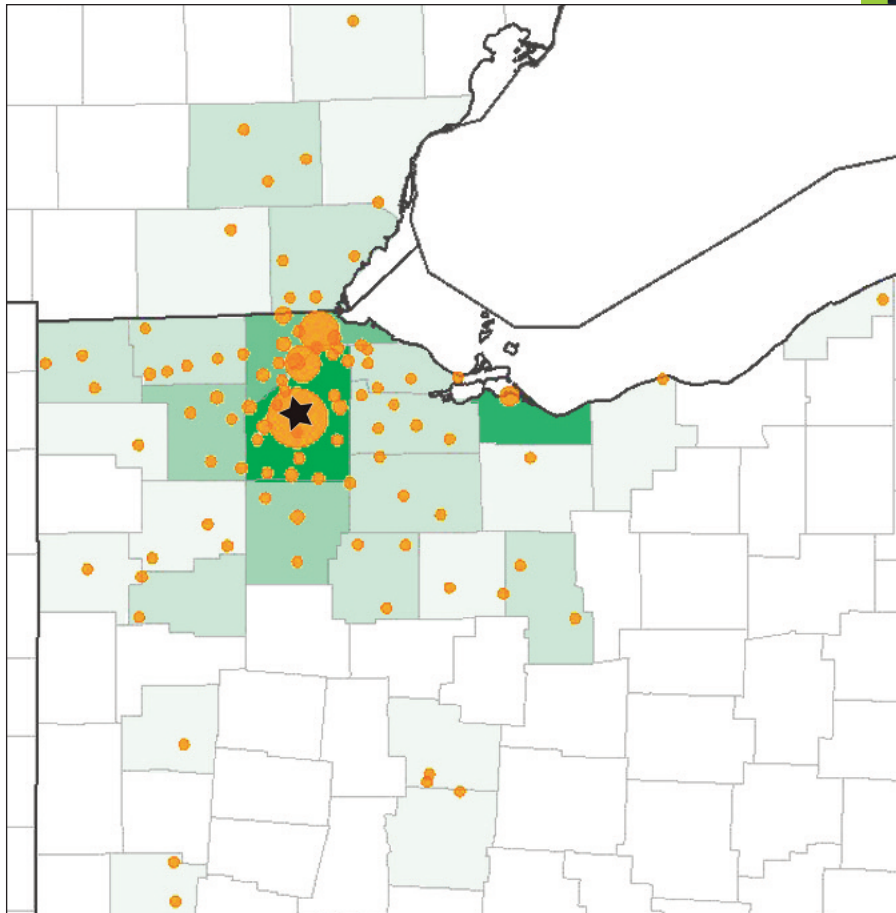


This activity station, facilitated by the BGSU School of Teaching and Learning Adolescent and Young Adult Program, was the most frequently mentioned favorite activity among attendees who completed the evaluation survey. Children visiting this station built a caterpillar habitat in a small container, which they wore around their neck for the rest of the event. Children were given instructions for taking care of their caterpillar at home as it formed a chrysalis. Weeks after the event, hundreds of butterflies emerged from their chrysalises in hundreds of homes and released in the environment in northwest Ohio and southeast Michigan!



## Where Are The Families Coming From?

This year, word about STEM in the Park reached more cities and towns in Ohio and Michigan than in the past. Families from 96 different cities and towns (in 30 different counties) in Ohio and Michigan attended STEM in the Park. Most attendees were from northwest Ohio, mainly Bowling Green, Toledo, and Perrysburg, but families also came from the Cleveland, Columbus and Cincinnati areas, as well as from several cities and towns in southeast Michigan. The map below illustrates the locations from which attendees traveled to STEM in the Park.



1-10   
  11-50   
  51-100   
  101-500   
  501-1000   
  1001-1500

★ STEM in the Park (Bowling Green, OH)

*Note: The size of a circle corresponds to the number of attendees from a particular city/town*

“I thought the event was fantastic! My children and I had a blast. Our family now has a STEM notebook to use for “rainy day” activities. Thanks a million for your efforts.”

## STEM in the Park Activity Highlight

### What Do People Do at STEM in the Park?

This year, STEM in the Park featured more than 100 STEM activities that were facilitated by local exhibitors from private businesses, non-profit organizations, pre-K-12 institutions, and institutions of higher education. Most activity stations included hands-on activities and games, and provided attendees with opportunities to observe and interact with several kinds of artifacts, animals, animal coverings, earth materials, and technology. Many of the activity stations included “make-and-take” activities that resulted in products attendees could take with them. Some of the make-and-take products included silly putty, “element” bracelets, “flubber”, ice cream, butterfly larvae necklaces, and solar ovens made from pizza boxes. In addition, 33 activity stations provided attendees with take home activity cards, which could also be accessed online after the event (at <http://cosmos.bgsu.edu/STEMinPark/activitycards.htm>). The cards included directions and an explanation for an activity that would allow the attendees to extend their STEM discovery at home after the event. The figure on page 6 illustrates the percentage of activity stations facilitated by each type of exhibitor, and lists the specific exhibitors who participated.



### Explore Snakes and Reptiles

This activity station, facilitated by the BGSU Department of Biological Sciences Herpetology Lab, was the second most frequently mentioned favorite among attendees who completed the evaluation survey. Attendees visiting this station had the opportunity to observe and interact with more than two-dozen different species of reptiles, under the guidance and supervision of several BGSU students who volunteer in the Herpetology Lab. Some of the reptiles at this station included crested geckos, bearded dragons, corn snakes, Kenyan sand boas, and a six and half foot long albino boa constrictor!

*“What a wonderful opportunity our children have when coming to an event like this. It was well organized and more exciting than we could have ever dreamed! I cannot tell you how much our children enjoyed this!!”*

*“It was amazing! My twin girls (age 3.5) keep talking about how they’re going to be scientists! They do little experiments and displays and tell us it is science!”*

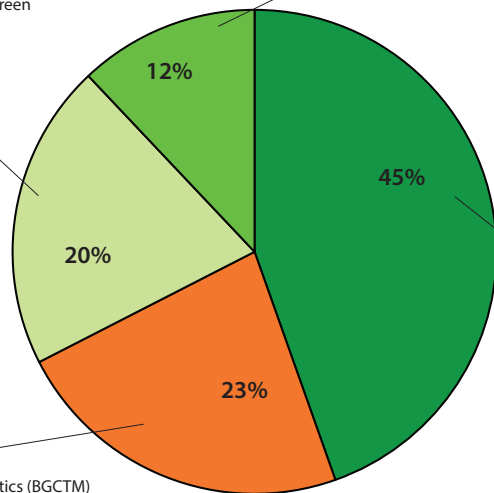




## 2014 STEM in the Park Exhibitors

Build It!  
 Davis-Besse Nuclear Power Station of First Energy  
 E.S. Wagner Company  
 ERG Environmental Services  
 First Solar, Inc.  
 Lubrizol  
 New York Life Insurance Company of Bowling Green  
 PNC Bank  
 PVS Nolwood  
 SDG Creations, Ltd  
 SSOE Group  
 Thayer Family Dealerships  
 Osborne Books & More  
 Verizon  
 Wood County Hospital  
 Zeemo Productions

Bowling Green City Fire Division  
 Bowling Green Council of Teachers of Mathematics (BGCTM)  
 Challenger Learning Center of Lake Erie West  
 Imagination Station  
 Maumee Valley Historical Society  
 Metroparks of the Toledo Area  
 NWOET at BGSU  
 Saturn V Productions  
 Sauder Village  
 Science Alliance  
 SECO/NSTA  
 Spark! Learning - Perrysburg  
 The Wood County Park District  
 Toledo Botanical Garden/Toledo Grows  
 Toledo Football Academy (TFA)  
 Toledo Zoo  
 Wood County District Public Library Children's Place  
 Wood County Historical Center and Museum  
 Wood County Soil & Water Conservation District  
 Wood Lane School



- Higher Education Institutions
- Local Businesses
- Non-profit Organizations
- PreK-12 Education Institutions

Bowling Green Early Childhood Learning Center  
 Gateway Pre-K School  
 K12/Ohio Virtual Academy  
 Maumee Valley Country Day School  
 Rainbow Co-op Preschool  
 St. Aloysius Elementary and Jr. High School  
 Toledo School for the Arts - Steel Drum Band  
 West Side Montessori

BGSU - Architecture and Environmental Design  
 BGSU - Athletics  
 BGSU - Aviation Studies  
 BGSU - Chemistry Club  
 BGSU - Construction Management  
 BGSU - Dept. of Biological Sciences – Herpetarium  
 BGSU - Dept. of Geology  
 BGSU - Dept. of Physics & Astronomy  
 BGSU - Dining Services  
 BGSU - Electroacoustics-College of Musical Arts  
 BGSU - Electronics and Computer Engineering Technology  
 BGSU - Engineering Technology & FalconBEST Robotics  
 BGSU - Exercise Physiology and Bio-Mechanics  
 BGSU - Firelands  
 BGSU - Kids' Tech University  
 BGSU - Marine Biology Association  
 BGSU - Martha Gesling Weber Reading Center  
 BGSU - Office of Admissions  
 BGSU - School of Teaching and Learning - Early Childhood Science  
 BGSU - School of Teaching and Learning - Middle Childhood Science  
 BGSU - School of Teaching and Learning – AYA Science  
 BGSU - Science and Mathematics Education in ACTION Program  
 BGSU - Tau Beta Sigma  
 BGSU - University Libraries - Curriculum Resource Center  
 BGSU - Visual Communication Technology  
 BGSU - World Languages Education  
 Building Ohio's Sustainable Energy Future - BOSEF  
 Lourdes University  
 Ohio Northern University  
 Owens Community College STEM-Science  
 The University of Findlay - College of Education  
 The University of Toledo - American Chemical Society

*“I was very impressed with the variety and quality of the experience while being a completely free experience!! Very nice!!”*

## STEM in the Park Activity Highlight

The favorite activities mentioned by the attendees on the evaluation survey were tallied, and the most commonly listed activity stations (those given by at least 10% of respondents) are displayed in the table below. Descriptions of these activities can be found throughout the report in the “STEM in the Park Activity Highlight” boxes.

**“STEM in the Park is a wonderful FREE family event! All of the activities were fun, interactive and a great learning opportunity for my two children.”**



## Science of Sports Zone

### Attendees' Favorite Activity Stations at STEM in the Park 2014

Activity Station (Provider)	# of Times Mentioned	% of Survey Respondents Who Mentioned the Activity
Create a Butterfly Larva Necklace (BGSU School of Teaching and Learning AYA Program)	83	28.6%
Reptiles are “Cool” (BGSU Dept. of Biological Sciences – Herpetarium)	65	22.4%
The Science of Sports Zone (Various Providers)	45	15.5%
Bubbles: Phun with Physics (BGSU Dept. of Physics & Astronomy)	40	13.8%
Ice Cream in a Bag (BGSU Chemistry Club)	38	13.1%
What’s a Polymer? Flubber! (Imagination Station)	35	12.1%
Marine Touch Tanks (BGSU Marine Biology Association)	30	10.3%

This zone was the third most frequently mentioned favorite activity among attendees who completed the evaluation survey. The Science of Sports Zone was a new addition this year, and was comprised of four different activity stations facilitated by BGSU Exercise Physiology, Verizon, BGSU Athletics Department, and the Toledo Football Academy. Attendees visiting the Science of Sports Zone had the opportunity to experience and explore the science behind their favorite sports. Attendees measured their running speed and vertical jump, tracked the motion of their bodies as they swung tennis rackets and golf clubs, measured the strength of their soccer kick and recorded the accuracy of their basketball shooting.

## STEM in the Park Activity Highlight



## Bubbles: Phun with Physics

This activity station, facilitated by the BGSU Department of Physics and Astronomy, was the fourth most frequently mentioned favorite activity among attendees who completed the evaluation survey. Attendees visiting this station had the opportunity to explore and observe bubbles using several different bubble-making instruments. The station also featured a contraption capable of making a large bubble sheet several feet high, which many children used to create the biggest bubble they have likely ever seen!

## What Are People Saying About STEM in the Park?

Attendees' survey responses indicate the activity stations appealed to the preferences of many different people. Almost all of the activity stations were mentioned as a favorite by at least one person. In addition, many attendees specifically mentioned being impressed with the variety of activities at STEM in the Park. Three **attendees** wrote:

*"I was impressed with the variety of activities and the ability for my 3 year old to be able to find activities that he could understand and enjoy."*

*"This was our first year ever attending and we were blown away with the amount of science activities. You touched on every age from preschool (even earlier) to my age."*

*"It had activities for a wide variety of ages and scientific disciplines."*

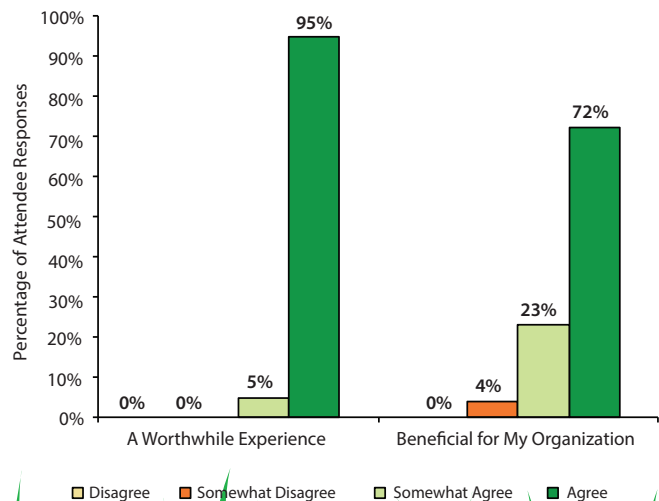
Most participants believed the STEM in the Park activities were highly engaging and positively impactful on children's interest in STEM. **Attendees** wrote:

*"My children LOVED this event! They are still talking about the day and the activities that they did. Before we even reached the parking lot, they were asking to come back next year."*

*"I was really made aware at this event how interested one particular child of mine is in a certain area of science. It was so fun to watch each child gravitate to their certain interests."*

*"Both of my daughters (ages 6 and 5) loved STEM. They didn't want to leave and were upset because we weren't able to visit every station. They were very engaged the whole time!"*

### Exhibitors' Perceptions Regarding the Value of their STEM in the Park Experience (n = 37)





## STEM in the Park Activity Highlight

Exhibitors saw first-hand how engaged and interested attendees were in STEM in the Park activities. Some **exhibitors** wrote:

*"[The children] were excited, trying to "beat" the other children building parachutes at the same time--this challenge activity was fun for children AND adults! Parents could be heard relating the activity to real life experiences they may have had before."*

*"The adults were participating heavily in the activities as well. What was really cool was seeing the adults interact with other like minded adults and starting connections between resources that they use."*

*"The children were enthusiastic, energetic, asked questions, and even more or less patiently waited in line to make a "really big bubble."*

Exhibitors also believed that STEM in the Park was a worthwhile experience, and reported that being an exhibitor was beneficial for their organization (see table on page 8). Almost all exhibitors said it is very likely that they will return as exhibitors to STEM in the Park.

Likewise, most attendees said it is very likely that their family will attend STEM in the Park next year. Many attendees also commented about their attendance in the future. Some **attendees** wrote:

*"Had an amazing time and can't wait to come back next year and try more of the activities."*

*"The event was great and we will definitely be attending next year."*

*"We thought it was an awesome event. We can't wait until next year!"*

*"Great job everyone! I have told many people about it and told them they need to go next year!"*

Overall, the attendees' comments were very positive. Many attendees wrote how impressive the event was, and expressed their gratitude for being able to attend a free community event with a free lunch. Attendees also mentioned how helpful and friendly the exhibitors and volunteers were. Some of the **attendees** wrote:

*"I was very impressed with the variety and quality of the experience while being a completely free experience!! Very nice!!"*

*"Free lunch, great exhibits, friendly volunteers, and it is all FREE!"*

*"Everyone was very friendly and helpful. We are looking forward to attending next year."*



## Ice Cream in a Bag

This activity station, facilitated by the BGSU Chemistry Club, was the fifth most frequently mentioned favorite activity among attendees who completed the evaluation survey. Attendees visiting this station created a tasty frozen treat using only milk, vanilla, sugar, salt, ice, and a whole lot of shakin'.

This activity has been a favorite since the first STEM in the Park in 2010, and will surely continue to satisfy children's curiosity AND their sweet tooth!

## STEM in the Park Activity Highlight



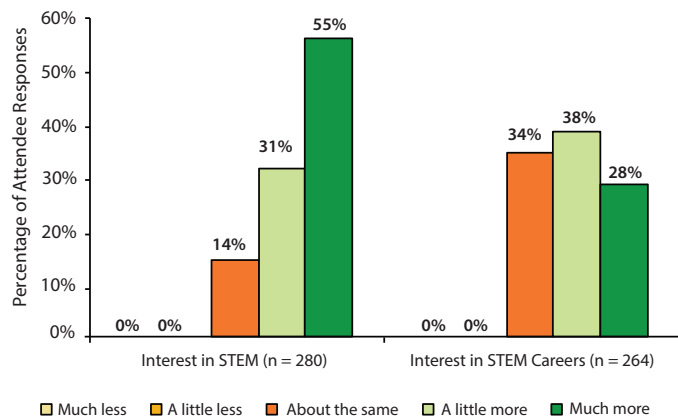
## Marine Touch Tanks

This activity station, facilitated by a pod of Marine Biology students from the BGSU Marine Biology Association, was the seventh most frequently mentioned activity among attendees who completed the evaluation survey. Attendees visiting this station had the opportunity to get their hands wet and observe and interact with several kinds of marine life, including horseshoe crabs, sea stars, sea urchins, and coral. Artifacts were also on hand for participants to examine such as a dolphin skull and teeth, shark jaws and turtle skulls.

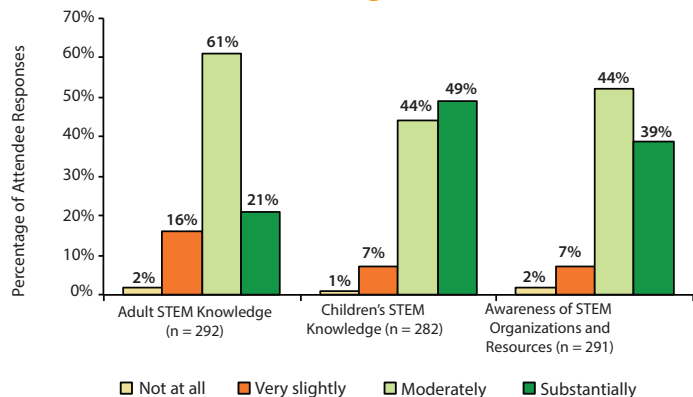
## What is the Impact of STEM in the Park?

The findings from the 2014 STEM in the Park evaluation demonstrate that STEM in the Park successfully reached its goals of increasing attendees' awareness of STEM-related organizations and events in their community, and improving attendees' knowledge about and interest in STEM and STEM careers.

### STEM in the Park Impact on Children's Interest in STEM and STEM Careers



### STEM in the Park Impact on Attendees' STEM Knowledge and Awareness





## How Do People Learn About STEM in the Park?

People learn about the event in several ways. NWO sent e-mails to past attendees, community STEM partners, university and college faculty members, and pre-K-12 teachers and administrators. Postcards and flyers were also distributed to local schools and community partners. New this year, yard signs were distributed at key locations around northwest Ohio and a local television station broadcasted live on-site the morning of the event highlighting the unique activities of STEM and the Park, and inviting viewers to attend. Feedback showed that attendees learned about 2014 STEM in the Park through each way it was advertised, with 'schools' being the highest percentage of how attendees heard about the event.

*“My family really enjoyed our experience. It was a great way to spend the day together and there was so much to see and do.”*

## What Are the Future Plans for STEM in the Park?

Participants provided some valuable feedback regarding aspects of the event that could be improved in the future. Based on these suggestions, the STEM in the Park staff plans to consider the following changes:

- Expand transportation grants for urban school districts
- Add new activity themes (the new Science of Sports zone was highly successful this year)
- Continue to provide alternative lunch options (many commented on the benefits of having healthier snacks available at the event)
- Group some activities by age (this is based on the success of the “Roots to STEM” PreK-2 area)
- Continue to refine the registration process
- Improve the visibility of the signage around the activity stations
- Connect the event to a social cause (e.g., food drive or some other charity)







## STEM in the Park Staff

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STEM in the Park Director

**Lena Ballone-Duran**

STEM in the Park Co-Director

**Bob Midden**

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**Jenna Pollock**

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**Jacob Burgoon**

NWO Project Evaluator

**Joetta Kynard**

NWO Senior Administrative Assistant

**Susan Stearns**

NWO Assistant Director of  
Programming & Development

The **STEM in the Park** team receives many 'thank you' sentiments. Here is an example of one from an elementary student who was able to attend the event as a result of the transportation grants offered. (See reference on page 3).

