



**Berrien County  
 Mathematics/Science Center  
 Annual Report 2015-2016**

Berrien County Mathematics and Science Center, a program of the Berrien Regional Education Service Agency (Berrien RESA), serves a 650 square mile area in southwestern Michigan. The mission of the Berrien County Mathematics and Science Center is to enhance the quality of mathematics and science education for all students. The Center serves the counties of Berrien and Cass.

### Overview of the Year's Accomplishments

The Berrien County Math and Science Center experienced a very positive 2015-2016 school year. We graduated our largest class in over 10 years and sent these high achievers to some of the country's most prestigious

**Our sponsored FIRST Robotics team excelled through state and world competition.**

colleges and universities. In addition, our sponsored FIRST Robotics team excelled through state and even world competition. Furthermore, we continue to enhance our curriculum with undergraduate-level coursework and research opportunities.

Much of our professional development training focused on STEM-related activities such as Makerspaces, Family Engineering, and Coding. We successfully piloted an after-school Google CS First "club" at an area elementary school, helped develop Maker activities for local school Maker events, and hosted three Family Engineering Nights, which saw over 300 teachers, students, and families, participate.

**Maker Faire drew over 1,500 participants (300 more than last year) from around our region.**

Building upon last year's success, we again hosted the Southwest Michigan Mini Maker Faire, which drew over 1,500 participants from around our region. The Maker Faire highlighted the application of STEM skills and knowledge to design, build, and create.

Finally, this past spring the Berrien County MSC was pleased to continue to host the Michigan High School Research Symposium. We welcomed student researchers from Southwest Michigan to share their original research projects as well as experience science lab demonstrations and experiences.

## Organization of the Report

The Strategic Plan identifies six service areas: Leadership, Professional Learning, Student Services, Curriculum Support, Community Involvement, and Resource Clearinghouse. This report will focus on Professional Learning and Student Services for the entire service area. In addition, there will be a narrative on closing the achievement gap describing services to Priority and Focus School(s) in the area, including successes and challenges.

### REGION-WIDE PROFESSIONAL LEARNING

**Goal: For educators who participate in Center Professional Learning to reflect best instructional practices in their own settings.**

#### Who participated in the professional learning?

Professional learning opportunities were provided for classroom teachers, classroom support staff, administrators, parents/community members, and others involved in K-12 education. The table below describes who participated.

**Table 1: Participants Receiving Professional Learning**

Participants	# of Individ.	Total Hours	Reported Gender**		Position					
			M	F	Admin	Math Tchr	Sci Tchr	Tech Tchr	Comb Subj	Other or Unknown*
Pre-School	0	0	0	0	0	0	0	0	0	0
Elementary	1	8	0	1	0	0	0	0	0	1
Middle/Jr. High	1	18	1	0	0	0	0	0	0	1
High School	2	24	0	2	0	2	0	0	0	0
K-12 Mixed Levels	0	0	0	0	0	0	0	0	0	0
Other*	31	266	10	18	0	0	0	0	0	31
<b>Total</b>	<b>35</b>	<b>316</b>	<b>11</b>	<b>21</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>33</b>

\*Other includes persons who work across levels, are not teachers or administrators, or did not indicate position.

\*\*Gender was not reported by all individuals.

Professional learning was delivered in many ways, depending upon the identified needs. Two primary formats included: (1) **Single events**, lasting for a portion of one day to several consecutive days, focused on a particular topic, skill, or issue; and (2) **Series**, which were a series of sessions (one building on the previous one and conducted periodically over a several week/month period). The goal was to systematically strengthen teaching practices based on local needs and current research.

**Teachers who participated in Berrien County M/S Center activities received, on average, 9.0 hours of professional learning related to mathematics or technology.**

Table two below details the number of sessions offered for each subject by grade level as well as total hours and total number of participants in the sessions.

**Table 2: Professional Learning Activities**

		<b>Math</b>	<b>Technology</b>	<b>Total</b>
<b>High School</b>	Activities	1	1	1
	Hours	6	6	6
	# Participants	4	4	4
<b>Other (includes mixed levels)</b>	Activities	4	4	4
	Hours	32	32	32
	# Participants	34	34	34
<b>Total</b>	Activities	5	5	5
	Hours	38	38	38
	# Participants	38	38	38

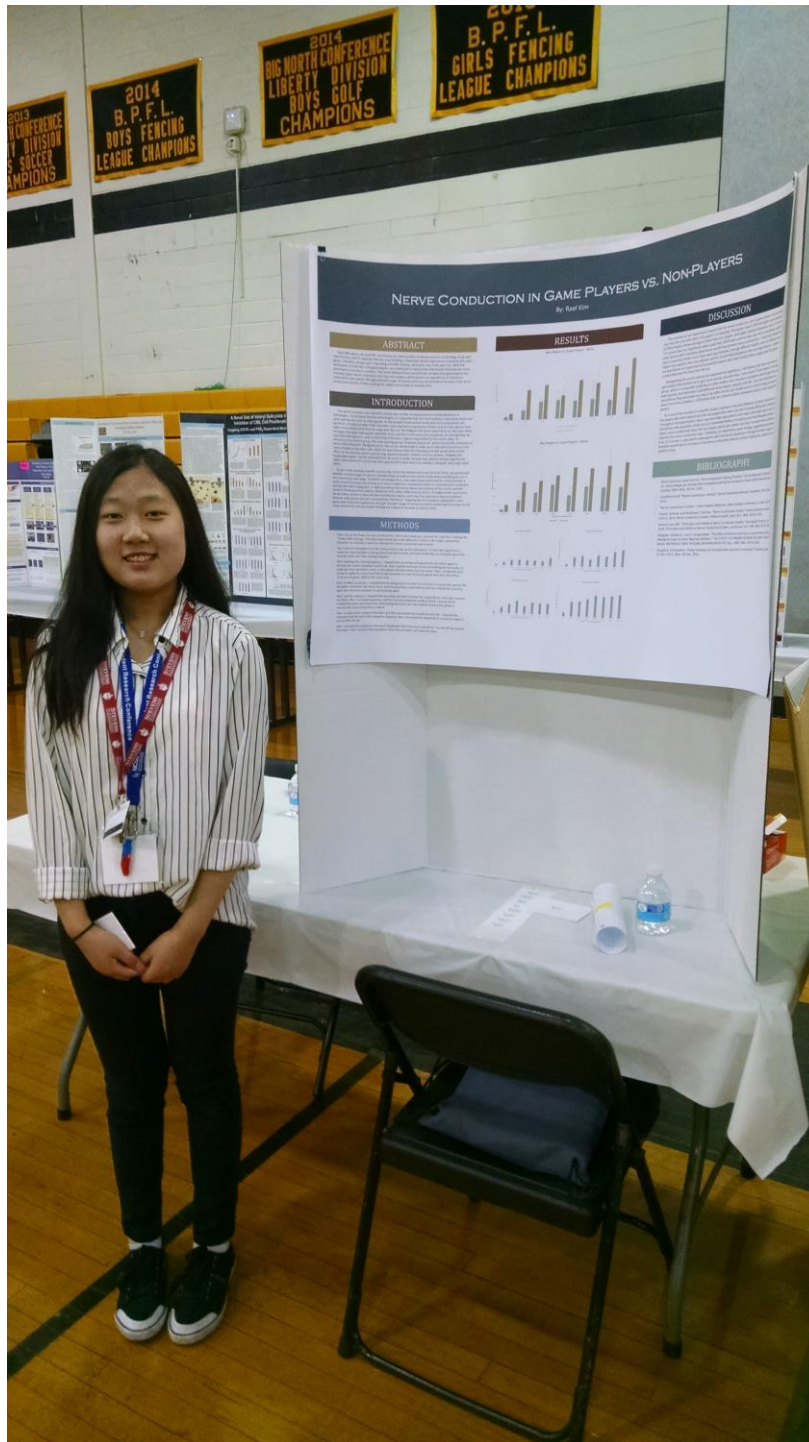
### *Spotlight on Professional Learning*

During the past year, professional development activities and training focused primarily on STEM-related activities. Makerspaces, Family Engineering, and Coding have all become a part of the new STEM literacy and help students develop and utilize these skills.

**Students and teachers experienced eight weeks of activities using Google CS First.**

Working alongside school personnel, we successfully piloted an after-school elementary programming club utilizing Google CS First. This free curriculum was developed as a first step in learning computer programming. Students and teachers experienced eight weeks of activities that culminated in a working interactive program.

Throughout the year and leading up to the Mini Maker Faire in June, various opportunities were taken to lead “maker” activities in local school buildings with students and teachers participating together.



**Freshman student, Rael Kim, presents her research at the National Consortium of Secondary STEM Schools Student Research Symposium.**

## Student Services

Student services are delivered based on identified needs to improve and enhance science, technology, engineering, and mathematics education. Students who participate in enrichment activities have the opportunity to explore new concepts, develop process skills, cooperate on group tasks, and discuss their findings. Student services include:

- ❖ school-day classroom programs provided by Center staff
- ❖ afterschool, summer enrichment and support programs
- ❖ field trips to museums, natural areas, laboratories, and businesses to expose students to practical application of mathematics and science knowledge
- ❖ organization of science and mathematics fairs and academic competitions

Table three below details the number of student sessions offered for each subject by grade level as well as total hours and total number of participants in the sessions.

**Table 3: Student Services Activities Provided in 2015-2016**

		Science	Technology	Engineering	Other	Total
<b>Elementary</b>	Activities	1	0	3	0	4
	Hours	3	0	6	0	9
	# Participants	740	0	265	0	1,005
<b>High School</b>	Activities	7	2	0	3	12
	Hours	183	16	0	7	206
	# Participants	429	78	0	196	703
<b>Other (includes Mixed Levels)</b>	Activities	1	1	0	0	2
	Hours	7	6	0	0	13
	# Participants	278	1,500	0	0	1,778
<b>Total</b>	Activities	9	3	3	3	18
	Hours	193	22	6	7	228
	# Participants	1,447	1,578	265	196	3,486

### *Closing the Achievement Gap*

Family Engineering Nights (FEN) continue to be a successful event for bringing students and their families together around STEM topics. This year, more than 300 students and their families were served by the FEN presentations that were facilitated by Berrien MSC personnel. Many of the participating schools involved teams of teachers in order to follow up with some of the instruction that took place at their FEN event.

**More than 500 students and their families were served by the FEN presentations.**

## Spotlight on the Accelerated High School

The Berrien County Mathematics and Science Center provides a rigorous, half-day program in mathematics, science and technology for selected students in grades 9-12. This program is offered to 15 school districts in Berrien and Cass counties in Michigan and during the 2015-2016 year enrolled 112 students.

Over 23% of participating students represent one or more minority groups. Andrews University in Berrien Springs is the host site for the Center and university instructors teach all classes. The Center curriculum includes required AP courses in physics, statistics, and calculus and includes the opportunity for undergraduate credit for core courses as well as electives. Students are required to create an original research project in both their 9<sup>th</sup> grade and 12<sup>th</sup> grade year.

**Accelerated High School was offered to 15 school districts in Berrien and Cass counties in Michigan.**

Table 4 below details the number of students attending the accelerated high school program by race/ethnicity and gender.

**BERRIEN COUNTY ACCELERATED HIGH SCHOOL PROGRAM TABLE**  
**Table 4: School-Year Program Enrollees**

		9th	10th	11th	12th	Total
<b>ETHNICITY</b>						
Hispanic or Latino	M	0	0	0	0	0
	F	0	1	0	0	1
Hispanic or Latino Ethnicity Not Indicated	M	15	14	14	12	55
	F	14	14	15	13	56
TOTAL	M	15	14	14	12	55
	F	14	15	15	13	57
	ALL	29	29	29	25	112

		9th	10th	11th	12th	Total
<b>RACE</b>						
White	M	14	12	9	10	45
	F	12	11	9	9	41
Black or African American	M	0	0	0	0	0
	F	0	1	0	0	1
Asian	M	0	0	4	1	5
	F	2	0	2	1	5
American Indian or Alaska Native	M	1	0	0	0	1
	F	0	0	0	0	0
Two or More Races	M	0	2	1	1	4
	F	0	3	4	3	10
Racial Information Unknown	M	0	0	0	0	0
	F	0	0	0	0	0
TOTAL	M	15	14	14	12	55
	F	14	15	15	13	57
	ALL	29	29	29	25	112

## Spotlight on Partnerships

The Southwest Michigan Mini Maker Faire continued to allow us to foster relationships with organizations in our community.

We again worked closely with Cornerstone Alliance and Kinexus, both of who seek to develop talent and economic opportunities in our region. This year, however, we were able to work more closely with some of the manufacturing companies to provide opportunities for collaboration.

**Berrien RESA worked closely with Cornerstone Alliance, which provides workforce, and economic development services to the community.**

The Mini Maker Faire provided these companies a chance to showcase their talent as well as what they do, which was a benefit to them as well as the students who attended the Mini Maker Faire.



**Freshman students, Benjamin Park and Matthew Kennedy, present their research at the Berrien County Science and Engineering Fair.**

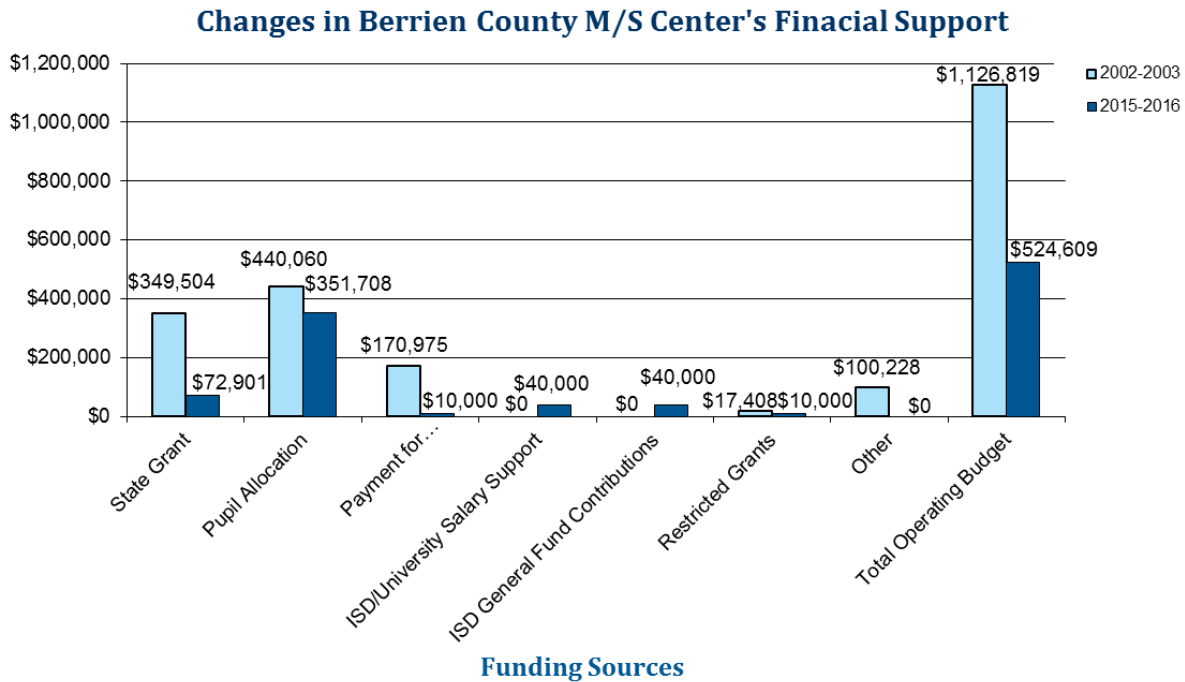


**A group of sophomore students take a moment to pose at the waterfalls during a hike in the Smoky Mountains.**

## Director's 2015-2016 Budget Discussion

The Center budget has remained relatively stable, although Berrien RESA uses general fund dollars to make up budget shortfalls. Available resources are used to supplement costs for running the Center and are in short supply for providing substantial curriculum support to local districts. As much as possible, we hope to take advantage of Network resources and opportunities.

The Center's contract with Andrews University was renewed this year, as they are still eager partners to host the Accelerated High School Program. They have also been understanding of our situation as it pertains to personnel and budget limitations.



In addition to the financial support illustrated in the graph above, “in-kind” services received by the Center (donated time, facilities, or equipment) were valued at \$36,000.



## Director's Summary 2015-2016

The Berrien County MSC enjoyed a successful 2015-2016 school year. Our students experienced high-quality, engaging courses and were recognized for their efforts through scholarships and honors. Students took advantage of opportunities to earn undergraduate credit for their coursework. The outreach our Center was able to provide through Family Engineering events benefitted a large number of students in our service area and gave us the opportunity to be a resource to our elementary schools.

The Michigan High School Research Symposium again was a great opportunity for students to gather and learn from each other. Students from across Southwest Michigan attended and were able to present research and interact with other student projects. This program provided an exceptional opportunity for students to experience real-world scientific conversations and research.

Each year we look forward to new students and experiences. As STEM education becomes more in vogue, we will seek opportunities to be more impactful on the students and teachers in our region.

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