Berrien County Mathematics and Science Center
Annual Report 2007-2008

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.

The Center provides full-time consultants in the areas of mathematics and science education. The Berrien RESA Health Consultant also provides health science professional development and activities. The outreach consultants, along with other Center support persons, seek current information on important new research and initiatives in mathematics and science education to share with local teachers and district administrators.

Overview of the Year's Accomplishments

Professional Development

- Educators took part in High School Merit Exam training
- Provided intensive middle school (grades 4-8) mathematics professional development to Benton Harbor Area Schools, Benton Harbor Charter School and Buchanan Middle School

Curriculum Support

- Implemented countywide mathematics and science curriculum for grades K-12
- Provided Section 99.6 supported technology training and curriculum topic studies in mathematics

Enriched Science Education Programs for Students

- Hosted the Berrien County Science Olympiad
- Hosted the science portion of the Berrien County Arts and Science EXPO and a Regional International Science and Engineering Fair

Strong Outcomes for Students in Model High School Program

- Nineteen graduating seniors from the Accelerated High School Program averaged a SAT score of 30

Organization of the Report

The Strategic Plan identifies six service areas: Leadership, Professional Development, Student Services, Curriculum Support, Community Involvement, and Resource Clearinghouse. This report will focus on Professional Development and Student Services for the entire service area. In addition, there will be narrative targeting work done with underachieving schools in the area.

REGION-WIDE PROFESSIONAL DEVELOPMENT

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

Who participated?

Professional development opportunities were provided for classroom teachers, classroom support staff, administrators, parents/community members, and others involved in K-12 education. The chart and summary descriptions show who participated.

Table 1: Participants Receiving Professional Development

			Reported Gender**		Position					
Participants	# of Indiv.	Total Hours	M	F	Admin	Math Tchr	Sci Tchr	Tech	Comb Subj	Other or Unknown*
Pre-School	10	102.5	2	8	0	4	0	0	6	0
Elementary	53	528	9	43	0	1	1	0	46	5
Middle/Jr. High	33	393	5	28	0	14	13	0	0	6
High School	20	223	11	9	0	6	9	0	0	5
K-12 Mixed Levels	30	467.5	12	18	2	16	3	0	5	4
Other*	133	1312.5	24	69	9	3	0	0	6	115
Total	279	3026.5	63	175	11	44	26	0	63	135

* Other includes persons who work across levels, are not teachers or administrators, or did not indicate position.
**Gender was not reported by all participants.

Professional development 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 either a series of sessions, each building on the previous, conducted periodically over a several week/month period. The goal was to systematically strengthen teaching practices based on local needs and current research. Table 2 on the following page represents a picture of the number of sessions offered and the rate of attendance.

Teachers, on average, spent 10.8 hours on mathematics, science, or technology professional development.

Table 2: Professional Development Activities

		Math	Science	Technology	Total
Elementary	Events	5	4	0	9
	Hours	33	9.5	0	42.5
	# Participants	91	30	0	121
Elementary & Middle School/Jr. High	Events	1	2	0	3
	Hours	6	9.5	0	15.5
	# Participants	8	52	0	60
Middle School/Jr. High	Events	2	0	0	2
	Hours	11	0	0	11
	# Participants	16	0	0	16
Middle School/ Jr. High & High School	Events	3	0	0	3
	Hours	56	0	0	56
	# Participants	94	0	0	94
High School	Events	4	0	0	4
	Hours	24.5	0	0	24.5
	# Participants	28	0	0	28
Other	Events	0	0	2	2
	Hours	0	0	6	6
	# Participants	0	0	43	43
Total	Events	15	6	2	23
	Hours	130.5	19	6	155.5
	# Participants	237	82	43	362

Spotlight on Professional Development

Four major efforts were much of the focus at the Berrien County Mathematics and Science Center. While the Center continues to support a number of professional development and curriculum efforts, the major thrust was in these three areas.

Countywide Mathematics Science Curriculum
First, the countywide mathematics and science curriculum was completed two years ago. Teams of teachers and curriculum directors took part in the development of the curriculum and continue to assist as necessary. This effort has morphed into the Merit curriculum.

Michigan's Mathematics Grade Level Content Expectations
The second major effort involved the high school grade level course expectations and preparation for the Merit Exam.

Mathematics and Science Partnership Grant
Work continued through the Mathematics and Science Partnership grant with underachieving middle schools. Professional development was conducted in grades 4-8 with teachers and administrators.

Statewide Projects
Finally, the Center was highly involved in several statewide projects. Center staff assisted in the planning and delivery of the new High School Merit curriculum.

Spotlight on High Priority Schools

The Center continued to work with the Benton Harbor Area Schools middle schools (grades 4-8), Benton Harbor Charter School, and Buchanan Middle School to improve student achievement in mathematics; this effort was expanded to include Buchanan Middle School. This work included professional development for mathematics teachers in content and pedagogy through intense summer institutes, school year curriculum professional development and lesson study. The Center was awarded a Title II Mathematics and Science Partnership grant in collaboration with Andrews University to specifically raise student achievement through increasing the skill of middle school mathematics teachers.

The Center continues to support the SciMaTech Academy at Hull Middle School. The Academy's goal is to accelerate students to increase student achievement in science and mathematics.

Student Services

Student services are delivered based on identified needs to improve and enhance mathematics and science 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
- after-school and 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 3: Student Services Activities Provided in 2007-2008

		Math	Science	Technology	Other	Total
Middle School/Jr. High	Events	1	0	0	3	4
	Hours	2	0	0	15	17
	# Participants	90	0	0	1097	1187
High School	Events	3	8	2	4	17
	Hours	52	203	74	24	353
	# Participants	411	364	67	128	970
Other	Events	0	2	0	0	2
	Hours	0	134	0	0	134
	# Participants	0	3800	0	0	3800
Total	Events	4	10	2	7	23
	Hours	54	337	74	39	504
	# Participants	501	4164	67	1225	5957

Accelerated Mathematics and Science Program:

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 enrolls 110 students. Admission is highly competitive. Andrews University in Berrien Springs is the host site for the Center and university instructors teach all classes. The Center curriculum includes AP courses in physics, statistics, and calculus. Students have the option of earning college credit for some classes.

In 2007-08, nineteen graduating seniors have enrolled in a four-year college. These students were offered over one million dollars in scholarships.

Berrien County PULL-OUT PROGRAM TABLE
Table: School-Year Program Enrollees

		9th	10th	11th	12th	Total
Caucasian	M	11	10	15	06	42
	F	16	19	09	11	55
African American	M	0	0	0	0	0
	F	0	0	0	1	1
Asian American	M	0	0	0	1	1
	F	1	0	1	0	2
Hispanic	M	0	0	1	0	1
	F	0	0	0	0	0
Other	M	1	0	1	0	2
	F	1	0	0	0	1
TOTAL	M	12	10	17	7	46
	F	18	19	10	12	59
		30	29	27	19	109

What was the impact of the Berrien County Mathematics and Science Center?

Impact on Students	Impact on Teachers
• Students complete and present original research • Students in underachieving schools have significantly improved mathematics achievement • Students participate in science activities such as Science Olympiad • Students are aware of careers in mathematics, science and technology • Students are better prepared for the Michigan Merit Exam.	• Teachers demonstrate significant gains in mathematics content knowledge. • Teachers use student activities to improve teaching and learning. • Teachers stay abreast of state and national trends in mathematics and science education. • Teachers have become highly qualified in mathematics. • Teachers are prepared for student success on the high school Merit Exam. • Teachers learn to integrate technology in mathematics instruction
Impact on Schools	**Impact on Communities**
• Schools have implemented a county-wide mathematics and science curriculum • Schools are assisted in providing required professional development opportunities • Schools are using data in school improvement activities.	• The community is active in Science Olympiad and the Arts & Science EXPO and the Regional International Science and Engineering Fair. • Accelerated Program students serve as interns in local businesses • The Curious Kids Museum is strengthened with the Center partnership

Spotlight on Partnerships

The Berrien County Mathematics and Science Center enjoys a number of partnerships with agencies in the area. One long-standing partnership is with Andrews University.

Since the Berrien County Mathematics and Science Center was founded, Andrews University in Berrien Springs has been a strong partner is supporting educators and preparing students in mathematics and science.

The Center's accelerated high school program is hosted on the campus of Andrews University. University faculty teach all courses. Students are able to take advantage of the University laboratories and equipment, experience the college environment and interact with college students through electives. Students receive in-depth instruction and work in an environment that prepares mathematics, science and technology professionals.

The Center assisted the Andrews University Physics Department in the start up and operation of *Smartlabs*, a weeklong physics professional development in integrating technology in to the physics classroom. An important component of *Smartlabs* is that each participating teacher brings a student to act as a student mentor when the teacher and student return in the fall.

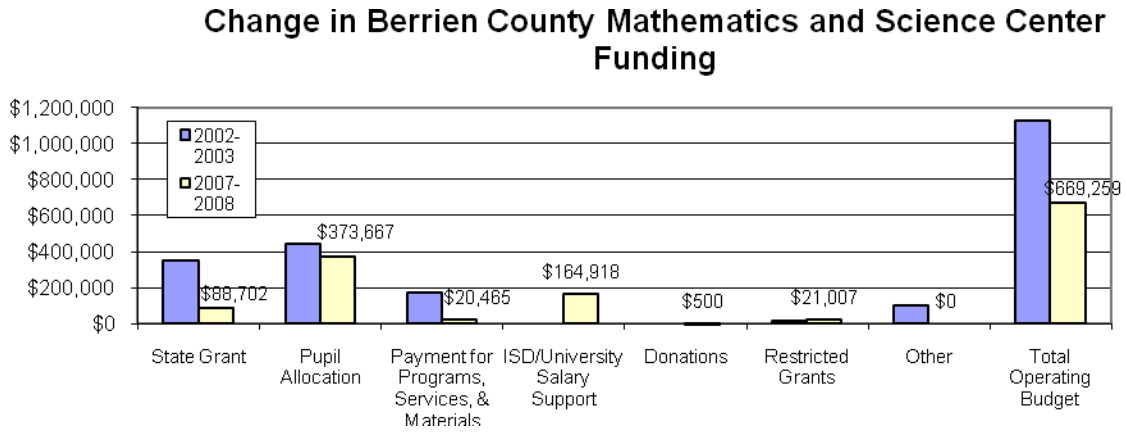
The Honors College at Andrews University operates the Center's middle school portion of the Regional International Science and Engineering Fair (ISEF) and the Berrien County Arts and Science EXPO. The University also provides judges for the regional ISEF. In addition, Andrews University faculty also volunteer to run events at the Center's Science Olympiad.

Andrews University STEM faculty provided support for lesson study and trained substitutes in support of the Title II Mathematics and Science Partnership Grant, Project TEAM^2.

Director's 2007-2008 Budget Discussion

The loss of over one quarter of a million dollars in the Section 99 grant drastically reduced the services and program available to our service area. We were faced with other budget **reductions** that resulted in a total reduction of $309,406. The net result was a reduction of one secretary, our science consultant position was cut to half time for two years, and there was a marked reduction in the number of programs and services available to the local districts. There was also an administrative realignment resulting in added responsibilities for the director, and the Berrien RESA Student Services Coordinator now supervises the high school accelerated program. The accelerated program also saw reductions in program as well.

Berrien RESA coordinated a Professional Development Consortium of district from Berrien and Cass counties. This has helped to provide curriculum support and professional development but each year becomes more difficult to maintain services. REMC XI has also assisted in providing some technology training. Next year's funding will continue be a challenge.



In addition to the financial support illustrated in the graph above, "in-kind" services received by the Center (donated volunteer time, facilities, and materials) were valued at $47,500.

Director's 2007-2008 Summary

The Center continues to adjust programming with the reduction of funding. The Center reduced staff, which resulted in a significant drop in the number of services and events.

The focus for the year was in five major areas: 1) the of assisting schools in school improvement planning and development, 2) the support of the high school Merit Exam 3) the support of Benton Harbor in mathematics with support of a Mathematics and Science Partnership Grant and other initiatives in both mathematics and science, 4) support of statewide projects, and 5) the continuation of the Accelerated Program.

The state High School Content Expectations were completed last year. The Center continues working to assist high schools in understanding the expectations, to implement the goals of the high school content expectations, and to move toward more success in the Merit Exam.

The Accelerated Program continued to enjoy a high level of success in 2007-08. The senior class enjoyed a high SAT average of 30 and all students enrolled in a four-year college for the fall semester.