

# **Western Upper Peninsula Center for Science, Mathematics and Environmental Education 2003-2004 Annual Report**

---

---

The Western Upper Peninsula Center for Science, Mathematics and Environmental Education provides services to 21 school districts and their communities in Baraga, Keweenaw, Houghton, Ontonagon, and Gogebic counties. The Center strives to develop scientifically literate and environmentally committed citizens, scientists and community leaders for the 21<sup>st</sup> century by providing innovative and quality programming for students, teachers and the community.

## **Overview of the Year's Accomplishments**

All of the Western UP Center's student and teacher programming addresses needs to improve science and mathematics education in underachieving schools in the service area.

### **Supporting teacher quality.**

- ™ Provided two sustained comprehensive professional development institute series that integrated service learning with science, mathematics and social studies content, funded by a Teacher Quality Grant
- ™ Provided a sustained comprehensive professional development series for new teachers and their mentors

### **Developing curriculum.**

- ™ Developed three curriculum units for the Department of Environmental Quality Clean Michigan Initiative Environmental Curriculum
- ™ Provided a combination of gap analysis, professional development and curriculum support to address areas of need in the math curriculum

### **Engaging families in science education.**

- ™ Provided after-school science and family science programs to elementary school in the service area

### **Environmental education for students.**

- ™ The Center provided an ecology field trip program and an Earth Day program to all districts in the service area. Both programs promoted awareness and stewardship of the environment.

## 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**

Participants	# of Individ.   Total Hours*		Reported Gender		Position					
			M	F	Admin	Math Tchr	Sci Tchr	Tech Tchr	Comb Subj	Other Unknown*
<b>Pre-K</b>	8	37	1	7	1	0	0	0	2	5
<b>Elementary</b>	155	1882	33	122	8	1	1	0	136	9
<b>Middle/ Jr. High</b>	34	481	12	22	1	6	8	1	5	13
<b>High School</b>	72	1427	40	32	3	13	7	3	11	35
<b>Others*</b>	115	1898.5	50	63	10	9	11	11	19	55
<b>Total</b>	<b>384</b>	<b>5725.5</b>	<b>136</b>	<b>246</b>	<b>23</b>	<b>29</b>	<b>27</b>	<b>15</b>	<b>173</b>	<b>117</b>

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

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, one building on the previous one, 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 and Table 3 on the following page represent a picture of the number of sessions offered and the rate of attendance.

**Teachers, on average spent 14.9 hours on mathematics, science, or technology professional development.**

**Table 2: Single Event Professional Development Activities**

Single event activities last from a few hours to several consecutive days such as Summer Institutes.

		Math	Science	Tech	Other	Total
<b>Pre-K</b>	Events		1			1
	Hours		4			4
	# Participants		4			4
<b>Elementary</b>	Events	2	1			3
	Hours	12	6			18
	# Participants	49	13			62
<b>Elementary &amp; Middle School</b>	Events		1			1
	Hours		6			6
	# Participants		14			14
<b>Middle School</b>	Events	3	1			4
	Hours	18	2.5			20.5
	# Participants	52	15			67
<b>Middle &amp; High School</b>	Events	2	3	2	3	10
	Hours	7	23	12	58	100
	# Participants	21	27	36	59	143
<b>K-12 Mixed Levels</b>	Events	1	12		6	19
	Hours	6	117		28	151
	# Participants	6	130		103	239
<b>Total</b>	Events	8	19	2	9	38
	Hours	43	158.5	12	86	299.5
	# Participants	128	203	36	162	529

**Table 3: Professional Development Series**

Professional Development Series are a sequence of sessions, one building on the previous one, conducted periodically over a several week/month period.

		Science	Other	Total
<b>Middle &amp; High School</b>	Events	4	3	7
	Hours	63	18	81
	# Participants	52	47	99
<b>K-12 Mixed Levels</b>	Events		4	4
	Hours		24	24
	# Participants		80	80
<b>Total</b>	Events	4	7	11
	Hours	63	42	105
	# Participants	52	127	179

# Spotlight on Professional Development

**Support for New Teachers.** School districts in the Western UP Center's service area had many new teachers for the 2003-2004 school year. The state requires that districts provide 15 days of professional development in 3 years to meet the needs of novice teachers and provide a mentor. To assist districts, the Center developed a series of 4 workshops for first year teachers and their assigned mentors covering topics such as:

- ™ classroom management
- ™ preparing for the first day
- ™ record keeping
- ™ communication with parents
- ™ effective instruction
- ™ student assessment
- ™ special education
- ™ professional responsibilities

The Center will continue this series by providing relevant workshops for these teachers as they enter into their second year of teaching. We will also run the first year series again for new teachers beginning employment in the 2004-2005 school year.

**Teacher Quality Grants.** The Western UP Center provided two comprehensive professional development series for science and social studies teachers in the services area, funded by an Improving Teacher Quality Grant. The first series is called Watershed Investigations and the second series is called Community Land Use. Each professional development series consisted of three workshops during the 2003-2004 school year, one-week institute in the summer of 2004, and two workshops during the 2004-2005 school year and another one-week institute in the summer of 2005. Teachers who complete the whole series receive 8 graduate credits from the Education Department at Michigan Technological University (MTU). Each institute integrated science, mathematics and social studies content with how to implement a service learning project in the classroom. All teachers are required to design, implement and reflect on a service-learning project in their classroom during the duration of the series.

**Other Professional Development** The Western UP Center provided professional development for math teachers at all levels on engaging students in higher order thinking, problem solving strategies, and communicating mathematical reasoning. The Center hosted the statewide two-day conference called "Teaching with the Outdoors" which focused on science, mathematics, social studies, and language arts instruction with using the outdoors as the classroom.

## 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:

- ❖ After-school science and mathematics classes
- ❖ Family Science and Mathematics Night Program - Winner of the 2000 MASB Education Excellence Award
- ❖ Ecology field trips using school forests, state parks and national parks in the service area.
- ❖ Earth Day Program – Winner of 2003 MASB Education Excellence Award
- ❖ Western UP Science Fair, First LEGO League and several school science fairs.

**Table 4: Student Services Activities Provided in 2003-2004**

		Science	Tech	Total
<b>Elementary</b>	Events	179		179
	Hours	299		299
	# Participants	7368		7368
<b>Elementary &amp; Middle School</b>	Events	1	1	2
	Hours	4.5	2	6.5
	# Participants	343	50	393
<b>Middle School</b>	Events	6		6
	Hours	91.5		91.5
	# Participants	346		346
<b>Middle &amp; High School</b>	Events	2		2
	Hours	1		1
	# Participants	44		44
<b>High School</b>	Events	6		6
	Hours	4.5		4.5
	# Participants	182		182
<b>Total</b>	Events	194	1	195
	Hours	400.5	2	402.5
	# Participants	8283	50	8333



## Spotlight on Underachieving Schools

### **Meeting needs through enriched inquiry-based programming.**

Historically, many schools in the Western UP Center's service area were underachieving in the area of science, especially at the elementary and middle school level. In the response to this need, the Center implemented several programs that focused on inquiry-based science and mathematics teaching and learning. These programs were implemented at each district on the school site. The programs were:

- ™ family science and math nights
- ™ after-school science and mathematics classes
- ™ ecology field trips
- ™ school science fairs
- ™ an area wide science fair
- ™ comprehensive professional development

The science MEAP scores improved significantly in most districts due to increased opportunities for students to participate in hands-on science programs and teachers to participate in high quality professional development.

### **Preparing Districts for Changes in Mathematics MEAP and new Grade Level Content Expectations in Mathematics.**

- ™ When the format of Math MEAP changed in 2002, the math scores in many districts decreased significantly due to these changes in the test. The Western UP Center programming changed focus to respond to this need. During the 2003-2004 school year, the Center continued the successful programs listed above with increased focus on mathematics teaching and learning.
- ™ Staff also worked with districts to use their mathematics MEAP data to find gaps in student achievement and inform instruction. In addition, professional development workshops were offered that focused on common student achievement gaps throughout the districts in the service area.
- ™ The Center in collaboration with MTU received a two Teacher Quality Grant to provide comprehensive professional development to improve mathematics and science teaching and learning for the 2004-05 and 2005-06 school years.

## ***What was the impact of the WUP Center for Science, Mathematics, and Environmental Education?***

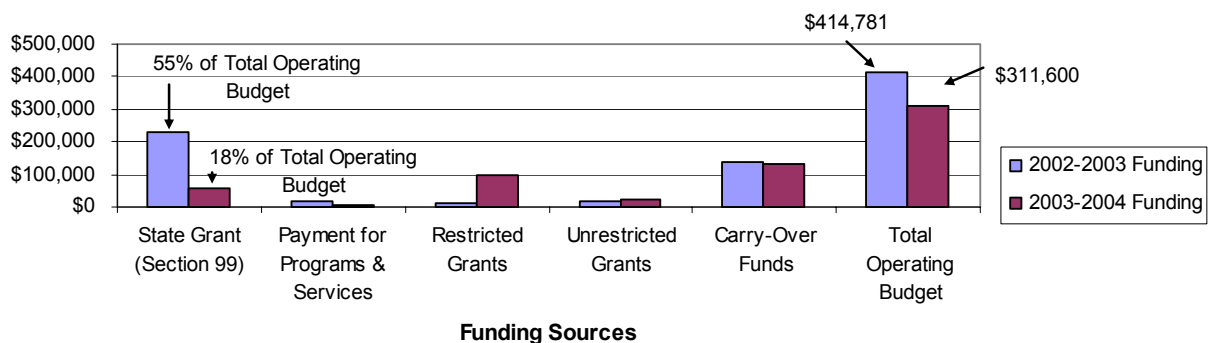
<p style="text-align: center;"><b>Impact on Students</b></p> <p>™ The science MEAP scores improved significantly in most districts due to increased opportunity for students to participate in hands-on science and improved science instruction in the classroom.</p>	<p style="text-align: center;"><b>Impact on Teachers</b></p> <p>™ Teachers developed and implemented standards based teaching units that incorporated a service-learning project.</p> <p>™ New teachers and their mentors received training in how to create an effective learning experience for their students.</p> <p>™ Teachers have the opportunity to receive graduate credits from MTU for professional development delivered through the Center for a reasonable fee.</p>
<p style="text-align: center;"><b>Impact on Schools</b></p> <p>™ Schools are receiving support for the induction of new teachers.</p> <p>™ Student programming supports students' achievement in the classroom.</p> <p>™ Schools used data to improve their curriculum and instruction.</p>	<p style="text-align: center;"><b>Impact on Communities</b></p> <p>™ Parents are becoming more engaged in the education of their children through the Family Science and Math programs.</p> <p>™ Environmental education programs promote environmental stewardship of local area.</p> <p>™ Students are engaged in service-learning projects to benefit the community.</p>



## Budget Discussion:

Grants and Partnerships. The Western UP Center has been very aggressive in forming collaborative partnerships with various departments on MTU campus. These collaborative partnerships have resulted in successful grant proposals, financial and volunteer support of Center programs and educational outreach subcontract work. In the 2003-2004 school year, Western UP Center received 9 grants and funding from the Wege foundation for environmental education programming. These grants and foundation moneys account for 40% of the Center's total operating budget. Section 99 funding accounted for 18% of the Center's total operating budget. The Center does subcontract work on funded research proposals to develop and implement educational outreach programs. The Western UP Center will continue to foster these collaborative partnerships to maintain programming for the schools in the service area.

Changes in Financial Support



## Summary

The decreased funding through Section 99 had a profound effect on the Western UP Center's focus. Before the funding issues, the Western UP Center provided student and teacher programming to all districts in the service area. Most of the student programming was done at the school sites in the 21 districts that we serve. Staff or volunteers would drive to schools to conduct field trips, after school science and math classes, family programs etc. With the decrease in funding, the Western UP Center put an emphasis on professional development and select student programs to help districts meet the mandates of "No Child Left Behind". The expensive student programs such as after school science and math classes and family science nights were delivered to those schools that could pay part of the cost. Many schools were willing to pay the cost of these programs, but many districts are feeling budget shortfalls and could not purchase the programs.

The Western UP Center became more aggressive in pursuing other grant funds to maintain programming and staff for the 2003-2004 school year. A substantial amount of time was spent pursuing grant opportunities and collaborative partnerships. The Western UP Center received six grants during the 2003-04 school year. The Center in collaboration with MTU Education Department has received two Teacher Quality Grants to conduct professional development in science and social studies. The Center also received a grant from the Michigan Department of Environmental Quality to write three environmental curriculum units for the Clean Michigan Initiative.



The Western UP Center's staff decreased from 5 full-time members to 3 full-time and one part-time member due to budget cuts. The governance of the Western UP Center has remained the same. The Center is a partnership of the Copper Country Intermediate School District (CCISD) and Gogebic Ontonagon Intermediate School District (GOISD) and Michigan Technological University (MTU) and provides services to schools in the CCISD and GOISD. The CCISD acts as the fiscal agent and fiscal records are reviewed by the CCISD Board of Education.

The Western UP Center's focus for the 2004-2005 school year is to provide programs that help school district meet the mandates of "No Child Left Behind" and improve science and mathematics teaching and learning. The Center will continue to offer high quality professional development and student programs. It has been successful in pursuing funding to maintain programming. The Center in collaboration with MTU received two more Teacher Quality Grants to offer professional development in mathematics and physical science over a two -year period. The Center received a grant from the Environmental Protection Agency to fund a field trip and an after-school science program.