

Western Upper Peninsula Center for Science, Mathematics and Environmental Education 2005-2006 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 21st century by providing innovative and quality programming for students, teachers and the community.

Overview of the Year's Accomplishments

Math Partnership Grant: Building Bridges Mathematics Project. A cohort of secondary math teachers attended a comprehensive series of workshops and summer institutes aimed at improving their content knowledge and instructional practice. The same group of teachers will continue their professional development in the 2006-2007 school year.

Summer Institutes. Math, Science and Social studies teachers participated in institutes that focused on improving teaching and learning that occurs in their classroom. Participants received graduate credit from MTU, at greatly reduced rates due to various grants. The institutes were funded with grants from Improving Teacher Quality Program, National Science Foundation, U.S. Environmental Protection Agency, Michigan Forest Foundation, U.S. Forest Service, International Paper, Department of Natural Resources, and the Mathematics and Science Partnership grant program.

Michigan Environmental Curriculum Support (MEECS). The Western UP Center developed 3 of the 5 units for DEQ endorsed Michigan Environmental Curriculum Support. The units provide teachers with resources to teach science and social studies benchmarks using the environment as the classroom. For more information about the MEECS units, please visit www.michigan.gov/deq-meeecs.

Torch Lake Monitoring Project. High school science classes from schools around the Super-Fund Torch Lake Site worked with staff from the Western UP Center to monitor the remediation of the site. They provided biodiversity, water quality and soil data to EPA and their local communities. The Western UP Center received the 2005-06 Education Excellence Award from the Michigan Association of School Boards for this project.

Family Science/Math Nights- Grades K-6. Students and their parents attended two 40-minute inquiry-based activities led by MTU students. Elementary students participated in problem solving activities, engineering challenges, and investigations designed by MTU students.

After-School Programs- Grades 1-8. Six-week long classes were designed to enhance the curriculum at the school and were taught by MTU students that are trained by Center staff to conduct these classes.

Forest Field Trip Program Grades 1-8. The field trips were conducted at school forests, state parks and other wildlife areas in all seasons. Winter field trips are conducted on snowshoes. The field trips were conducted by Anne Collins, Americorps member, and two MTU forestry graduate students.

Western UP Science Fair and Science Festival- March 16, 2006. Students in grades four through eight communicated their findings on experiments they conducted using scientific method through a science fair project. Students presented their science fair projects to the judges who are local educators or MTU faculty.

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	Comb Subj	Other or Unknown*
Pre-School	0	0	0	0	0	0	0	0	0	0
Elementary	87	895	15	72	5	0	2	0	77	3
Middle/Jr. High	23	226	10	13	0	6	10	0	3	4
High School	55	719	23	32	1	16	18	3	3	14
K-12 Mixed Levels	50	910	23	27	6	9	12	2	7	14
Other	11	172	2	8	2	0	0	0	0	9
Total	226	2922	73	152	14	31	42	5	90	44

* 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 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. Table 2 on the following page represents a picture of the number of sessions offered and the rate of attendance.

Teachers, on average, spent 12.9 hours on mathematics, science, or technology professional development.

Table 2: Professional Development Activities

		Math	Science	Technology	Other	Total
Elementary & Jr. High	Events	0	10	0	0	10
	Hours	0	69	0	0	69
	# Participants	0	65	0	0	65
Middle School	Events	3	1	0	0	4
	Hours	15	15	0	0	30
	# Participants	25	1	0	0	26
Jr. High & High School	Events	9	4	0	0	13
	Hours	81	24	0	0	105
	# Participants	102	49	0	0	151
High School	Events	3	2	0	0	5
	Hours	9	6	0	0	15
	# Participants	23	17	0	0	40
K-12 Mixed Levels	Events	0	0	1	9	10
	Hours	0	0	6	48	54
	# Participants	0	0	15	155	170
Total	Events	15	17	1	9	42
	Hours	105	114	6	48	273
	# Participants	152	132	15	155	452

Spotlight on Partnerships

The Western UP Center is a partnership of the Copper Country ISD, Gogebic-Ontonagon ISD and Michigan Technological University (MTU). This partnership allows the Center to leverage many resources to provide programming to the 19 school districts in their service area. The partnership with MTU provides ways to pursue additional funding through grants to provide programs and services to school districts. MTU Students and faculty provide a tremendous volunteer resource for conducting student programming. In addition, the expertise of MTU faculty is a crucial component to the success of the Center's summer institute program. Center staff work closely with MTU faculty to provide the teachers with relevant ways to present cutting edge technology to their students.

Spotlight on Professional Development

Preparing “Highly Qualified” Teachers

Building Bridges Mathematics Project

The Western UP Center provided secondary math teachers with a comprehensive series of workshops and summer institutes aimed at improving content knowledge and instructional practice. The content of the workshops was determined to address student achievement gaps indicated by current MEAP data. The cohort of teachers from 2005-06 will continue their professional development in the 2006-2007 school year. This project is funded by a Mathematics and Science Partnership Grant.

Summer Institutes

The Western UP Center provided high quality teacher institutes that allow teachers to improve the teaching and learning that occurs in their classroom. Participants received graduate credit from MTU at greatly reduced rates due to various grants. The institutes were funded with grants from Improving Teacher Quality Program, National Science Foundation, U.S. Environmental Protection Agency, Michigan Forest Foundation, U.S. Forest Service, International Paper, Department of Natural Resources and Mathematics and Science Partnership Grant Program.

Institutes conducted:

- *Michigan New Environmental Curriculum*: June 12-16, 2006
- Mathematics and Navigation: June 19-23, 2006
- *Global Change*: June 25-30, 2006.
- Educators Science and Mathematics Institute Series—Applied Mathematics: June 19-30, 2006
- Educators Science and Mathematics Institute Series—Applied Science: June 19-30, 2006
- Great Lakes Maritime Transportation: June 24-28, 2006 and July 31-Aug 3, 2006

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:

- Family Science and Math Nights
- After-school enrichment opportunities that engage students in the practical application of mathematics and science knowledge.
- Field trips to natural areas to promote environmental stewardship
- Science fairs, LEGO League and TiViTZ tournament

A table presenting a summary of student services is shown on the following page.

Table 3: Student Services Activities Provided in 2005-2006

		Math	Science	Other	Total
Elementary	Events	0	214	6	220
	Hours	0	360	36	396
	# Participants	0	7664	216	7880
Elementary & Jr. High	Events	0	3	1	4
	Hours	0	9	6	15
	# Participants	0	618	38	656
Middle School	Events	0	17	4	21
	Hours	0	20	24	44
	# Participants	0	637	386	1023
Jr. High & High School	Events	0	4	0	4
	Hours	0	54	0	54
	# Participants	0	89	0	89
High School	Events	0	6	1	7
	Hours	0	19.5	6	25.5
	# Participants	0	570	61	631
Total	Events	0	244	12	256
	Hours	0	462.5	72	534.5
	# Participants	0	9578	701	10279

Spotlight on High-Priority Schools

The school districts in the Copper Country ISD and Gogebic-Ontonagon ISD for the 2005-2006 school year made Annual Yearly Progress at all levels. The Western UP Center for Science, Mathematics, and Environmental Education focused on providing vital services that helped school districts meet the mandates of “No Child Left Behind” and improve science and mathematics teaching and learning. The Center offered high quality professional development that addressed these mandates:

- *High School Reform.* Multiple workshops were conducted at various locations to inform teachers and administrators about high school graduation requirements and allow them to participate in the web review of the new content expectations for science and mathematics.
- *Middle School Mathematics Initiative.* These workshops focused on identifying student needs and developing instructional strategies to address those needs. Workshop to address instructional strategies to teach algebraic concepts to all students are planned for the Fall of 2006.
- *New Teacher Mentor Workshop Series.* This series of 7 workshops provided new teachers and their mentors with the resources and knowledge to help new teachers create an effective learning experience for their students. This professional development helped teachers and their districts meet the professional development requirement for new teachers.
- *School Improvement Workshop Series.* This series of three workshops guided administrators and school improvement teams on how to lead their teachers, staff, parents, students and community through the process of school improvement.

What was the impact of the Western Upper Peninsula Center for Science, Mathematics and Environmental Education?

Impact on Students	Impact on Teachers
<p>The number of students that received proficient scores on the 5th Grade Science MEAP from 12 elementary schools that actively participate in after-school science programs, ecology field trips, family science nights, school science fairs, Western UP Science Fair and teacher professional development offered by the Western UP Center increased from 2002 to 2005. <i>Proficiency levels increased on the average by 12%.</i></p>	<p>The Western UP Center developed 3 of the 5 units for DEQ endorsed Michigan Environmental Curriculum Support. These units provide teachers with resources to teach science and social studies benchmarks using the environment as the classroom. The units have been well received by teachers throughout the state of Michigan. Workshops were conducted throughout the state from January to August 2006. According to workshop evaluations, <i>99% of the participants found the units relevant and appropriate to teach science and social studies content.</i></p>
<p style="text-align: center;">Impact on Schools</p> <p>The schools in the region have come to depend on the Center to provide student programming that enhances their science and math curriculum.</p> <ul style="list-style-type: none"> ▪ Many schools were willing to pay for the high quality programming that the Western UP Center offers. <p>Schools depend on the Center to provide high quality professional development in math, science, school improvement and new teacher training.</p> <p>Schools depend on the Center to provide high quality mathematics and science enrichment activities for students that would otherwise not be possible due to school budgets:</p> <ul style="list-style-type: none"> ▪ After-school Classes and LEGO League Teams ▪ Ecology Field Trips ▪ Family Science and Math Nights ▪ Western UP Science Fair 	<p style="text-align: center;">Impact on Communities</p> <p><u>Community Planning</u></p> <ul style="list-style-type: none"> • The Western UP Center created and published <i>Design Guidelines: to Enhance Community Appearance and Protect Natural Resources</i> and <i>Looks Count Middle School Community Design Curriculum</i>. These publications were distributed throughout the state of Michigan. <p><u>Community Involvement</u></p> <ul style="list-style-type: none"> • The Western UP Center developed a model where high school students can monitor and contribute data on a Torch Lake Super Fund Site to the EPA. In addition, it will meet a community need to provide useful information about an environmental concern.

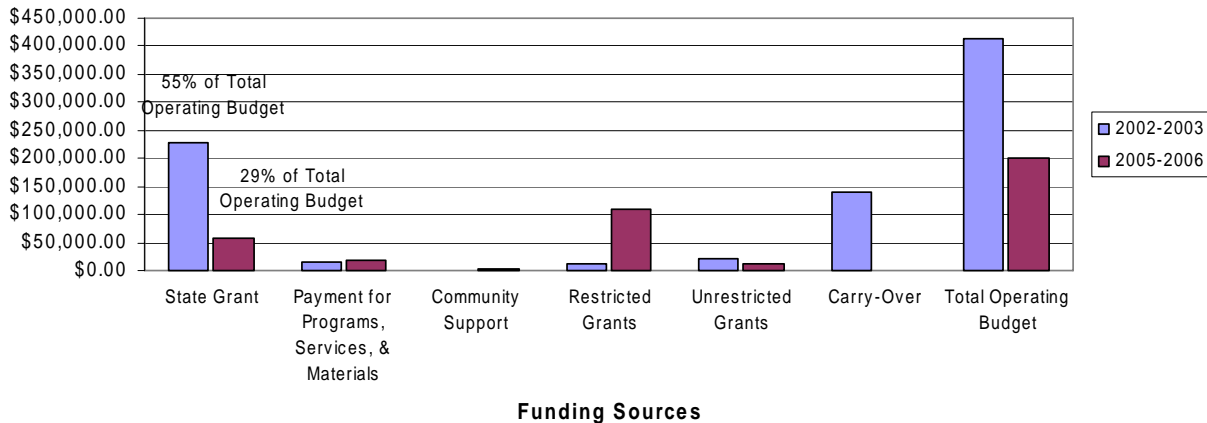
Director's 2005-2006 Budget Discussion :

The Section 99 allocation did not provide enough funding to run programming or to provide salary for one full time person. The Western UP Center staff was very aggressive in pursuing other grant funds to maintain programming and staff for the 2005-2006 school year. A substantial amount of time was spent pursuing grant opportunities and collaborative partnerships. The Western UP Center was able to provide a wide variety of student programs and professional development opportunities by combining funds from Section 99 with 7 other grants during the 2005-06 school year.

The school districts in the CCISD and GOISD paid a minimal fee for student and family programs offered through the Western UP Center in the 2005-2006 school year. The fee paid for materials and travel but did not pay for staff time. These programs are valued by the school districts and they are willing to pay the fees even in an atmosphere of reduced school budgets.

The 2006-2007 school year will be a challenging year due to no carryover funds, reduction in other grant funds and Section 99 funding remaining at 25% of full funding. Increased costs for staff benefits and travel for student programs combined with decrease in revenue will leave the Western UP Center with very limited funds to run programming. If the Section 99 funding remains at 25% of full funding, I predict that the Western UP Center will consist of one staff member and very limited programming for the 2007-2008 school year.

Changes in the Western Upper Peninsula Center's Financial Support



In addition to the financial support illustrated in the graph above, “in-kind” services received by the Center (donated volunteer time, facilities and equipment) were valued at \$22,700.

Director's Summary 2005-2006

The focus of the Western UP Center for Science, Mathematics, and Environmental Education for the 2005-2006 school year was to provide programs that help school districts meet the mandates of “No Child Left Behind”, High School Reform, and improve science and

mathematics teaching and learning. The Center offered high quality professional development and has been successful in pursuing funding to maintain teacher programs. The Center in collaboration with MTU, received two more Teacher Quality Grants to offer professional development in mathematics over a two-year period. The Center also received a grant from the Department of Environmental Quality to fund professional development on proper chemical handling and lab safety.

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 site. Staff or volunteers would drive to schools to conduct field trips, after school science, family programs etc. With the decrease in funding, the Western UP Center put an emphasis on professional development and selected student programs to help districts meet the mandates of "No Child Left Behind". The expensive student programs such as after school 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.

A substantial amount of staff time was spent pursuing grant opportunities and collaborative partnerships to maintain programming. The Western UP Center will use funding from seven different grants in addition to Section 99 to maintain Center programming for the 2006-2007 school year. The seven grants will provide \$92,637 in restricted grant funding for the Center during the 2006-2007 school year. One of the grants received is the Math Partnership Grant for the Mathematics Building Bridges Project. This grant will provide quality sustained professional development for 20 mathematics teachers in the Western UP Center's service area for the 2006-07 school year.

The Western UP Center staff decreased from 5 full time employees to 3 full time employees and one part time employee due to budget cuts. One of the full time employees is an Ameri-Corp worker that costs the Western UP Center \$6,700 annually. 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 the CCISD Board of Education reviews fiscal records.