Western Upper Peninsula Center for Science, Mathematics and Environmental Education

A Partnership of Copper Country & Gogebic-Ontonagon ISDs and Michigan Technological University

Serving 21 school districts in Houghton, Baraga, Keweenaw, Gogebic, and Ontonagon Counties

1 of 33 Math & Science Centers in Michigan funded by Michigan Dept. of Education
CENTER STAFF

CCISD Office:  809 Hecla Street, Hancock
  Shawn Oppliger  Director
  Loret Roberts  Secretary

MTU Office:  105 Dillman Hall
  Joan Chadde  Education Program Coordinator
  Katie Walch  Science Education Specialist
  Pam Schmidt  Elementary Math/Science Specialist
Overall Goal of Center Programs

To improve the teaching and learning of science and mathematics, and promote environmental stewardship amongst K-12 students, teachers, university students, parents and community members.
Who Do We Reach?

• K-12 Students & Teachers
• University Faculty & Students
• General Public
• Resource Professionals
Center Program Areas

1. K-12 student programs
2. Teacher professional development & curriculum support
3. Community Involvement
4. Resource clearinghouse
5. Local and regional leadership
• Family Math and Science Nights
• Forest Field Trips
• After-School Science Classes
• Classroom Presentations
• Earth Day Programs
• Science Fair
• FIRST LEGO League
Family Science Nights

21 family nights per year at every elementary school in Houghton, Baraga, Ontonagon & Gogebic counties.

Hands-on activities presented to 2,507 K-6 students & parents by MTU students in ED 3510 Communicating Science class.
Why Family Science?

• Students & parents have “fun” doing science.

• Bring scientific learning to family unit.

• Encourage doing science at home with everyday materials.

• Spark children’s scientific interest through hands-on activities.
Why Family Science?

• Builds connections between classroom science and the real world.
• Allows interaction with “practicing scientists.”
• Provides opportunity to share information about careers in science.
• Stimulates parents’ interest in science and their children’s science education.
Sean Sands (CEE) directs Gr. 3 students in a demonstration of compression and tension forces.

Chris Edlin (CEE) helps Gr. 1 students learn about surface runoff and water pollution.
Richard Vendlinski (CEE) guides Gr. 4 students in the construction of a parachute that can slow the descent of a raw egg.
## Sample Family Science Night Attendance
### 2001-02 School Year

<table>
<thead>
<tr>
<th>School</th>
<th># Students</th>
<th>% Student Body</th>
<th>Total Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Baraga Elementary</td>
<td>35</td>
<td>40 %</td>
<td>65</td>
</tr>
<tr>
<td>2. Chassell Elementary</td>
<td>103</td>
<td>63 %</td>
<td>203</td>
</tr>
<tr>
<td>3. Dollar Bay Elementary</td>
<td>31</td>
<td>20 %</td>
<td>86</td>
</tr>
<tr>
<td>4. E.B. Holman School</td>
<td>56</td>
<td>40 %</td>
<td>90</td>
</tr>
<tr>
<td>5. Hancock Elementary</td>
<td>130</td>
<td>30 %</td>
<td>231</td>
</tr>
<tr>
<td>6. Houghton Elementary</td>
<td>82</td>
<td>17 %</td>
<td>192</td>
</tr>
<tr>
<td>7. Lake Linden Elementary</td>
<td>53</td>
<td>18 %</td>
<td>131</td>
</tr>
<tr>
<td>8. Sleight Elementary</td>
<td>86</td>
<td>41 %</td>
<td>164</td>
</tr>
<tr>
<td>9. Wakefield Elementary</td>
<td>59</td>
<td>49 %</td>
<td>109</td>
</tr>
<tr>
<td>10. Washington Elem (Bessemer)</td>
<td>83</td>
<td>36 %</td>
<td>151</td>
</tr>
</tbody>
</table>

**TOTAL ATTENDING** 1,286* 2,507* (All Schools)
Sample Comments from University Students in Course

• *I learned about the importance of flexibility and how adapting to your audience is imperative to effective communication.*

• *This course taught me how to convey complicated ideas in a common, understandable way.*

• *This course provided the opportunity to develop the communication skills essential to becoming successful in the workplace.*
Sample Comments from University Students in Course

- This course sets us apart from our peers and instills in us a sense of community involvement and accomplishment.

- I am now sure that I will someday have to find a way to incorporate students into my profession.

- Working with multiple-age groups and varying populations helped me to improve my people skills and become perceptive to a wide range of interest levels.
Forest Field Trips

75 field trips last year reaching 2,314 students and teachers from 15 schools during fall, winter & spring.
After-School Enrichment Classes

60 classes per year reaching 864 students

Forest Ecology
Grades 1-3 & 4-6

Amazing Animals
Grades 1-3

Science Explorers
Grades 1-3 & 4-6

Chemistry for Kids
Grades 4-6

Return to WUP Center
After-School Enrichment Classes

Engineering Challenges
Grades 4-6

Alternative Energy LEGOs
Grades 4-6

After-School Classes
- Taught at 23 elementary schools by MTU students.
- Classes are 4 or 6 weeks long.
- Offered for gr. 1-3 students & gr. 4-6 students.
Hands-On !!
Classroom Presentations for Gr. 1-8
153 presentations reaching 3,188 K-8 students
Earth Day 2002 “Kids Make A Difference”
1,151 students from 29 schools developed projects

- Planting school garden
- Storm drain stenciling
- Paper-making
2002 Western UP Science Fair

437 students in Gr. 4-9 participated

** 40 MTU faculty and students were judges **
FIRST LEGO League Teams

• 13 elementary and middle schools teams.

• Teams are coached by MTU engineering students.

• Hosted U.P. Regional Tournament at MTU on Nov. 23, 2002
Professional Development

927 Teacher Participants Attended  53 Workshops

- Annual Teaching With the Outdoors Workshop
- Environmental Stewardship Workshops
- Physical & Earth Science Workshops
- Stream Monitoring Workshops
2001-2002
Educators Science & Math Institute Series

• Wolf Ecology
• Winter Ecology
• Geology of Utah’s Nat’l Parks
• Ecology of Isle Royale
• Artistic Expression Explored through Math and Science
• Ecology of the Great Lakes Aboard the EPA’s Lake Guardian
Community Involvement

- Stream Monitoring Programs
- Community Planning & the Visual Environment Curriculum & Guidebook
- Frog Deformity Surveys
- 2001 Lake Superior Youth Symposium at MTU
- Superior Stewardship summer courses for students
2001 Lake Superior Youth Symposium @ MTU
400 students/teachers from MI, WI, MN, ON

NEXT SYMPOSIUM: April 25-27, 2003
Northland College ~ Ashland, WI

Return to WUP Center
Volunteer, Paid & Credit Opportunities for MTU Students

• Experience teaching through After-School and Family Science Programs.
• Earn (Gen Ed) credit by enrolling in ED 3510 Communicating Science.
• Assist classes with stream monitoring.
• Volunteer & paid positions, or course credit.
• Assist with forest field trips.
Summary of MTU Student Participation in Center Programs 1998-2001

Forestry  43
Civil & Environmental Engineering  60
Elec/Mech/Chemical Engineering  65
Biological Sciences  36
Geological Sciences & Engin’g  24
Other (math, physics, computer, business)  82
TOTAL  300
Resource Clearinghouse

Resources Available to Teachers

Scientific equipment:
- Graphing calculators & CBL’s
- GPS units (set of 10)
- Spectrophotometers & centrifuges
- Water quality monitoring kits
- LEGO Mindstorm kits

K-12 curriculum/activity guides

Activity kits & trunks: wolves, owls, mineral ID, animal tracks, eniroscope, groundwater model
Regional & Statewide Leadership

- Member of network of 33 Mathematics and Science Centers in Michigan.

- Act as liaison between Michigan Dept. of Education and local school districts.

- Help shape regional & statewide initiatives in mathematics and science education.

- Coordinate math and science programs and leverage resources for two ISDs.
Conference Presentations at:

- National Science Teachers Association
- North American Association of Environmental Educators
- Michigan Science Teacher Association
- Detroit Metropolitan Science Teachers
- Michigan Association of School Boards
Primary Funders (75%)
- Michigan Department of Education
- Wege Foundation

Special Project Funders (25%)
- Michigan Depts. of Natural Resources & Environmental Quality
- U.S. Environmental Protection Agency
- National Science Foundation
- Dunn Foundation
Opportunities for Collaboration with MTU Faculty

• Partner on grants requiring K-12 outreach.

• Collaborate in developing K-12 curriculum.

• Utilize Center’s distribution network to local, UP, and upper Great Lakes region schools.
2001-02 School Year Outreach Summary

TOTAL PARTICIPATION = 18,913 students, teachers, parents & community people

- 927 teachers
  - Professional Development
  - MTU graduate credit offered
- 2,507 students & parents
  - Family Science Nights
- 11,796 students
  - Classroom presentations, assemblies & forest field trips
- 60+ MTU students
  - Working in area schools through Center programs