Nellie B. Chisholm Montague Middle School

Learning by Doing and Serving the Community

Community Partners

- Muskegon Conservation District
- Weesies Brothers Garden Center & Landscaping
- Pekadill's
- City of Montague
- MACUL, STEM MI Champs

Planting native species improves the watershed!

West Michigan Great Lakes Stewardship Initiative

Student Learning Outcomes

Students used project based learning and STEM technology to answer the question "How do we improve water quality?"

Students learned about the history of White River and Buttermilk Creek from speaker, Jeff Auch.

They researched the water quality of Buttermilk Creek by focusing on the chemical, biological, and physical aspects of the creek.

Data sheets were completed and analyzed at the chemical station of Buttermilk Creek. Students discussed the phosphate, nitrate, pH, bacteria, and dissolved oxygen levels of Buttermilk Creek. iPads and Pasco temperature probes were used to monitor the water temperature.

At the biological station, students collected and identifed macro invertebrates as pollution sensitive to pollution tolerant to evaluate the water quality of the creek.

The students walked and sketched to observe the physical aspects and human impact to the creek.

Students helped the community by planting native plant species to improve the watershed. Students create a sign to post at the restoration site to teach the community about watershed care.

In the classroom, students learned about the water quality of Buttermilk Creek. Students used iPads to plot the creek and learn mapping skills. Mean, median, and mode are used to compare the data collected at the chemical station. Essays and poems were written to inform the community about the quality of the watershed. Writing was entered to an area "Clean White Lake" contest.

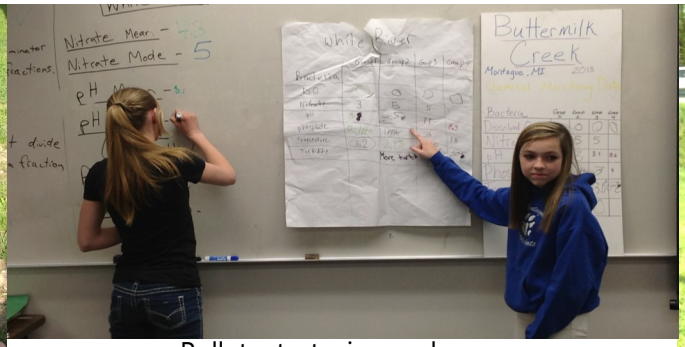
Nellie B. Chisholm 2012-13 School Year:

- **100 Students**
- **7 Teachers**
- **5 Classrooms**
- **Seventh Grade—science, English, math, social studies**

Waste
Abandoned
Toxic
Ecosystems
Recovery

How are you a problem?
End the polluting!
Lakes and streams are hurt.
Please try!!!!

By: Alayna Merten



Pollutants, toxins, and more
Our White Lake is getting poor.
Fertilizers running into drains,
Every time the sky decides to rain.
To find macro invertebrates are rare
For it is hard for animals to live there.
Water you drink and swim in
Polluted it has been!

(Excerpt from *TOXIC White Lake* by Alayna Merten

2012-2013 School Year Project Timeline

March — Learn about the history of the Buttermilk Creek. Mapping skills. Learn about the importance of watersheds.

April — Begin using iPads and Pasco Probes

May — Reading strategies using informational text about watersheds.

May 9 — Conduct stream monitoring at Buttermilk Creek

Plant native species at Montague restoration site

Research and compose text for restoration signs

Submit poems and essays to "Clean White Lake" Contest

June — Evaluate signs

Post sign at restoration site

Skills learned:

- Civic & Community Responsibility
- Stream Monitoring
- Wetland Studies
- Writing Poems & Essays
- Mapping with iPads
- Mean, Median, Mode
- History & Cultural Studies
- Interpretive Sign Making

Nellie B. Chisholm, May 2013