



Program Overview, Metrics and Evaluations





CoreKids Overview
And
2013-2014 Events List



CoreKids Program at the Michigan Geological Repository for Research and Education/Michigan Geological Survey

Prepared by Dr. Peter Voice, Director of K-12 Outreach, Michigan Geological Survey

Our Mission: To increase awareness and understanding of Earth, its processes and its natural resources among Michigan's students, teachers and citizenry. We utilize the unique geological resources of Western Michigan University Geoscience Department's Michigan Geological Repository for Research and Education (MGRRE). CoreKids educators carry earth science literacy, science literacy and citizenship messages from university faculty, our sponsors and our partners to the K-12 community and to the public. The program utilizes a mixture of presentations and hands-on activities to promote the understanding of earth science as well as to increase interest in the STEM (Science, Technology, Engineering and Math) fields especially the earth sciences among K-12 students. The majority of our contacts with southern Michigan students have been with higher grade level students who are making decisions about their future and we hope that we can influence some of these students into pursuing careers in the earth sciences. A basic tenet of the organization is to provide programming to schools and non-profit organizations without charge.

Our Current Funding: We thank the DTE Energy foundation for their generous support for the 2012-2014 period. We also thank the American Petroleum Institute for generous support for the development of a module focused on shale energy resources. The Western Michigan University Interdisciplinary Research Fund has also generously provided funds as initial support for the development of an online MGRRE Education Portal.

We are currently seeking additional funding to support the future activities of the CoreKids Program. In addition, a NSF DR K-12 grant proposal was submitted Dec. 9, 2013. This grant if awarded will be used to develop a prototype for the MGRRE Education Portal. Proposals have been submitted to the Toshiba America Foundation and the Dow Corning Foundation.

Our Partnerships:

The Cranbrook Institute of Science

The Kalamazoo Geological and Mineral Society

The Michigan Department of Environmental Quality

The Michigan Aggregate Association

The Michigan Basin Geological Society

The Kalamazoo Air Zoo

The University of Michigan Museum of Paleontology

The Michigan Mineralogical Society

We also have the support and partnership of several Teachers associations: The Michigan Earth Science Teachers Association, the Michigan Science Teachers Association, the Michigan Alliance for Environmental and Outdoor Educators and the Metropolitan Detroit Science Teachers Association.

Future Proposals:

1. Develop a pilot MGS-MGRRE online education portal focused exclusively on Michigan energy issues. This portal would develop activities using authentic datasets to guide students through the process by which geologists go from exploration to oil and gas production. As part of portal development, we will engage professional Michigan geologists to work with teachers directly, both in the field and in the classroom. These could also lay the foundation for future mentoring relationships between sponsoring companies and participating schools.
 - a. We have applied for a NSF DR K-12 grant for this proposal [pending]
2. Develop workshops and continuing education short courses for Michigan teachers. We would use the well cores and samples and production records at MGRRE and allow the teachers to lay their hands on the actual rocks that yield these natural resources such as oil, gas, minerals, metals, and groundwater. This would also allow us to build a stronger collaboration with local teachers associations (Michigan Earth Science Teachers Association, Michigan Science Teachers Association) and promote earth science clubs at their schools.
3. Develop additional classroom modules. Several teachers that we have worked with in the past are excited to learn that we now present new modules about natural hazards and shale energy. As a result they are inviting us into their classrooms for multiple events. A wider variety of modules will not only interest more teachers, they will invite us back for more events, and more teachers and students will gain a better understanding of our natural resources and the need to responsibly manage them.
4. Develop an Open House Event twice a year at the MGRRE Facility as a resource for local home school associations and youth groups. A series of hands-on activities are planned centered around Michigan Geology, Michigan Natural Resources, Energy and Fossils. We have already done a pilot version of this idea with the Kalamazoo Geological and Mineral Society and their youth group and it was very well received.
5. Create a traveling classroom to bring these modules to schools, educational meetings and conferences, parks, events, and neighborhood organizations where students and the public can participate in learning games and displays which show people of where natural resources come from, how they are used in their daily lives, and how important responsible management of these critical resources makes Michigan a better place to live in and an example for others to follow. The vehicle used for this endeavor would be labeled with the logo(s) of the financial backer.
6. Expand our impact by developing partnerships with other Michigan Universities and Colleges. We are currently building a partnership with Delta College to develop the first CoreKids Satellite. The primary CoreKids program would still be at Western Michigan University, but our satellites would be able to widen the geographic area that we could potentially reach. The current nature of the partnership would be to share physical resources such as module materials, rock and mineral samples, as well as contacts with area teachers in the region specified for the CoreKids Satellite.

CoreKids Frequently Asked Questions

1. Which regions of the state of Michigan does CoreKids go to?

We cover all of the southern Lower Peninsula of Michigan including the Kalamazoo, Grand Rapids, Lansing and Detroit Metro regions.

2. What is the MGRRE facility?

MGRRE is the Michigan Geological Repository for Research and Education. It is the premier collection of Lower Peninsula Geologic data and archives half a million feet of core rock data. We are part of the Michigan Geological Survey.

3. How many students can your Educators work with during a school trip or MGRRE tour?

Our modules are designed for groups of 30 students. We bring into the classroom all materials that we use including mineral samples and hands-on activities. We encourage schools with multiple sections of the same grade level at each period to schedule more than 1 day of CoreKids visits – i.e. one day for each 6th grade teacher's sections.

At MGRRE we are limited to groups of 25-30 at a time. We have a classroom at the facility that we use for brief presentations and hands-on activities.

4. How can we book a CoreKids Event?

Contact Dr. Peter Voice (peter.voice@wmich.edu or 269-387-8696 or 269-387-5446) to schedule events. He will try to accommodate your group.

5. What modules do you take into the classroom?

We currently have five modules: Michigan Geologic History; Hydrogeology; Shale Energy and Hydraulic Fracking; Michigan Fossils and Natural Hazards. The Natural Hazards module is designed as three submodules: Volcanoes; Earthquakes; and Impact Craters. Each module is designed for a 50 minute session and includes a brief presentation and hands-on activities. Michigan Department of Education Grade Level Content Standards have been described for each module and are available on request.

6. Can I schedule more than one CoreKids event for my school or group with different modules?

If we have room in our schedule, we will gladly visit your school or group multiple times during the year presenting different modules.

7. Is there a charge for CoreKids Events?

We are currently supported by generous grants from the DTE Energy Foundation. We are seeking funding for 2014-2015 from multiple sources. Our policy is to provide our content free of charge for school visits and MGRRE tours. For MGRRE tours, we cannot cover the cost of transportation to bring your group to the MGRRE facility.

8. What if my school has a snow day or other cancellation the day a CoreKids event is scheduled?

We will try our best to reschedule the CoreKids event.

CoreKids Events 2013-2014

(65 Events – School Visits, MGRRE Tours, Larger Events with Allied Associations and 7 Conferences/Teachers Workshops)

July 30th – Cub Scout Group, Kalamazoo, MGRRE Tour [Mineral Identification]

Aug. 5th – WMU Hydrogeology Camp MGRRE Tour

Aug. 22nd – Lego Robotics League MGRRE Tour (Natural Hazards – Impacts Module)

Sept. 11-13th – Cranbrook Institute of Science Rouge River Festival (Hydrogeology Module)

Oct. 4-6th – Michigan Earth Science Teacher Association/Michigan Alliance of Environmental and Outdoor Educators Annual Meeting

Oct. 14th – Loaned Michigan Geologic History Module to Kalamazoo Geological and Mineral Society for a School Visit – Star Elementary, Plainwell

Oct. 21st – Scheduled School Visit - St. Mary Visitation School, Bryon Center (Michigan Geologic History Module)

Oct. 25th – Petroleum Geology Class, Central Michigan University – MGRRE Tour

Oct. 30th – Kalamazoo Reformed Heritage Christian School MGRRE Tour

Nov. 1st – MGRRE Online Education Portal Workshop

Nov. 1st - Okemos High School Geology Class MGRRE Tour

Nov. 5th – Saudi Arabia Geological Survey MGRRE Tour

Nov. 11th – Scheduled School Visit, Upton Middle School, St. Joseph (Michigan Geologic History Module)

Nov. 12th – Scheduled School Visit, Gull Lake Middle School (Michigan Geologic History Module)

Nov. 14th – Scheduled School Visit, Gull Lake Middle School (Michigan Geologic History Module)

Nov. 16th – Kalamazoo Geological and Mineral Society Lecture Series – MGRRE talk and tour

Nov. 18th – Scheduled School Visit, St. Francis School of Ann Arbor (Michigan Geologic History Module)

Nov. 20th – WMU Geology Club Tour

Dec. 11th – Scheduled School Visit, St. Francis of Ann Arbor (Natural Hazards – Earthquakes Module)

Dec. 12th - Scheduled School Visit, Upton Middle School, St. Joseph (Natural Hazards – Earthquakes Module)

Dec. 13th - Scheduled School Visit, Upton Middle School, St. Joseph (Natural Hazards – Earthquakes Module)

Dec. 26th – Dec. 30th – Cranbrook Institute of Science Fossil Festival (Michigan Fossils Module)

Dec. 30th – Kalamazoo Air Zoo Digging Michigan Camp (Michigan Fossils Module)

January 16th – Gardner Family MGRRE Tour

January 18th – WMU STEMulating Career Day (Michigan Geologic History Module)

Jan. 21st – Scheduled School Visit, Gull Lake Middle School (Natural Hazards: Earthquakes Modules)

Jan. 22nd – Scheduled School Visit, Gull Lake Middle School (Natural Hazards: Earthquakes Module)

Jan. 25th – Dr. Hampton borrowed CoreKids equipment for outreach event with a Webelos Scout Pack.

Feb. 8th – Kalamazoo Geological and Mineral Society Seminar Series (MGRRE)

Feb. 11th – Grand Haven Public Schools – MGRRE Tour

Feb. 14th – Scheduled School Visit, Berkshire Middle School [Michigan Geologic History Module]

Feb. 28th – Schedule School Vist, Gull Lake Middle School [Natural Hazards: Volcanoes Module]

Mar. 3rd - Scheduled School Visit, Gull Lake Middle School [Natural Hazards: Volcanoes Module]

March 5th—Scheduled School Visit, Hastings Middle School [Michigan Geologic History Module]

March 6th -8th -Michigan Science Teachers Association Annual Meeting

March 17th – Scheduled School Visit, Mattawan Middle School (Tom Howe) [Michigan Geologic History Module]

March 18th – Scheduled School Visit, Okemos High School [Shale Energy and Hydraulic Fracking Module]

March 19th -20th – Michigan Section of the Petroleum Technology Transfer Council Spring Meeting

March 28th – Scheduled School Visit, Lake Shore High School [Hydrogeology Module]

April 1st – Scheduled School Visit, Northwestern Middle School, Battle Creek [Hydrogeology Module]

April 9th – Hydraulic Fracking Demo at MBGS Meeting

April 8th – 11th – Cranbrook Earth Week Festival

April 15th – Scheduled School Visit, Detroit Public Safety Academy

April 17th – Michigan Oil and Gas Association 12th Annual Michigan Petroleum Geology Conference

April 22nd -Michigan Dept. of Environmental Quality Earth Day Event

April 24th-25th -North-Central GSA Section Meeting

May 2nd –4th -Kalamazoo Geological and Mineral Society Annual Show

May 8th -- Scheduled School Visit, Greater Heights Academy [2 sessions of Michigan Geologic History Module and 2 sessions of Natural Hazards: Volcanoes Module]

May 12th – Scheduled School Visit, Upton Middle School [Hydrogeology Module]

May 13th – Scheduled School Visit, Upton Middle School [Hydrogeology Module]

May 22nd – Scheduled School Visit, Thornapple Kellogg Middle School [Natural Hazards: Earthquakes Module]

May 23rd – Scheduled School Visit, Thornapple Kellogg Middle School [Natural Hazards: Earthquakes Module]

May 24th – K.G.M.S. Grand Ledge Field Trip

May 27th – Auburn Elementary School, Auburn Hills [Michigan Fossils Module]

May 27th – Polk Elementary School, Dearborn Heights [Michigan Geologic History Module]

May 29th – Science Night, El Sol Elementary, Kalamazoo

May 30th – MGRRE Online Education Portal Workshop II

June 2nd – Moorsbridge Elementary School [Michigan Geologic History Module with Sand Dunes]

June 3rd – Moorsbridge Elementary School [Field Trip to the Van Buren State Park]

June 4th – MGRRE Tour for the Baker Hughes Summer Interns

June 18th – Quincy Branch, Branch Co. District Library

June 18th – Algansee Branch, Branch Co. District Library

June 23rd – WMU College of Engineering Summer Camp, MGRRE Tour

Upcoming Events

July 3rd – University of Michigan Museum of Paleontology Summer Camp

July 8th – Kalamazoo Air Zoo Eco Explorers Camp – on main campus

July 9th – Coldwater Branch, Branch Co. District Library

July 10th – Bronson Branch, Branch Co. District Library

July 10th Sherwood Branch, Branch Co. District Library

July 11th – Union branch, Branch Co. District Library

July 16th – Kalamazoo Air Zoo Eco Explorers Camp – at Air Zoo

July 17th – Coldwater Branch, Branch Co. District Library

August 12th – University of Michigan Museum of Paleontology Summer Camp

Tentatively Scheduled Events post-July 2014

August 12-16th – Michigan Science Teachers Association Annual Meeting

Sept. 9-12th – The Cranbrook Institute of Sciences Rouge River Festival

Oct. 10-12th – Michigan Mineralogical Society Annual Show

Nov. 4th – K.G.M.S. Society Meeting at MGRRE

Nov. 7-8th – Gull Lake Community Schools Foundation – Sparks Series: Science and Engineering Fair

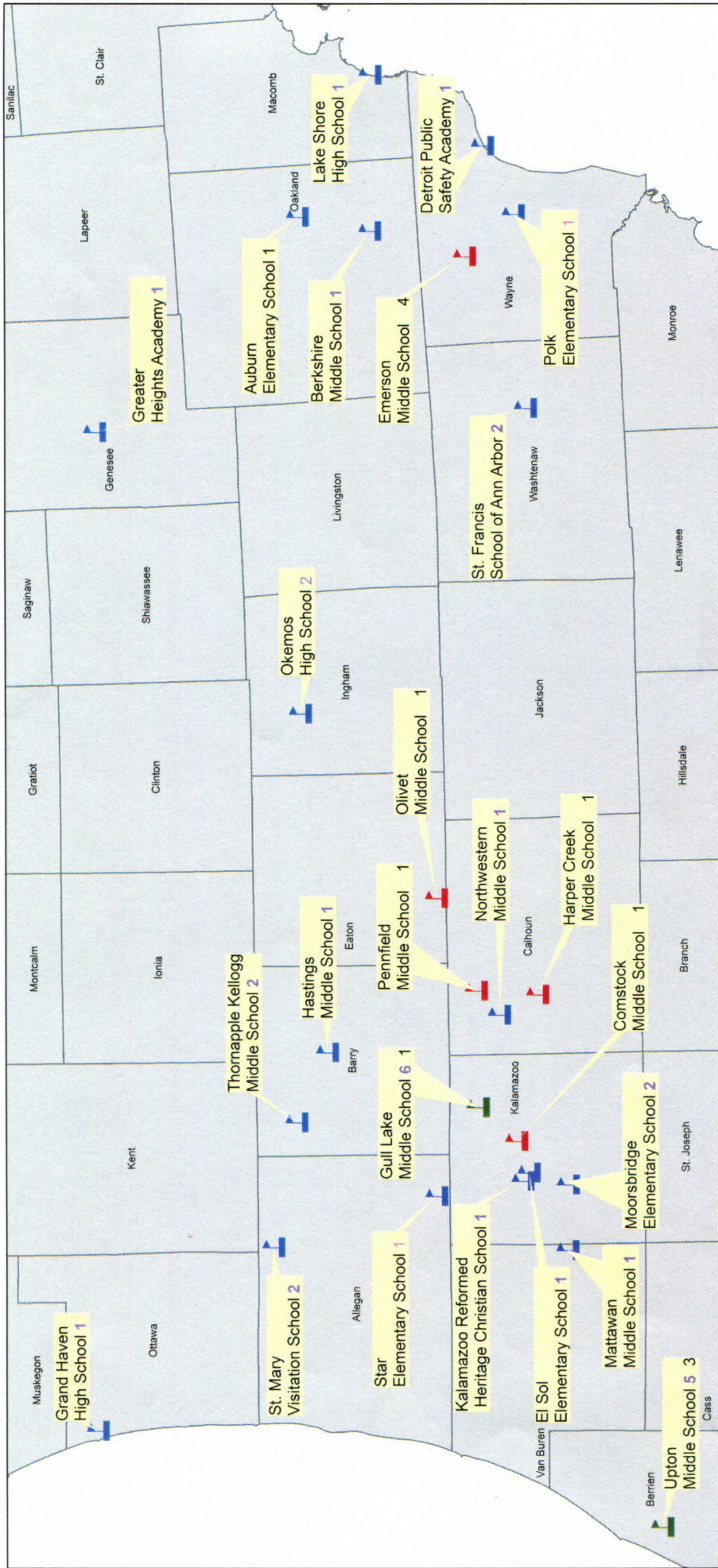
Nov. 8th – Metropolitan Detroit Science Teachers Association Meeting

Nov. 19th – University of Michigan Museum of Natural History Geology Day

March 18th – University of Michigan Museum of Natural History Geology Day

Distribution of Scheduled School Visits and MGRRE Tours

46 Events for Public and Private Schools in Michigan



School Visits and MGRRE Tours

- 2012/13 and 2013/14
- 2013/14
- 2012/13



CORE Kids

Letters of Support





April 21, 2014

39221 Woodward Ave.
Mail Correspondence to:
P.O. Box 801
Bloomfield Hills
Michigan 48303.0801
Ph 248.645.3139
Fx 248.645.3050

To whom it may concern:

I am writing this letter in support of the CoreKids K-12 Earth Science Outreach Program. Cranbrook Institute of Science partners with them to provide outstanding learning experiences that supplement and extend learning beyond the classroom.

Coordinated through the Michigan Geological Repository for Research and Education (MGRRE), Core Kids brings an important collection of rocks to public viewing and understanding. Their collection includes thousands of bedrock samples not found anywhere else, and most unique to Michigan. It is truly a one-of a kind storehouse of valuable geological information.

CoreKids does an outstanding job of relating Earth Science concepts to kids and families with fun, engaging activities and demonstrations that use MGRRE samples. These are impactful and memorable experiences for children to widen their knowledge and perspective on how geology relates to our lives and economy.

I have personally witnessed the excellence in interpretation and materials through numerous events: including water festivals and museum fairs. They inspire thousands of students each year about Earth Science and Natural Resources management. This education plays a significant role in shaping the knowledge and understanding of future citizens to build a sustainable society. I look forward to many years of partnership with the CoreKids K-12 Earth Science Outreach Program. Please feel free to contact me if you have any questions. I can be reached by phone at 248-645-3223 or by email at lappel@cranbrook.edu.

Sincerely,

A handwritten signature in cursive script that reads "Lisa Appel".

Lisa Appel
Watershed Education Coordinator
Cranbrook Institute of Science

CORE Kids

Module Overviews



Module	Recommended Grade Level	Michigan Department of Education Standards	Description
Michigan Geologic History	2-12	E.ES.03.41, E.ES.03.32, E.ST.04.31, E.SE.06.12, E.ST.06.42, E4.p3A	Discussion of Michigan's Geologic resources in their historical geology context. Emphasis on resources such as Oil and Gas, and Groundwater
Hydrogeology	7-12	E.ES.07.81, E4.1A, E4.1C	Discussion of infiltration rates, porosity and permeability.
Natural Hazards: Earthquakes	6-12	E.SE.06.51, E.SE.06.52, E.SE.06.53, E3.4A, E3.4C, E3.4f	Emphasis is on vibrational energy of earthquakes and its impact on structures.
Natural Hazards: Volcanoes	4-12	E.SE.06.52, E3.1d, E3.4C, E3.4d, E3.4e, E5.4B	Flow rates and magma chemistry are used to classify different types of volcanic eruptions. Volcanoes as natural hazards are explored.
Natural Hazards: Impacts and Asteroids	2-12	E5.p1A, E5.3C, E5.4B, P3.6A, P3.6B	Describes the influence of asteroids on Earth's geologic history.
Shale Energy and Hydraulic Fracturing	7-12	E.ES.03.41, E.ES.03.32, E2.2B, E2.4A, E2.4B, E3.1c, E4.1C	Discussion of conventional vs. unconventional hydrocarbon reservoirs. Explains the process by which hydraulic fracturing occurs.
Michigan Fossils	2-12	E.ST.04.31, E.ST.06.31, E.ST.04.32, E.St.06.42, Ef.3D, E5.4f	Michigan fossils are used to explore Michigan's changing climate as a function of plate tectonics through geologic time. Fossils are used to explore basic ecological principles (food webs, competition, niches).
The Environment and Climate Change	2-12	E.ES.03.52, E.ES.07.41, E1.2B, E1.2f, E1.2g, E2.3A, E2.3d, E2.4B, E5.4A, E5.4e	Module presents an overview of the nature of carbon dioxide gas and the greenhouse effect. The albedo effect is used illustrate the impact of changes in land cover and land use.

1. Michigan Geological History Presentation (Michigan Natural Resources)

The Michigan Geological History Presentation provides an overview of the approximately 3 billion years of Earth Processes that the state of Michigan has experienced with an emphasis on two time periods, the Paleozoic and the Holocene. The presentation illustrates that the climate of Michigan has changed through geologic time with much warmer tropical climates during the Paleozoic and colder glacial conditions in the recent past. The concept of uniformitarianism is defined as one of the paradigms of modern Geology – that processes acting on modern environments are the same processes that acted in ancient environments. Examples are used to illustrate uniformitarianism through comparison of Silurian age reefs in the Michigan Basin and modern reefs in the Bahamas. One of the key aspects of this module is the exploration of the rich variety of natural resources present in the subsurface of the state of Michigan. The students are encouraged to discuss everyday objects that they use and the natural resources that had to go into the production of those objects. Natural resources such as groundwater, oil and natural gas, metallic resources, aggregate (sand and gravel), as well as salt are discussed and placed in the framework of the geology of Michigan. A final topic covered in the module is the idea that rocks have pore space which can be used to store materials like oil, natural gas, and water. A hands-on activity designed to supplement this module is the Core permeability test described below. This presentation is appropriate for grades 3-12 and meets the following content standards:

Michigan Department of Education Grade Level Content Standards covered:

E.ES.03.41 Identify natural resources (metals, fuels, fresh water, fertile soil, and forests).

E.ES.03.32 Describe how materials taken from the Earth can be used as fuels for heating and transportation.

E.ST.04.31 Explain how fossils provide evidence of the history of the Earth.

E.SE.06.12 Explain how waves, wind, water, and glacier movement, shape and reshape the land surface by eroding rock in some areas and depositing sediments in other areas.

E.ST.06.42 Describe how fossils provide important evidence of how life and environmental conditions have changed.

E4.p3A Describe how glaciers have affected the Michigan landscape and how the resulting landforms impact our state economy.

2. Hydrogeology Presentation

The availability of potable water is a significant problem worldwide. This module was developed to increase awareness in students of issues pertaining to the extraction of groundwater as well as to environmental issues that impact groundwater supplies. The module specifically outlines the distribution of water on the Earth's surface and in its interior. Fresh water makes up approximately 2.5% of the total water on the Earth's surface and much of that water is frozen as glacial ice. The module presenter explores with the students the water cycle and how water molecules move from the atmosphere to the surface as precipitation, from the oceans to the atmosphere through evaporation and the connection between surface waters and groundwater stored in subsurface aquifers. The balance of rainwater (and meltwater) runoff and infiltration is discussed in the context of how groundwater aquifers are recharged. As in the Michigan Geological History module, the properties of porosity and permeability are important concepts explored in this module. The storage space in an aquifer is the pore space between sediment particles that make up the rock portion of the aquifer. The importance of permeability to extraction/production of groundwater is discussed with the students. One final concept that is explored is the contamination of aquifers and how hydrogeologists can study or model the movement of contaminants in an aquifer. A brief discussion of remediation techniques is also described. This presentation is appropriate for grades 7-12. The following content standards are met by this module:

Michigan Department of Education Grade Level Content Standards covered:

E.ES.07.81 Explain the water cycle and describe how evaporation, transpiration, condensation, cloud formation, precipitation, infiltration, runoff, ground water, and absorption occur within the cycle.

E4.1A Compare and contrast surface water systems and groundwater in regard to their relative sizes as Earth's freshwater reservoirs and the dynamics of water movement (inputs, outputs, residence times, sustainability).

E4.1C Explain how water quality in both groundwater and surface systems is impacted by land use decisions.

3. Natural Hazards

The study of how natural hazards occur is an important component of applied geosciences. Students will gain a better appreciation of the types of natural hazards and the destructive nature of these events. Three different sub-modules have been prepared for this module: Earthquakes, Impacts and Asteroids, and Volcanoes. Each sub-module is designed around a series of hands-on activities and rock samples. The individual sub-modules are designed to fill a 50 minute class period and we bring in all of the materials necessary for the activities.

a. Natural Hazards: Earthquakes

The earthquake sub-module develops for the students an understanding of the behavior of earth materials during an earthquake. The students explore the harmful effects of an earthquake through construction of model cities on different substrates. Earthquakes are put into a plate tectonics context and the forces that generate earthquakes are discussed in the short presentation.

Michigan Department of Education Grade Level Content Standards covered:

E.SE.06.51 Explain plate tectonic movement and how the lithospheric plates move centimeters per year.

E.SE.06.52 Demonstrate how major geological events (earthquakes, volcanic eruptions, mountain building) result from these plate motions.

E.SE.06.53 Describe layers of the Earth as a lithosphere (crust and upper mantle), convecting mantle, and dense metallic core.

E3.4A Use the distribution of earthquakes and volcanoes to locate and determine the types of plate boundaries.

E3.4C Describe the effects of earthquakes and volcanic eruptions on humans.

E3.4f Explain why fences are offset after an earthquake, using the elastic rebound theory.

b. Natural Hazards: Volcanoes

The volcanoes module is a fun, hands-on module that explores the principle of viscosity and its relationship to the fluid flow dynamics of lava. A classification of volcanoes based on shape and size, magma composition, and eruption style is presented to the students and analog versions of the volcanoes are used to exhibit the viscosity of different lava types. Students work in groups to explore crystallization and cooling rate. A discussion of intrusive versus extrusive igneous rocks, highlights the textural differences observed in these igneous rocks which is a function of cooling rate.

Michigan Department of Education Grade Level Content Standards covered:

E.SE.06.41 Compare and contrast the formation of rock types (igneous, metamorphic, and sedimentary) and demonstrate the similarities and differences using the rock cycle model.

E.SE.06.52 Demonstrate how major geological events (earthquakes, volcanic eruptions, mountain building) result from these plate motions.

E3.1d Explain how the crystal sizes of igneous rocks indicate the rate of cooling and whether the rock is extrusive or intrusive.

E3.4C Describe the effects of earthquakes and volcanic eruptions on humans.

E3.4d Explain how the chemical composition of magmas relates to plate tectonics and affects the geometry, structure, and explosivity of volcanoes.

E3.4e Explain how volcanoes change the atmosphere, hydrosphere, and other earth systems.

E5.4B Describe natural mechanisms that could result in significant changes in climate (e.g. major volcanic eruptions, changes in sunlight received by the earth, meteorite impacts).

c. Natural Hazards: Impacts and Asteroids

This sub-module discusses the impact that a collision by meteorites or asteroids with the Earth would have on humanity. Basic types of meteorites are described and samples are provided for the students to examine. A brief discussion of orbital dynamics and gravitational attraction sets the stage for a hands-on activity where students simulate impacts on the Earth with different types of impactors (size, density, shape) and incident angles. The shapes of craters are described. Example impact craters in the Midwest region, including the Sudbury impact crater (Ontario) and the Calvin 12 structure (Southern Michigan) are used to illustrate how we can identify deposits related to these events in the geologic record.

Michigan Department of Education Grade Level Content Standards covered:

E5.p1A Describe the motions of various celestial bodies and some effects of those motions.

E5.3C Relate the major events in the history of the Earth to the geologic time scale, including the formation of the Earth, formation of an oxygen atmosphere, rise of life, Cretaceous-Tertiary (K-T) and Permian extinctions, and Pleistocene ice age.

E5.4B Describe natural mechanisms that could result in significant changes in climate (e.g. major volcanic eruptions, changes in sunlight received by the earth, meteorite impacts).

P3.6A Explain earth-moon interactions (orbital motion) in terms of forces.

P3.6B Predict how the gravitational force between objects changes when the distance between them changes.

4. Shale Energy and Hydraulic Fracturing

This module provides a balanced approach to discussion of hydraulic fracturing and utilizing hydrocarbon resources hosted in shales. Hydrocarbons underpin the world's economy and students need to understand where these natural resources come from that affect their daily lives in so many ways. Permeability and Porosity are used as a starting point for discussion of the differences between conventional hydrocarbon reservoirs and unconventional shale reservoirs. At the end of the session, students will be able to explain the process of hydraulic fracturing and how it is used to extract hydrocarbons from both conventional and unconventional hydrocarbon reservoirs. Students will also be able to list both the positives and negatives of hydraulic fracturing. The module consists of a short presentation and several hands-on activities.

Michigan Department of Education Grade Level Content Standards covered:

E.ES.03.41 Identify natural resources (metals, fuels, fresh water, fertile soil, and forests).

E.ES.03.32 Describe how materials taken from the Earth can be used as fuels for heating and transportation.

E2.2B Identify differences in the origin and use of renewable (e.g. solar, wind, water, biomass) and nonrenewable (e.g., fossil fuels, nuclear [U-235]) sources of energy.

E2.4A Describe renewable and nonrenewable sources of energy for human consumption (electricity, fuels), compare their effects on the environment, and include overall costs and benefits.

E2.4B Explain how the impact of human activities on the environments (e.g., deforestation, air pollution, coral reef destruction) can be understood through the analysis of interactions between the four Earth systems.

E3.1c Explain how the size and shape of grains in a sedimentary rock indicate the environment of formation (including climate) and deposition.

E4.1C Explain how water quality in both groundwater and surface systems is impacted by land use decisions.

5. Michigan Fossils

The Michigan Fossils module illustrates the diversity of life found in the fossil record of Michigan's sedimentary record. Discussion of how an organism becomes a fossil is presented with hands-on activities that simulate the process of fossilization. At the end of the module, students will be able to define the term index fossil. Specific fossils from Michigan are presented as index fossils that constrain the age of the host sediment. Behavioral and ecological principles are also explored with specific fossils (mastodons and mammoths) as diet and habitat can be inferred from skeletal morphology.

Michigan Department of Education Grade Level Content Standards covered:

E.ST.04.31 Explain how fossils provide evidence of the history of the Earth.

E.ST.06.31 Explain how rocks and fossils are used to understand the age and geological history of the Earth (timelines and relative dating, rock layers).

E.ST.04.32 Compare and contrast life forms found in fossils and organisms that exist today.

E.ST.06.42 Describe how fossils provide important evidence of how life and environmental conditions have changed.

E5.3D Describe how index fossils can be used to determine time sequence.

E5.4f Describe geologic evidence that implies climates were significantly colder at times in the geologic record (e.g., geomorphology, striations and fossils).

6. The Environment and Climate Change

Using a variety of hands-on activities, this module explores environmental and climate issues in the context of objective scientific exploration. The students will examine the properties of carbon dioxide gas as a greenhouse gas and the implications of increasing levels of carbon dioxide (and other greenhouse gases) on climate. Discussion of land use and land cover will provide an introduction to precipitation and infiltration rates. Societal impacts of climate change and degradation of the environment will be explored through role-playing.

Michigan Department of Education Grade Level Content Standards covered:

E.ES.03.52 Describe helpful or harmful effects of humans on the environment.

E.ES.07.41 Explain how human activities change the surface of the Earth and affect the survival of organisms.

E1.2B Identify and critique arguments about personal or societal issues based on scientific evidence.

E1.2f Critique solutions to problems, given criteria and scientific constraints.

E1.2g Identify scientific tradeoffs in design decisions and choose among alternative solutions.

E2.3A Explain how carbon exists in different forms such as limestone (rock), carbon dioxide (gas), carbonic acid (water), and animals (life) within Earth systems and how those forms can be beneficial or harmful to humans.

E2.3d Explain how carbon moves through the Earth system (including the geosphere) and how it may benefit (e.g., improve soils for agriculture) or harm (e.g., act as a pollutant) society.

E2.4B Explain how the impact of human activities on the environment (e.g., deforestation, air pollution, coral reef destruction) can be understood through the analysis of interactions between the four Earth systems.

E5.4A Explain the natural mechanism of the greenhouse effect, including comparisons of the major greenhouse gases (water vapor, carbon dioxide, methane, nitrous oxide, and ozone).

E5.4e Based on evidence from historical climate research (e.g. fossils, varves, ice core data) and climate change models, explain how the current melting of polar ice caps can impact the climatic system



Public Presentations on the CoreKids Program at Meetings

2014 North-Central GSA Section Meeting:

Abstract and Presentation on CoreKids

2014 Michigan Earth Science Teachers

Association Meeting: Abstracts





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North-Central Section - 48th Annual Meeting (24-25 April)

Paper No. 17-3

Presentation Time: 9:00 AM

EXPANDING THE IMPACT OF THE MICHIGAN GEOLOGICAL SURVEY'S COREKIDS PROGRAM: PRODUCTIVE PARTNERSHIPS WITH NON-PROFITS AND REGIONAL AMATEUR GEOLOGY GROUPS

VOICE, Peter J., Michigan Geological Survey, Western Michigan University, 1903 W. Michigan Ave, MS 5241, Kalamazoo, MI 49008-5241, peter.voice@wmich.edu, **GILCHRIST, Ann M.**, Michigan Geological Survey, Western Michigan University, 1903 W. Michigan Ave, Department of Geosciences WMU, Kalamazoo, MI 49008-5241, **BARONE, Steven**, GZA GeoEnvironmental, Inc, 19500 Victor Parkway Suite 300, Livonia, MI 48152, **PETCOVIC, Heather L.**, Department of Geosciences and The Mallinson Institute for Science Education, Western Michigan University, 1903 W Michigan Ave, Kalamazoo, MI 49008-5241, and **HARRISON, William B. III**, Michigan Geological Survey, Western Michigan University, Kalamazoo, MI 49008

The CoreKids program was established for K-12 outreach by the Michigan Geological Repository for Research and Education (MGRRE). MGRRE, now part of the Michigan Geological Survey housed at Western Michigan University, is a core repository with emphasis on the bedrock and glacial geology of the Lower Peninsula. CoreKids has traditionally focused its outreach efforts on classroom visits in which trained staff present hands-on learning activities related to topics of energy, oil and gas, subsurface geology, groundwater issues, environmental geology, natural hazards, and Michigan fossils. The modules are designed to supplement the resources available to area teachers as either classroom visits or field trips to the MGRRE facility. CoreKids operates on grant funding. Over the past year, we have experimented with developing partnerships with local amateur geological and mineralogical societies, regional professional geological societies, and other non-profit organizations in order to increase the reach and impact of our outreach efforts.

A presence at state Science and Earth Science Teaching Association annual conferences increased the number of teachers asking for CoreKids materials and classroom visits. We partnered with the Kalamazoo Geological and Mineral Society (KGMS) to develop a seminar series with quarterly events at the MGRRE facility. Partnerships with the KGMS and other local mineral-collecting clubs included the development of educational activities at their annual mineral shows. We participated in the activities of the Cranbrook Institute of Science's Rouge River Festival and Fossil Festival events.

The positive results of expanding our partnerships with other entities included a significant increase in our total interactions with both K-12 students and the general public. Participation in other group's outreach events was more cost-effective. We were able to generate contacts in shorter periods of time and for less cost per interaction. It expanded our area of impact from southwestern Michigan into the rest of southern Michigan and allowed us to provide information, activities and resources to people in the Lansing, Detroit and Grand Rapids regions. As a side benefit, association with other groups increased our visibility, especially when the other entity had resources for event promotion.

Session No. 17

T18. Public Outreach Beyond the Classroom: Geological Surveys, Museums, and Parks

Friday, 25 April 2014: 8:15 AM-12:00 PM

Cornhusker Marriott Olive Branch

Geological Society of America *Abstracts with Programs*. Vol. 46, No. 4, p.0

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See more of: [Public Outreach Beyond the Classroom: Geological Surveys, Museums, and Parks](#)

See more of: [Theme Sessions](#)

[<< Previous Abstract](#) | [Next Abstract >>](#)

Expanding the Impact of the Michigan Geological Survey's CoreKids Program: Productive Partnerships with Non-profits and Regional Amateur Geology Groups

Peter Voice, Ann Gilchrist, Steve

Barone, Heather Petcovic and

William Harrison III



Program History

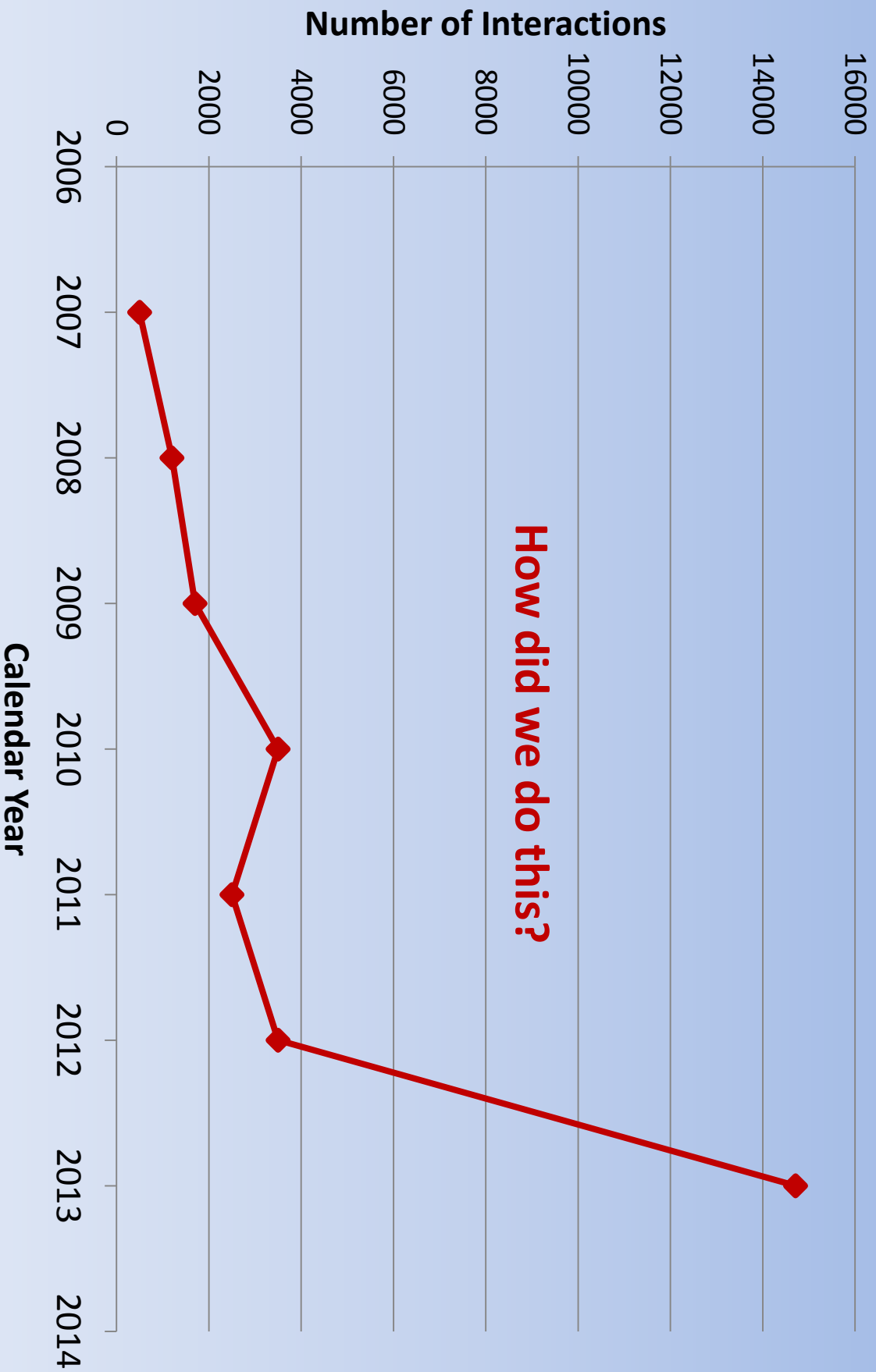
- CoreKids founded in 2007 by Susan Grammer



- Michigan Geological Survey transferred to WMU in 2011
- Peter Voice became Director of K-12 Outreach at the Survey in 2013



Number of K-12 Interactions (Actual and Projected) Total July 2007 to July 2014



Program Activities

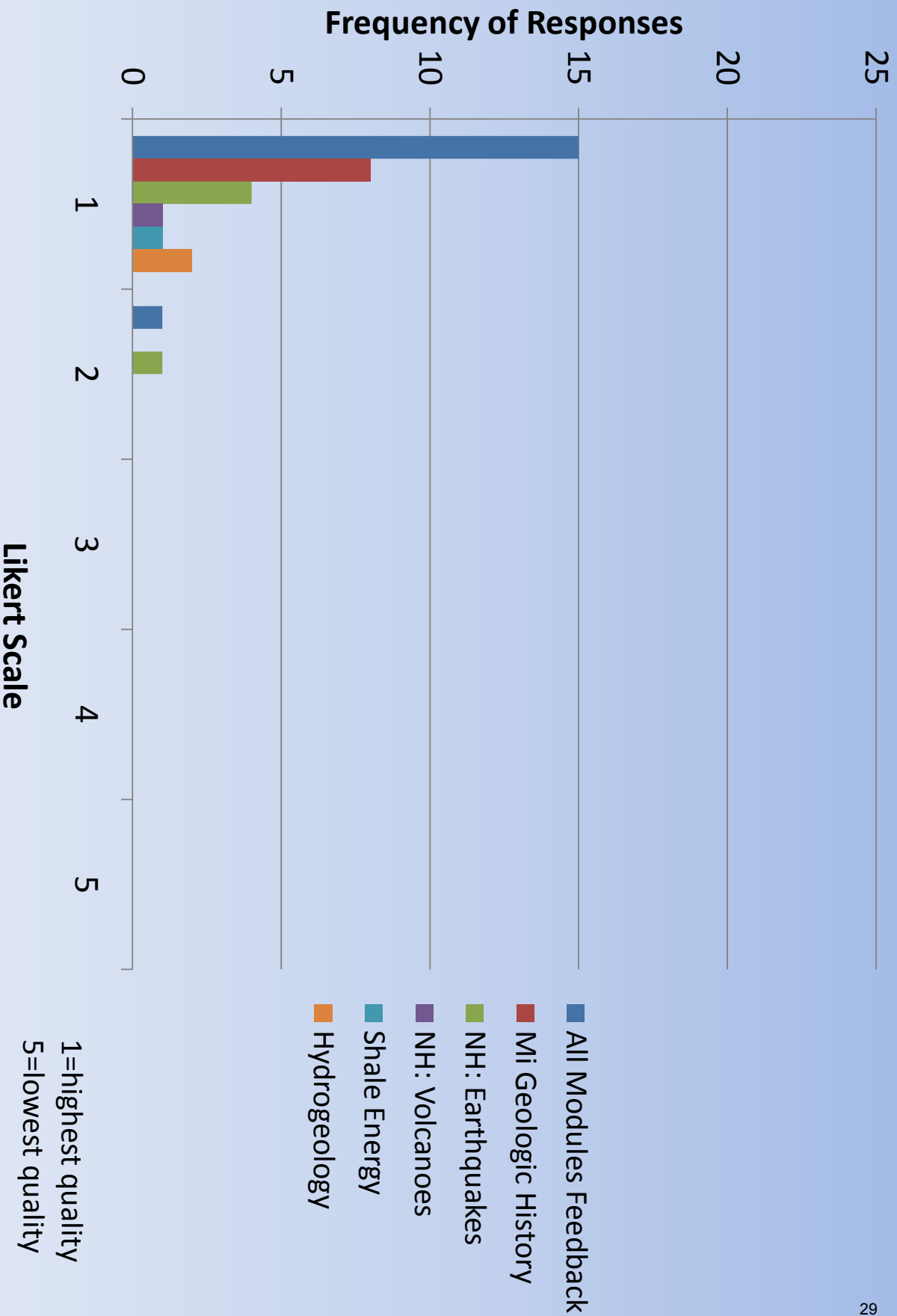
- School visits
 - Themed modules presented in individual K-12 classes
- School tours
 - College, professional, and K-12 classes that visit the MGRRE facility
- Teacher Association Meetings
 - CoreKids booth in regional and statewide teacher professional association conferences
- Partner events
 - CoreKids booth at events hosted by allied partner organizations

School Visits

- 40-50 min themed modules
- Hands-on activities, samples, and presentations
 - Natural Hazards (Volcanoes, Earthquakes, Impact Craters and Asteroids), Hydrogeology, Michigan Geologic History, Hydraulic Fracturing and Shale Energy, and Michigan Fossils
- Teacher evaluations of effectiveness
- 20 School visits (2,500 K-12)



Overall Module Score



Teachers Association Meetings



- Participated in annual conferences – booths
 - Generated contact lists
 - Scheduled school visits
 - 700+ contacts



03.06.2014

Michigan Science Teachers Association Meeting 2014

Partnerships



Like No Place
Else on Earth!



Characteristics of Partnership Events

33

- Short interactions with K-12 students at booth
 - Hands-on activities
 - Posters and other visual displays
 - All ages – general public
 - Lots of questions concerning the environment, natural resources, hydraulic fracturing, etc.

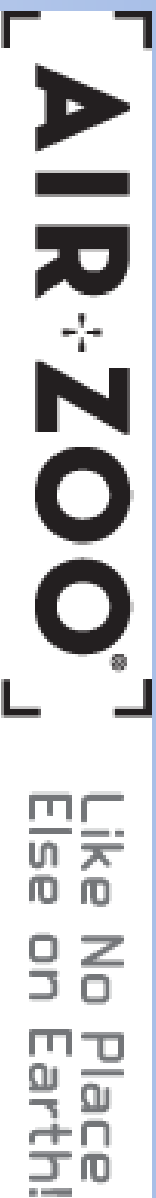
Cranbrook Institute of Science

- Oct. 4th-6th -- Rouge River Festival
- Dec. 26th-30th – Fossil Festival
- Apr. 8th – 11th – Earth Week Festival



- Developed themed materials for each event
- Booth format, informal brief contacts with people of all ages (pre-K to senior citizens)
- Generated 5,220 contacts based on Cranbrook's ticket sales

Kalamazoo Air Zoo



- Air Zoo reoriented its program from aviation-related to broader STEM-based
- We present modules as part of their Eco-Explorers Camps
- Dec. 30th – Digging Michigan Camp
- Upcoming events – July 8th and 16th

Michigan Department of Environmental Quality

- State Agency – former home of the MiGS
- Provided geologic content at their Earth Day event – Michigan Fossils
- April 22nd – Earth Day event – 3,000 contacts – K-12 students from greater Lansing area schools



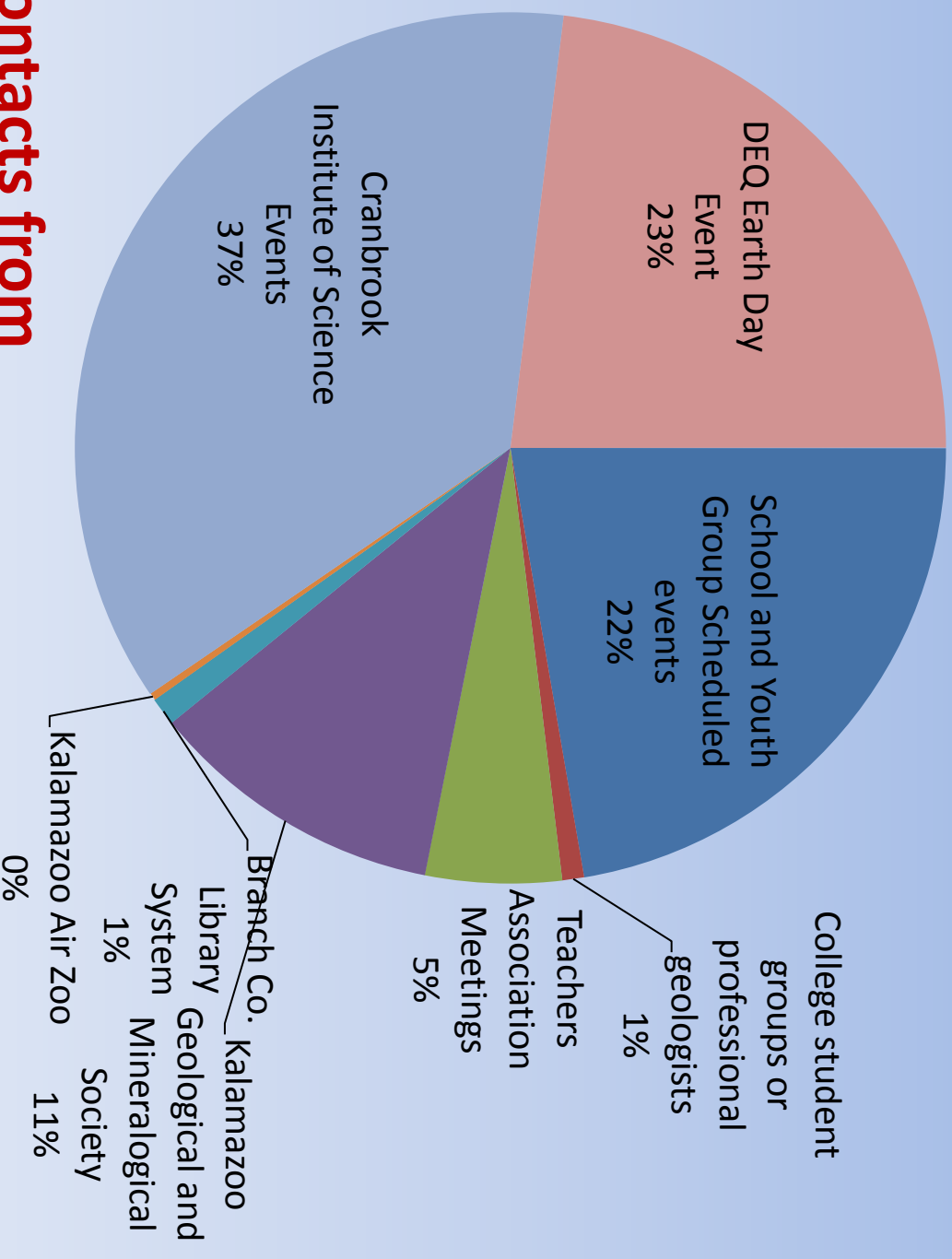
Amateur and Professional Geology

Groups

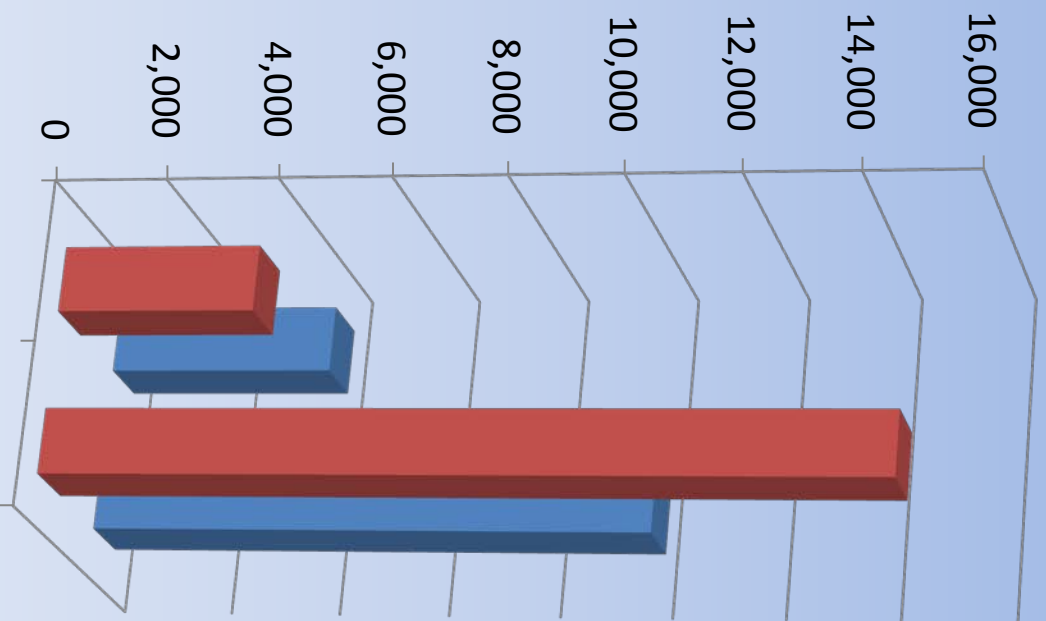


- Upcoming “School Day events” at the KGMs and MMS Annual Gem and Mineral Shows – 1,200 projected contacts at each event
- KGMS Lecture Series – hosted at MGRRE

Event Type - Conducted + Projected (July, 2013-July, 2014)



72% of our contacts from events with allied partners



■ K-12 Total Conducted and Projected Interactions at Present 100K Funding Received

■ K-12 Proposed Total Interactions at Previously Requested 250K Funding

Despite flat funding, allied partnerships have enabled us to reach more people than projected.

Conclusions

- Partnerships with Allied Groups represented 72% of our contacts 2013-2014
 - Generated contacts with teachers, youth group leaders, and PTA members – led to additional school visits or other events
 - Increased our total contacts with less funds spent per contact
 - Free advertising from Host partner – increased our name recognition
- Partnerships enhance our outreach mission

Michigan Earth Science Teachers Association 2014 Field Conference

Alpena Community College, Alpena, MI



Abstract 1: **The MGRRE Education Portal: Investigating Rocks and Fossils Under Michigan**

Was accepted for presentation at the Field Conference and is tentatively scheduled for the morning session on Thursday, August 14th.

Abstract 2: **A Demonstration Model of Hydraulic Fracturing: A hands-on Analog to Fracturing Shale**

Was tentatively accepted as a back-up presentation for the afternoon session on Thursday, August 14th in the case that one of the scheduled presentations is canceled.



MESTA ANNUAL CONFERENCE PRESENTER FORM

*MESTA 2014 Field Conference
Alpena Community College, Alpena, Michigan.*

Presenter #1:

Name: Heather Petcovic

Position/Title: Associate Professor

Home Address: 5295 Stapleton Dr, Kalamazoo, MI 49009

Home Phone: 269-342-2368

E-Mail Address: heather.petcovic@wmich.edu

School Name & Address Western Michigan University – Dept. of Geosciences and Mallinson Institute for
Science Education, 1903 W Michigan Ave, Kalamazoo, MI 49008-5241

Presenter #2 (if co-presenting)

Name: Peter Voice

Position/Title: Director, K-12 Outreach

Home Address: 1102 Mount Royal Dr 3-B, Kalamazoo, MI 49009

Home Phone: 540-818-9347

E-Mail Address: peter.voice@wmich.edu

School Name & Address Western Michigan University – Michigan Geological Survey,
1903 W Michigan Ave, Kalamazoo, MI 49008-5241

Presenter #3 (if co-presenting)

Name: Brian Horvitz

Position/Title: Associate Professor

Home Address: 1104 Manor St, Kalamazoo, MI 49006

Home Phone: 269-387-3457

E-Mail Address: brian.horvitz@wmich.edu

School Name & Address Western Michigan University – Dept. of Education Leadership, Research, and
Technology, 1903 W Michigan Ave, Kalamazoo, MI 49008

Presenter #4 (if co-presenting)

Name: Andrew Bentley

Position/Title: Graduate Assistant

Home Address: _____

Home Phone: 484-883-3052

E-Mail Address: andrew.p.bentley@wmich.edu

School Name & Address Western Michigan University, Mallinson Institute for Science Education,
1903 W Michigan Ave, Kalamazoo, MI 49008-5444

PRESENTATION TITLE: The MGRRE Education Portal: Investigating Rocks and Fossils under Michigan

Presentation Description (please word this as you wish it to appear in the conference program):

The Michigan Geological Repository for Research and Education (MGRRE), part of the Michigan Geological Survey within the Department of Geosciences at Western Michigan University (WMU), maintains an extensive collection of Michigan geological information in the form of rock and sediment core samples, chemical and physical datasets, fossil collections, and information about wells drilled for water, mineral and hydrocarbon resources. With funding from the WMU College of Arts and Sciences, we are in the process of making these authentic subsurface datasets available for NGSS-aligned classroom activities. The purpose of this presentation will be to introduce K-12 teachers to an example rock core and associated datasets by exploring both a physical core and digitized photos and data. The sample core is the St. Charlton 4-30 from Otsego County and exhibits Upper Silurian to Lower Devonian rocks of the Bass Islands Group, Bois Blanc, Garden Island and Amherstburg Formations. These different geologic units include limestones, dolomites and cherts. Participants will have an opportunity to try out two of our pilot Education Portal activities. One activity focuses on fossil identification and relating fossil assemblages to past environments. The second activity focuses on graphing and interpreting rock permeability and porosity data to find a potential host rock for CO₂ sequestration. Participants will receive copies of digital data used in the presentation for their classroom use, and will be asked to provide feedback to improve the activities.

Appropriate Level(s): (check) Elementary Middle School High School

Michigan Science Content Expectations Presented: (<http://www.michigan.gov/mde/>)

Fossils - S.IP and S.IA, E.ST.04.31, L.EV.05.13, E.ST.06.31, E.ST.06.42, E1.R1

Rock porosity and permeability - S.IP and S.IA,E.ES.07.41, E1.2A, E5.3B, E5.R3

Audio/Visual Requests: Our resources are limited. If at all possible, please bring your own audio visual equipment (laptop, LCD projector, slide projector, extension cord, or overhead projector). If this is NOT possible, we will try to provide what you request. Check the items you will need.

TV/VCR OVERHEAD PROJECTOR SCREEN SLIDE PROJECTOR

Room Requirements (Check):

Black Out Shades

Demo Table

Water

Lab Table for Participants

Sinks

Computer Lab w/ Internet Connection

Other: ~30 feet of table or counter space to lay out cores (in a lab room, preferred)

Enter any limit to the number of people you can accommodate: 20

Sessions are scheduled to be 60 minutes long. If you would like more than one session, duplicate this form for each session.

If your presentation requires more time, please check here to request a double-block (110 minutes).

Presenters receive complimentary registration for Saturday's classroom sessions + lunch.

Please return this form by May 31st, 20124

to current MESTA President

Cris DeWolf

PO Box 357

Mecosta, MI 49332

You may also scan the completed form and send as an email attachment to

dewolf.cris@gmail.com



MESTA ANNUAL CONFERENCE PRESENTER FORM

MESTA 2014 Field Conference
Alpena Community College, Alpena, Michigan.

Presenter #1:

Name: Peter Voice
Position/Title: Director, K-12 Outreach
Home Address: 1102 MOUNT ROYAL Dr 3-B Kalamazoo MI 49009
Home Phone: 540-818-9347
E-Mail Address: peter.voice@wmich.edu
School Name & Address: Department of Geosciences / MI Geological Survey
1903 W. Michigan Ave. Kalamazoo MI 49008-5241

Presenter #2 (if co-presenting)

Name: Heather Petcovic
Position/Title: Assistant Professor
Home Address: _____
Home Phone: _____
E-Mail Address: heather.petcovic@wmich.edu
School Name & Address: Department of Geosciences, Western Michigan University
1903 W. Michigan Ave. Kalamazoo MI 49008-5241

Presenter #3 (if co-presenting)

Name: Ann Gilchrist
Position/Title: Core Kids Assistant Educator
Home Address: _____
Home Phone: _____
E-Mail Address: ann.m.gilchrist@wmich.edu
School Name & Address: Department of Geosciences, Western Michigan University
1903 W. Michigan Ave. Kalamazoo MI
49008-5241

PRESENTATION TITLE: A ~~demo~~ Demonstration- Model of Hydraulic Fracturing : A Hands-on Analog to Fracturing Shale

Presentation Description (please word this as you wish it to appear in the conference program):

see attached

Appropriate Level(s): (check) Elementary Middle School High School

Michigan Science Content Expectations Presented: (<http://www.michigan.gov/mde/>)

E 2.2B; E 2.4A; E 2.4B; E 3.1A; E 3.1c; E 4.1C

Audio/Visual Requests: Our resources are limited. If at all possible, please bring your own audio visual equipment (laptop, LCD projector, slide projector, extension cord, or overhead projector). If this is NOT possible, we will try to provide what you request. Check the items you will need.

TV/VCR OVERHEAD PROJECTOR SCREEN SLIDE PROJECTOR

Room Requirements (Check):

Black Out Shades Demo Table
 Water Lab Table for Participants
 Sinks Computer Lab w/ Internet Connection
 Other: _____

Enter any limit to the number of people you can accommodate: 30

Sessions are scheduled to be 60 minutes long. If you would like more than one session, duplicate this form for each session.

If your presentation requires more time, please check here _____ to request a double-block (110 minutes).

Presenters receive complimentary registration for Saturday's classroom sessions + lunch.

Please return this form by May 31st, 20124

to current MESTA President

Cris DeWolf

PO Box 357

Mecosta, MI 49332

You may also scan the completed form and send as an email attachment to

dewolf.cris@gmail.com

A Demonstration Model of Hydraulic Fracturing: A Hands-on Analog to Fracturing Shale

The Michigan Geological Survey and the Department of Geosciences at Western Michigan University has developed an analog model for hydraulic fracturing in a vertical well. Hydraulic fracturing has become a sensitive issue over the past decade, even though it has been in use as a standard well-completion technique here in Michigan for over 60 years. The development of high-volume hydraulic fracturing and the increase in utilization of hydrocarbons from unconventional reservoirs has made this technique much more common. A hands-on model was developed to illustrate the process by which hydraulic fracturing is performed. The model serves as one component of a module (Shale Energy and Hydraulic Fracturing) from the WMU CoreKids program and has been used as a K-12 classroom demonstration. It is also used in a lesson on hydraulic fracturing in a college earth science content course for future elementary teachers.

We use an artificial stratigraphy to illustrate the layered nature of sedimentary rocks in a basin similar to the Michigan Basin. One of the layers is composed of agar gelatin. The other layers consist of either cemented sand and gravel, or of plastic and foam. Agar gelatin gels at room temperature and is sufficiently transparent to observe the fractures that develop during the hydraulic fracturing procedure. The non-agar layers are designed to be impermeable, illustrating that the fracturing medium only interacts with the target agar layer. A mixture of glycerin and colored sand is used as an analog to the hydraulic fracturing fluid. The glycerin acts as the injectant and carries the proppant (sand) into the agar layer. The hydraulic fracturing fluid is injected under pressure into a pre-set well-bore into the agar layer. The hydraulic fracturing process develops wing-shaped fractures in the agar. These fractures form this morphology as the well-bore is designed to only allow the hydraulic fracturing fluid out into the agar through a set of vertically aligned perforations in the well casing.

One of the more interesting properties of the agar is that it can be removed from the model. After removal, the students can slice the agar along the fracture planes. The students can observe that the sand (proppant) lines the surface of the fracture. The proppant in current hydraulic fracturing practice is used to hold open the fractures that develop in the shale – otherwise the ductile nature of the shale will act to seal up the generated fractures. In using the model in the classroom, we have found that children and adult students alike enjoy the (somewhat messy) hands-on aspect and gain an appreciation of the mechanics of hydraulic fracturing.

CORE Kids



Program Metrics



Current Totals

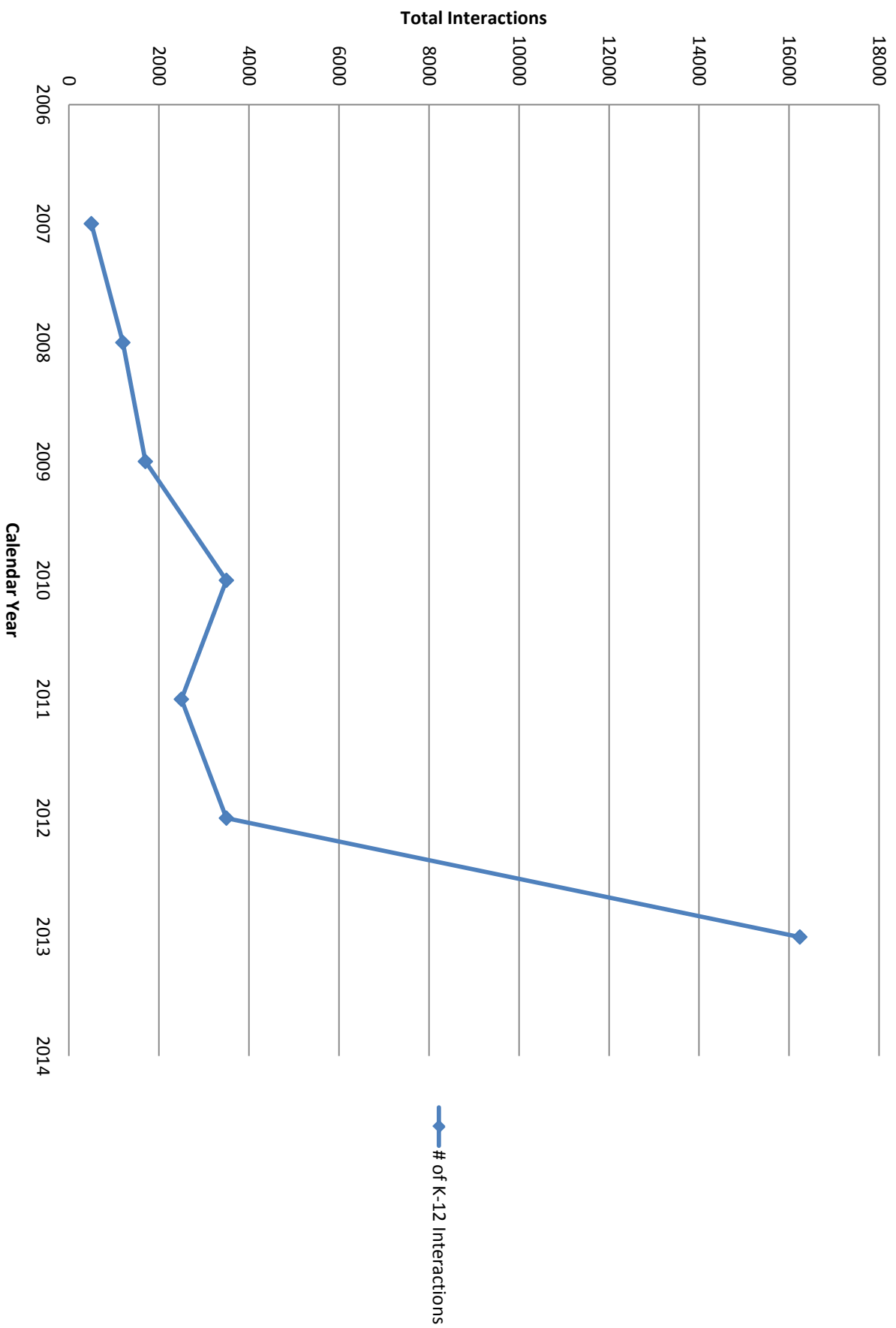
Total K- 12 Student Interactions – Youth Groups and School Visits (As of July 2013)	3,681
Total Adult Interactions (As of July 2013: Chaperones and teachers at events)	106
WMU Hydrogeology Field Trip; CMU Petroleum Geology Class (College Students); Saudi Arabia Geological Survey Visit; WMU Geology Club, MBGS Meeting, Michigan Oil and Gas Association Meeting, Baker Hughes Summer Interns	251
Conferences (Teachers Associations, Teachers Workshop; Other Professional Groups)	732
K.G.M.S. Seminar Series, Annual Show.	3,885
Cranbrook Institute Events (Rouge River Festival 2013, Fossil Festival, Earth Week Festival)	5,220
DEQ Earth Day Festival:	2,300
Branch Co. Library System	63
<u>Total:</u>	<u>16,238</u>

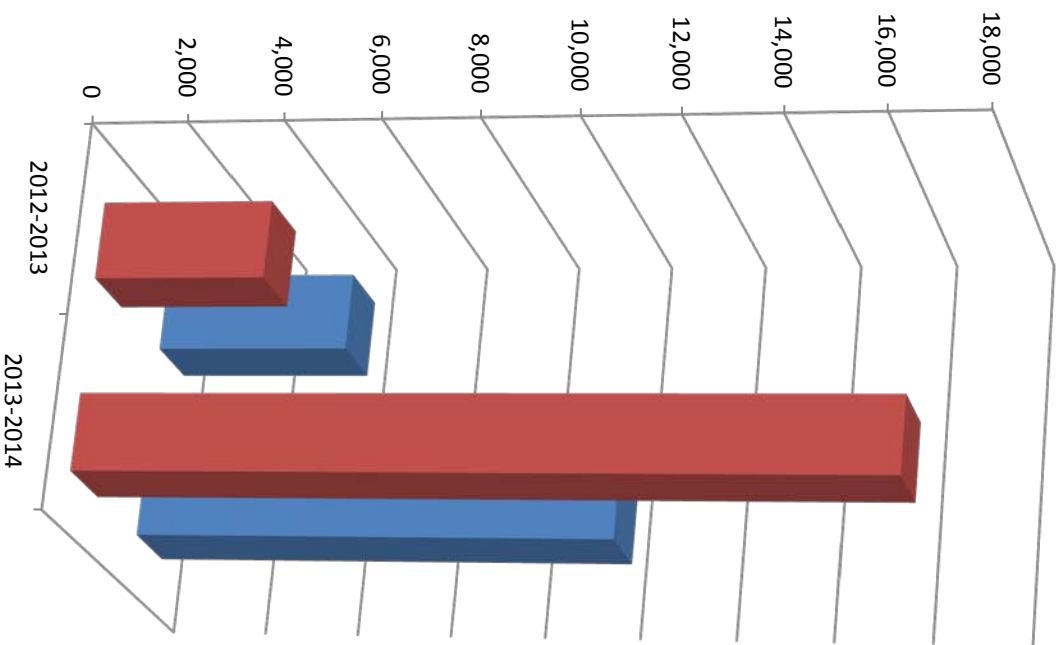
Projected Totals of Upcoming Events

Branch Co. Library System	100?
Kalamazoo Air Zoo Summer Events	40?
U of M Museum of Paleontology	90?
<u>Total Projected:</u>	<u>230?</u>
<u>Total Projected + Actual</u>	<u>16,468</u>

As of July 1, 2014

Number of K-12 Interactions with Scheduled Total Through June, 2014

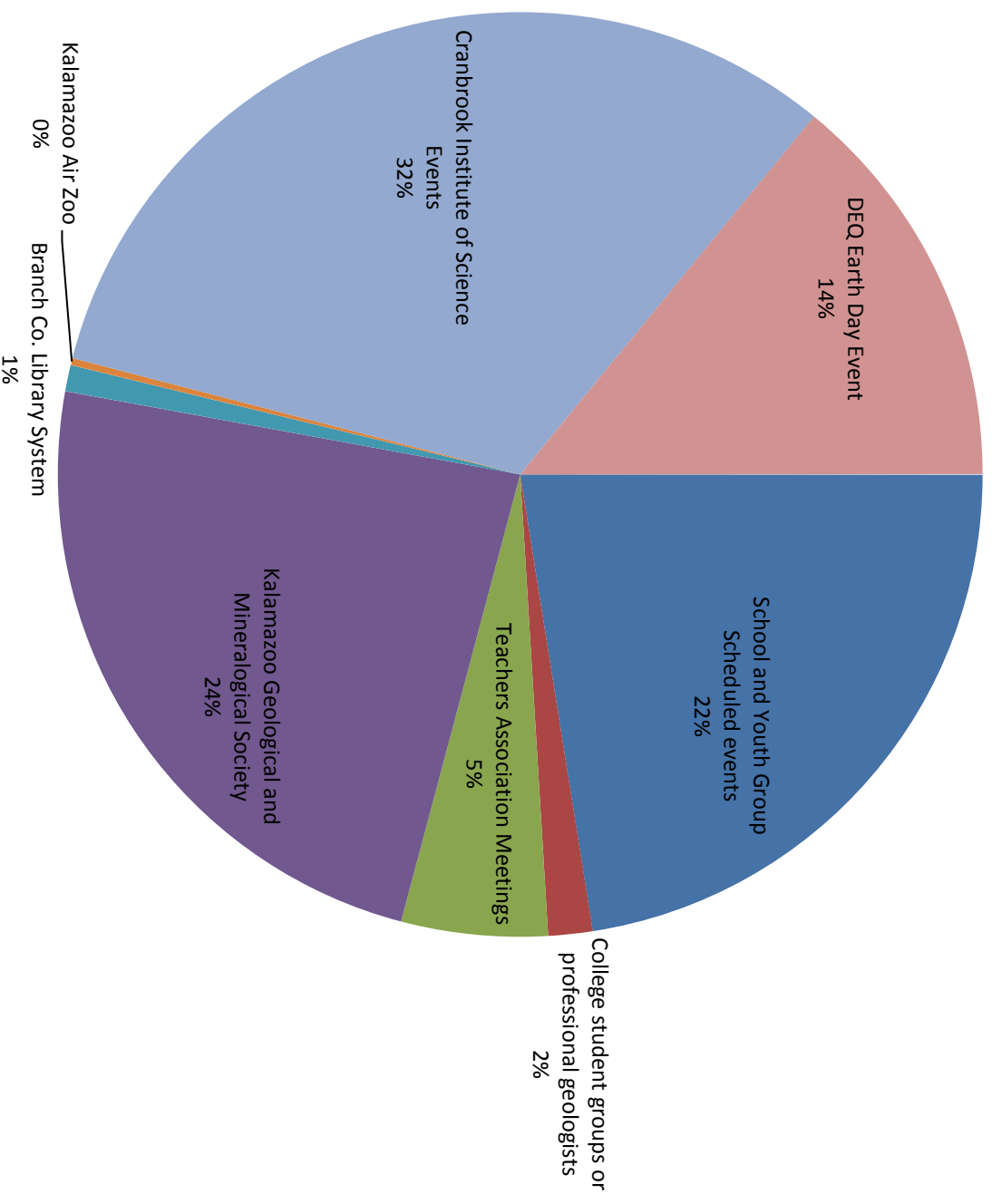




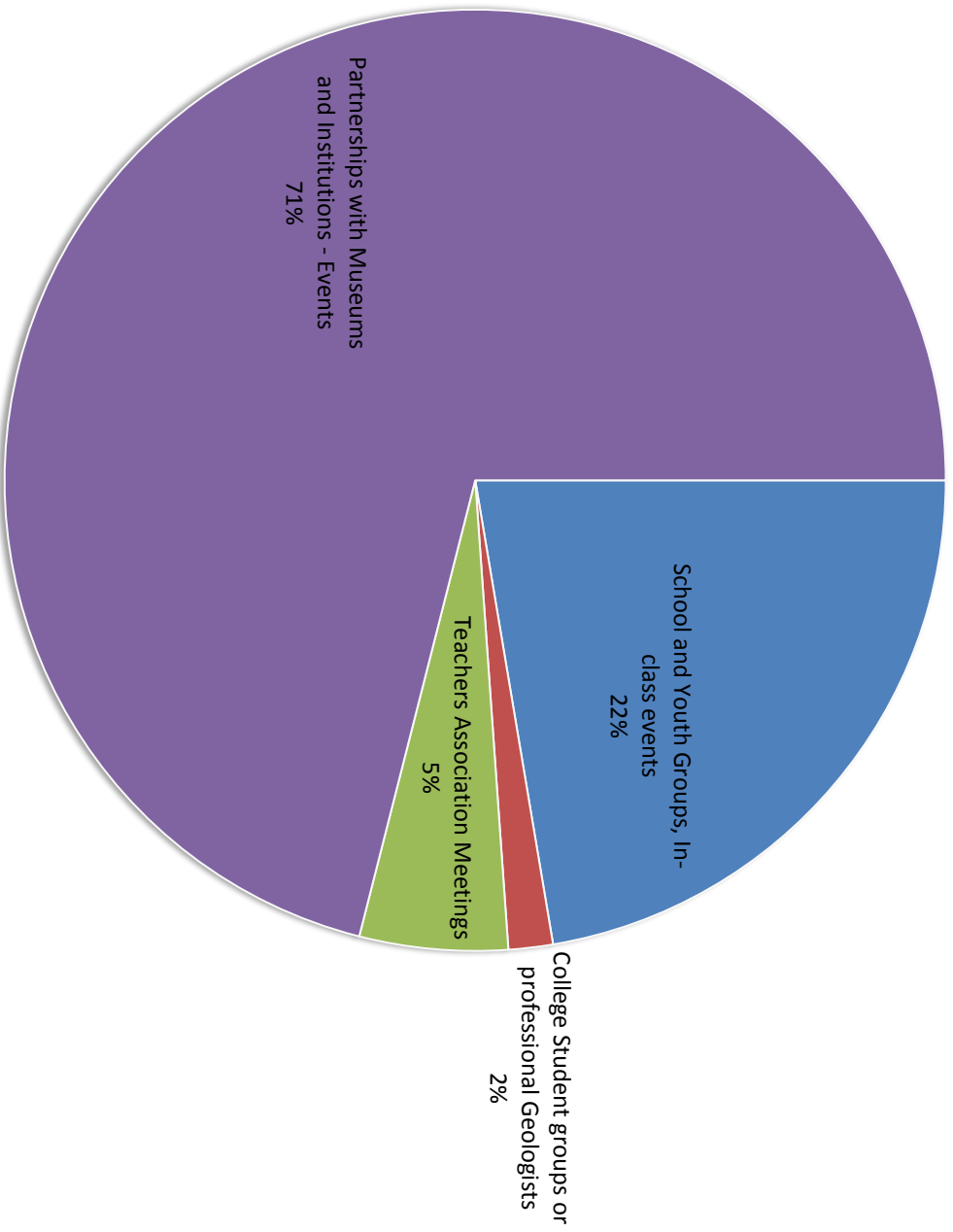
■ K-12 Total Conducted and Projected Interactions at Present 100K Funding Received

■ K-12 Proposed Total Interactions at Previously Requested 250K Funding

Event Type - Conducted + Projected (July, 2013-July, 2014)



Distribution of Contacts as a function of Event Type through August, 2014





Evaluation Forms Metrics



Date: _____ School: _____ Grade Level: _____

District: _____ Total # of Students: _____

Teacher: _____ **Sample Copy** _____ Office Phone: _____

Email: _____

Presenter: _____ Module: _____

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	1	2	3	4	5
Was Educational	1	2	3	4	5
Met Expectations	1	2	3	4	5
Was Too Difficult for Students	1	2	3	4	5
Had Clear Instructions	1	2	3	4	5
Had Clear Purpose	1	2	3	4	5
Improved Understanding	1	2	3	4	5
Presenter Was Knowledgeable	1	2	3	4	5
Presenter Was Organized	1	2	3	4	5

3. What part of this activity was most effective to help students explore this topic?

4. What was the least favorite part of this activity?

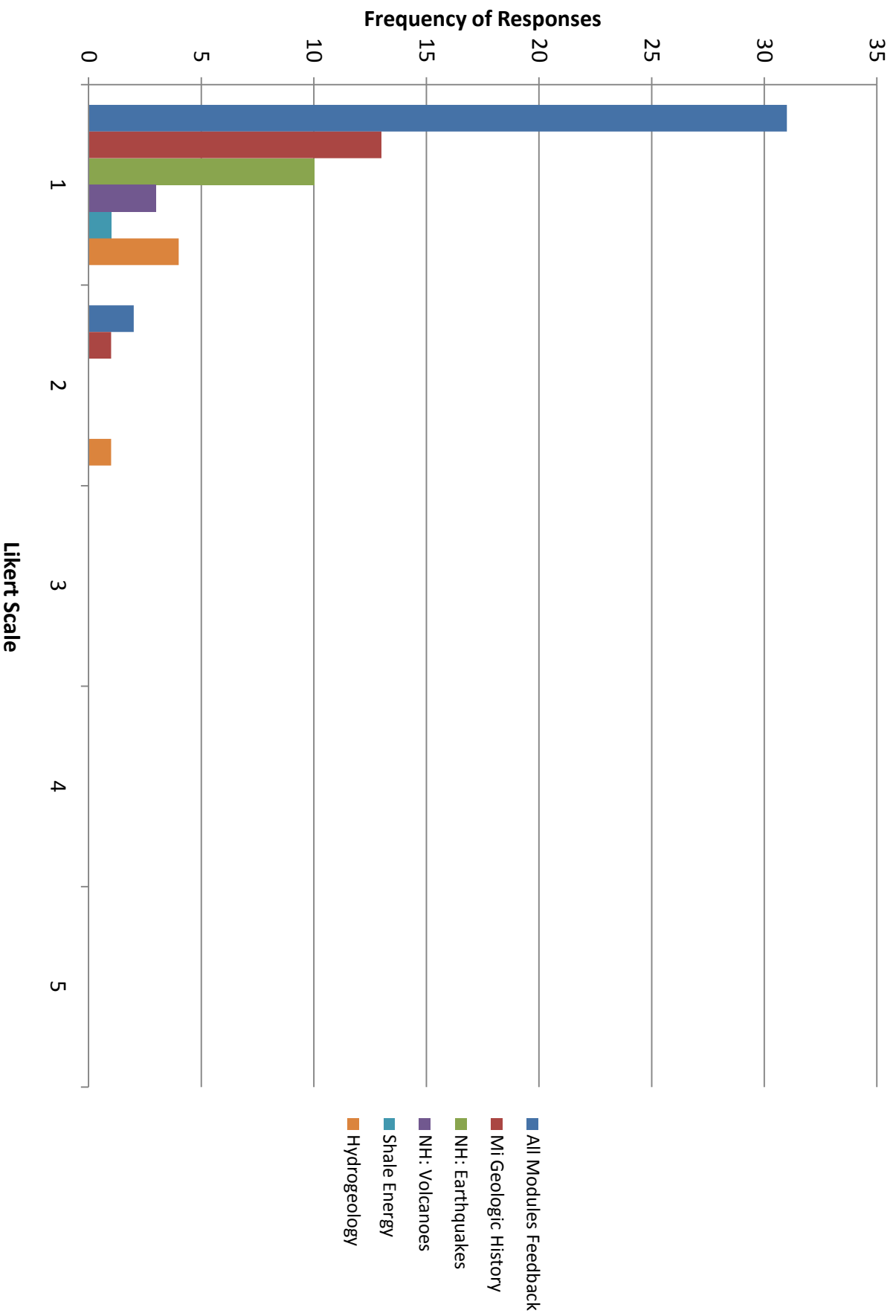
5. How could this activity be improved?

6. Do you feel this module meets Michigan State Science Standards?

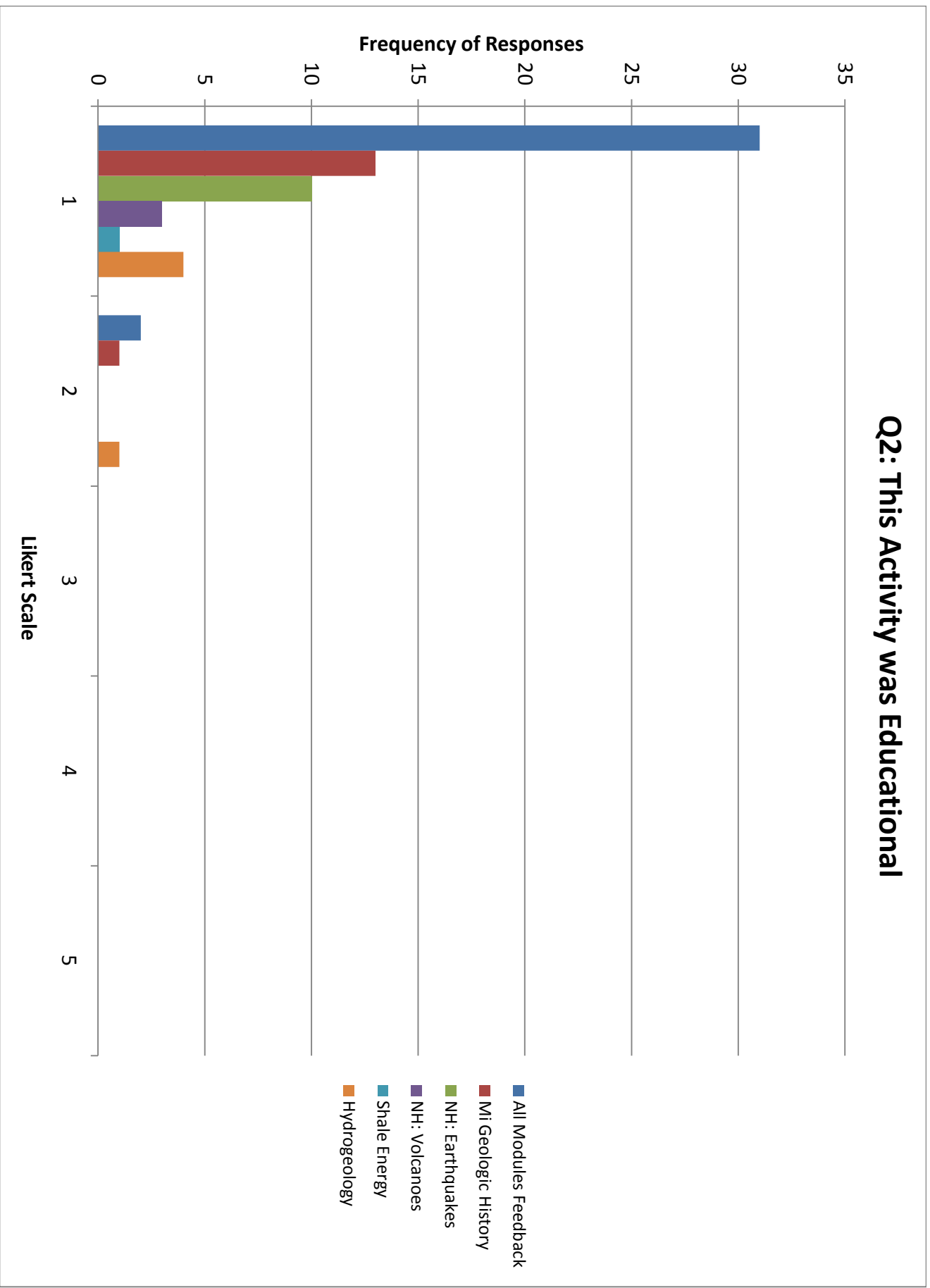
7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

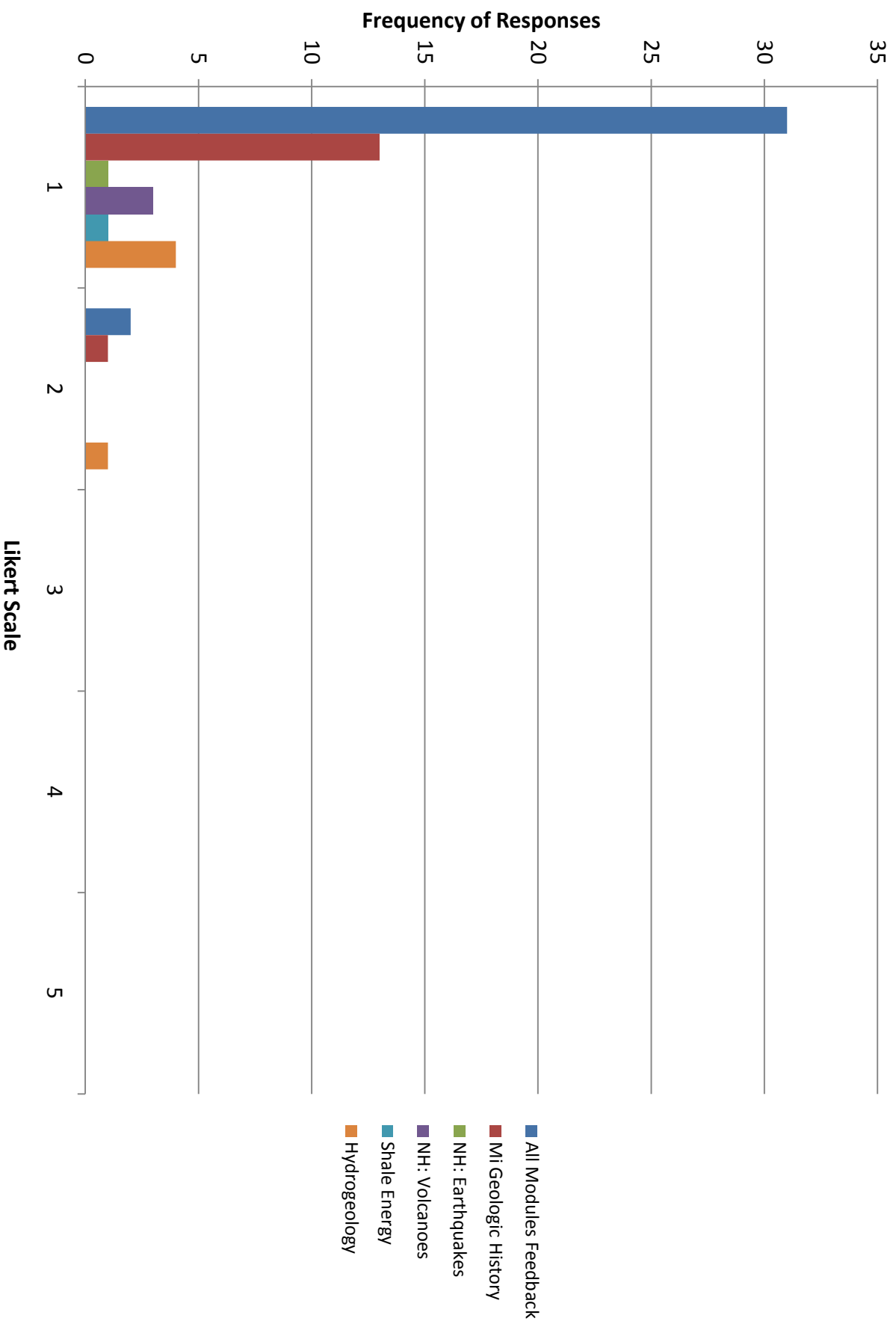
Q1: This Activity was Enjoyable



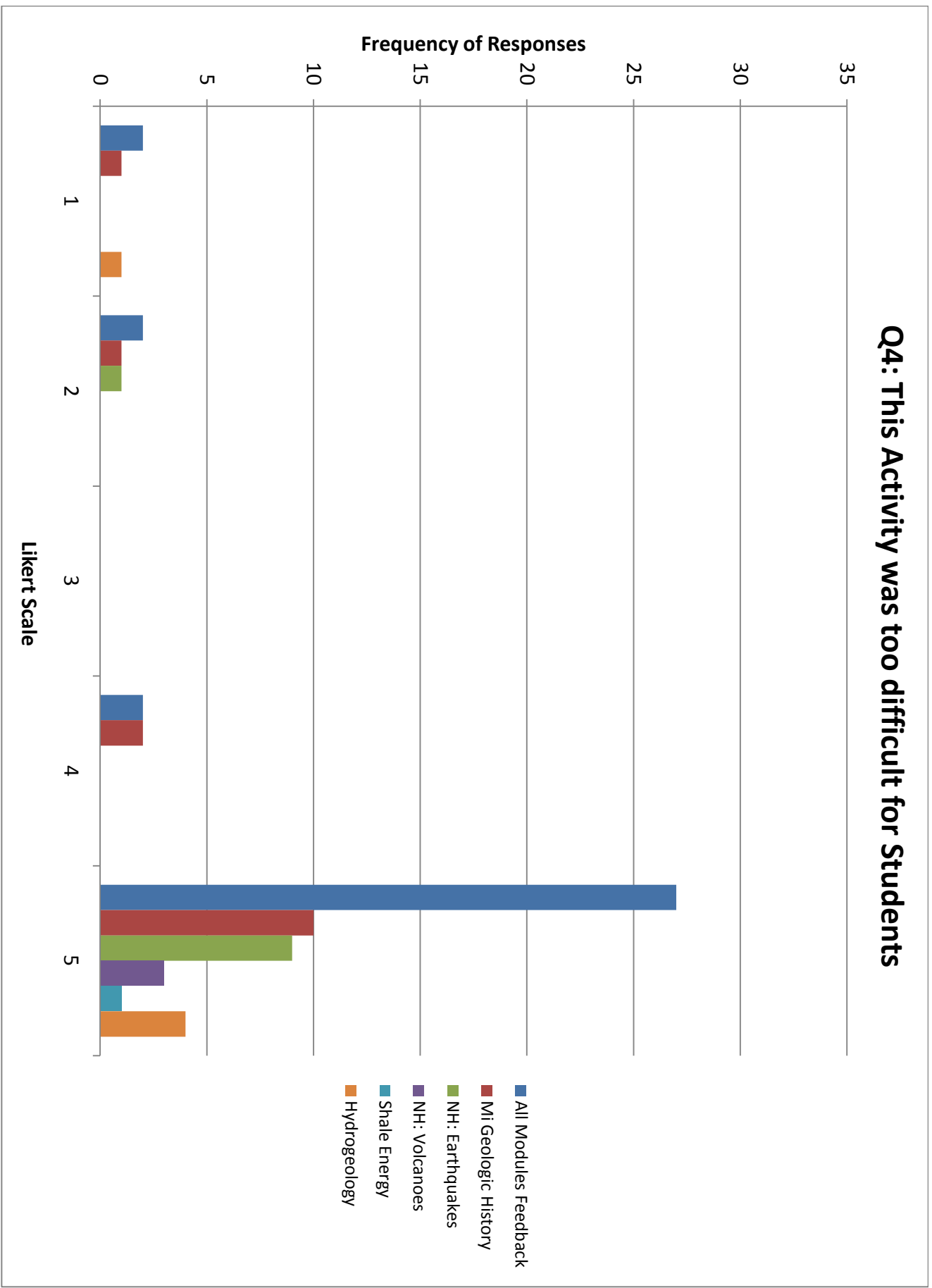
Q2: This Activity was Educational



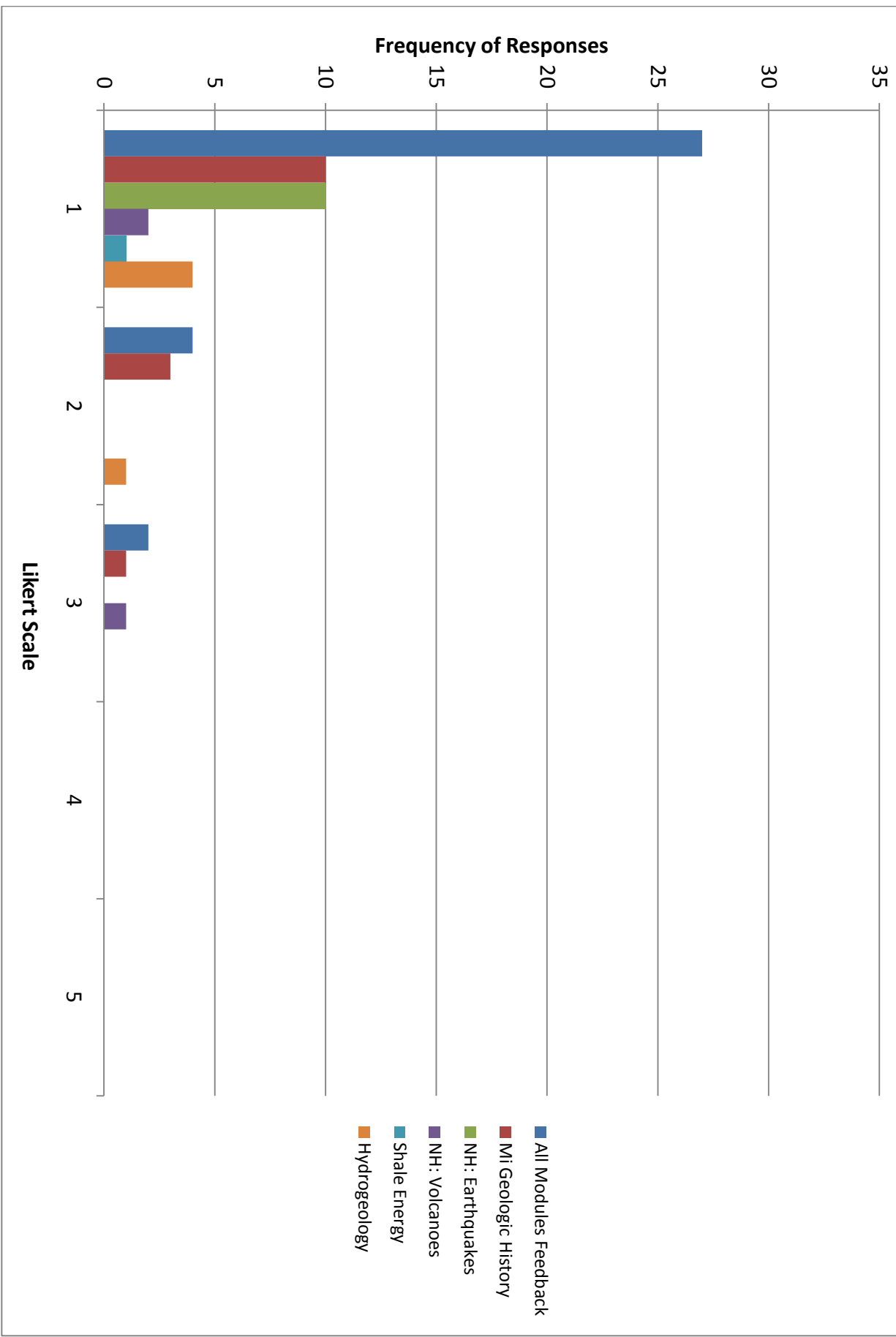
Q3: This Activity met Expectations



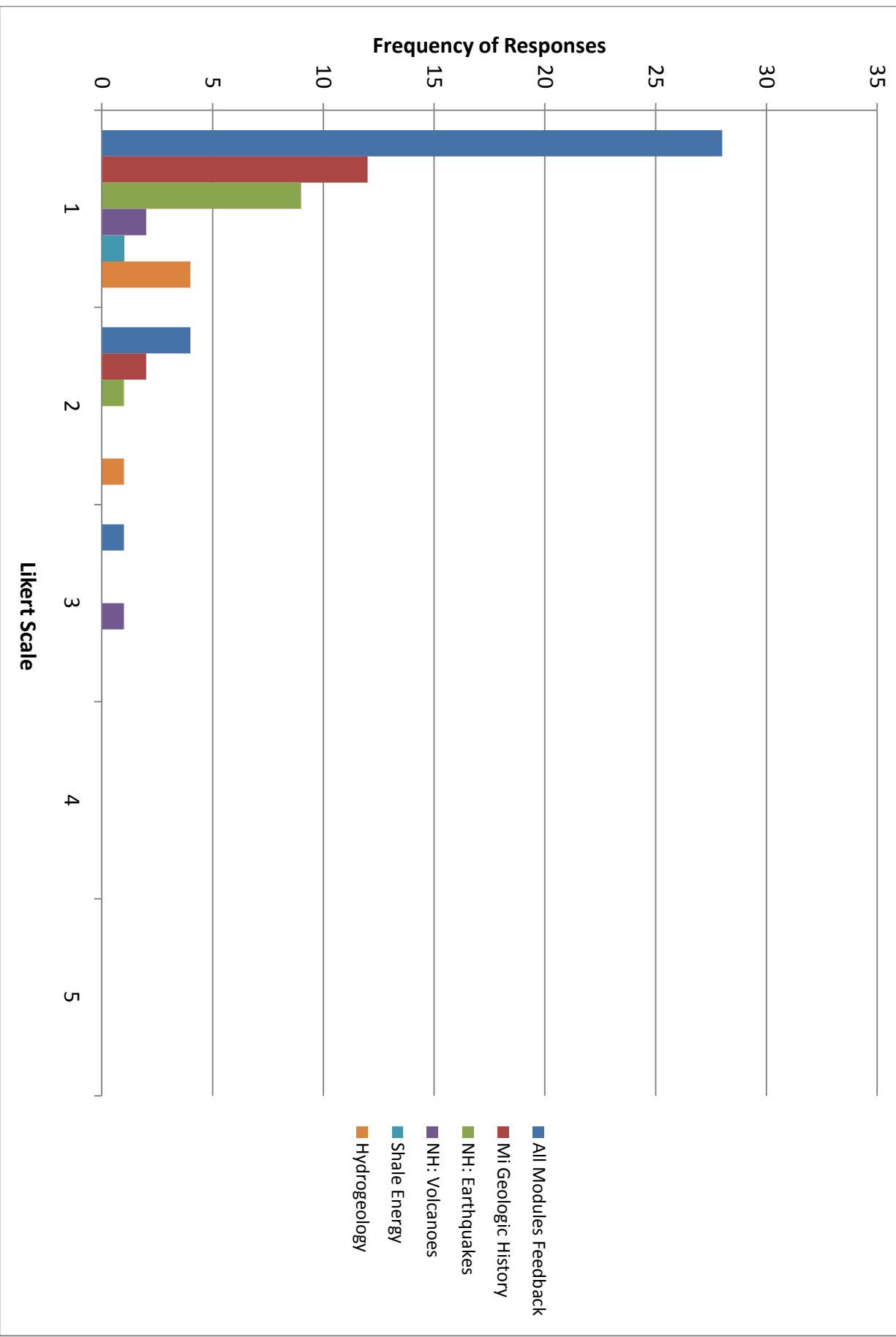
Q4: This Activity was too difficult for Students



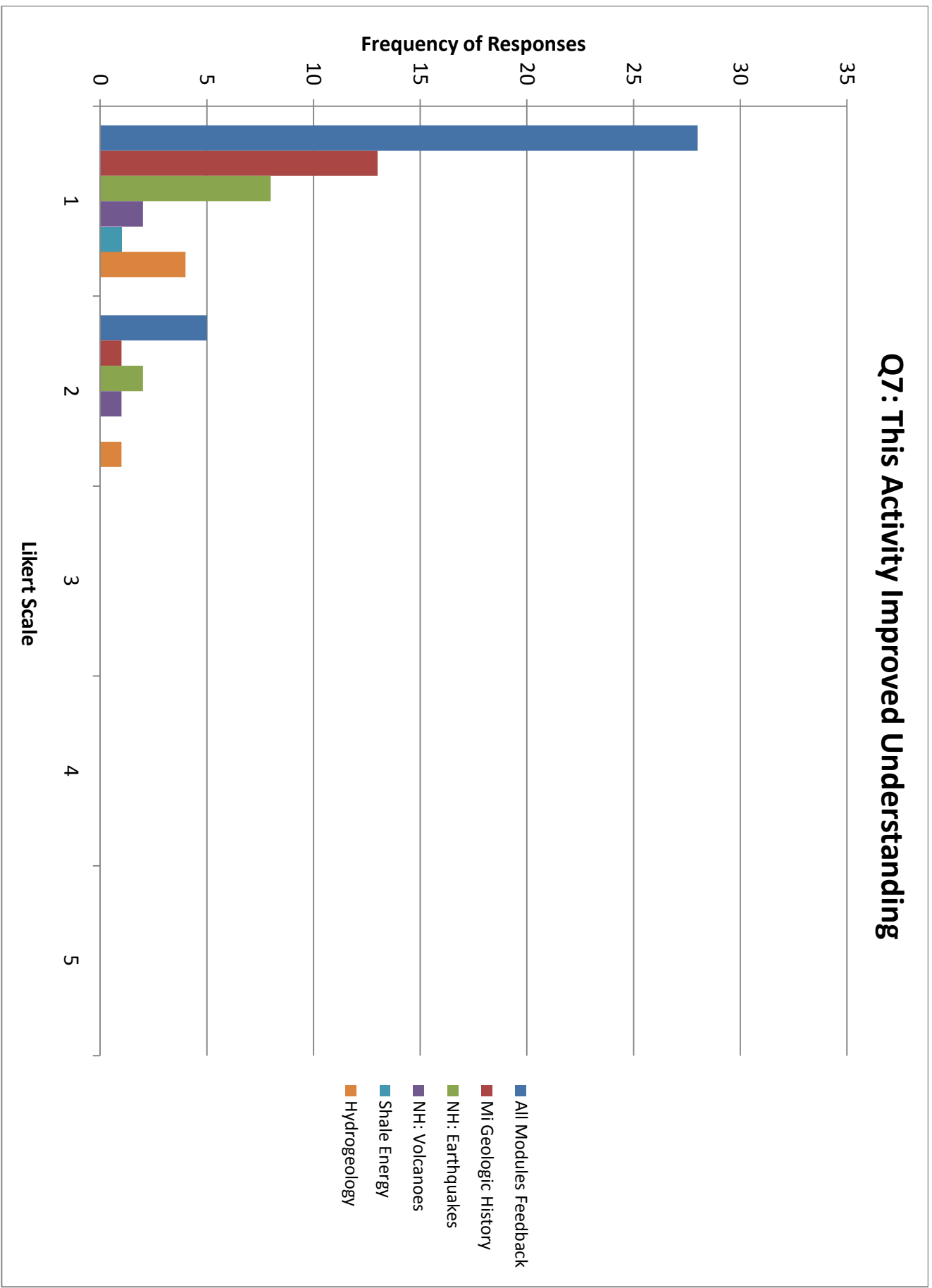
Q5: This Activity had Clear Instructions



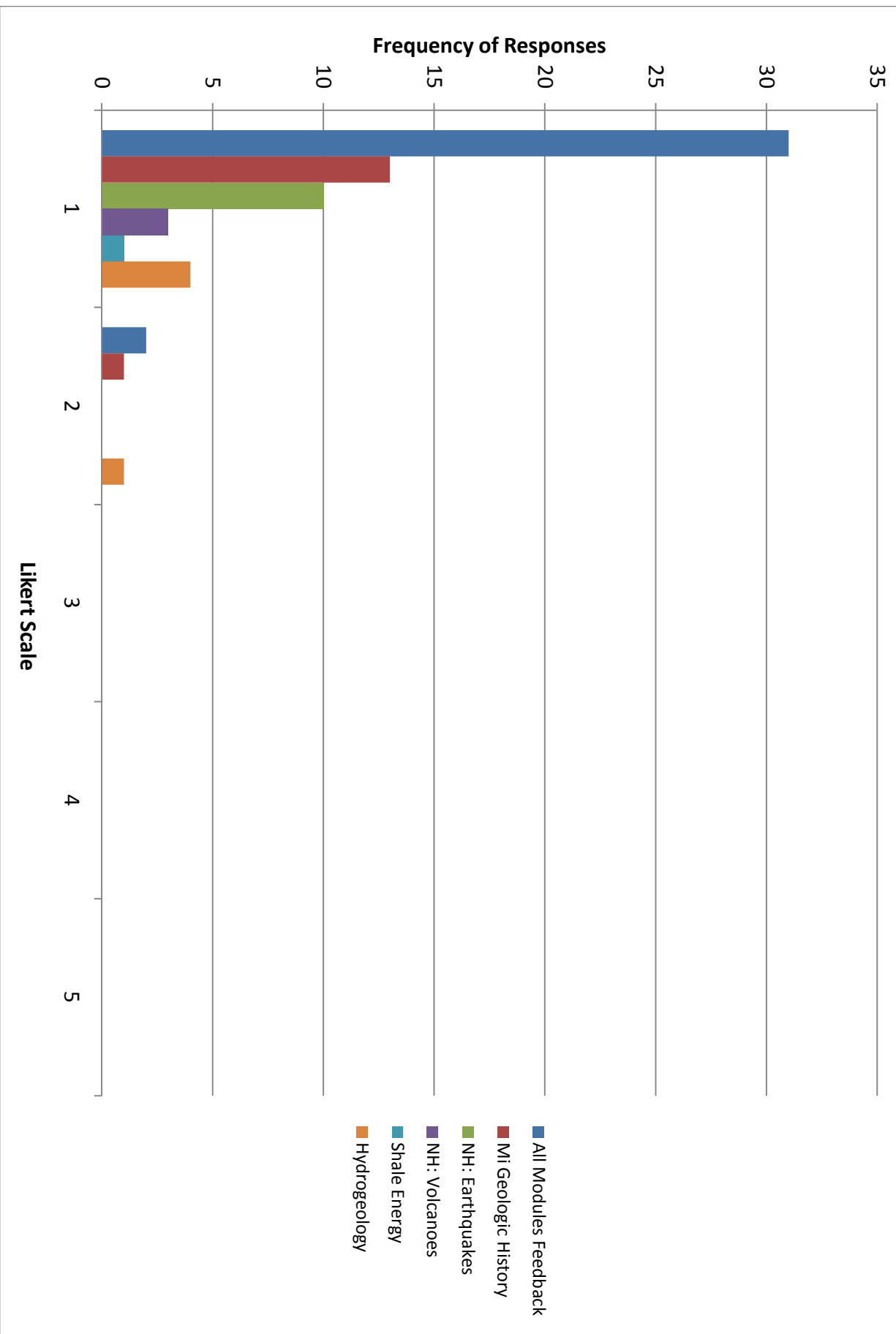
Q6: This Activity had a Clear Purpose



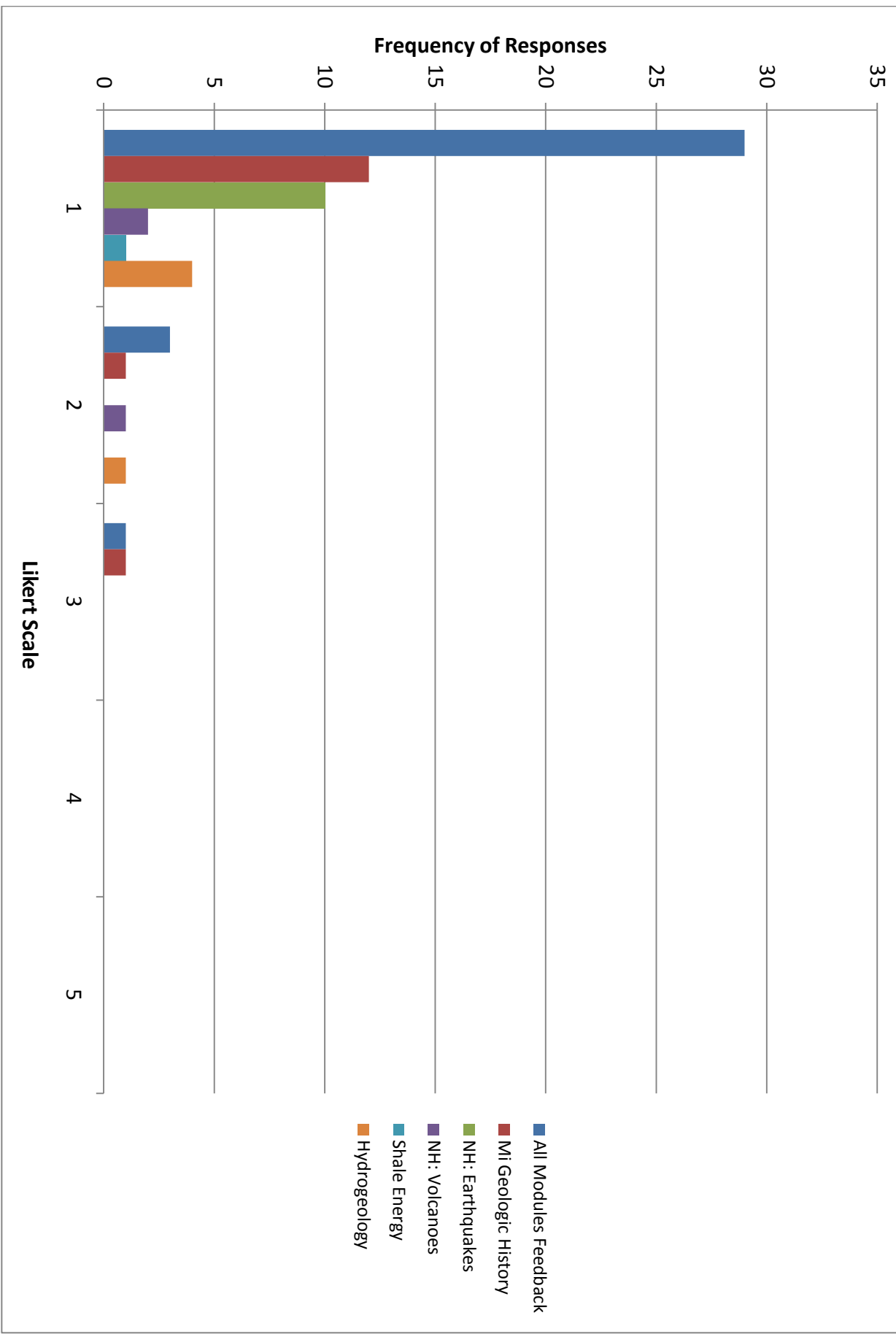
Q7: This Activity Improved Understanding



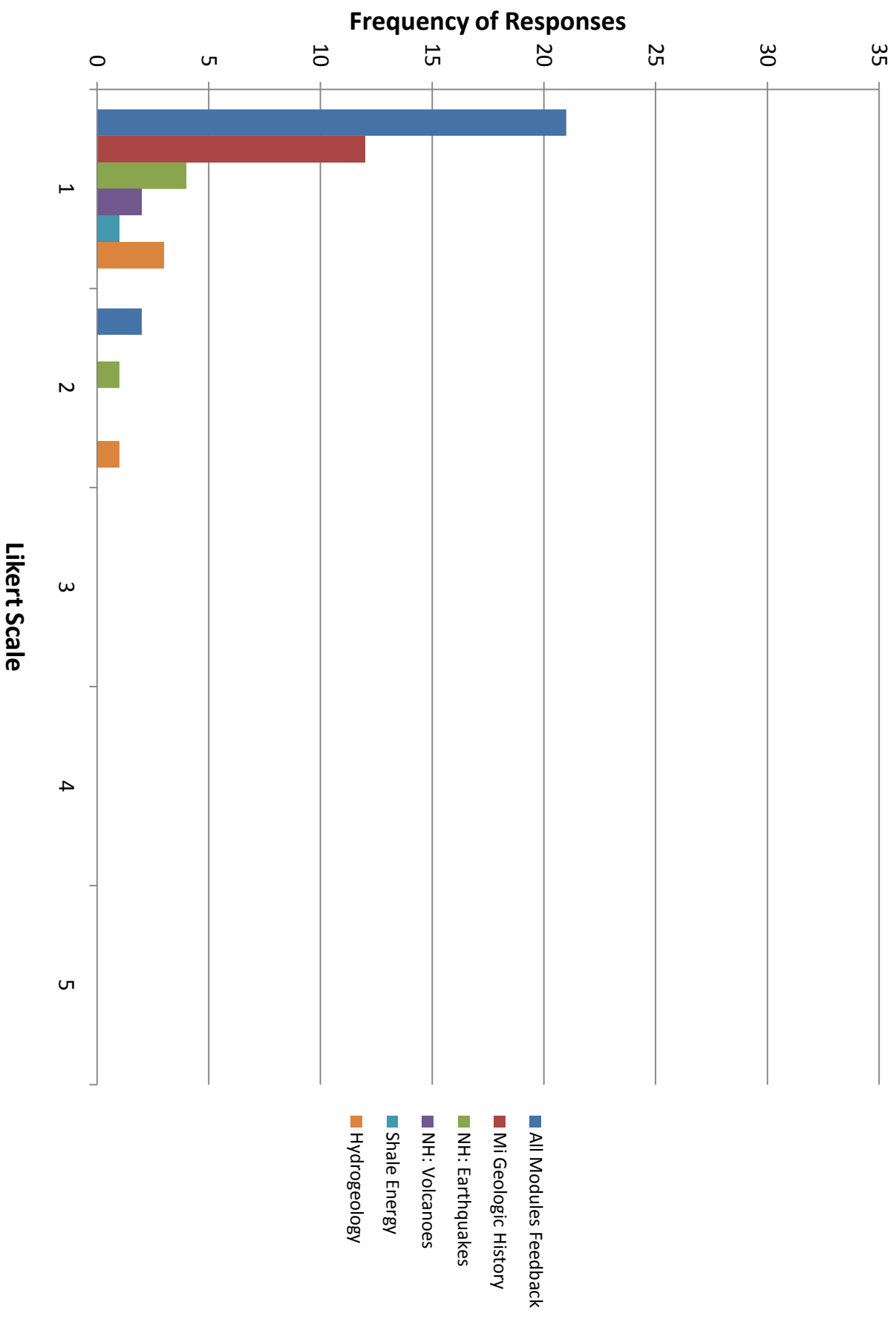
Q8: The Presenter was Knowledgeable



Q9: The Presenter was Organized



Q10: Overall Module Score



All Modules: Metrics Summary Statistics

Question	Mode	Median	n
Q1	1	1	33
Q2	1	1	33
Q3	1	1	33
Q4	5	5	33*
Q5	1	1	33
Q6	1	1	33
Q7	1	1	33
Q8	1	1	33
Q9	1	1	33
Module Overall Score	1	1	24**

*This question was poorly worded and often was answered in a manner that contrasted sharply with all other feedback provided by the individual teacher.

**This question was separate from the other 9 questions and was not always filled in.



Teacher Feedback and CoreKids Module Evaluations



Class Demographic: _____

Date: ¹² 11/11/13 _____

School: Gull Lake Middle School _____

Grade Level: 6th _____

District: Gull Lake Community Schools Total Students: 132

Teacher: Mrs. Kimberly Clancy Office Phone: 249-488-5040 ext. 2122

Email: Kclancy@gullakecs.org

Presenter: A. Gilchrist Module: Michigan Geologic History

Please circle one for each question:

1. Overall, this module was:	<u>Awesome</u>	Pretty good	OK	Not so good
2. This activity:				
Was Enjoyable	<u>Very much</u>	Somewhat	Not so much	Not at all
Was Educational	<u>Very much</u>	Somewhat	Not so much	Not at all
Met Expectations	<u>Very much</u>	Somewhat	Not so much	Not at all
Was Too Difficult for Students	<u>Very much</u>	Somewhat	Not so much	<u>Not at all</u>
Had Clear Instructions	<u>Very much</u>	Somewhat	Not so much	Not at all
Had Clear Purpose	<u>Very much</u>	Somewhat	Not so much	Not at all
Improved Understanding	<u>Very much</u>	Somewhat	Not so much	Not at all
Presenter Was Knowledgeable	<u>Very much</u>	Somewhat	Not so much	Not at all
Presenter Was Organized	<u>Very much</u>	Somewhat	Not so much	Not at all

3. What part of this activity was most effective to help students explore this topic?

Students loved the open forum to examine different hands on activities ~ many different learning activities ☺
The cant wait to have you back

4. What was the least favorite part of this activity?

Students weren't always careful with the materials.

5. How could this activity be improved?

maybe a wrap up assignment to check for learning

6. Do you feel this module meets Michigan State Science Standards?

Yes, absolutely

7. May we use any of your comments in our promotional materials (brochures, module handouts, website)?

Yes

Ann did a fabulous job relating concepts to students level she also interacted wonderfully with them! Thank you!

Class Demographic: _____

Date: 11/14/2013School: Gull Lake MiddleGrade Level: 6thDistrict: Gull Lake Community Schools# of Students: 121Teacher: Laurie Klok Office Phone: 488-5040Email: LKlok@gulllakecs.orgPresenter: Ann Gilchrist Module: Michigan Geologic History

Please circle one for each question:

1. Overall, this module was:

Awesome

Pretty good

OK

Not so good

2. This activity:

Was Enjoyable

Very much

Somewhat

Not so much

Not at all

Was Educational

Very much

Somewhat

Not so much

Not at all

Met Expectations

Very much

Somewhat

Not so much

Not at all

Was Too Difficult for Students

Very much

Somewhat

Not so much

Not at all

Had Clear Instructions

Very much

Somewhat

Not so much

Not at all

Had Clear Purpose

Very much

Somewhat

Not so much

Not at all

Improved Understanding

Very much

Somewhat

Not so much

Not at all

Presenter Was Knowledgeable

Very much

Somewhat

Not so much

Not at all

Presenter Was Organized

Very much

Somewhat

Not so much

Not at all

3. What part of this activity was most effective to help students explore this topic?

All of the stations had great value to the content we are studying.

4. What was the least favorite part of this activity?

Nothing!

5. How could this activity be improved?

? A few more stations?

Hard to improve on what's already so well put together.

6. Do you feel this module meets Michigan State Science Standards?

Yes!

7. May we use any of your comments in our promotional materials (brochures, module handouts, website)?

Yes!

71 Date: 11/18/2013 School: X St. Francis Grade Level: (6th)

District: Lansing Diocese Total # of Students: 54

Teacher: Wendy Temke Office Phone: (734) 821-2261

Email: LDLETAL@yahoo.com

Presenter: (A. Gilchrist) Module: Nat. Hazards - Earthquakes

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 (2) 3 4 5
2. This activity:
- | | | | | | |
|--------------------------------|------------|------------|---|---|------------|
| Was Enjoyable | <u>(1)</u> | 2 | 3 | 4 | 5 |
| Was Educational | <u>(1)</u> | 2 | 3 | 4 | 5 |
| Met Expectations | <u>(1)</u> | 2 | 3 | 4 | 5 |
| Was Too Difficult for Students | 1 | 2 | 3 | 4 | <u>(5)</u> |
| Had Clear Instructions | <u>(1)</u> | 2 | 3 | 4 | 5 |
| Had Clear Purpose | 1 | <u>(2)</u> | 3 | 4 | 5 |
| Improved Understanding | 1 | <u>(2)</u> | 3 | 4 | 5 |
| Presenter Was Knowledgeable | <u>(1)</u> | 2 | 3 | 4 | 5 |
| Presenter Was Organized | <u>(1)</u> | 2 | 3 | 4 | 5 |

3. What part of this activity was most effective to help students explore this topic?

The hands-on portion.

The students were actively engaged at all times. The excitement was palpable! Thank you, Ann!!

4. What was the least favorite part of this activity?

none

5. How could this activity be improved?

6. Do you feel this module meets Michigan State Science Standards?

yes!

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Sure

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Ann was outstanding - great teacher!!

Date: 12/11 School: St. Mary's Visitation Grade Level: 3rd/4thDistrict: Diocese of Kalamazoo Total # of Students: 13Teacher: Alyson Schonhard Office Phone: (616) 681-9701Email: aschonhard@smvschool.orgPresenter: Ann Gilchrist Module: Earthquakes

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable 1 2 3 4 5Was Educational 1 2 3 4 5Met Expectations 1 2 3 4 5Was Too Difficult for Students 1 2 3 4 5Had Clear Instructions 1 2 3 4 5Had Clear Purpose 1 2 3 4 5Improved Understanding 1 2 3 4 5Presenter Was Knowledgeable 1 2 3 4 5Presenter Was Organized 1 2 3 4 5

3. What part of this activity was most effective to help students explore this topic?

The students said, "The activity with moist, dry, and saturated dirt because I have never learned that before."

4. What was the least favorite part of this activity?

? We loved it all!

~~Just~~ The hands-on activities were the most effective on learning about earthquakes.

5. How could this activity be improved?

The cover could have markings on it with ≈ 1 in / ≈ 2 in. because it was difficult for younger kids to measure/estimate.

6. Do you feel this module meets Michigan State Science Standards?

Yes

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Other than that, everything was great!
Our class had been looking forward to this for weeks! We really enjoy the hands-on science activities!

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Yes - I will 😊

73 Date: 12/11 School: St. Mary's Visitation Grade Level: 5/4

District: Diocese of Kalamazoo Total # of Students: 18

Teacher: Amanda Nickels Office Phone: 681-9701

Email: anickels@smvschool.org

Presenter: Ann Gilchrist Module: Earthquakes

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<u>1</u>	2	3	4	5
Was Educational	<u>1</u>	2	3	4	5
Met Expectations	<u>1</u>	2	3	4	5
Was Too Difficult for Students	1	2	3	4	<u>5</u>
Had Clear Instructions	<u>1</u>	2	3	4	5
Had Clear Purpose	<u>1</u>	2	3	4	5
Improved Understanding	<u>1</u>	2	3	4	5
Presenter Was Knowledgeable	<u>1</u>	2	3	4	5
Presenter Was Organized	<u>1</u>	2	3	4	5

The activity w/ washers was great though! 😊

3. What part of this activity was most effective to help students explore this topic?

Building the sugar cube buildings, and experimenting with different conditions was such a great hands-on way to explore earthquakes!

4. What was the least favorite part of this activity?

None!

5. How could this activity be improved?

Can't think of any. It was really engaging and interesting!

6. Do you feel this module meets Michigan State Science Standards?

Yes!

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

What a super way to model an earthquake! Also, love how organized the kits are that you bring!

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Yes!

74 Date: 12-12-13 School: Upton M.S. Grade Level: 6th

District: St. Joseph Public Total # of Students: 119

Teacher: Kelly Kietzerow Office Phone: 269 926 3400

Email: KKietzerow@sjschools.org

Presenter: Ann Gilchrist Module: Earthquakes

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable 1 2 3 4 5

Was Educational 1 2 3 4 5

Met Expectations 1 2 3 4 5

Was Too Difficult for Students 1 2 3 4 5

Had Clear Instructions 1 2 3 4 5

Had Clear Purpose 1 2 3 4 5

Improved Understanding 1 2 3 4 5

Presenter Was Knowledgeable 1 2 3 4 5

Presenter Was Organized 1 2 3 4 5

3. What part of this activity was most effective to help students explore this topic?

This activity was great for showing the students what soil types & building types were best for earthquake prone areas.

4. What was the least favorite part of this activity?

my students not listening

5. How could this activity be improved?

- may need to refresh the sugar cubes a little more frequently - some were funny sized.

6. Do you feel this module meets Michigan State Science Standards?

yes - E-S.E. 06.52

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

- yes. This hands-on activity was a real eye-opener for my students in just not how earthquakes affect land & buildings, but also what can go wrong w/ an experiment & what we can learn from that.

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

yes - I do!

Date: 1/21/14 School: Gull Lake Middle School Grade Level: 6th

District: Gull Lake Community Schools Total # of Students: 135

Teacher: Mrs. K. Clancy Office Phone: 269-488-5040

Email: kclancy@gulllake.cs.org

Presenter: Ann Peter Voice Module: Earthquakes

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:					
Was Enjoyable	<u>1</u>	2	3	4	5
Was Educational	<u>1</u>	2	3	4	5
Met Expectations	<u>1</u>	2	3	4	5
Was Too Difficult for Students	<u>1</u>	2	3	4	5
Had Clear Instructions	<u>1</u>	2	3	4	5
Had Clear Purpose	<u>1</u>	2	3	4	5
Improved Understanding	<u>1</u>	2	3	4	5
Presenter Was Knowledgeable	<u>1</u>	2	3	4	5
Presenter Was Organized	<u>1</u>	2	3	4	5

The students are learning and they don't even know they are working. Fun!!!

3. What part of this activity was most effective to help students explore this topic?

Hands on and engaging to students. Creative way to explore effects of earthquakes on buildings.

4. What was the least favorite part of this activity?

Students loved the activity ~ great dialog went in. Jamming + student

5. How could this activity be improved?

Students could record results of different groups, analyze the data and form a conclusion based on the data.

6. Do you feel this module meets Michigan State Science Standards?

Yes E.S.E. 06.02 Demonstrate how major geological events (earthquakes, volcanic eruptions, mountain building) result from the plate tectonic motion.

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Yes

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Absolutely!

Date: 2/11/2014 School: Grand Haven High School Grade Level: 11th & 12th
 District: Grand Haven Area Public School Total # of Students: 18
 Teacher: Jason Hunter Office Phone: (616) 994-6823
 Email: hunterj@ghaps.org
 Presenter: Peter Voice Module: _____

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<u>1</u>	2	3	4	5
Was Educational	<u>1</u>	2	3	4	5
Met Expectations	<u>1</u>	2	3	4	5
Was Too Difficult for Students	1	2	3	<u>4</u>	5
Had Clear Instructions	<u>1</u>	2	3	4	5
Had Clear Purpose	<u>1</u>	2	3	4	5
Improved Understanding	<u>1</u>	2	3	4	5
Presenter Was Knowledgeable	<u>1</u>	2	3	4	5
Presenter Was Organized	<u>1</u>	2	3	4	5

3. What part of this activity was most effective to help students explore this topic?

The hands-on activities are a nice follow-up to the information provided.

4. What was the least favorite part of this activity?

~~None~~

5. How could this activity be improved?

Perhaps some additional information on igneous and metamorphic structures/rocks in Michigan - realizing that is not the focus of this facility.

6. Do you feel this module meets Michigan State Science Standards?

Absolutely!

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

What a great opportunity for my students to SEE geology and the application of it.

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

I definitely will recommend this to my colleagues!

Date: 2-14-14 School: Berkshire Middle School Grade Level: 6
 District: Birmingham Public Schools Total # of Students: 290
 Teacher: Mark Phillips / Scott Bruyssel Office Phone: 248-203-4702
 Email: MP86 bps @ birmingham.k12.mi.us
 Presenter: Dr. Peter Voice Module: Michigan Geologic History

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was:

1 2 3 4 5

2. This activity:

Was Enjoyable	<u>1</u>	2	3	4	5
Was Educational	<u>1</u>	2	3	4	5
Met Expectations	<u>1</u>	2	3	4	5
Was Too Difficult for Students	<u>1</u>	2	3	4	<u>5</u>
Had Clear Instructions	1	<u>2</u>	3	4	5
Had Clear Purpose	<u>1</u>	2	3	4	5
Improved Understanding	<u>1</u>	2	3	4	5
Presenter Was Knowledgeable	<u>1</u>	2	3	4	5
Presenter Was Organized	<u>1</u>	2	3	4	5

3. What part of this activity was most effective to help students explore this topic?

Students learned there are different kinds of geologists.
 Students enjoyed hands-on activities, and interacting with scientists.
 Slides with questions...
 Fluorescent mineral box

4. What was the least favorite part of this activity?

Students never like to sit for too long.
 Not enough room around the tables.

5. How could this activity be improved?

Elicit more answers from students.
 Pause hands-on session at intervals to introduce new concepts, or emphasize

6. Do you feel this module meets Michigan State Science Standards?

Yes.

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Probably groups of 30 or so could be more manageable with the given hands on materials...

→ Before students examine materials, introduce each station.

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Yes! I have contacts in other schools!

Date: 2/28 School: Gull Lake Middle School Grade Level: 6-7District: Gull Lake Total # of Students: 120

Teacher: _____ Office Phone: _____

Email: _____

Presenter: Ann Gilchrist Module: Natural Hazards: Volcanoes

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	①	2	3	4	5
Was Educational	①	2	3	4	5
Met Expectations	①	2	3	4	5
Was Too Difficult for Students	1	2	3	4	⑤
Had Clear Instructions	1	2	③	4	5
Had Clear Purpose	1	2	③	4	5
Improved Understanding	1	②	3	4	5
Presenter Was Knowledgeable	①	2	3	4	5
Presenter Was Organized	1	②	3	4	5

3. What part of this activity was most effective to help students explore this topic?

The comparison of volcanoes seemed to be an area where students were very engaged and learned a great deal.

4. What was the least favorite part of this activity?

Timing of experiments? Maybe melting hot so it has more time to cool.

5. How could this activity be improved?

① *Have conclusion/wrap up questions on a worksheet*
 ② *Fully explain instructions before releasing students to do expts.*

6. Do you feel this module meets Michigan State Science Standards?

Yes

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Awesome day!

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

I would recommend!

Date: 3/3 School: Gull Lake Community Grade Level: 6

District: Gull Lake Total # of Students: 135

Teacher: Mrs. K. Clancy Office Phone: 269-488-5040 ext. 2122

Email: Kclancy@gulllake.us.org

Presenter: Dr. Peter Voice Module: Volcanoes / Igneous Rocks

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<u>1</u>	2	3	4	5
Was Educational	<u>1</u>	2	3	4	5
Met Expectations	<u>1</u>	2	3	4	5
Was Too Difficult for Students	<u>1</u>	2	3	4	<u>5</u>
Had Clear Instructions	<u>1</u>	2	3	4	5
Had Clear Purpose	<u>1</u>	2	3	4	5
Improved Understanding	<u>1</u>	2	3	4	5
Presenter Was Knowledgeable	<u>1</u>	2	3	4	5
Presenter Was Organized	<u>1</u>	2	3	4	5

Wonderful educational experience so glad you are able to come in and present.

3. What part of this activity was most effective to help students explore this topic?

- Hands on
- modeling types of volcanoes
- love the informational power point

4. What was the least favorite part of this activity?

5. How could this activity be improved?

6. Do you feel this module meets Michigan State Science Standards?

Yes!

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?)) Yes! Fabulous

The students were super excited about the activity I loved the sounds they made when the volcano exploded. I am learning right along with my students

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Absolutely

Fun Engaging Exciting

Entertaining

Students

Date: 03.17.14 School: Mattawan Middle Grade Level: 6District: Mattawan Total # of Students: 150Teacher: Karin Fender Office Phone: 668.3361Email: kfender@mattawanschools.orgPresenter: Tom Howe Module: MI Geology; Energy and Env.

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<u>1</u>	2	3	4	5
Was Educational	<u>1</u>	2	3	4	5
Met Expectations	<u>1</u>	2	3	4	5
Was Too Difficult for Students	1	2	3	4	<u>5</u>
Had Clear Instructions	<u>1</u>	2	3	4	5
Had Clear Purpose	<u>1</u>	2	3	4	5
Improved Understanding	<u>1</u>	2	3	4	5
Presenter Was Knowledgeable	<u>1</u>	2	3	4	5
Presenter Was Organized	<u>1</u>	2	3	4	5

3. What part of this activity was most effective to help students explore this topic?

I enjoyed the variety; presentation, discussion, hands-on.

4. What was the least favorite part of this activity?

—

5. How could this activity be improved?

—

6. Do you feel this module meets Michigan State Science Standards?

It gave the students a more "real world" view of geology

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Yes! Posters, samples were wonderful, kids loved them.

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Yes!

Date: 3-18-14 School: Okemos High School Grade Level: 9-12
 District: Okemos Public Schools Total # of Students: 30
 Teacher: Dave Chapman Office Phone: 517-706-4886
 Email: dave.chapman@okemoschools.net
 Presenter: Deleter Voice Module: Hydraulic Fracking

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5
2. This activity:
- | | | | | | |
|--------------------------------|--------------|---|---|---|----------|
| Was Enjoyable | <u>1</u> | 2 | 3 | 4 | 5 |
| Was Educational | <u>1</u> | 2 | 3 | 4 | 5 |
| Met Expectations | <u>1</u> | 2 | 3 | 4 | 5 |
| Was Too Difficult for Students | 1 | 2 | 3 | 4 | <u>5</u> |
| Had Clear Instructions | <u>1</u> | 2 | 3 | 4 | 5 |
| Had Clear Purpose | <u>1</u> | 2 | 3 | 4 | 5 |
| Improved Understanding | <u>1</u> | 2 | 3 | 4 | 5 |
| Presenter Was Knowledgeable | <u>1</u> | 2 | 3 | 4 | 5 |
| Presenter Was Organized | <u>1</u> | 2 | 3 | 4 | 5 |

3. What part of this activity was most effective to help students explore this topic?

activity / module model

4. What was the least favorite part of this activity?

5. How could this activity be improved?

Follow up to activity: form to record observations, draw conclusions, summarize learning
printed directions - so students can work at their own pace
(A larger class would be hard to do unless there are clear written directions for students to follow.)

6. Do you feel this module meets Michigan State Science Standards? yes

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

This module turns a social controversy into a scientific inquiry.

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

yes

Date: 03.17.14 School: Mattawan Middle Grade Level: 6District: Mattawan Total # of Students: 150Teacher: Karin Fender Office Phone: 668.3361Email: kfender@mattawanschools.orgPresenter: Tom Howe Module: MI Geology; Energy and Env.

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<input checked="" type="radio"/> 1	2	3	4	5
Was Educational	<input checked="" type="radio"/> 1	2	3	4	5
Met Expectations	<input checked="" type="radio"/> 1	2	3	4	5
Was Too Difficult for Students	1	2	3	4	<input checked="" type="radio"/> 5
Had Clear Instructions	<input checked="" type="radio"/> 1	2	3	4	5
Had Clear Purpose	<input checked="" type="radio"/> 1	2	3	4	5
Improved Understanding	<input checked="" type="radio"/> 1	2	3	4	5
Presenter Was Knowledgeable	<input checked="" type="radio"/> 1	2	3	4	5
Presenter Was Organized	<input checked="" type="radio"/> 1	2	3	4	5

3. What part of this activity was most effective to help students explore this topic?

I enjoyed the variety; presentation, discussion, hands-on.

4. What was the least favorite part of this activity?

—

5. How could this activity be improved?

—

6. Do you feel this module meets Michigan State Science Standards?

It gave the students a more "real world" view of geology

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Yes! Posters, samples were wonderful, kids loved them.

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Yes!

Date: 4/1/14 School: Northwestern Middle Grade Level: 8District: Battle Creek Total # of Students: 136Teacher: Stacy Belson Office Phone: _____Email: sbelson@battle-creek.k12.mi.usPresenter: _____ Module: hydrogeology

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<u>1</u>	2	3	4	5
Was Educational	<u>1</u>	2	3	4	5
Met Expectations	<u>1</u>	2	3	4	5
Was Too Difficult for Students	1	2	3	4	<u>5</u>
Had Clear Instructions	<u>1</u>	2	3	4	5
Had Clear Purpose	<u>1</u>	2	3	4	5
Improved Understanding	<u>1</u>	2	3	4	5
Presenter Was Knowledgeable	<u>1</u>	2	3	4	5
Presenter Was Organized	<u>1</u>	2	3	4	5

3. What part of this activity was most effective to help students explore this topic?

*This was an awesome review for my students.
It was on target to curriculum*

4. What was the least favorite part of this activity?

5. How could this activity be improved?

*at least 1 or 2 more activities, teacher could
run one.*

6. Do you feel this module meets Michigan State Science Standards?

yes!

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

yes.

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

*I will recommend this to others in our
district as well as other.*

Fwd: CoreKids Hydrogeology Module

From : Ann M Gilchrist <ann.m.gilchrist@wmich.edu>

Thu, Apr 03, 2014 09:04 AM

Subject Fwd: CoreKids Hydrogeology Module

:

To : Peter J Voice <peter.voice@wmich.edu>

Cc : Lindsay Bergquist <lindsay.r.bergquist@wmich.edu>, Nathan Brown <nathan.brown@wmich.edu>, Dawn Caldwell <dawn.d.caldwell@wmich.edu>

See below from Stacy. Great job guys! I think you got the best feedback ever!

Sent from my iPhone

Begin forwarded message:

From: Stacy Belson <sbelson@battle-creek.k12.mi.us>

Date: April 2, 2014, 7:24:28 PM EDT

To: Ann M Gilchrist <ann.m.gilchrist@wmich.edu>

Subject: Re: CoreKids Hydrogeology Module

What a wonderful group of people you had come to us and Northwestern. They were so good with the kids and so friendly and knowledgeable. Not many people can handle 8th graders, but the 3 people you sent were exceptional. They ran the whole show over and over and I cannot say enough good about them. Thank you so much for such a great program and being free. Thank you again and please let them know how wonderful I thought they were as I did not have much time to chat with them as it was a crazy day.

Stacy Belson

On Mon, Mar 31, 2014 at 3:07 PM, Ann M Gilchrist <ann.m.gilchrist@wmich.edu> wrote:

Hi Stacy,

I will not be able to attend tomorrow, however Dawn, Nathan and Lindsay from CoreKids will be at your school by 7:20 am to set up.

Attached is the presentation and a copy of the student handout to accompany the Hydrogeology hands on exercises. Nathan, Lindsay and Dawn will bring laminated copies with them of the handout, but if you prefer to keep it for review with the students, or use it as a graded assignment, you can make copies of it and they will use those instead. It is totally your call.

The exercises are designed for groups of 3-4 students, so please divide you class into lab groups (we will provide enough materials to accommodate up to 9 groups per class). There will also be 2 exercises that will each require a long table or section of counter top to set up the demonstrations. The educators will need access to water and a projector to give the presentation, and if there are sinks close that will also make it easier.

I have the address as 176 Limit St, Battle Creek, MI 49037. If this is not correct, please let me know.

Hope you enjoy the module,

--

Sincerely,

Ann M. Gilchrist, MSc
Outreach Educator
CoreKids, MGRRE

Date: 4/15 School: Detroit Public Safety Academy Grade Level: 9District: Charter Total # of Students: 25Teacher: MS. Amanda Silic Office Phone: 313-965-6916Email: silicscience@gmail.comPresenter: Ann Module: Hydrogeology

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<input checked="" type="radio"/> 1	2	3	4	5
Was Educational	<input checked="" type="radio"/> 1	2	3	4	5
Met Expectations	<input checked="" type="radio"/> 1	2	3	4	5
Was Too Difficult for Students	<input checked="" type="radio"/> 1	2	3	4	5
Had Clear Instructions	<input checked="" type="radio"/> 1	2	3	4	5
Had Clear Purpose	<input checked="" type="radio"/> 1	2	3	4	5
Improved Understanding	<input checked="" type="radio"/> 1	2	3	4	5
Presenter Was Knowledgeable	<input checked="" type="radio"/> 1	2	3	4	5
Presenter Was Organized	<input checked="" type="radio"/> 1	2	3	4	5

3. What part of this activity was most effective to help students explore this topic?

The bottles w/ sand, dirt, rocks.

4. What was the least favorite part of this activity?

I was worried some of the technical stuff was over their heads, but they definitely got what they needed for the activities

5. How could this activity be improved?

I can't think of anything!

6. Do you feel this module meets Michigan State Science Standards?

Yes!

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Yes

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Yes!

Re: CoreKids outreach in Detroit

From : Amanda Silic <silicscience@gmail.com>

Tue, Apr 15, 2014 04:24 PM

Subject Re: CoreKids outreach in Detroit

:

To : Peter J Voice <peter.voice@wmich.edu>

Peter,

I just wanted to shoot you a quick note to thank you for setting us up with the Hydrogeology module. My students had SO much fun and I don't know how I am going to follow this up tomorrow! I already talked to Ann and having them come out next year because it was so fun and informative (if it wasn't so late in the year, I would already be booking the Hydraulic Fracturing module!).

Thank you again, this is a really wonderful program.

Amanda Silic

On Fri, Mar 28, 2014 at 9:15 AM, Peter J Voice <peter.voice@wmich.edu> wrote:

Hi Amanda,

I am going to copy Ann Gilchrist on this email as she developed the current version of the hydrogeology module and has a better feel for what was needed. My understanding from talking to her yesterday as she prepped for a presentation of the hydrogeology module over at Lake Shore High School is that she needed at least two large table spaces and access to water. She will give a powerpoint presentation -- if you need us to, we can bring a projector and laptop, or alternatively use whatever tech resources you have. Ann will bring in all of the demonstration materials that we use and present with.

PJV

----- Amanda Silic <silicscience@gmail.com> wrote:

>

Hi Peter,

Just a quick follow-up, what sort of technology/space requirements do you have for your presentation?

Amanda Silic

> On Thu, Mar 20, 2014 at 6:57 AM, Amanda Silic <silicscience@gmail.com> wrote:

>

Thank you!

Amanda Silic

On Mar 19, 2014, at 9:51 AM, Peter J Voice <peter.voice@wmich.edu> wrote:

>

> Hi Amanda,

I apologize, I had a couple busy days so far this week and haven't gotten back to you yet. One of my assistants has confirmed that she will be able to come out to your classroom. If she can't make it, I will come out on April 15th.

Date: 5-8-14 School: Greater Heights Grade Level: 4th/5th

Flint

District: Greater Heights Academy Total # of Students: 45Teacher: MS. DeEtta Crane Office Phone: 810-768-3860Email: Craned@greaterheightacademy.orgPresenter: Mr. Voice Module: Description of Rocks
Classifying

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<u>1</u>	2	3	4	5
Was Educational	<u>1</u>	2	3	4	5
Met Expectations	<u>1</u>	2	3	4	5
Was Too Difficult for Students	1	2	3	4	<u>5</u>
Had Clear Instructions	<u>1</u>	2	3	4	5
Had Clear Purpose	<u>1</u>	2	3	4	5
Improved Understanding	<u>1</u>	2	3	4	5
Presenter Was Knowledgeable	<u>1</u>	2	3	4	5
Presenter Was Organized	<u>1</u>	2	3	4	5

3. What part of this activity was most effective to help students explore this topic?

Dr. Voice talked to the students about the stations and what they were going to learn. The hands on portion was fun for the students.

4. What was the least favorite part of this activity?

We enjoyed every part of the activity.

5. How could this activity be improved?

The program was well organized and the presenter was very knowledgeable.

6. Do you feel this module meets Michigan State Science Standards?

Yes, it was very informative.

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Yes

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Yes

Date: 5-8-14 School: Greater Heights Academy Grade Level: 2nd/3rdDistrict: Greater Heights Academy Total # of Students: 58Teacher: Ms. DeEtta Crane Office Phone: 810-768-3860Email: Craned@greaterheightsacademy.orgPresenter: Mr. Voire Module: Volcano

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<u>1</u>	2	3	4	5
Was Educational	<u>1</u>	2	3	4	5
Met Expectations	<u>1</u>	2	3	4	5
Was Too Difficult for Students	1	2	3	4	<u>5</u>
Had Clear Instructions	<u>1</u>	2	3	4	5
Had Clear Purpose	<u>1</u>	2	3	4	5
Improved Understanding	<u>1</u>	2	3	4	5
Presenter Was Knowledgeable	<u>1</u>	2	3	4	5
Presenter Was Organized	<u>1</u>	2	3	4	5

3. What part of this activity was most effective to help students explore this topic?

Discussing the types of rocks - obsidian and pumice. Learning about the different volcanos - shield and composite.

4. What was the least favorite part of this activity?

We didn't have a least favorite, only good comments. The students learned a lot about rocks today, Volcanos too!

5. How could this activity be improved?

It was nice to have students from the college help in the classroom with all the activity. I would continue having college students participate in the program.

6. Do you feel this module meets Michigan State Science Standards?

Yes, Earth science is a state standard.

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Yes

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Yes

89 Date: 5-14-14 School: Upton Middle School Grade Level: 8th

District: St. Joseph Total # of Students: 30

Teacher: Jill Hubble Office Phone: ⁽²⁶⁹⁾ 926-3466

Email: jhubble@sjschools.org

Presenter: _____ Module: _____

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<input checked="" type="radio"/> 1	2	3	4	5
Was Educational	<input checked="" type="radio"/> 1	2	3	4	5
Met Expectations	<input checked="" type="radio"/> 1	2	3	4	5
Was Too Difficult for Students	1	2	3	4	<input checked="" type="radio"/> 5
Had Clear Instructions	<input checked="" type="radio"/> 1	2	3	4	5
Had Clear Purpose	<input checked="" type="radio"/> 1	2	3	4	5
Improved Understanding	<input checked="" type="radio"/> 1	2	3	4	5
Presenter Was Knowledgeable	<input checked="" type="radio"/> 1	2	3	4	5
Presenter Was Organized	<input checked="" type="radio"/> 1	2	3	4	5

3. What part of this activity was most effective to help students explore this topic?

Seat work w/ the different types of materials to show pores.

4. What was the least favorite part of this activity?

None

5. How could this activity be improved?

One more station when they get up to walk around so there are a total of 4. It's easier to divide kids into 4 groups

6. Do you feel this module meets Michigan State Science Standards?

Yes

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?)) *Yes.*

It was a great presentation. I love how hands on it was for the kids! Thank you!

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Yes

Date: 5/23/14 School: Thornapple Kellogg MS Grade Level: 8thDistrict: Thornapple Kellogg Total # of Students: 24Teacher: Mike Rynearson Office Phone: _____Email: mrynearson@tkschools.orgPresenter: Zakk Weber Module: Earthquakes
Dawn Caldwell

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<u>1</u>	2	3	4	5
Was Educational	<u>1</u>	2	3	4	5
Met Expectations	<u>1</u>	2	3	4	5
Was Too Difficult for Students	1	2	3	4	<u>5</u>
Had Clear Instructions	<u>1</u>	2	3	4	5
Had Clear Purpose	<u>1</u>	2	3	4	5
Improved Understanding	<u>1</u>	2	3	4	5
Presenter Was Knowledgeable	<u>1</u>	2	3	4	5
Presenter Was Organized	<u>1</u>	2	3	4	5

3. What part of this activity was most effective to help students explore this topic?

using sugar cubes & soil to demonstrate which structures are best built to survive earthquakes

4. What was the least favorite part of this activity?

5. How could this activity be improved?

Instructors need to have a way to quiet the class & call on students to answer questions. Maybe send out an email to teachers prior to visiting and ask how the teacher manages the class. Every class is different.

6. Do you feel this module meets Michigan State Science Standards?

Yes

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Yes

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Yes

Date: 5-23 School: Thornapple Kellogg Middle Grade Level: 8thDistrict: Thornapple Kellogg Total # of Students: 30Teacher: Randy Stehlik Office Phone: 269-795-5400Email: rstehlik@tkschools.orgPresenter: Dawn, Zach Module: Earthquakes

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<input checked="" type="radio"/> 1	2	3	4	5
Was Educational	<input checked="" type="radio"/> 1	2	3	4	5
Met Expectations	<input checked="" type="radio"/> 1	2	3	4	5
Was Too Difficult for Students	1	2	3	4	<input checked="" type="radio"/> 5
Had Clear Instructions	<input checked="" type="radio"/> 1	2	3	4	5
Had Clear Purpose	<input checked="" type="radio"/> 1	2	3	4	5
Improved Understanding	<input checked="" type="radio"/> 1	2	3	4	5
Presenter Was Knowledgeable	<input checked="" type="radio"/> 1	2	3	4	5
Presenter Was Organized	<input checked="" type="radio"/> 1	2	3	4	5

3. What part of this activity was most effective to help students explore this topic?

*Hands on is always effective in helping kids understand.
Great unit with wonderful labs.*

4. What was the least favorite part of this activity?

None

5. How could this activity be improved?

Have students predict... even write them down.

6. Do you feel this module meets Michigan State Science Standards? *yes*

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Dawn did a great job! Kids were actively participating in the activities. She asked great questions to keep kids thinking.

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop. *yes.*

Date: 5/23 School: Thornapple Kellogg Grade Level: 8th

District: Thornapple Kellogg Total # of Students: 260

Teacher: Jamie Bowman Office Phone: 269-795-5400

Email: jbowman@tk.schools.org

Presenter: Natural Disasters (Earthquakes) Module: _____

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<u>1</u>	2	3	4	5
Was Educational	<u>1</u>	2	3	4	5
Met Expectations	<u>4</u>	2	3	4	5
Was Too Difficult for Students	1	2	3	4	<u>5</u>
Had Clear Instructions	<u>1</u>	2	3	4	5
Had Clear Purpose	<u>1</u>	2	3	4	5
Improved Understanding	<u>1</u>	2	3	4	5
Presenter Was Knowledgeable	<u>1</u>	2	3	4	5
Presenter Was Organized	<u>1</u>	2	3	4	5

exceeded expectations

3. What part of this activity was most effective to help students explore this topic?

Frosting?

Examples - Butter vs elastid - Cool table idea - Building with sugar cubes - simple but gets the content across

4. What was the least favorite part of this activity?

Nothing!

5. How could this activity be improved?

N/A

6. Do you feel this module meets Michigan State Science Standards? yes!

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Great reinforcement/Review of our Earthquake Unit!

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Definitely - would love to have you back next year during our Earthquake Unit!

Date: 5-27-14 School: Polk Elementary Grade Level: 3
 District: Dearborn Hgts #7 Total # of Students: 25
 Teacher: Rebecca Bulla Office Phone: 313-278-4455
 Email: bollareb@dhsd7.net
 Presenter: Zack/Jessica Module: Rocks + Minerals

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<u>1</u>	2	3	4	5
Was Educational	<u>1</u>	2	3	4	5
Met Expectations	<u>1</u>	2	3	4	5
Was Too Difficult for Students	<u>1</u>	2	3	4	5
Had Clear Instructions	<u>1</u>	2	3	4	5
Had Clear Purpose	<u>1</u>	2	3	4	5
Improved Understanding	<u>1</u>	2	3	4	5
Presenter Was Knowledgeable	<u>1</u>	2	3	4	5
Presenter Was Organized	<u>1</u>	2	3	4	5

3. What part of this activity was most effective to help students explore this topic?

That it was hands on the students seemed to enjoy it

4. What was the least favorite part of this activity?

Some children were off task too much waiting

5. How could this activity be improved?

3 or 4 more samples where 5 could be touching

6. Do you feel this module meets Michigan State Science Standards?

Yes

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Yes

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Yes

Date: 5/27 School: Polk Grade Level: 3

District: Don HHS #7 Total # of Students: 26

Teacher: Kemp Office Phone: 313-278-4485

Email: kemppame@DHSD7

Presenter: Zac + Jessica Module: _____

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<u>1</u>	2	3	4	5
Was Educational	<u>1</u>	2	3	4	5
Met Expectations	<u>1</u>	2	3	4	5
Was Too Difficult for Students	1	2	3	4	<u>5</u>
Had Clear Instructions	<u>1</u>	2	3	4	5
Had Clear Purpose	<u>1</u>	2	3	4	5
Improved Understanding	<u>1</u>	2	3	4	5
Presenter Was Knowledgeable	<u>1</u>	2	3	4	5
Presenter Was Organized	<u>1</u>	2	3	4	5

3. What part of this activity was most effective to help students explore this topic?

The hands on exploring with ability to ask questions.

4. What was the least favorite part of this activity?

none

5. How could this activity be improved?

It fit right in with what we are doing in class!! Have the wrap up after kids tried!

6. Do you feel this module meets Michigan State Science Standards?

yes

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

yes. My kids really enjoyed the hands on set up and information presented. tried! stall!

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

yes!!

Date: 5/27/14 School: Polk Grade Level: 3District: Dearborn Heights Dist 7 Total # of Students: 27Teacher: Gorham Office Phone: _____Email: gorhamna@dhsd7.netPresenter: Zack + Jessica Module: Rocks + Minerals

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	<u>1</u>	2	3	4	5
Was Educational	<u>1</u>	2	3	4	5
Met Expectations	<u>1</u>	2	3	4	5
Was Too Difficult for Students	1	<u>2</u>	3	4	5
Had Clear Instructions	1	<u>2</u>	3	4	5
Had Clear Purpose	1	<u>2</u>	3	4	5
Improved Understanding	<u>1</u>	2	3	4	5
Presenter Was Knowledgeable	<u>1</u>	2	3	4	5
Presenter Was Organized	<u>1</u>	2	3	4	5

3. What part of this activity was most effective to help students explore this topic?

the hands on activities

4. What was the least favorite part of this activity?

5. How could this activity be improved?

Perhaps have small stations with less students at each one.

6. Do you feel this module meets Michigan State Science Standards?

Yes. It goes right along with the Science kit

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Sure

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Date: 5-27-14 School: Rouk Elementary Grade Level: 3

District: Dearborn Heights District #7 Total # of Students: 28

Teacher: Shelly Van Esley Office Phone: 313-278-4455

Email: vaneslmie@dhsd7.chet

Presenter: _____ Module: Rocks & Minerals

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was: 1 2 3 4 5

2. This activity:

Was Enjoyable	1	<u>2</u>	3	4	5
Was Educational	1	<u>2</u>	3	4	5
Met Expectations	1	<u>2</u>	3	4	5
Was Too Difficult for Students	1	2	3	4	<u>5</u>
Had Clear Instructions	1	<u>2</u>	3	4	5
Had Clear Purpose	1	<u>2</u>	3	4	5
Improved Understanding	1	<u>2</u>	3	4	5
Presenter Was Knowledgeable	1	<u>2</u>	3	4	5
Presenter Was Organized	1	<u>2</u>	3	4	5

3. What part of this activity was most effective to help students explore this topic?

my class always loves everything i anything hands on!

4. What was the least favorite part of this activity?

5. How could this activity be improved?

6. Do you feel this module meets Michigan State Science Standards?

yes... it goes right along with the unit we are

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?)) sure. Studying how.

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop. yes!

Date: 6/2/14 School: Moorsbridge Elem Grade Level: 3District: Portage Total # of Students: 22Teacher: Kristen Mulder Office Phone: _____Email: Kmulder@portageps.orgPresenter: Zakk Weber
Dawn Caldwell Module: _____

Please circle one for each question (scale 1-5: 1 = awesome/absolutely agree, 2 = really good/strongly agree, 3 = pretty good/somewhat agree, 4 = fair/slightly disagree, 5 = terrible/firmly disagree)

1. Overall, this module was:

①	2	3	4	5
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2. This activity:

Was Enjoyable	①	2	3	4	5
Was Educational	①	2	3	4	5
Met Expectations	①	2	3	4	5
Was Too Difficult for Students	1	2	3	4	⑤
Had Clear Instructions	1	2	③	4	5
Had Clear Purpose	①	2	3	4	5
Improved Understanding	①	2	3	4	5
Presenter Was Knowledgeable	①	2	3	4	5
Presenter Was Organized	1	2	③	4	5

Thank
you!

3. What part of this activity was most effective to help students explore this topic?

understanding in a fun-hands-on way
how resources/minerals come about, look like!

4. What was the least favorite part of this activity?

None - all knowledgeable

5. How could this activity be improved?

A presenter @ each activity so kids
stay on task and learn info.

6. Do you feel this module meets Michigan State Science Standards?

Yes!

7. Comments: (May we use any of your comments in our promotional materials (brochures, module handouts, website?))

Yes!

8. Would you recommend CoreKids to your colleagues, friends and other districts? If so, please forward our contact information to them. The more students we reach the more funding we can obtain, and the more modules we are able to develop.

Yes! Fun hands-on program!
Loved how you incorporated "sand-dunes" to help prepare our
students for field trip.

WESTERN MICHIGAN UNIVERSITY



Centennial
1903-2003 Celebration

Department of Mechanical and Aerospace Engineering
College of Engineering and Applied Sciences

June 30, 2014

Peter Voice, Ph.D. Director
K-12 Outreach Unit and CoreKids Program
Instructor and Research Associate
Dept. of Geosciences/Michigan Geological Survey,
WMU 49008-5241

Dear Peter,

Thank you so much for hosting the summer camp students. They enjoyed the activities very much and have learned a great deal!

Wishing you a great summer.

Best regards,

A handwritten signature in blue ink that reads "Pnina Ari-Gur".

Dr. Pnina Ari-Gur, Professor
Mechanical and Aerospace Engineering



CoreKids Reports to the
Michigan Geological Survey
Director



CORE Kids



CoreKids Reports to the Director of the Michigan Geological Survey are available for download at: <http://wmich.edu/corekids/News-Events.htm> or are available by request from the K-12 Outreach Director, Peter Voice (peter.voice@wmich.edu)



CORE



Kids

