

2011 MMEW Evaluation - General

GENERAL SURVEY: Demographics

D1. Why did you choose to attend this workshop?

Learn about Geoscience	61	38%
Gain CE credits	27	17%
Gain College Credits	20	13%
Learn about mining ind.	30	19%
See diff. part of state	21	13%
Other:	159	
Had a lot of great info last time- great cost for teachers		
Very Affordable		
Friend invited me to come with		
Past workshops were informative always well done		
See friends- network		
close to cabin		
to have fun		
courses sounded interesting- a lot to choose from		
only lived in Mn 5 years- personal interest		
Ideas for new earth science curriculum		
different perspectives as a develop a curriculum for our school district		
Refresh knowledge as I will be teaching earth science this year (I haven't taught it for about 4 years)		

D2. Which MMEW meetings have you attended?

2010 St. Paul	30	39%	2002 St Paul	5	7%
2008 Ely	18	24%	2001 Virginia	8	11%
2007 Bemidji	17	22%	2000 St. Cloud	6	8%
2006 Duluth	20	26%	1999 Duluth	4	5%
2005 Mankato	12	16%	1998 Mankato	4	5%
2004 Winona	13	17%	1997 Chisholm	2	3%
2003 Hibbing	9	12%			

Number of MMEW workshops previously attended

0	28	38%	5	6	8%	10	1	1%
1	22	30%	6	2	3%	11		0%
2		0%	7	3	4%	12	1	1%
3	5	7%	8	1	1%			
4	5	7%	9		0%	Total	74	

D3. What grade level do you typically teach?

<u>K-4</u>	<u>5 thru 8</u>	<u>9 thru 12</u>	<u>College</u>	<u>Home Schl</u>	<u>Total</u>
7	40	36	1	1	85
8%	47%	42%	1%	1%	

Other:

Geology student- I want to teach after working in the field
 GED
 Special Ed. 12+
 Retired (3)
 Have taught Earth science (6th grade) and now I'm an ESL instructor for K-5, I also consult w/elementary teachers on Earth Science lessons
 Home school
 K-12 teachers and youth leaders

D4. What type of educational environment do you work in?

<u>K-12 Pub.</u>	<u>K-12 Priv.</u>	<u>College</u>	<u>Home Schoo</u>	<u>Informal</u>	<u>Summer Camp</u>	
58	7	2	1	6	1	75
77%	9%	3%	1%	8%	1%	

Other:

Teaching elementary students with TGA(Teen Geological Association) at SDSM&T with other geo students
Retired (3)
Science Museum of Minnesota

D5. How many years have you been teaching?

<u>0</u>	<u>1 to 5</u>	<u>5 to 10</u>	<u>11 to 20</u>	<u>21 to 30</u>	<u>>30</u>	
1	7	20	19	15	7	69
1%	10%	29%	28%	22%	10%	

D6. What is the primary content area you teach?

Earth Science	46	42%
General Science	12	11%
Life Science	19	17%
Physical Science	16	15%
Chemistry	8	7%
Other	8	7%
Total	109	

GENERAL SURVEY: Continuing Education

CE1. The number of CEC available for this workshop is about the right amount.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>
12	40	13	2	1	68
18%	59%	19%	3%	1%	

CE2. The EDUC 5570 two-credit course is a valuable option offered by the MMEW

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>
23	39	15	0	1	78
29%	50%	19%	0%	1%	

Comments:

It would be easier for lane changes if it was a different course number
Did not look into college credit
Not looking for college credit
Would prefer more options for the homework assignment
I would like to see 10 CEC a day.
I would love a grad. Geology credit
Called DNR

GENERAL SURVEY: Publicity/Outreach

P1.How did you hear about the MMEW

<u>Website</u>	<u>E-mail</u>	<u>MESTA</u>	<u>Colleague</u>	<u>Principal</u>	<u>Mail</u>	<u>Total</u>
12	44	20	16	0	1	93
13%	47%	22%	17%	0%	1%	

Other:

Project Learning Tree
District curriculum coordinator
My Mom
MnSTA
Friend
Google Search
Past visits
Mystery cave Tour Guide

P2. How would you prefer to be contacted about MMEW in the future?

<u>Website</u>	<u>E-mail</u>	<u>MESTA</u>	<u>Colleague</u>	<u>Principal</u>	<u>Mail</u>	<u>Total</u>
5	60	16	3	0	2	86
6%	70%	19%	3%	0%	2%	

Other:

MnSTA newsletter (4)
 Snail mail brochure to earth science teacher at each school district
 Flyers handed out at Education MN fall conference?

P3. How might we best reach other educators who have not heard about the MMEW?

Flyers to the schools
 School principals (2)
 State Dept. of Education (3)
 MnSTA listserve and convention (4)
 Mn Science Museum Education listserve
 Fall MEA convention
 Ask attendees to contact other teachers about the workshop (2)
 School districts at the district office level.
 ESPIRIT listserv
 Keep trying
 Contact teachers directly via email during school year

GENERAL SURVEY: Logistics

L1. Circle two factors that are most important in choosing a workshop location

<u>Geology</u>	<u>Mining</u>	<u>Twin C.</u>	<u>Scenic</u>	<u>College</u>	<u>Local Exp.</u>	<u>Accom.</u>	<u>Total</u>
67	17	2	8	3	36	17	150
45%	11%	1%	5%	2%	24%	11%	

L2. Where would you most like to see the MMEW held in the future?

Iron Range/Northern MN	3	5%
Duluth/North Shore	11	18%
Metro Area	3	5%
St. Cloud	2	3%
SE MN	12	20%
SW MN	15	25%
NW MN	5	8%
No Preference	10	16%
Total	<u>61</u>	

L3. The late June date is an acceptable time slot for the MMEW

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>
35	32	6			73
48%	44%	8%	0%	0%	

L4. Which summer time slots are most ideal for you?

<u>L June</u>	<u>E July</u>	<u>M July</u>	<u>L July</u>	<u>E August</u>	<u>No Pref</u>	<u>Total</u>
48	16	10	5	7	21	107
45%	15%	9%	5%	7%	20%	

Comments:

After Father's Day, before mid-July

Weather must be better

This is the best June week. Many school district have classes and meetings until mid June.

Knowing the dates early is most important for planning

This is why I could go

I like the opportunity to set aside the rest of the summer for other purposes outside of education.

Wait too long and we forget about registering.

This week is a good date, gives teachers time to think about how to incorporate the materials
and when in units- plan lessons using material

So long as the date is not in August, I'm okay with it.

Any

June is the best because other workshops are in July and August.

I also like late June because it tends to be a lot cooler in temperatures still.

I would prefer the last week in June

L5. The one day allocated to short courses is appropriate for a 3-day workshop.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>
25	44	6	1		76
33%	58%	8%	1%	0%	

L6. The two days allocated to field trips is appropriate.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	
32	34	8	1		75
43%	45%	11%	1%	0%	

L7. The 3-day format is the right length for the workshop.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	
31	38	6			75
41%	51%	8%	0%	0%	

L8. It is appropriate that MMEW short courses are based in a college campus environment.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	
23	38	13			74
31%	51%	18%	0%	0%	

Comments:

But not absolutely necessary, course could be held anywhere there is adequate room

Use 3 days of field trips to explore/learn more about a region; 4 days would be "do-able"

The college environment is a "good sell" to local committees that fund professional development expenses.

The field trip days are the most valuable component.

it is good for us to have exposure to a variety of post-secondary campuses to share with our students.

Makes for a learning environment- get to see different campuses

Fun to learn new material

I am more interested in rocks and minerals - not so interested in MINING and Careers.

How about a little later start on day 1 so most could reduce overnight accommodations by one night?

Equipment and facilities are available for participants. Participants can be introduced to different campuses so
can help students decide where to go.

Would love to have a second day of options for classes or in the evenings.

Could be a hotel- imagine cost is an issue.

Too many good workshops 1 and 1/2 each field trips and Workshops.

Can be held in any building w/ enough classrooms. Might be fun to hold at a high school.

More time for sessions would be nice

L9. Offering a continental breakfast and break snacks are appreciated

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>
36	36	3		

L10. The menu selection for the lunch buffett on Day 1 was appealing and sufficient.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>
34	28	4	2	1

Comments:

It would be nice to have a little more variety

Healthier and more options at breakfast (fruit, yogurt, bagels, cereal, ...). (8)

Very well done! (2)

Love the local food (2)

Very good food

We are always well fed at this one- don't charge anything

Very nice selection, good food, bottled water would be nice, I did bring my own.

Excellent food portions! Much better than other workshops I have attend! Appreciate the home cooking

Yummy!

I would appreciate half and half and splenda offered with the coffee. The bkfast was appropriate for diabetics.

Great lunch

Please add water/milk any drinks

Good variety, feel appreciated,well-treated.

Snacks- cookies were delicious. Thanks.

Please consider fresh and vegetarian options. I don't eat pork or sausage. Too many creams/dairy (fattening)

Prefer option for hot breakfast (2)

L11. I selected to stay at...

<u>Dorm</u>	<u>Camp</u>	<u>Motel</u>	<u>Friends/Family</u>	
2	15	48	8	73
3%	21%	66%	11%	

L12. The lodging options available provided adequate quality for my needs.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>
17	35	9	0	0	61
28%	57%	15%	0%	0%	

L13. The choice of housing accommodations were affordable.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>
10	48	12	1	0	71
14%	68%	17%	1%	0%	

L14. In the future, my ideal accommodations would be:

<u>Dorm</u>	<u>Camp</u>	<u>Motel</u>	<u>Frnd/Fam</u>	<u>No Pref</u>	<u>Total</u>
22	14	33	2	12	83
27%	17%	40%	2%	14%	

Comments:

It's good to have multiple lodging optioins as some are on limited budgets.

Where I could stay for least cost

I enjoy camping because we don't have much time in the school year to relax and other teachers are camping too depends on when/where offered

Eveleth has awesome resources for camping!

Lodging was kind of high this time I thought.

L15. How far did you travel to attend this MMEW

<u>Hours</u>	<u>#</u>	<u>%</u>
>5	6	8%
5-4	15	21%
4-3	32	44%
3-2	11	15%
2-1	3	4%
<1	5	7%
	<u>72</u>	

L16. What is the maximum distance you would travel?

<u>Hours</u>	<u>#</u>	<u>%</u>
>5	20	39%
5-4	12	24%
4-3	12	24%
3-2	6	12%
2-1	0	0%
<1	1	2%
Total	<u>51</u>	

Comments:

Distance is worth it to experience interesting geology. Have rocks will travel :)

Anywhere in state (6)

Rotating alternating workshops is ideal, making workshops accessible to teacher statewide is important

It might be more enticing to include housing along with the registration- either provided on campus housing or hotel space as part of the workshop cost.

Stay in Mn and I would consider it.

Depends on other variables such as location and timing (6)

L17. The \$40 registration fee is reasonable

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>
50	23	0	0	0	73
68%	32%	0%	0%	0%	

L18. The cost of travel and lodging is a limiting factor to my attendance.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>
3	29	22	19	1	74
4%	39%	30%	26%	1%	

L19. My school district contributed to the cost of my attendance

<u>Full</u>	<u>Partial</u>	<u>No help</u>	<u>Prefer Not to Answer</u>	<u>Total</u>
6	7	51	1	65

Comments:

My Mom paid for it.

They did not fund any of this. Answers are unfitting for this question.

Cost of class only

Questions 18 will vary from person to person and year to year as staff development budgets changes. Lodging is the limiting factor, so its good to have low cost recommended hotels or dorm rooms.

Shared cost with colleague

Full cost of workshop and hotel covered by district.

Credit hours will apply to lane change

I didn't ask though...

I did not check

I was looking for credit/last minute

My district contributed nothing

KEYSTONE PRESENTATION

K1. The keynote presentation imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>		
4	43	21	5	0	73	
5%	59%	29%	7%	0%	2.63	GPA

K2. The keynote presentation provided content directly applicable to my educational environment.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>		
4	31	26	10	1	72	
6%	43%	36%	14%	1%	2.38	GPA

K3. The keynote speaker was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>		
22	47	6	0	0	75	
29%	63%	8%	0%	0%	3.21	GPA

K4. The keynote presentation is an appropriate way to kick off the workshop.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>		
16	49	7	2	0	74	
22%	66%	9%	3%	0%	3.07	GPA

Comment:

This years keynote was OK, but one with a strong geology focus would be better. Harvey Thorleifson or Justin Revanaugh of the U of M world would be excellent future keynote speakers.

This is a discussion we have w/ all of our kids that there are numerous jobs/careers

Perhaps not an hour- seems a bit long first thing in the morning.

Need a bit more time break before first session.

Good information, can share with student to encourage careers to consider

It is such a great reminder that we are educating students for life careers and not solely for knowledge.

There are so many way to do that and it needs to be done in any way(s) that work best for students.

Framed the educational environment and culture and employment needs if the area hosting the conference.

Our students NEED jobs and some want to stay and even thought I'm a different part of the state.

It was an interesting topic, but I am not a big fan of long power points or lecture style.

Could be shorter. Set the scene for "big picture"

Sit in the back and view your slides- I tried but couldn't see most, could not read the printing-

hard to get out of it what one should.

Since I grew up in the area- I found this to be very interesting. I guess I'm an achiever since I left the area.

This was extremely beneficial to my teaching area.

Need to have a location that is more appropriate for sake of visibility of powerpoint

Think about setting up a second screen in deep meeting rooms.

Difficult to read the charts in the back of the room.

2011 MMEW Evaluation - Short Courses

Short Course Survey - General

C1. Please circle the short courses you attended.

Session	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>Totals</u>
1	MN Geo. 29	Ground 20	Go West 8	ID Min. 16		73
2	Rock Cycl 9	Space 9	Soudan 22	Roadside 31		71
3	Mining 16	Env. Perm 11	Every Min 29	Geotech 8	Simulator 7	71
4	Min. Pot 34	Mine Recl 11	Oil 20	Sand, Gravel, Stone 7		72

C2. The short course selections adequately addressed basic geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>
25	42	2	0	0	69
36%	61%	3%	0%	0%	

C3. The short course selections adequately covered mining/mineral resource content

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>
27	35	5	1	0	68
40%	51%	7%	1%	0%	

C4. The short course selections adequately addressed environmental/reclamation issues.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>
16	35	12	1	0	64
25%	55%	19%	2%	0%	

C5. The structure of the schedule allowed me to get most of my first choices

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>
25	22	4	1	0	52
48%	42%	8%	2%	0%	

C6. A short course topic(s) I wish had been offered is:

Using technology- even specific technology mining companies use. Something to spark interest of high schoolers and middles students.

Karst topography, glacial landforms, modern day equivalents to Minnesota's historical geological settings.

Nice selection of courses. All provided valuable information.

More cross- content- I'm chemistry and physics.

More on rock and mineral ID. Also wanted to do more hands- on inquiry lessons I can use with students.

All 4 sessions seemd to have timing issues/run over time.

Longer classes

Glacial history and resulting soils in Minnesota, surface drainage of Minnesota and Minnesota's potential as a water resource for the northern Midwest of Minnesota.

tips on taking students to a mine or quarry. How to plan a sucessful field investigation like hands on classes!!

More implementation into the classroom

Short Course Survey -Session 1A

Course: Minnesota's Geologic Story

Instructor: Jim Miller

S1. Why did you choose this topic?

Great topic to teach students
 I wanted to learn more about the local geology
 Overview of MN geology(2)
 Good speaker
 I need to explain why and how land is shaped and continues to be reshaped
 Interested in origin of rocks(2)
 Great Instructor
 I traveled this state extensively-it is always great to review this information year to year.
 To understand how the rocks in MN formed and fit together
 He's an excellent instructor-knowledgeable, personable, and organized
 Interested and applicable
 Personal interest
 Wanted to be in the groundwater course
 Review of MN Geology. Sounded like an approach I could use in 8th grade
 Rocks are the basis for my geology unit and relating it to our homes makes it more relevant
 I never had a class on the Precambrian rocks of MN
 To reinforce what I know about MN geology, to learn more, to teach students
 I enjoy Jim Miller's presentation style and I always try to hear him when I can
 Jim Miller
 Great teacher and content I wanted to review
 I heard the presentation before but I wanted a refresher
 Instructor/content interest
 Saw description and liked the "every rock tells a story" format; also appreciate rock samples

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
19	10				29	
66%	34%	0%	0%	0%	3.66	GPA

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
19	8	2			29	
66%	28%	7%	0%	0%	3.59	GPA

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
23	6				29	
79%	21%	0%	0%	0%	3.79	GPA

Comments:

Great hands-on short activity
 Wish there had been more time for the slide show
 Not enough time. I wanted to hear his complete lecture!! Thanks for the rock samples.
 Less time on --- , more on lecture; rocks were a great surprise
 Story in rocks technique is good but as always the pitfall is not getting the total overall story told -
 rushed at the end
 Great specimens

A lot of information in a short period of time, Phew! And then you do it again at the end of the day,

Double Phew!!

Excellent

Great topic with the new academic standards

Too much information in a short amount of time

Informative, helpful - Could have spent several hours learning here. Thank you.

Jim Miller is awesome!

I love the lab that Jim did; I will use this

Thanks for the samples!

Great teaching activity, was engaging and really got into my memory. The lecture made more sense because we'd seen the rocks

Great idea to have pairs tell rock stories from oldest to newest (Suggest time limit though - we ran out of time)

Short Course Survey -Session 1B

Course: Ground Water

Instructor: Scott Alexander

S1. Why did you choose this topic?

Low on my expertise list

I teach a unit on H2O resources

I wanted to learn more about groundwater. Also a very important topic.

Hot topic nationally w/ irrigation, etc.

To become better informed & share with my students

To learn more about this topic

Groundwater is an important resource and needs to be protected; mining causes problems with groundwater so MN needs to know its groundwater

Topic of most interest

Water is important to everyone

Teaching groundwater course next year

Interested in groundwater use and pollution

I teach a groundwater unit. Like new resources

Wanted to know about groundwater

Important to the world

More info on groundwater and surface water

I needed more information on this topic

Wanted teaching ideas for groundwater

Looking for curriculum ideas

Chemistry interest and local groundwater contamination issues

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
5	12	3	0	0	20	
25%	60%	15%	0%	0%	3.10	GPA

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
5	9	5	0	1	20	
25%	45%	25%	0%	5%	2.85	GPA

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
3	12	1	3	1	20	
15%	60%	5%	15%	5%	2.65	GPA

Comments:

Turns out I attended this same presentation in 2010

Time was too short for material, but ppt pictures will be good for classes

Had a tough time answering questioned asked...Handouts for classroom activities not available?

Can't read small info on slides in binder and some are different than on screen. Didn't pace slides or watch time-didn't get thru

Scott was pretty bad. He is a researcher, but was not prepared to present his material. Boring!

Excellent

A bit too technical-didn't have the handouts available that would be most benefical part for teachers

Little to no use to me

Too much on basics - ran out of time before we got to what I didn't already know

Get classroom materials link on website

Short Course Survey -Session 1C

Course: Go West Young Man

Instructor: Cheryl Sill

S1. Why did you choose this topic?

I teach earth science and want stuff to use in my class

Hands-on

Want to teach compass work

Wanted to see how to teach students use of compass

Interested in adding GPS to my classes

Previously attended other topics offered during time slot

Sounded interesting

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
2	6				8	
25%	75%	0%	0%	0%	3.25	GPA

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
5	2				7	
71%	29%	0%	0%	0%	3.71	GPA

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
7	1				8	
88%	13%	0%	0%	0%	3.88	GPA

Comments:

Cheryl did an excellent job. Good resources.

Short Course Survey -Session 1D

Mineral Identification

Instructor: Nancy Nelson

S1. Why did you choose this topic?

Directly applied to classroom topics
 I would like to have more references to mineral properties and uses to include in chemistry classes
 Refresher for teaching
 Interested
 Teaching earth science and need as much help as possible
 Wanted practical info on looking at rocks
 Have had difficulty in the past identifying minerals
 Refresher/practice; anticipate teaching middle school earth sci in the future
 More practice identifying minerals
 More information
 Self-interest, share with students
 Review purposes
 Need to know

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
8	8				16	
50%	50%	0%	0%	0%	3.50	GPA

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
9	7				16	
56%	44%	0%	0%	0%	3.56	GPA

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
11	5				16	
69%	31%	0%	0%	0%	3.69	GPA

Comments:

Not enough time
 Great, needed 2x class time
 Nancy has a wonderful teaching manner, however the teachers were noisy. Two hrs would have been helpful
 This was a GREAT class. Loved the lab work.
 Great!
 Wonderful hands-on lab exercise; wish we could practice identifying more samples
 Needed more time, but very good
 Too short!! Needed more time.

Short Course Survey -Session 2A

Course: Rock Cycle

Instructor: Jeff Price

S1. Why did you choose this topic?

Hoping for new activities

Hands-on example I could try and use

Ideas

Always interested in learning about resources; techniques to use in the lab/classroom

New ideas for Earth Science teaching

Interesting

Wanted basics and overview of rock cycle

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
4	5				9	
44%	56%	0%	0%	0%	3.44	GPA

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
4	5				9	
44%	56%	0%	0%	0%	3.44	GPA

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
4	5				9	
44%	56%	0%	0%	0%	3.44	GPA

Comments:

I've done this activity before - a good one, but not new

My favorite class! - great crayola activity that really illustrates rock cycle

Loved the hands-on exercise; Very knowledgeable. This is the instructor's first time teaching this class;
next time add prepared diagrams and visuals

Great guy

Excellent hands-on experiment, but would have appreciated more step-by-step explanations of what
it meant for rocks (rather than crayons)

Short Course Survey -Session 2B

Course: Shrinking Space and Time

Instructor: Kate Rosok

S1. Why did you choose this topic?

Great classroom labs that I can create in my classroom

To learn about low-cost, easy set-up stream table

Learn more teaching methods using inquiry

Want to complete my stream table unit

Need practical ideas that are not costly

Wanted more info on stream tables

Needed ideas for erosion, stream processes, etc.

Classroom application ideas

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
6	3				9	
67%	33%	0%	0%	0%	3.67	GPA

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
7	2				9	
78%	22%	0%	0%	0%	3.78	GPA

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
7	2				9	
78%	22%	0%	0%	0%	3.78	GPA

Comments:

Love the easy set up of the activity and the operation
 Good ideas/lot's of information
 Great job!
 It was teachers sharing teacher ideas. Very useful

Short Course Survey -Session 2C

Course: Soudan Underground

Instructor: Scott Alexander

S1. Why did you choose this topic?

I was curious about current and potential science projects in the mine
 Interested in Mining and Physics studies
 Interested in the Soudan Mine-after reading an article in MN Conservation
 To learn more on this topic
 The extraterrestrial component
 I wanted to know the scientific uses of the Soudan Mine
 Someone recommended speaker, interesting subject
 Visited the mine
 Topic is of interest
 Interested and applicable
 Personal interest
 I wanted to learn more about the mine - how it was constructed, what it is used for now, etc.
 I knew nothing about Soudan and I wanted to learn
 I have been to the mine and lab several times and always wanted to learn more
 Soudan mine info- in the news with the fire
 Biological aspect

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
14	8				22	
64%	36%	0%	0%	0%	3.64	GPA

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
8	9	5			22	
36%	41%	23%	0%	0%	3.14	GPA

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
11	10	1			22	
50%	45%	5%	0%	0%	3.45	<i>GPA</i>

Comments:

Very biologically oriented and well done. Not what I expected, but good
 The information for this session was newer for me and a little more engaging
 Unexpected, but learned a lot
 Great!
 Excellent speaker
 Excellent talk
 I liked the link between geology and biology, about how one influences the other
 Interesting information added to my knowledge base
 Would love to have access to the pictures in his PPT presentation
 I never thought about geomicrobiology! Fascinating!

Short Course Survey -Session 2D

Course: Roadside Geology of Minnesota

Instructor: Dick Ojakangas

S1. Why did you choose this topic?

Directly applied to classroom topics
 OJ is a great speaker; I incorporate local geology into my class
 Can be used in my classroom
 Personal interest
 This would be a good resource for students
 To bring rocks to the classroom
 Everyone in MN usually drives by rock formations so this is doable for all
 Learn more about identifying rocks and minerals
 Was thinking of using it as a possible source for field trips
 Meet the author
 Personal interest and ability to use with non-science students
 Reason 1 - Dick Ojakangas, a wealth of information. Have his books.
 Want to know more about the geology of the state
 Practical application for everyone
 I enjoy his books and my students have seen some of the roadside sites
 Learn about his book and list to him speak
 General interest
 I thought it would be interesting
 Interested in hearing OJ, have his book
 One of my former profs from UMD. I have his book. I'm interested in "tourist" geology
 Interested in topic
 I have the book and I am a rockhound
 To meet Dick before he stops giving lectures
 Presenter wrote the book
 I own the book and wanted to hear him talk
 Sounded interesting and usefull
 Looking for curriculum ideas
 Knew Dick from UMD as a physics grad student

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
22	9				31	
71%	29%	0%	0%	0%	3.71	GPA

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
18	10	2	1		31	
58%	32%	6%	3%	0%	3.45	GPA

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
25	5	1			31	
81%	16%	3%	0%	0%	3.77	GPA

Comments:

Not what I thought would be covered until time was half over, but so interesting
 More about earth processes than specific rocks and minerals
 The session was more than worth the trip
 Could listen for hours
 Loved it!! I have the book - provide a great overview. Thanks.
 Excellent
 Unique content delivered with sense of humor
 Loved him!
 Very good
 Very funny guy!
 Had to have him sign my book!
 Great
 Very entertaining - I want the book!

Short Course Survey -Session 3A

Course: Mining Sequence

Instructor: Jeff Price

S1. Why did you choose this topic?

I know too little about the factors involved in locating and developing mines-topics of current economic and environmental relevance
 Interest in current mining
 To gain deeper understanding of the mining process
 To learn more on this topic
 Lab activity
 I want to learn more about the process and the present-day impact
 To learn more about the process
 Lack of knowledge about mining
 I know very little about mining
 Curious to learn about it - so I can teach process to students
 Interested in MN future mining
 It sounded interesting
 Curiosity - environment concern
 Content interest

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
10	6				16	
63%	38%	0%	0%	0%	3.63	GPA

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
9	6	1			16	
56%	38%	6%	0%	0%	3.50	GPA

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
10	6				16	
63%	38%	0%	0%	0%	3.63	GPA

Comments:

Really appreciate the classroom activity!
 The activity was appropriate and fun for learning the process - Thanks!
 Great lesson for 8th grade classroom
 Good
 Knew he was teaching to teachers and offered valuable information and some ideas
 Great job - very upbeat and focussed
 I will use this activity in the fall

Short Course Survey -Session 3B

Course: Environmental Permitting

Instructor: Mehgan Blair and Leah Gruhn

S1. Why did you choose this topic?

Topical with Polymet
 I wanted to better understand the nitty gritty of what is involved in opening a mine (pros&cons).
 This will help me be a better citizen
 Current significance
 Local issues with process; to learn more
 Interested in politics and procedure
 Understand how mining is approved/monitored
 Learn more about the permitting process
 I have an interest in environmental decision-making
 Curious
 Personal interest

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
4	6	1			11	
36%	55%	9%	0%	0%	3.27	GPA

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
3	6	1	1		11	
27%	55%	9%	9%	0%	3.00	GPA

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
5	6				11	
45%	55%	0%	0%	0%	3.45	GPA

Comments:

Excellent role play activity

Great

Well-prepared, very interesting topic. The activity would need to be adapted for middle school

Could not find link to use in HS chemistry

Short Course Survey -Session 3C

Course: Everyday Uses of Minerals

Instructor: Ken Reid

S1. Why did you choose this topic?

Relevance

Applied to classroom

To come ups with new ideas/ways to teach about minerals

Liked a course that shows what minerals are used for

Interested, real world applications

Ideas for classroom

Interest in minerals

I need to talk about natural resources in social studies. I bring in a lot of earth science.

Before today, I knew very little about the mining process, and how much dependance there is on mining for everyday conveniences

Most interesting

"Beef" up my mineral unit - make it more life-compatible to my students lives

New ideas for teaching earth science

I use the Mii infor in my geology class, wanted to have more ideas to go along with mine

Interested and applicable

Ideas to emphasize relevance in my teaching

Connect students to uses of minerals

I was not familiar w/ the mining process especially in MN

Thought it would be interesting

Like this topic

Curriculum ideas

Interesting

Wanted to know what common objects are made from minerals

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
7	20	2			29	
24%	69%	7%	0%	0%	3.17	GPA

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
9	16	4			29	
31%	55%	14%	0%	0%	3.17	GPA

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
11	16	1	1		29	
38%	55%	3%	3%	0%	3.28	GPA

Comments:

New material- Thank you! Excited to use the powerpoint and concrete activity
 Real Lifestory, helps put things in perspective for students
 He wasn't a good speaker
 Great presentation on ----of processing, not your academic geology
 Tremendous workshop presentation; very useful
 Not as helpful as I hoped
 Very interesting. He's a valuable resources!
 This was a great presentation
 Would've like to have seen demo and less of him talking about himself
 Very helpful!
 Very good
 Thought the video was a really great approach to looking at "a day in the life". Too much
 lecture overall though.
 Would have liked more hands-on exercises

Short Course Survey -Session 3D

Course: Careers in Geotechnical Engineering

Instructor: Carlos Carranza-Torres

S1. Why did you choose this topic?

Curious about new mining engineering option for geologist & careers in geology are of interest
 to some students
 I wanted several careers in the geotech area
 The new academic standards include engineering
 To get an idea of what type of careers are available so I can talk about them in my classes.
 To give my students an idea of what options they have
 Thought it would be good to have ideas of careers in geology to tell my 8th grade students
 I don't feel like I adequately present what students can do with their earth science knowledge
 in terms of careers
 To get info to help inform my students for career ideas

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
2	4	1	1		8	
25%	50%	13%	13%	0%	2.88	GPA

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
1	2	3	1	1	8	
13%	25%	38%	13%	13%	2.13	GPA

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
3	4	1			8	
38%	50%	13%	0%	0%	3.25	GPA

Comments:

The presentation was more about what geotech engineering is. I wish it was more geared to a high school or middle school student (e.g., by being a geotech eng. You could work "here" doing ____, and making ___ salary

Keep offering sessions on this topic. Man adults and students are unaware of geotech careers

Need more science, but good!

Like to have more of an overview of the types of careers an earth scientist could do and education /prep for these careers

This helped me better understand all the levels involved (and people involved) in something as "simple" as building a structure

Short Course Survey -Session 3E

Course: Training for Mining at MRCTC

Instructor: Bill Parker

S1. Why did you choose this topic?

Try to drive big machinery

Interesting and fun

Seemed most interesting of other choices

Interested in the technology, simulators used for training

I would like to do mining

Looked interesting

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
1	4	2			7	
14%	57%	29%	0%	0%	2.86	GPA

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
1	3	3			7	
14%	43%	43%	0%	0%	2.71	GPA

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
6	1				7	
86%	14%	0%	0%	0%	3.86	GPA

Comments:

Gained better appreciation of skills needed to run huge machines

Bill is Great; I'm thinking of a career change

My favorite, fabulous! Got to drive...

What an energetic instructor. Awesome resource in these simulators

Awesome experience!

Short Course Survey -Session 4A

Course: Metal Potential in Northern MN

Instructor: George Hudak

S1. Why did you choose this topic?

I am interested in increasing my knowledge base about mining
 I teach a unit on MN mining and MN mineral resources
 Interested in the geological terranes
 Interest in current mining
 Find out MN's metal ores other than iron
 To learn more about this topic
 Wondered about effect of mining on BWCAW area
 More geology
 Wanted to know how realistic future production of Ni & Cu and other metals is for MN
 Very interested
 Interested in topic
 Interest and investment in PolyMet
 Curious about new mining possibilities
 I want to be current in news about our mining area
 High interest level
 Understand how these mineral exist in MN
 It ties the geology to the future career , economic, and policy opportunities for my students
 Want to know what to tell students
 Interested and applicable
 Understand MN geology and learn more about research
 My own interest in resources
 It is relevant to me
 Personal interest
 Interested in minerals exploration
 The news as of late has been talking about the Ni-Cu mining potential of the Iron Range
 Interesting
 Seemed interesting

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
20	12	1	1		34	
59%	35%	3%	3%	0%	3.50	GPA

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
15	8	5	5		33	
45%	24%	15%	15%	0%	3.00	GPA

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
28	6				34	
82%	18%	0%	0%	0%	3.82	GPA

Comments:

Passionate!
 Enthusiastic, great presentation, informative and entertaining!
 Too much information that was probably "over" a lot of people's heads

Excellent!
 Very engaging speaker and knowledgeable; really enjoyed this!
 This speaker was excellent, the best- well organized and an excellent speaker. I would listen to any topic he spoke on.
 Too long - went over at end of day and he didn't get to his samples
 High energy and passionate
 It's so difficult to visualize most of the processes which create Cu, Ni, Au; Computer simulations of these processes need to be created
 Excellent speaker
 He was very enthusiastic
 Some info was useful and interesting. Not much transfer to an 8th grade classroom however...
 Went 20 min over.
 Lots of speculation. He is very enthusiastic
 Very knowledgeable and excited/passionate about geology. Nice ppts and graphics
 A little to technical for people at this workshop. Can't use most in classroom. Tried to pack to much in.
 Simply enthusiastic tho!
 A TON OF INFORMATION - a little over-the-head of elementary/middle school/high school Earth Science teachers. Nonetheless, I learned A TON
 Great
 Upbeat, energetic, detailed, forward-looking approach to a timely topic
 Good information. Tough to relate to students. What are some of the minerals used for?
 I like his intensity and passion
 Very good
 Too technical for my ability - would prefer "user-friendly" language, but program was engaging
Too much info, but very interesting
 Very dynamic speaker!
 Too advanced for high school use
 Very good
 Never got to see cool rocks! Went 20 minutes over time-not OK. Super-motivated!
 Don't understand the geoscience vocabulary to understand this and neither would my students.
 Would appreciate hands-on experiments or demos

Short Course Survey -Session 4B

Course: Mineland Reclamation

Instructor: Paul Eger

S1. Why did you choose this topic?

I teach about reclamation and hoped to add information to my unit
 Importance in the community
 Most interesting
 To bring current events/issues into my teaching
 Learn more about reclamation
 I teach about reclamation to my 8th graders and I'm interested in engineering applications
 in Earth science
 To get ideas for classroom activities to tie in with mining
 I always wonder how mines are reclaimed in Minnesota

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>
4	7				11

36%	64%	0%	0%	0%	3.36	<i>GPA</i>
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S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
3	8				11	
27%	73%	0%	0%	0%	3.27	<i>GPA</i>

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
7	4				11	
64%	36%	0%	0%	0%	3.64	<i>GPA</i>

Comments:

Great!
 Good simulation for use in the classroom
 I loved the hands-on stuff!
 Room was hot, claustrophobic

Short Course Survey -Session 4C

Course: Oil: From Source to Spill

Instructor: Dean Moosavi

S1. Why did you choose this topic?

Interest
 Current events- Need info/ideas to teach
 Interested in BP spill and ramifications of it. Liked the hands-on
 Interest, real-world application
 The Gulf Oil spill was of great interest to my class last fall
 Current event with public interest, great deal of media coverage, topic of interest to students
 Ideas for classroom use
 Interested in oil formation, natural resource management, reclamation, economic impacts
 of spill, etc.
 Gulf oil spill
 Importance of oil and the economy
 Recent topic in the news
 I want to know about abiotic oil and the oil spill
 I didn't know much about the Gulf oil spill
 Interest
 Content interest, background to current event
 Oil relevance to science, carbon chemistry, & global warming

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
9	10	1			20	
45%	50%	5%	0%	0%	3.40	<i>GPA</i>

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
9	8	3			20	
45%	40%	15%	0%	0%	3.30	<i>GPA</i>

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
9	10	1			20	
45%	50%	5%	0%	0%	3.40	GPA

Comments:

Great activities!

Hands-on activities are great! And they are new ones to me.

Very interesting topic; great before/after photos and explanation/discussion

Would be very appropriate for a decision case experience for Biology/Ecology/Earth Science students

Hard to follow directions for lab activities

I would have liked to see a discussion about the future of oil and the economy

Tried to share ideas for teaching

Awesome!

I liked having both parts of the session. It was informative and useful. Consider reversing the order.

Fun teacher, inspiring

Short Course Survey -Session 4D

Course: Sand, Gravel and Crushed Stone

Instructor: Steve Kostka

S1. Why did you choose this topic?

Closest to interests

General knowledge

I take students to quarries and discuss the use of aggregates in our area; wanted to supplement that lesson

To learn more about the process

Lack of choices

S2. The short course imparted relevant geoscience content.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
4	3				7	
57%	43%	0%	0%	0%	3.57	GPA

S3. The short course provided content that I could apply to my classroom.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
3	1	3			7	
43%	14%	43%	0%	0%	3.00	GPA

S4. The instructor was prepared, knowledgeable and engaging.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
5	2				7	
71%	29%	0%	0%	0%	3.71	GPA

Comments:

Good refresher on geomorphology

Wish it had an activity I could use - good content though

Excellent

2011 MMEW Evaluation - Resources, Museum Trip, Field Trips

Teacher Resource Survey

R1- Materials within the resource box will of use in my classroom environment

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
38	23	3	0	0	64	
59%	36%	5%	0%	0%	3.55	GPA

R2- The hand lens and pen magnet gifts will be useful additions to my resource collection

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
50	15	0	0	0	65	
77%	23%	0%	0%	0%	3.77	GPA

R3- What other types of materials would you like to see made available through the resources boxes?

Mineral identification key, streak plates, periodic table posters

Text on Roadside Geology, a great resource!

Anything that can be physically used... samples, books, etc.

Compass? And add'l resources for lesson, materials, etc.

Roadside Geology of Minnesota

I think it was very good and have used a kit like the ones we got to teach a class.

More maps

CD of resources- powerpoints, slides in files in the resource book. On website- yea! Educational Goldmine

My first time so this all looks good to me

CD-roms with classroom materials. How to use real world MN data in classrooms

Core samples would be really nice to get (2)

A good topo or county map covering the field trip route, on ?? Stops could be easily plotted.

The geology map of the range(?) Was ?? ??, but difficult to see exactly what we were ??

Lots of small specimens to distribute as rewards, etc. incentives.

I'm happy with the presenters making their powerpoints available to all!

Appreciate all of the resources and posters. Thanks also for resources/powerpoints available on the website

and within the 3 ring binder. As teacher all resources are greatly appreciated.

Any samples to be used in the classroom or lesson plans.

More rock samples with geologist deals

An activity share from participants- just an idea. Roadside geology book would be nice.

Posters, geologic timelines, downloadable powerpoints, field guides, and labelled outcrop photographs,

announcements for other geoscience events such as the MESTA and GSA conferences.

Taconite set. Laminated rock Id sheet for MN

The book on Roadside Geology, Hands on tools/books for middles chool and special ed.

Display of the different tills (Wadena, Superior, Rainy, Des Moines lobes) found in MN.

Rock pick like Jim Miller's

I think if you are going to run out of samples please make sure there is a distinction for teachers

in current service and teacher/s others that aren't.

Strong magnets for kids usage.

Rock ID kits

Mineral/rock identification guides based on physical characteristics, not just hardness.

Good DVD

Electronic copies of lesson teacher attendees have used- perhaps submit one with registration.

Compass, rock hammer

MN rock samples

Examples of some important Mn rocks and minerals.

Fewer old posters from early 90's

Chemical test kits or instructions

Special Event Survey- MN Museum of Mining

SE1. I chose to attend/not attend the optional field trip and picnic to the Mn Museum of Mining because:

I've never been there and wanted to attend. Also wanted to include my family in a workshop event.
 All experiences at MMEW add to my understanding of geosciences and have all been a positive experience.
 To learn more and see more rocks for comparison
 Food, Interesting location
 Was planning to, but after leaving home at 3 am, was exhausted by night.
 When else might I be here to get a personalized tour and learn so much?
 To talk to other attendees and tour the museum.
 Personal interest. Share with students.
 I found the trip to be very good and it is always amazing learning about our past.
 Did not attend- I wanted to explore the fishing possibilities
 History of science graduation standards
 I visited many years ago and want to see it again
 Interesting
 Fun!
 I did not know anyone and wanted to mingle, also I enjoyed seeing the museum.
 To have a chance to socialize with other teachers, and to be able to see the museum.
 Wanted to see the museum
 I've never been there before. And everyone else attended- peer pressure!
 Great magnetic core samples (for purchase) at the gift shop!
 Museum tour/networking with colleagues.
 I am here to learn. All opportunities are welcome. Also spending time with experts and other attendees
 offers additional opportunities for growth and learning.
 I did not attend- networking- I have to eat, never been there- but I was exhausted.
 Network with other teachers- instructors, see the museum, and get a meal
 I needed to eat and socialize. Meet people
 I thought it would be interesting and I haven't been there in years!
 It's a great chance to network with other teachers and it's nice to have an evening activity when I'm away
 from home. This year also offers a unique site.
 I don't know very much about the mining industry past or history
 I had heard it was great and it really is. Quite a resource and treasure.
 It was a time to meet participants and visit one of the sites in the area for tourists which was geologic.
 To eat dinner and see the machinery
 It was an evening activity and I would never have gone on my own.
 History is intriguing to see.
 This was a nice little museum- I didn't know anything about it- thought we were going to Ironworld.
 Never been before.
 It was an opportunity to visit a museum and learn about "behind the scenes" topics.
 I was too tired from the 6 hour drive.
 I'd never been there before.
 Historical interest
 I would learn info about mining and it's great to network.
 I chose not to attend and spent time with my family.
 I thought it would be interesting and a chance to network.
 Group togetherness, science info, food, nice way to spend an evening.
 I commuted from home near Duluth.
 An interest in history of iron range.
 Pit tours
 I wanted to see the big trucks again. Good photo ops.
 Could be interesting/ collegiality!! Free food!
 Dinner, something to do

SE2. The displays at the Musuem contributed to my understanding of the history of mining along the Mesabi Range

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
23	25	3	1	0	52	
44%	48%	6%	2%	0%	3.35	GPA

SE3- The content available at the Museum was applicable to my educational environment.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
15	28	8	0	0	51	
29%	55%	16%	0%	0%	3.14	GPA

SE4- Including an optional field trip/activity on Tuesday night after the short courses adds to the strength of the works!

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
30	17	6	0	0	53	
57%	32%	11%	0%	0%	3.45	GPA

SE5- The food provided at the special event was appealing and sufficient

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
30	20	1	0	0	51	
59%	39%	2%	0%	0%	3.57	GPA

Comments

The musuem was "OK"- not great...

Very nice meal! Thank you!

On my previous survey I said I was neutral about the date of MMEW, but the weather was never a problem for past MMEW that I've attended at the beginning of August. I also like it then as it energizes me for the new school year. Whenever it is I make all efforts to attend because its an exceptional workshop.

Exceptional, very good vender

Nice place to go

The guides made a huge difference. They made the museum come alive! Also more fresh options with the food.

Though of interest, the exhibits were mediocre

Enjoyed evening. Nice musuem. Excellent volunteers at musuem. Full of knowledge.

Tour guide was very knowledgeable and enthisiastic, adds to the experience

Nice to be inside- thank you! I loved the tours.

This was a great cap to the first days activities- what a nice dinner also!

Food was amazing! Very good and enjoyed the hospitality.

Super!

Tour guides were excellent! They went way above and beyond in showing their expertise and their enthusiasm.

Very good. Italian sausage, lasagna and vegetable were excellent.

Thank you

The food this was very good!

The workers/guides were awesome and so helpful.

That makes it a very long day.

Good!

Great food!

Musuem was great! Great tour guides too.

Field trip 1 Survey- LTV Taconite Mine & PolyMet Mining Operations

F1.1- Which outcrop or activity did you find the most interesting and why?

Getting close to drum rollers

Trip to Erie/LTV/PolyMet site + history

PolyMet processing plant core observation- to learn about the taconite processing. Lower cherty member of Biwabik formation- looking at examples and discussion

Stromatolites- connection to biology. Gabbro-strawberries along the trail were an added bonus.

PolyMet mine- amazed by the efforts of previous generations- how they were able to accomplish

Stop at Cu-Ni outcrop to see how tiny the evidence is that can translate into a significant deposit

Visiting the mills

Most interesting was the stromatolite beds because it gives such a unique view into life at that time

Stromatolite fossils- I like the link between life and earth science and between stromatolites and iron formation.

Inside crushing building. All were good.

All outdoor activities

Stromatolites- unique and impressive

I found all of them interesting and it is very hard to pick because all of them were so good.

Lower cherty, the stromatolites and unconformity were fascinating.

Stromatolites produced O₂ needed

Lower cherty and slaty- Most geology

Stromatolites, did not know much about them

Looking over the PolyMet operations

The stromatolites- 2nd to last stop.

The tailings basin and the crusher facility- just to be able to see the amazing scale of it all.

1-8 with algal variety

I enjoyed stop 1-5 for the synerisis cracks- new term for me- and for the ankerite. Was Giants Range granite at this site as well? Seriously, I enjoyed the last stop at the railroad tracks.

The troctolite and symbiotic were new minerals to me. Mark and Jim were most helpful.

We have to pick? The "ghost" mine plant was very impressive/awesome, but I really enjoyed the stromatolites.

Algal formation over time, visible very interesting

1-8 Mounds of algal stromatolites

Sample collection

Buildings and pickup

Stromatolites- beautiful could see the shapes- good exposure- see X-section- see mounds very cool!

First stop= looking for works- seeing different members.

Stromatolites were the most interesting

The red stromatolites and the Giants Range granite.

Stromatolites at PolyMet- uniqueness and significance in earth history.

Looking for stromatolites to increase my classroom collection. Checking out the crushers and collectors at the LTV mine to show examples of engineering in earth science.

Reading landscape at real mine

Stop 1-10 Wetlegs copper-nickel deposit. I was able to hear and see the presenters there. Very interesting.

The stromatolite mound because pictures can be used in class. Also the jasper stromatolites will good for students to see the layers.

Loved the stromatolite field!

Lower cherty - samples

All outcrops

I enjoyed touring the mine especially the crusher!

stromatolites were interesting. I had never seen them before.

1.8- formation very visual

Stromatolite site 1-9? Glacial evidence.

Stromatolites- because they are the coolest rocks ever!

Stop 1-5 iron formations

The pillows, stromatolites and the huge crack caused by the blasting.

Where we were able to get samples of stromatolites and the other place of seeing them in place

(non-hammer place) Thank Polymet for allowing us to see them!

Stromatolites, liked the polymet tour of the plant not in use- great way to hear and see.

The stromatolites were great! I learned about 2 new theories of the formation of Fe.

Stop 1-8- Great example of stromatolites.

Stop 1-8- Stromatolites good samples.

PolyMet mine/core samples

Algal Mounds- Wow!

Touring the mills.

Mining cores with explanation

Split: Polymet core discussion and stromatolite stop.

Stromatolite- unique

IDEA drilling

Old mine was interesting to thik about how all of it was engineered.

The plant- awesome fortress of human endeavors

1-5, 1-7

F1.2 Schedule/pacing of the field trip was appropriate for understanding of the geology and mining operations in the a

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
19	31	5	10	0	65	
29%	48%	8%	15%	0%	2.91	GPA

F1.3- The bus transportation, breaks, food and beverages provided were well planned.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
30	30	2	5	0	67	
45%	45%	3%	7%	0%	3.27	GPA

F1.4- The field trip leaders and representatives of the mining companies provided clear descriptions and insights into the geology and mining processes discussed on the field trip

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
32	27	3	4	0	66	
48%	41%	5%	6%	0%	3.32	GPA

F1.5- The cumulative activities of the field trip gave a balanced perspective and understanding of the geologic, mining and environmental issues relevant to these sites.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
25	29	8	4	0	66	
38%	44%	12%	6%	0%	3.14	GPA

F1.6- the content of the field trip was directly relevant to the curricular needs of my educational environment

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
19	30	14	3	0	66	
29%	45%	21%	5%	0%	2.98	GPA

Comments:

Too long lectures- like to see and do. Recycle at lunch? It's 2011!

I believe it would have been beneficial to review taconite production process prior to Eric Mining trip to site.

While I was waiting Tues night at the Museum of mining a great DVD/tape was playing that explained the process well. The gift shop clerk said she thought originally the tape was used as an employee orientation for one of the taconite plants. there was a stack of DVD/CD's next to the TV- I assume copies. I think the group would have benefitted by viewing this Wed before trip.

I've yet to make a direct connection from day one.

1. Speakers should be provided with microphones and speaker/amplifiers that hook on to them built so that 70 participants can easily understand them. Such technology is needed in such large groups.
2. Rules at sites should be explained clearly in advance, not after someone had committed an infraction.

Way too much time spent at lunch with core samples. Little is any mention of environmental issues.

The polymet people did not handle the large group well. Explanations were focused on very

small groups, rather than addressing everyone.

We didn't hear much about the environmental issues. The geology and mining aspects were well covered and the leaders were extremely helpful in answering questions and providing explanations. I am impressed.

Bit too long at some sites. Need to limit time for individual questions (people will ask questions forever).

With a visit to active mine tomorrow I question the value of LTV. Soudan area would have been a better choice.

Student- I learned a lot and even though I am not a teacher and am not planning on just teaching for at least 15 years, I do volunteer and teach small geology workshops/classes for middle school and elementary schools with TGE (Teen Geological Association) and will be using a lot of the information I learned in my classes and while teaching at schools in Rapid City.

I've been here twice before -still learning things.

Interesting

The mine tour could have moved a bit faster. Also you can be more clear: 1) what to bring- raingear, cameras, rock hammers, 2) rules and expectations were not made clear. I would like to be treated as a professional. I also had a problem with the lack of access to bathroom with running water. I had a unique but not unusual situation, but I needed to wash my hands and use the restroom often.

It would be nice to have agreement from all leaders on what to touch and what not to touch.

Field trip leaders/guides are excellent, feel privileged to learn from these experts!

It was a little beyond me. Parts were hard to understand so I couldn't teach it to 6-12 kids. But people were very helpful when asked questions. I'd like an animation of some kind to show kids just how MN has changed tectonically over 3 billion years.

Thanks for stopping to let us collect specimens

I found Rich to be slightly rude with people and very hard to understand. Mark was also hard to understand.

Could there be a better way of explaining maps? Hard to understand.

I was happy to see the stacked quarts due to the SIE. The huge marble erratic. Jim Miller is amazing.

Well done. This is the greatest strength of this workshop

Our guest speakers need to remember to speak up, define jargon/abbreviations and speak more slowly.

I wanted to hear all they had to say.

Too advanced unfortunately (but interesting)

Spent too much time at Polymet. Did not like standing to eat lunch- poor nutrition (other than apple).

Very hard to hear in several places, esp. indoors. Trips seemed very pro-mining overall. Did not hear about environmental impact of operations here. Not directly relevant in my setting. There were a lot of wonderful highlights to the field experiences. However, it was frustrating at times to not know what was happening or what was expected. In such a large group, it was difficult to see and hear the presenters, esp. by the larger mining machinery. Also I know there are certain things that can't be controlled- i.e. the weather! but we arrived back 30 minutes past our scheduled return time. That is not professional or respectful. Please be mindful of scheduled times.

Even with the rain it was a successful day. The geologists were very helpful.

Too long at Polymet (maybe that was weather related). Be conscious of more bathroom breaks and time for (we have a wide variety of ages elderly and pregnant). When we leave buses- tell us how long we will be there- then I can judge personal needs etc.

Some of the stops were so slow. I ended up going back to the bus early most of the time.

There was a great amount of assumed knowledge of the iron range. Which for some was troublesome.

Having set expectations for each stop, and telling us them before we exit the bus would have been helpful. Also having smaller groups would have kept more of us engaged in the talks. The trips seemed a little disjointed as well, maybe a question pertaining to what we will see and then allow us to make our own observations and then ask questions of a geologist.

The tour will help me explain the process better to students. The outcrops were liked also.

Way too much time spent at each stop. Seemed disorganized. Talks should have been loud and to all. I did get a better understanding of the mining process but got frustrated trying to hear/get close enough/ get to the place before the knowledgeable ones stopped their presentations. I would have liked more direction at each stop such as amount of time planned at each and whether hard hats, glasses, or neither were needed. I was chastized and accused of trying to get away with not wearing a hard hat and I was simply unaware of needing them at that stop. Bus guide was not always clear/direct.

Due to the weather condition and trying to keep all of us dry, the building tour became tedious- standing around, not knowing where the speakers were hearing difficulties and coming down the stair

from the crusher was dangerous- someone should have been at the top with flashlight. As always Mark and Jim are tremendous and make it fun and educational.

Bathroom breaks and information needed to be more frequent.

Too much standing around listening to people ramble. The group was too large.

at polymet;s building the tour was difficult to hear and it did not move along (it was too slow!)

Weak on environmental issues.

I learned more on the bus from discussions with Mark and Dean than I did from the planned presentations.

They were good guys. Mark had great additional information.

Great geology with great mining. Geology is much better than last year.

What a fun valuable day. It will impact my classroom. Seemed very pro mining. Would like to learn more about that they (PolyMet) will do with the waste. I feel some credibility was lost when no discussing all sides of the issue equally.

I wish there had been a succinct general outline of the Cu, NI, PGE metal extraction process including relevance and manipulations of pH etc. I felt I got bits and pieces without a clear continuous perspective of the process. It was frustrating to have a large group struggling to hear knowledgeable speakers due to individuals on the side" chattering, another knowledgeable person answering an individual's question.

Please protect the main groups ability to hear.

The presentation was clearly pro-mining and did not adequately discuss/cover the environmental impacts/concerns with the Polymet operation, even when pressed about sulfur and sulfuric acid.

I'm stretching to find relevant chemistry and physics in much depth. But it is there!

I'll try something for the lesson plans. Thanks for the inspiration.

Schedule appropriate, pacing slow. Obviously weather was a factor. I was bored- too much time and standing around at stops up until lunch. Consider announcing: 1 how long away from the bus, 2 equipment need 3 rock hammer and collecting rules, 4 safety considerations before disembarking bus.

I got yelled at for being curious and didn't know I was breaking a rule.

Field Trip 2 survey- United Taconite Facilities, Idea Drilling and Geology of the Quad Cities

F.2.1- Which outcrop or activity did you find the most interesting and why?

Blast, active plant tour

Driving down in the mine- seeing how huge it is!

I found all of them interesting. I liked the mine the best.

The open pit mine

The blast and stromatolites once in a lifetime stuff

The blast- its not something we get to see in another setting

United taconite- I've never been to a mine in operation and the blast was a special event.

Idea drilling- it was nice to see how things worked for drilling- we could get up close to machinery and touch it.

Going in the mine and of course the blast

Tour of cliffs was awesome! Taconite processing plant.

The blast- was neat to see and experience

The stromatolite layer/ plus kaboom!

Whole day- blast

The blast, also the tour of Thunderbird

The blast! Who doesn't like an explosion!!

Blasting! Any need to explain?

All good

Watching the blast- just cool, Seeing the drilling platform, touring all of the mine both indoors and outdoors, learning more about the whole process and collect a few samples.

Mine blast- unique, others great too.

the mine tour and blast was a great experience

open pit tour and blasting

Taconite mine - new

The blast. Besides the cold, rain and wind it was great!

The blast at the mine- unique. UTAC tour- interesting to see the process

UTAC facility tour- impressive process, scale and efficiency

Processing plant

Thunderbird mine was great to get stratification. Also the algae fossils.

The natural ore outcrop was interesting

UC2? Original ore and beautiful jasper

The blast! Who doesn't like an explosion!!

I enjoyed all stops. Each one had its own unique characteristics. The blast is always very fun to see!

Plant tour

This comment refers to field trip 1 survey- Observing (not touching) the various drill core samples from the different layers w/in the same site was more than fascinating!

Thanks for having us go down in the pit- see the "big picture" was perfect.

Watching the blast.

Place where we collected the jasper. Beautiful rock.

the blast! Who doesn't like an explosion!!

Blowing up the mine!

Mine blowing up

The trip in the mine-seeing the layers in person helps me understand why there is so much waste in mining. All.

I loved the entire day1 tour, going to the pit, blast.

I very much enjoyed touring the Fairlane Taconite processing plant (United Taconite) Great opportunity to see a major manufacturing site.

Cliffs Fairlane taconite plant. Yesterday's trip to the 'ghost' plant was very helpful when visiting this site.

The mine-it was interesting to have the layers pointed out along with the handout. The mine was so immense. The plant was also very good.

The Blast! The only part of the mining process I hadn't seen before.

Polymet tour- it was a unique opportunity to see this process and to understand it better.

Blast/Taconite plant

Bottom of the pit seeing the 7/6 layer and the stuff above.

Fairlane Facility

Thunderbird mine- I had previously toured a taconite plant but this was my first experience of a working mine blast was great but sense of scope even better.

Learning about and witnessing blast- new info for me regarding amounts of explosives etc.

The blast! Awesome!

Drilling, I thought it was very interesting

Physics of controlling blast waves to direct away from Virginia

I enjoyed the stops in the mine the most for the hands on view and rock picking.

F2.2- The schedule/pacing of the field trips was appropriate for gaining understanding of the outcrops and mine facilities

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
28	29	1	1	0	59	
47%	49%	2%	2%	0%	3.42	GPA

F2.3- the bus transportation, breaks, food and beverages provided were well planned.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
28	28	1	2	0	59	
47%	47%	2%	3%	0%	3.39	GPA

F2.4- The field trip leaders and representatives of the mining companies provided clear descriptions and insights into the rock outcrops and mining processes discussed on the trip.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
42	16	1	1	0	60	
70%	27%	2%	2%	0%	3.65	GPA

F2.5- The cumulative activities of the field trip gave a balanced perspective and understanding of the geologic, mining and environmental issues relevant to these sites.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
30	23	5	2	0	60	
50%	38%	8%	3%	0%	3.35	GPA

F2.6- The content of the field trip was directly relevant to the curricular needs of my educational environment.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
22	27	9	0	0	58	
38%	47%	16%	0%	0%	3.22	GPA

Comments

Eating outside-need to have plan B for rain. Recycle- It's 2011! Have pop and water on bus. AM and PM break
More environmental and how all three work together. Again bathroom issue, but I do understand the problems.
Keep the two field days in the workshop. We can't duplicate this experience in any other way. This is what
people enjoy when they return to MMEW for multiple years.

Please! More chances to see how things work, processed etc. All of the technical terminology was exhausting
and over our heads. Maybe have two directions one for those who want the geologic formation
information, and one for those who want to be able to see the machinery up close.

Nice to see processes from beginning to end.

Very good but wish the weather cooperated.

Very well planned

This day is a keeper with this available. Day 1 could focus on geology and day 2 on mining.

No bathrooms/running water is hard. Eating in the rain not ideal. Great presenters today- Peter and Jeff super
clear information. Didn't really talk about environmental concerns mostly about mining process.

A great day again! I liked being able to get behind the scenes and do the tours that the public doesn't get.
It was good to hear about the education experience, background of the people who were hired.

Great mine tour! Great job workshop organizers!

The taconite processing plant tour will really help me explain the process this fall.

Suggest time limits, so that no stops have to be deleted. (I like the natural outcroppings)

Today's tours gave a good understanding of iron mining in MN from ground to refined/smelted ore-metal.
the blast was very interesting

Watch time- again. Better communication- how long, what's the plan, why we're waiting, etc.

We can't control the weather... but I must say, I was glad it was cool and a bit rainy for the United Taconite
Mine Tour- with the high temps inside- it was sure refreshing making contact with the blustery outside-
a nice welcomed addition to the trip! All the workers at the mine were firendly and adapted well to
having tourists hover over their shoulders and machines.

I like blasting. Thanks for putting this all together.

Needed more bathroom breaks and place to wash hands when we ate lunch.

Except for the bearded guy from polymet

Today's adventure operated more smoothly than yesterday's. Even if we had to spend less time at say each
'pit' stop so we could see the other field trip places, I would have liked that.

Just the inherent problem of being able to hear in the plant.

Blast was an exceptional experience and the trip to the bottem of mine to see actual products was great.

Not much about environmental issues.

Environmental issues are not fully explained. For example, the volume of H2O used in taconite process
and impact on St. Louis river.

Physics/chem teacher, but unclear chemistry of precipitates

The blast was very cool. The tour groups were too large for everyone to be engaged, be able to see and hear.

Closure Survey

C1- The MMEW workshop is a great value for K-12 earth science teachers.

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
49	10	0	0	0	59	
83%	17%	0%	0%	0%	3.83	GPA

C2- The information gained from the short courses will be valuable to my teaching

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
27	31	1	0	0	59	
46%	53%	2%	0%	0%	3.44	GPA

C3- the information gained from the field trips will be valuable to my teaching

<u>SA</u>	<u>A</u>	<u>N</u>	<u>D</u>	<u>SD</u>	<u>Total</u>	
35	22	2	0	0	59	
59%	37%	3%	0%	0%	3.56	GPA

C4- Please provide some final suggestions on how to improve this workshop:

Appreciate cold water, cold cereal for breakfast w/ apples, oranges and bananas? Great workshop I always speak highly of it.

I really liked splitting up the group today!! Much better for hearing and seeing things. I realize that it is more planning but it was so much better. Thanks for a great workshop.

Checklist for what to bring- ooption to bring own safety glasses. Overall well planned and very worthwhile.

To have one person on each bus who communicates clearly what we are looking at at each stop and what we should or shouldn't bring with us. More than once there was some confusion on what we could or could not bring and it caused frustration for those people caught unprepared for that location

I like the variety and change of location throughout MN. Size of group is nice about 80 people. Get any bigger and we wouldn't have as much access to the experts as we do now.

Awesome workshop, thank you to all of the volunteers.

Keep the yearly offering but in early to mid or late July at the latest. Date conflicted with the (TIMES for two weeks) this year summer 2011. As well as most other summer teacher training that were also offered in mid- June 2011.

Other food than donuts for continental breakfast.

This was well planned and an exciting time for me. I really enjoyed getting in the field and learning more about MN rocks, it helps me.

A teacher share session in the short course offerings might be of value. Require each attendee to this session to bring 30 copies and an electronic copy. If you have a computer in the room and each brings a flash drive a master files could be created and shared.

Time management- communicate timelines in writing and stick to them. Communication- some presenters were great- Mark, Jim, Jeff, Peter, others were hard to hear/understand. Jargon- There was a lot of technical jargon far beyond middle school science. Invite people to bring own food or improve choices.

Perhaps the keynote speaker speech could be a presentation on the geology that will be covered and that will be seen on the field trips. Perhaps teacher could submit a lesson plan/activity /recommended books or readings prior to the event. The lessons could be put on the website and pape copies could be available for teachers to look over during the breaks. Hot water for tea. Slag with coffe T-shirts for sale MMEW- it's a blast, or MMEW- minings a blast, or MMEW- geology's a blast. Perhaps more integration of applicable standards?

Not much talking about environmental problems and reclamation. They are ruining a lot of resources and it seems like there are very few employees. Are all profits going overseas to investors and not getting into the local economy?

Thanks for all of your hard work and time and effort to put together this wonderful educational workshop. Next summer southern MN- sedimentary rocks -do it the same week. Super 8 was a very nice motel clean an had a good breakfast and reasonable for what they offer.

Some hot chocolate when its cold, ice cream when its not.

Less doughnuts

I love it, keep it going!

The workshop was great- good speakers and fun field trips. Breakfast shouldn't only be doughnuts- but since many folks might have gone to other breakfast options, maybe it was breakfast dessert.

None- well done, thank you.

Keep the workshop in June so information can be inserted to the new school year more easily. Also temperatures and bugs were fewer- of course the rain helped.

Have expectations clearly laid out before we empty the bus.

Explaining our stops before we get there is always helpful- where are we, what are we going to do, how long will we be here, what should you take? Need lots of collecting bags and wet wipes for hands.

Thank you for a fun workshop. Point out interesting things as we drive.

Photos would be nice. I'm not sure mine will be worth showing to my students. Maybe a way to post and share?

Please be on time! Keep things and people moving. This was a great time! Please don't put lettuce on sandwiches- it makes them soggy.

One day longer with fewer stops per day which would allow for all planned stops to be seen. A suggested list of supplies/tools to bring for the workshop that may be needed.

This was overall a great workshop and I would recommend it to friends, but I felt the organization was lacking.

Confusion on meals and a place to eat it, lack of bathroom facilities on field trips, lack of clear direction presentations in the large room were hard to see even from mid-way back- presenters seemed to be directing information at a level higher than the average middle school/high school earth science teacher.

Thank you for paying attention to suggestions from past years- everything continues to improve from year to year!!

Request better(warmer, dryer) weather. Rock bags, wet wipes for cleaning lunch.

Bathroom breaks. Place to wash hands before lunch. Place to sit while eating lunch. Need someone to verbalize what we will see at each stop as well as how long we will be there to more efficiently.

Talk to the weatherman? Thank you.

The lunch sandwiches were soggy both days and oranges are hard to eat with dirty hands - hand wipes!!

Advertise more!

Remind this year's attendees of the dates in March!

Less technical language...

Internet site to share photo's after (week or so) event.

You should have someone maybe graduate assistants take pictures of all the activities and burn a CD to be sent to all participants or a power point that can be accessed online. That way we could share more w/ our students. It's difficult to take quality pictures and listen to our instructors at the same time!
marjorie.ostgaard@marshall.k12.mn.us Also have you folks thought about going to SMSU, Marshall, for a session. We have sites at Pipestone and Granite Falls that are interesting. Also you could check out the Wind museum in Lake Benton. You can call me and I'll try to help get the connection.

I can't think of anything

Winona next year!

This is a great workshop 2 days of field trips make this very worthwhile.

I felt that with a lot of concerns publicized about Polymet and the copper industry this concerns could be addressed. It seems a lot was hidden from the teachers about the concerns with copper and nickel mining. I don't think politics and science should mix.

Protect the ability of people in a large group to hear. In an effort to perhaps prevent opposition to Cu, Ni, PGE

I feel we were given only partial information. More direct facts, numbers, quantities would provide objective food for discussion and analysis. I do not have enough information from which to defend or object to Cu, Ni, PGE mining.

Opportunity for more short courses- it is tough to pick and choose and know there are good topics that I had to miss.

Hard to hear instructions past 1st half of the bus, handwipes for hand clean up.

More hands on classroom sessions.

Relevance for other sciences- have a leader of session for physics/chem. I'm ingenious but a little help would be nice. So far... Fe_2O_3 to Fe_3O_4 plus O_2 Fe ions and CO_3 goes to FeCO_3 as a precipitate vs. silicates depending on pH. I'll google the rest.