



Building an Appreciation of Watersheds: Informal Science Education Summit

A Summary of the February 10th, 2005 Meeting



The Summit was developed in partnership with:



Land Information Access Association

Interlochen Public Radio

Water Studies Institute,
Northwestern Michigan College

Great Lakes Children's Museum

The National Science Foundation

“This material is based upon work supported by the National Science Foundation under Grant No. ESI-0431707. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.”



Table Of Contents

Introduction and Overview.....	ii
Goals of the Summit.....	1
Organization of the Summit.....	1
Summary of Findings.....	2
Breakout Discussion #1 <i>Topic: Strategic Impact & Audience</i>	3
Breakout Discussion #2 <i>Topic: Innovation in ISE Programs & Activities</i>	6
Breakout Discussion #3 <i>Topic: Collaboration & Partnership Building</i>	8
Closing Discussion.....	10
List of Participants.....	12

Introduction and Overview

On a sunny Thursday in February, with a panoramic view of Lake Michigan fittingly framed in the huge windows of the Hagerty Center, home of Northwestern Michigan College's Water Studies Institute, a conversation on watershed education began. More than 40 representatives* from a diverse mix of organizations -- science educators, non-profit organizations, water resource researchers, advocacy groups, technology providers and youth advocacy groups spent the day in a Summit about the potential to strengthen informal science education in the Grand Traverse region.

The Summit, supported by a grant to *Land Information Access Association* (LIAA) from the *National Science Foundation* (NSF), was part of an effort to explore new ways of increasing informal learning about the function and values of watersheds in our communities. The Summit was convened by four core partners in the NSF planning grant: *LIAA*, *Interlochen Public Radio*, the *Water Studies Institute at Northwestern Michigan College* and the *Great Lakes Children's Museum*.

About one quarter of the Summit participants were members of a core advisory committee made up of the NSF planning grant partners. The rest of the attendees responded to the invitation because of their self-identified strong interest. Five high school students and a recent college graduate also attended, providing a provocative youth voice to the day's proceedings. Two evaluators, Dawn Huntwork and Mark St. John of Inverness Research Associates, spent the day observing the process in order to offer their expert perspective on the Summit and provide help with front-end evaluation for LIAA's subsequent NSF proposal.

Led by skilled facilitators, the Summit participants quickly established rapport. Amid palpable energy-replenished continually with muffins, juice, executive box lunches, chocolate mints and nuts-they turned to the tasks at hand: *mobilizing* to improve understanding of ISE, *exploring* innovative ideas and *stimulating* collaborative relationships.

This Summit Report is intended as a review of what was discussed in the breakout sessions, as a compilation of ideas and suggestions, and as an examination of the interest and commitment of the 43 participants. It is offered as an executive summary of the day in the interest of keeping the conversation going.

*I have come to
expect that
something useful
occurs if I link up
people, units, or
tasks, even though
I cannot determine
precise outcomes.*

- Margaret Wheatly,

Leadership and the

New Science

*Complete contact information for all of the organizations with representatives at the Summit, presentations of each Summit speaker and notes compiled from the myriad flip charts for each breakout session can be retrieved by logging on to <http://liaa.info/soundscapes>.

Goals of the Summit

The Summit was initially perceived as a vehicle to uncover information on how the missions and expertise of local and regional organizations could be brought to bear on a specific project: Listening to the River**, but the Summit Planning Committee changed course at mid-stream. We realized it would be more meaningful to participants to focus on the entire watershed. The goals became:

- To offer information on National Science Foundation Informal Science Education guidelines to area organizations working with water resources, science, youth and technology;
- To facilitate a discussion of what local and regional organizations are doing and document the activities that successfully connect kids & community to the watershed/Boardman River;
- To create and stimulate partnerships among the organizations; and
- To find out about sources of funding for informal science education and youth programs.



** [Listening to the River](#) is an innovative NSF planning grant project to capture, document and broadcast the sights and sounds associated with the Boardman River from its headwaters in Kalkaska County to its mouth at the West Arm of Grand Traverse Bay.

Organization of the Summit

We focused on these goals through a series of mini-lectures interspersed with group breakout sessions. Participants were sorted into pre-assigned discussion groups to assure a diverse mix of experience and points of view in each. The groups were exemplified by watershed wildlife icons: duck, geese, fish, heron, turtle, and hawk. (*Comments from facilitators such as, "All ducks need to be ready to fly in 5 minutes", and, "Gather round, Geese," made for some of the lighter moments of the day.*)



Morning

The morning opened with a welcome and introductions by Dr. Joe VanderMeulen, Executive Director of Land Information Access Institute. He challenged the participants to accomplish four tasks over the course of the day:

1. Meet new people and build new connections,
2. Contribute your ideas and information to this discussion.
3. Share your points of view on innovative programs and opportunities for collaboration; and
4. Learn something - come away with something new.

Joe was followed by two brief presentations designed to frame the subsequent work of putting informal science education programs and practices into play in the watershed:

- "What Do We Mean by ISE" was presented by Dr. Mary Whitmore, Executive Director of See-North in Petoskey, MI. She gave an excellent introduction to ISE, its definitions, applications, relationship to formal science, and ended with a call to reflect on the potential depth of each specific ISE initiative we create.
- "What's Your Role in the Watershed," presented by Marlene J. Flaherty, Executive Director of Americana Foundation in Novi, MI, stimulated participants to think beyond the geographic and political boundaries of a watershed to build and share community responsibility for its care.

Before lunch, the small group work began, starting with a facilitated breakout session, Strategic Impact and Audiences, followed by reporting of key responses from each of the six breakout groups.

Afternoon

Dr. Mark St. John of Inverness Research Associates offered a short, but rich, PowerPoint overview on the functions of evaluation and about ways to think about ISE, titled *Some Thoughts about Evaluating NSF's Investments in Informal Science Education*."

A breakout session on Innovation in ISE Programs was followed by a Gallery Walk to browse each group's work and add sticky note comments.

The 3rd group reflection of the day dealt with Collaboration and Partnership Building, and was again followed by a Gallery Walk.

The Summit wrapped up with an integrating discussion, "Lessons Learned from the Summit", led by Dr. Marguerite Cotto, VP for Lifelong Learning at Northwestern Michigan college, Traverse City, Michigan.

Summary of Findings

The balance of this report is an attempt to highlight the central themes, key words, common threads and recurring suggestions in the three main areas of questioning:

1. Strategic Impact and Audience
2. Innovation
3. Collaboration

Breakout Discussion #1

Topic: Strategic Impact & Audience

Q1. Tell a little about how your organization fulfills a need for informal education in the community.

After round-robin introductions, the initial exchanges in each group gathered momentum and became an outpouring of information about favorite projects. Over the course of the day, contributions from the various “(con)tributary” organizations gurgled, gushed and grew into an astounding, tumbling “river” of information, confirming two suspicions we had during the planning for the day:

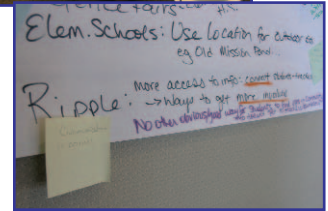
1. The Summit would unearth an extensive inventory of local and regional programs and projects that were driven by informal science education; and
2. People from various parts and aspects of the watershed- even those working on similar field experiences-were not completely aware of what others were doing.

The chance to network was enthusiastically welcomed by everyone at the Summit. One person said, “The networking was great! I really enjoyed learning what others are doing and how I can help them.” Another said, “Good, positive energy...a good cross-section of people.”

Participants named current programs and projects ranging from extending formal science education out into the field such as the Water Studies Institute's Ripple project and Traverse City Schools' magnet program (Sci-Ma-Tech) internships, to science in the environment encounters sponsored by nature centers that draw in visitors one family or student group at a time, and watershed-specific Great Lake's Children's Museum exhibits like "Waves of Wonder" that attract thousands of visitors.

It is difficult to summarize the list -- a scatter graph might be more in order, but here's a look at how programs could be grouped into several categories:

- Hands-on environmental programs at nature centers (Ex: Animal Room, Tortoise at Raven Hill Nature Center, Optimist Club's center on Beitner Creek);
- Discovery field trips (such as Discovery Hikes led by Grand Traverse Conservation District educators and Inland Seas' on-board science investigations);
- Large-scale celebrations of "place" like Bay Day and RiverFest;
- Field trips with a specific research component (Ex: Tip of the Mitt Water Council's "Bio Blitz" and the Grand Traverse Band of Ottawa and Chippewa Indians' water sampling activities, Audubon's Bird Count);
- Community service focus through schools, scouts and community organizations - most carrying an incentive of credit, completion of a certificate or badge, and resume building;



- Outreach programs into schools like Clinch Park Zoo's "Touch a Snake";
- Sweeping initiatives with regional, state or national impact (Ex. Department of Environmental Quality's efforts at networking, web site development and funding clearinghouse)

Q1A.

Students: What role or contribution has informal education played in the out-of-school programs/activities you participate in (especially science-related programs)?

Students were a welcome addition to the day, sharing equally in group conversations and freely giving voice to their opinions. Several mentioned how much they liked talking with the adults and sharing their views with them. Because the invited students had already been involved in science programs, their reflections provided insight into what got them into it in the first place. They cited opportunities to do labs, meeting science "experts" on location, having people come to them in class to recruit, seeing traveling exhibits, hands-on experiences and the possibility of college credit for work as the decisive "sparks" for their interest in out-of-school programs.

Q2.

How do you identify (or view) the need for your programs, particularly as they relate to the watershed?

Rather than emphasizing the processes implied in the "how" portion of the question, most groups listed needs they perceived as critical to developing the value of the watershed and understanding of the "bio-region". The responses were remarkably congruent. A number of people in each group wanted to build awareness and understanding of watershed issues toward the idea "we all own the watershed." Stewardship was a recurring theme, as was the need to involve students and younger children so there is a lasting impact and sustainability.

The idea of breaking through artificial boundaries surfaced over and over again. There was talk of political boundaries, of forging links between communities, and of the need to pay attention to intergenerational activities.

Participants especially expressed interest in paying much closer attention to the difference in youth and adult perspectives. Comments like, "What do kids see versus what we, as adults, see?", "...to get a fresh perspective", and "let students choose what they do" popped up repeatedly. *[It's interesting to note several of the teens' responses to adult ideas posted on flip charts during the Gallery Walks. They pasted sticky notes bearing cryptic commentary like "Yucky", and "make it more fun!", and "Totally agree. Students listen to peers!" over some of the listed ideas.]*

The idea of students as peer recruiters, presenters to community groups, teachers, mentors and guides for younger children was repeated throughout the day, too.



How do you identify (or view) the need for your programs, particularly as they relate to the watershed?



A number of people in each group wanted to build awareness and understanding of watershed issues toward the idea "we all own the watershed."

Q

How do you know when you've "got it right?" What programs "have it right"?

When asked "What makes program a interesting to you?", participants frequently voiced the key descriptor words of informal science education: *engaging* in meaningful issues, *inquiry*-based, *hands-on*, outdoors, *active* participation, *voluntary* involvement, "cool" adventures, "real" research and authentic data, relating activities to "real life" in "unique learning environments", making visually stimulating projects.

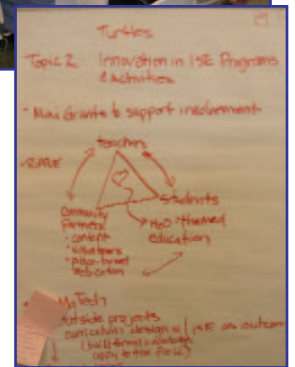
Q3.

How are you engaging/recruiting program participants (building stakeholders)?

Students: How did you find out about the programs you participated in?

Many participants mentioned the need for better dissemination of information to both students and community members via web sites, student presentations to community, and better connections with media. In particular, most breakout groups cited the need for a clearinghouse of contact information for all organizations at the Summit and others involved in watershed issues.

One group made an appeal for ongoing efforts to build intermediate or bridging connections to recruit and connect people to the environment, saying one-time experiences are not enough. They suggested tapping existing groups like Master Gardener (this idea came up a lot), being open to finding recruits in odd places, finding ways to "capture people's hearts" (Jane Goodall), and making it of interest and easy for families to participate, so parents will learn, also.



Students reiterated incentives to get and stay involved: mentoring with younger students, having people come into schools, asking students to talk to other students, food, stipends at workshops, and the chance to work with peers and "cool" teachers (defined by them as having a sense of humor, being passionate about content and respectful of student ideas, being full of high energy and fun "like a peer"), rather than with adults and parents.

Q4.

How do you know when you've "got it right?" What programs "have it right"?

One group said if there was turnout in large numbers, positive comments, repeat customers and donations, then they'd know they had gotten it right.

Another group looked at outcomes, citing changes in behavior, new ways of doing business-such as when veterans of programs choose to become teachers or leaders of other programs, and numbers at events as measures of success.

Several groups encouraged program staff to have conversations with participants and to really listen to feedback, to use formal evaluation processes to collect data.

A

Several groups encouraged program staff to have conversations with participants and to really listen to feedback, to use formal evaluation processes to collect data.

Breakout Discussion #2

Topic: Innovation in ISE Programs & Activities

Q1.

Building on what you know and what we've talked about so far, what (really cool) innovative ideas or products, techniques are you using, thinking about or have you seen?

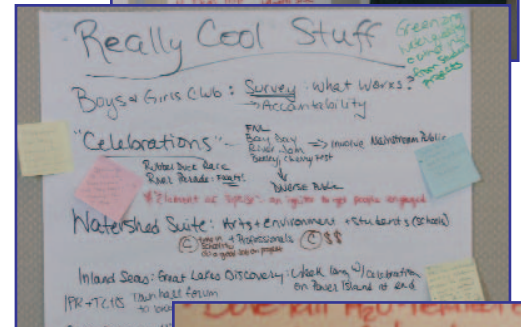
Q2.

Keeping in mind the ISE guidelines of learning being place-based, voluntary and self-directed, what are some innovative ways to engage and retain youth involvement?

Again, the groups rapidly generated long lists of single words and short phrases that denoted an exciting event or concept. These were noted on flip charts, the charts were then posted on the walls, and participants had a chance to wander around the room, adding comments on sticky notes to what they read. This Gallery Walk format elicited some great comments, gave a needed break from sitting, and jump-started a flurry of networking.



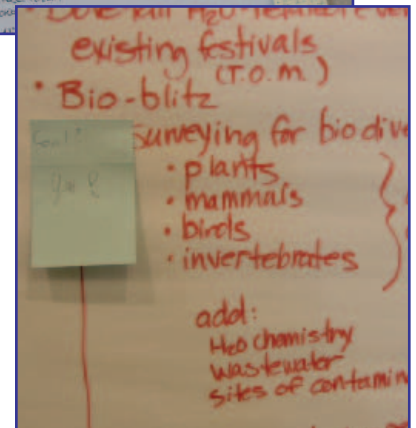
The majority of the ideas reiterated things that had already worked well for various organizations; few were "outside the box". Perhaps the lists were more of a validation of what people were already doing - a sense of being "on the right track"-- than a discovery of truly innovative approaches. *(Note: This could be a factor of the type of people and organizations that were invited to the Summit: they were leaders in the ISE field locally, and therefore might be doing activities deemed innovative and at the frontier of the field already.)*



Some of the more unusual responses to the "What's cool?" question were: Astronomy on a boat...thematic graffiti walls...morph pop culture into an activity and call it "Survivor".

While these "cool ideas" are best captured by reading through the flip chart notes, there were several recurring strands:

Quite a number of the ideas centered on celebration: bringing many people together to have fun while they're learning about water-related issues. Ideas cut two ways: adding water-related science components to an existing "Big Name" event such as doing a water quality demo at research station during Cherry Festival and Earth Day celebrations, or using an environmental theme for the Suttons Bay Film Festivals, and/or expanding ongoing environmental activities like Bio-Blitz (surveying for diversity) to heighten a water related focus (water chemistry, wastewater, sources of contamination) in an "Enviro-blitz" concept.





Building on what you know and what we've talked about so far, what (really cool) innovative ideas or products, techniques are you using, thinking about or have you seen?

Ways to involve youth permeated all the discussions:

- Youth as teachers, mentors and advisors - collecting “real data” in “real work environments” on “real projects” - which could lead to them become “advanced amateurs” - citizen naturalists, and/or into careers;
- Building ownership by giving youth a voice in trail design, interpretive opportunities;
- The importance of communicating what's happening so youth can jump on age-appropriate service learning and volunteer opportunities;
- Job shadowing, mentioned as "the most feasible kind of ISE";
- More student involvement in lobbying, media production, administering and designing projects, internships;
- Students presenting their science research in the community and having it published on community websites;
- Youth environmental action teams/councils;
- Connecting generations to link the knowledge of “elders” with the energy of youth. As one young adult put it, “The elderly ROCK!”
- Time for reflection built into student projects.



Quite a number of the ideas centered on celebration: bringing many people together to have fun while they're learning about water-related issues.

Breakout Discussion #3

Topic: Collaboration and Partnership Building

Q1. Given what you have heard and discussed today, in what ways can you envision merging your and/or your organization's interest with another group or activity so you are working on common purpose?

Q2. What is your most important project or program?

Q3. Compared to 5 years ago, how ready is your organization to collaborate?



The responses to question one generated a lot of potential joint projects. A member of one group stood up, pointed to each of the other group members in turn, and said, "I'm going to call you about "X", you and I have to meet about "Y", and I want you to send me the info on "Z", etc.," until he had made a connection with every other group member.

In general, people felt collaboration, while allowing each group to maintain its own identity, should build on the individual skills and capacity of each organization to "do what we do best." Assistance through sharing strengths made sense. (Ex: Some groups are good at fund raising, but need help with grant administration, or marketing.)

People reiterated that collaboration must be real - not window dressing, and that perhaps a "first-date" to check each other out might be in order prior to actually trying to do a project together.

Several groups generated list of incentives to collaborations, along these lines:

- funding-forced collaborations
- expanding capacity toward more effective delivery
- sharing equipment and resources
- more visibility for projects
- broadening of the knowledge base and experience
- fueling new ideas and opportunities
- reducing duplication of efforts



They also compiled these perceived challenges:

- restrictions on funding
- limited time-- "collaborations are hard work!"
- decreased credit and identity

Funding was an issue for everyone-- “Show me the money” was heard repeatedly-- due to shrinking budgets and new collaboration requirements from funders making start-up difficult for new non-profit organizations.

In general, people felt collaboration, while allowing each group to maintain its own identity, should build on the individual skills and capacity of each organization to “do what we do best.”

Since LIAA had just developed a comprehensive website listing of over 120 local, regional and state organizations that have bearing on the ISE Watershed efforts, we noted with some amusement that our efforts were corroborated. There was a reference in almost every group to the need for a collective database of organizations. Ideas for content included a short mission statement, lists of job and volunteer opportunities, a place to post data that comes out of bio-blitz activities, etc.

Closing Discussion

This discussion was led by Dr. Marguerite Cotto, Vice President for Lifelong Learning, Northwestern Michigan College.

Question from Dr. Cotto: What does the learning need to be like in our community to really make it different? Take a few moments to think about what you've been doing. When you started the day, you may have wondered "why am I here?" Can anyone answer that now?

A. Some of us learned how to network - we often work alone, and this was a chance to find out what others are doing and to get to know colleagues in the area. We have learned a lot and created relationships that will continue.

A. There are also science-related professionals and firms in the area that we need to bring into the discussion. We need to get those professionals involved in ISE.

Q: What else surprised anyone today?

A. It was interesting to work together with diversified break out groups - every group had a mix of perspectives.

A. It was great to have students involved and get their perspective - for some that was the most valuable aspect of the summit. (One group kept coming back to the generation of real data as a way to raise the level of interest for both the students and the organizations, toward the notion of balancing facts and data collection to build connections with and feelings about the resource.)

A. It was certainly very useful to hear what other people are doing - you tend to get lost in your own projects. It would be nice to gather regularly to do this.

A. It was great to take a break from the daily routine and take a whole day to gather with our colleagues and talk through all these issues.

Q: Is there a question that anyone needs to ask?

A. This group here today is not very diverse. There was no discussion about equal access or diverse access - does anyone think about that? One table did talk about at-risk kids and low income areas as a possible source of funding. Another table mentioned transportation costs could be a barrier, and that is another way to approach that same issue. It is important to find ways to get

"It was great to have students involved and get their perspective..."

into the mainstream public through mainstream outlets (like radio--not just IPR). We are learning that if we design our programs for universal access (including at risk folks) then we enhance the quality of our programs. We spoke to the diversity issue by not narrowing our target, but by broadening our target to try to target the mainstream.

A. The Traverse area ISE programs do serve as a magnet for 5 or maybe 10 counties. We need to consider how to serve the rural school areas.

A. Everyone, regardless of economic status, is very interested in the health of their family, and perhaps the way to get buy in is to discuss drinking water issues.

Q. If there is one word that sums up what you will think about today tomorrow, what is it?

A. Collaborations...Encouraging...Bio-blitz...Lack-of-funding...Opportunity and Challenge (there is a great group in this room - the opportunity is there, but it is a great challenge to get groups to effectively work together)...Connections - mostly what we got today is good connections for smaller scale collaborative projects or networking...Youth leadership (teenagers said they were willing to act as leaders and teachers of kids who are younger than us).

NOTE #1: The website (<http://www.liaa.info/soundscapes>) will be continually updated to add more information about the organizations, and if Summit participants want to add/delete/enrich what's there you should contact LIAA about it.

NOTE #2: If the emerging Coalition for Watershed Education launches a successful bid for NSF funds, much more development of the web site will ensue.

NOTE #3: Perhaps the Water Studies Institute is also a place to look for the type of web-based data collection requested in Breakout Discussion #3.

List of Summit Participants