REPORT AND PROCEEDINGS

Best Education Practices (BEPs) Symposium for Water Outreach Professionals:

Defining BEPs, Refining New Resources and Recommending Future Actions

June 2 – 4, 2004

Pyle Conference Center
University of Wisconsin, Madison

Cosponsored by:

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University of Wisconsin – Madison,
College of Agricultural and Life Sciences – Environmental Resources Center

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To learn more about the Water Outreach Education Project, to view the Proceedings online, or to order a copy, please go to our Web site at:

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http://wateroutreach.uwex.edu

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FORWARD

In June 2004, natural resource professionals from around the country attended the Symposium, *Best Education Practices (BEPs) for Water Outreach Professionals: Defining BEPs, Refining New Resources and Recommending Future Actions*, at the University of Wisconsin in Madison. We convened the Symposium to build knowledge among natural resources agencies and professionals that the application of BEPs in outreach efforts is an effective tool for accomplishing water management objectives. The Proceedings describe this gathering and the lessons learned about best practices in water outreach and education.

The success of water management strategies is strongly linked to our effectiveness at facilitating changes in behavior among targeted audiences. Education research offers tested theories and principles for how to assist individuals to think critically about new issues and/or to effect change. These principles, as found in areas of study such as *environmental education*, *communication, social marketing,* and *diffusion of innovation theory*, are the basis for the human dimensions work that has gained much attention within USDA Cooperative Extension and other natural resource agencies over the last few years. We anticipated that Symposium findings and recommendations, combined with resources from our Water Outreach Education Project, would help educators more effectively guide water organizations and agencies to integrate the use of BEPs into water management strategies.

The Symposium was one of five major objectives of a large national initiative, the Water Outreach Education Project, which provides tools for helping natural resource professionals choose and use education principles more easily and effectively. Project activities synthesized the applicable education theories and principles into simplified language; made BEP recommendations for target audiences; collected water education materials that correspond to instructional strategies and the Cooperative Extension's water management topics; and developed the pilot National Extension Water Outreach Education Web site (http://wateroutreach.uwex.edu) to provide access to our work.

We held this national symposium to:

1. Advance the dialogue about best practices for water outreach education.
2. Introduce Water Outreach Project products.
3. Showcase current water management research that illustrates our BEP recommendations.
4. Engage national Extension water quality coordinators and key stakeholders in fine-tuning Project products and marketing plans.

Presentations covered research about audience specific BEPs, case studies about successful application of BEPs, and topic-specific water outreach resources. Throughout a variety of Symposium activities, we expected participants to demonstrate their knowledge of BEPs and how to apply them, and to recognize that how BEPs are applied could contribute to achieving a water management strategy. In return, we expected that participants would help identify and analyze gaps in BEPs for target audiences. They were asked to make recommendations for future work to facilitate the use of BEPs, to develop BEPs for underserved target audiences, and to increase broad recognition of the value of education to water management strategies. Finally, we asked participants to use their understanding to advise us about the Water Outreach Education Web site design and content. These proceedings represent the review and analysis of the thinking and discussion that occurred.

Since the Symposium, we have worked, and will continue to work, to implement suggestions solicited through Symposium evaluations of the Water Outreach Web site and of the project in general. We look to Symposium participants to build on their connection with this project to promote use of BEPs among natural resources professionals in their organizations and to become conduits for collection of additional target audience case study resources. Eventually, through promotion of the Symposium outcomes and other project products, we expect agency partners to provide institutional support/funding for application of BEPs within their own work.

PLANNING COMMITTEE

Members of the BEP Project Advisory Team helped plan Symposium goals and objectives, and participated as presenters and facilitators during the event. We thank them for their hard work and good cheer throughout.

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Elaine Andrews, Project Director and Environmental Education Specialist

Kate Reilly, Project Coordinator and Outreach Specialist

Mark Stevens, Research Assistant

AGENDA

Wednesday, June 2, 4:30 – 9:00 PM

Welcome

Keynote Address: *Education – An Essential Ingredient for Successful Water Management*
Kevin Coyle, President of National Environmental Education Training Foundation (NEETF)

Dessert Reception and Poster Viewing

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Thursday, June 3, 7:30 AM – 5:30 PM

Plenary Welcome and Orientation: *Defining BEPs: What Are Good, Better, and Best Practices?*

Case Study Presentation: *Making Our Nonpoint Source Pollution Programs Effective*
Andy Yencha, Coordinator, Multi-Agency Land and Water Education Grant Program, UW Extension and WI DNR, and Kevan Klingberg, UW Extension Discovery Farms Program

Panel Discussion: *Framing the Dialogue - BEP Target Audience Success Stories*

Breakout Session: *Critical Thinking about BEPs in Water Outreach*

Plenary Session: *Introducing and Demonstrating BEP Project Products*

Lunch and Poster Presentations: Review posters for target audience education practice and measures of success.

Research Presentations: *Audience Specific BEPs*

Breakout Session: *Gap Analysis of Target Audience BEPs*

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Friday, June 4, 7:30 AM – 1:30 PM

Plenary Panels: *Moving Water Education to the Forefront of Water Management Strategies*

Panel Discussion: *Report on Target Audience Research Gaps*

Panel Discussion: *Promotion and Communication: Moving Water Outreach and Education from Backwater to Mainstream*

Plenary Activity: *Promoting BEP's – Challenges for Future Action*

- Refining and Promoting Project Products
- Building a Plan to Add Resources to the Web Site
- Recommending Future Actions

Lunch and Closing Address: *Education - Is It an Essential Ingredient for Community-Based Water Management?*
Closing Speaker: Cornelia Flora, Charles F. Curtiss Distinguished Professor of Agriculture and Sociology and Director of the North Central Regional Center for Rural Development, Iowa State University

EXECUTIVE SUMMARY

I. Symposium Purpose and Process

Natural resource professionals apply best *management* practices (BMPs) when planning water management strategies because BMPs are time-tested and have been shown to be successful. Similarly, when best *education* practices (BEPs) are applied in outreach efforts, the resulting education can be an effective tool for accomplishing water management objectives. This, according to Symposium Keynote Speaker, Kevin Coyle, "… is because there is a growing body of evidence that education works in a practical sense and produces results both by itself, and as an added measure, in the larger natural resource and water management arenas." Mr. Coyle emphasized that *education* is needed as part of the current scenario of water management because:

- Water management principles and practices are complex, and that complexity is rapidly increasing.
- Complex surface and groundwater dynamics at the urban-rural interface impact how water stewardship is shared among groups of people.
- Citizen knowledge of environmental subjects, including how water bodies become polluted, is relatively low.

The Best Education Practices Symposium was a working meeting attended by 93 participants from 31 states and a Canadian province. These educators included national Extension water quality coordinators and key stakeholders who contributed to the Symposium by attending a combination of panel and paper presentations, small and large group discussion sessions, poster viewing, and Web site evaluation. The Symposium explored the application of BEPs and investigated ways educators can help guide water organizations and agencies to integrate the use of BEPs into water management strategies more effectively. We looked to these educators to consider complex questions such as:

- Can we achieve improved water management without stronger education?
- Does the information to be imparted require simple awareness or deeper education?
- Should educators focus their work on community leaders and "influentials"?

We also asked presenters and participants to consider BEPs as they helped us to identify what we know about audiences of particular interest to water educators and to identify gaps in our knowledge about target audiences.

To organize the Symposium agenda, the presentations were set up to highlight target audiences in one of three groupings:

Group One:	Farmers, decision makers, leaders, and community organizations
Group Two:	Households, neighborhoods, and landowners
Group Three:	Youth, youth educators, and volunteers

Post-symposium analysis of the presentations unveiled additional audiences and led us to regroup our findings into the following nine categories:

- Conservation professionals
- Decision makers, leaders, and community groups
- Ethnic groups
- Farmers, producers
- Households and neighborhoods
- Landowners
- Recreational water users
- Volunteers
- Youth and youth educators

II. Recommendations

The Symposium planning committee developed an iterative series of discussion questions designed to provide participants with a framework for analyzing their experiences after each major segment of the Symposium. After some initial "warm up" discussions, participant responses to each discussion were recorded. The results are summarized in this report.

Participant recommendations address seven areas of emphasis:

- Understand the BEP concept itself.
- Apply BEPs for target audiences.
- Integrate the use of BEPs into water management.
- Advise funders and policy makers about BEPs.
- Make water education and actions part of the mainstream of community life.
- Understand why structures and actions are in place that lead to ecosystem degradation and identify the best ways to change those structures and actions.
- Consider BEPs as critical components of a water management strategy.

Recommendations are too numerous to list in the Executive Summary, but highlights are identified below. Audience BEPs and participant recommendations are provided in further detail in the "Symposium Summary and Findings" section (p. 13).

Understand the BEP concept itself.

Throughout symposium presentations, participants were asked to judge whether proposed education or outreach strategies applied BEPs. This led to critical thinking among participants about the BEP concept itself. Participants recommended that educators:

- Improve our understanding about the need for gathering exemplary practices; identify professional development needs and strategies that will improve outreach effectiveness.
- Build a common understanding of BEPs, and especially, find a way to articulate the theory that supports the practice in the minds of the practitioner.
- Promote rigorous social science research and evaluation methods to build the body of literature about and for BEPs.
- Identify BEPs through research and test them in practice.

Apply BEPs for target audiences.

The Proceedings editors sorted presentation findings according to the nine audiences selected for Symposium attention, and by six themes: *audience information*, *message content*, *message delivery vehicle*, *outreach strategies and methods for teaching*, *supporting and motivating professionals*, and *evaluation*. The editors incorporated participant comments, along with their own review, to identify gaps in our knowledge about applying BEPs with these target audiences.

Strengths in presentation findings
Research and case studies provided:

- Gems of advice for each of nine featured audiences and for six themes, indicating a strong understanding about effective techniques among outreach professionals.
- Comprehensive BEPs for outreach with *households* and *neighborhoods*.
- Comprehensive BEPs about *outreach strategies and methods for teaching*, for all nine audiences.
- Combined recommendations for each audience to provide a more holistic picture of water outreach that enables us to see what works with specific audiences.

Gaps in presentation findings
Research and case studies did not address:

- BEPs for landowners, recreational water users, and volunteers.
- BEPs for the outreach themes: *message content,* and *supporting and motivating professionals*.
- Studies about scientists, hydrologists, and engineers as partners for collaborative learning about water; groundskeepers and facilities managers; planners and design professionals; policy makers and influentials; socio-economically underserved; minorities; recreational water users; ranchers and irrigators.

Integrate the use of BEPs into water management.

Based on their Symposium experiences, participants made recommendations for how to move water education to the forefront of water management strategies and how to promote BEPs in their work.

- Encourage education-related professional development among natural resource professionals or "accidental educators."
- Analyze project focus on education, as opposed to communication or community development, and our assumptions about "good," "better," and "best" education. Be open to new visions.
- Acknowledge cultural differences within BEP recommendations.
- Clearly link social marketing concepts to BEP recommendations.
- Provide models of successful BEP applications (models for how to go from *good* to *best*) as well as evaluation templates.
- Provide more training, networking, and work groups.
- Investigate long-term evaluation of changes achieved by applying BEPs.
- Encourage representatives from federal agencies and national program leaders from USDA Cooperative Extension to investigate concepts proposed in the Symposium.

Advise funders and policy makers about BEPs.

An important element of integrating BEPs into water management relies on decisions by funders and policy makers. The following "top ten" list of recommendations is a synopsis of about 75 participant responses:

- Education or outreach programs, if based on sound education principles, lead to citizens who know how to make informed decisions and will take actions that have a positive or desired impact on the community.

- Clearly state *the issue*, or provide detail about the issue, that would benefit from attention by outreach or education.
- Ask questions before funding. Clearly state *the standard* required for each educational strategy, practice, or program.
    - Ask what combinations of BEPs are proposed?
    - How does the grantee defend or support the use of BEPs?
- Post education practice standards so that educators can compare their programs to see if they are meeting standards.
- Reach out to audiences beyond youth, farmers and households.
- Identify the target audience. Market segmentation research and identification of relevant BEPs provides "more bang for the buck."
- Study audiences carefully, including the influential leaders among target audience members. Train educators to address what the target audience knows and needs to know, and to require quality programs and methodology.
- Share BEPs for specific audiences among agencies.
- Stay the course. It takes time for outcomes to occur.
- Accept behavioral change resulting from BEPs as a proxy for future water quality improvements.

Make water education and actions part of the mainstream of community life.

Effectively integrating water education into water management strategies requires educators and their supervisors to take time to address the bigger picture.

- Value a team effort and coordinate the team through a variety of activities.
- Establish baseline information about water education needs to improve ability to show progress and to help establish outreach priorities.
- Build citizen and group skills to ask the right questions.
- Provide avenues for communication among groups.
- Build program acceptability, especially through encouraging decision makers and partners to tell the story of the program and to publicize impacts.

Understand why structures and actions are in place that lead to ecosystem degradation: Identify the best ways to change those structures and actions.

This is a challenging perspective for educators who are more familiar with the comfortable role of the neutral or a focus on providing "awareness" or "personal steps." Exactly how the application of BEPs meshes with an understanding of societal structures is the subject for another symposium. What we can do now is to perform well within the structures and settings where citizens or democratic rule have provided clear goals for change or improvement.

Consider BEPs as critical components of a water management strategy.

"Is education an essential ingredient for community-based water management?" This question was answered with a resounding YES from Symposium speakers and participants:

- Participants provided examples of BEPs in practice with specific audiences, and they provided recommendations for building the BEP concept and promoting the use of BEPs.
- Suggestions for new directions include the following:

- Refine the concept of BEP.
- Encourage and disseminate research-based information about target audiences.
- Provide training and networking among water educators.
- Promote the value of applying BEPs among agencies and funders.
- Provide models and evaluation templates for measuring whether we have achieved BEPs and to determine if they have the effect we predict.

Symposium activities also produced recommendations for how to work most effectively with the nine target audiences listed above. BEPs were identified for each of these audiences. Findings were also grouped across audiences to describe effective strategies for each of six important outreach themes:

- Audience information
- Message content
- Message delivery vehicle
- Outreach strategy/method of teaching
- Supporting and motivating professionals
- Evaluation

Detailed recommendations for outreach themes can be found on page 25 of the "Symposium Summary and Findings" section.

SYMPOSIUM SUMMARY AND FINDINGS

I. Framing the Dialogue

The Best Education Practices Symposium engaged national Extension Water Quality Program coordinators and key stakeholders in investigating ways educators can help water organizations and agencies integrate Best Education Practices (BEPs) more effectively into management strategies. This working meeting brought together 93 participants from 31 states and a Canadian province. The group included:

- Agency educators
- Extension educators
- Extension National Water Quality Program coordinators
- Natural resources professionals
- U.S. EPA staff
- Water education providers
- Agriculture and recreational business
- Decision makers
- Representatives of proposed target audiences
- Policy makers
- University/College researchers
- Water organizations

We invited presenters and participants to reflect on the BEP concept, to highlight what we know about audiences of particular interest to water educators, and to identify gaps in our knowledge about selected audiences. We organized a combination of panel and paper presentations, small and large group discussion sessions, poster viewing, and Web site evaluation to inspire thought and discussion. We looked to these educators to consider complex ideas and questions:

- Can we achieve improved water management without stronger education?
- Does the information to be imparted require simple awareness or deeper education?
- Should educators focus their work on community leaders and "influentials"?

Searching for New Ideas

The Water Outreach Education Project collects audience-specific BEPs and topic-specific water outreach resources. Expansion of the collection hinges on identification of relevant research, discovery of links to published information about water management topics, and access to case studies that demonstrate BEPs. The Symposium provided one opportunity to build the collection and to learn about new ideas that may have been tested, but where findings were not published.

Our search for Symposium presentations on audience specific BEPs started with a national call for research papers and target audience case studies. We sought:

- Papers that reviewed and summarized multiple studies of audience-specific BEPs
- Papers or posters that reported on research about audience-specific BEPs
- Posters that described a case study where BEPs have been applied

We looked for papers and posters about research that focused on identifying BEPs for one of the target audiences listed in Table 1. We also sought case studies that referred to an education/ outreach purpose, one of the theories that contribute to BEPs, or both, as described in Table 1. Some authors were specifically invited to submit paper proposals.

Proposed abstracts were subjected to a rigorous review by the planning committee. Symposium paper and poster presentations were eventually selected to showcase water management research

projects and programs that have successfully incorporated BEPs with target audiences. These presentations provided the foundation of our Symposium discussions.

Panel presentations also contributed to information that participants used to help guide recommendations. Panelists were personally invited based on their work that specifically related to Symposium goals and criteria for excellence. Panel content is also integrated into Symposium findings.

The papers and poster abstracts are provided in the second part of these Proceedings, along with PowerPoint slides from the panel presentations. All Symposium content, including these Proceedings and conference posters are available on the National Extension Water Outreach Education Web site, http://wateroutreach.uwex.edu.

Table 1. *Paper and Poster Solicitation Criteria: Did the work address one or more of the following?*

Audiences	Purposes	Theories Contributing to BEPs
Local Decision and Policy Makers Agency Partners Industrial Water Users Recreational Water Users Recreational Businesses (water-related) Retailers of Water Recreation Equipment Agricultural Commodity Groups Farmers Landowners Households Homeowners Neighborhood Organizations Service Clubs Environmental/Conservation Nongovernmental Organizations Soil and Water Conservation Districts Specific Ethnic Groups	Information (one way) Communication (two way) Education (formalized process with a goal) Capacity building (community management of the environment)	Development Theory Principles of Adult Education Principles of Youth Education Technology Transfer and Diffusion of Innovation Social Marketing Civic Empowerment Communication Leadership Citizen Participation/Community Involvement Non-economic Social Sciences

An Overview of Outreach Education and Best Education Practices (BEPs)

> *Outreach education relies on the existence of a body of knowledge, which is not only transferred to the individual but is instrumental in transforming the individual. In other words, the individual has to actively receive the knowledge and know how to use it* (Andrews, 2000).

Underlying the questions that Symposium participants were asked to explore is the need for a fundamental understanding of what is meant by *outreach*, and specifically outreach undertaken for the purpose of improving citizen stewardship and management of water. Cooperative Extension, government agencies, and water educators have been grappling with this question for a decade of meetings, symposia, and conference presentations (e.g. Andrews, Hawthorne, & Pickering, 1996). Discussions have led to broad agreement that sophisticated outreach initiatives are important to water management, and that outreach planning that follows key steps increases the likelihood of a successful effort.

This advice from the U.S. Environmental Protection Agency's (EPA) *Getting in Step* characterizes the relationship between water management and outreach.

> Watershed citizens must be informed about basic water quality problems. Stakeholders must be told about the process and encouraged to get involved. Elected officials will want to know what's happening and how they can support the initiative. And, finally, those who are contributing to water quality degradation by engaging in practices that increase polluted runoff will need to be informed, engaged, and motivated to adopt more appropriate behaviors.
>
> As you progress through your watershed management process, your outreach objectives and activities will change. For example, during the early stages it might be necessary to generate basic awareness on watershed issues, but as problems are identified your objectives will focus on educating your target audiences on the causes of the problems. Finally, during the implementation phase of your watershed planning and management process, your objectives will focus on action by your target audience to reduce adverse water quality impacts (MacPherson & Tonning, 2003).

As indicated in the quote above, designing effective outreach education depends on following steps that have been outlined by experienced educators, such as those listed in Table 2. These planning tips both include and imply the use of BEPs, particularly as they focus on selecting and understanding one or more target audiences, engaging the audience in planning, and matching education activities to audience needs.

Preparation for the Symposium included clarifying what we meant by "best education practices" and planning Symposium activities that would allow us to consider in more detail the potential for education to impact water management. We shared our thinking with Symposium participants, both to provide a foundation for their work during the Symposium and to ask them to critique our thinking.

Table 2. *Tips for Planning*

1.Determine the type of outreach or education effort that you will emphasize:
- Provide information
- Educate
- Communicate
- Build capacity

2. Familiarize yourself with the "community of interest." Link your effort to local issues and activities.

3. Assess and define the target audience(s).

4. Define clear goals and objectives in cooperation with stakeholders and target audience.

5. Inventory resources and constraints, and adapt your initiative to capitalize on results.

6. Design your initiative with a focus on your goals, audience characteristics, and resources.
- Match to resources and audience characteristics.
- Identify education or outreach knowledge areas relevant to the topic and use BEPs for each.
- Actively engage target audience.

7. Pilot test and modify.

8. Implement, deliver, or disseminate.

9. Evaluate and revise.

Education – An Essential Ingredient for Successful Water Management

To kick off the Symposium, we invited Kevin Coyle, President of the National Environmental Education and Training Foundation (NEETF), to paint a broad picture of the need for quality water education. Mr. Coyle's presentation was based on findings from years of Foundation investment in understanding and promoting citizen environmental literacy.

Mr. Coyle emphasized that reports and studies support the idea that it is possible to extend the concept of Best Management Practices to education because there is a "growing body of evidence that education works in a practical sense and produces results both by itself and as an added measure in the larger natural resource and water management arenas." Education is needed as part of the current scenario of water management because:

- Water management principles and practices are complex and that complexity is rapidly increasing.
- Complex surface and groundwater dynamics at the urban-rural interface impact how water quantity and water quality stewardship is shared among groups of people.
- Citizen knowledge of environmental subjects, including how water bodies become polluted, is relatively low.

Mr. Coyle described three levels of learning about the environment that lead to three levels of impact. Learning at the *awareness* level can lead to public support, but lack of understanding of details can foster misunderstandings. Learning at the *personal steps* level has been shown to change behavior, but may not be durable. This type of knowledge needs constant updating and reminders. Learning at the *literacy* level means knowing and understanding underlying environmental principles, and being able to analyze and apply them. One potential goal for outreach education is to build environmental literacy among community "influentials" who are actively involved in the community and "constantly making decisions on every aspect of community life."

NEETF funded research suggests several questions that educators could ask to determine whether their initiatives have the potential for success. The following points, as outlined in the keynote address, could contribute to assessing the quality of BEPs for water outreach.

1. Can we achieve improved water management without stronger education?
2. Does the information to be imparted require simple awareness or deeper education?
3. Do the BEPs that are delivered adhere to other basic rules of pedagogy?
4. Does the instruction teach skills and application?
5. Will BEPs aim at community leaders or "influentials"?

Target Audiences and "Best" Education Practices

We constructed the Symposium to allow participants to answer questions, like those posed by Mr. Coyle, as they delved into details about effective use of education practices in outreach initiatives. We asked participants to help us assess the use of *best* education practices, with a particular emphasis on how well presenters seemed to understand and apply information about the *target audience* in their outreach plan.

As we focused on **target audiences** we were referring to a segment of the population that has a *specific opportunity to take action* on the identified problem, or to a group *specifically affected* by the identified problem. For example, the target audience for our Water Outreach Education Project is natural resource management and outreach professionals. We invited *our* target audience to help us review project products and help guide project recommendations. Research and case studies presented at the Symposium summarized results of work with one or more specific audiences.

In general, to find out whether an education technique is a *best* practice, we apply a selected education technique and study the outcome using research methodologies. A best practice is one that is shown to be equally effective in multiple cases with like audiences.

To call an education practice a *best education practice* is to say that it is better than all other practices to which it has been compared using some standard or criterion of comparison. To fully specify the relative quality of a practice requires that its value be described in the educative context. Not only must the claims of "best education practice" be shown to hold in comparison to other practices, the claim must narrow its recommendations to also describe the contexts and audiences for which the practice is shown to be the best. Therefore, all claims that an education practice is a best education practice require consideration of the following questions:

- Relative to what?
- In what circumstance?
- With what audience?

To the extent that research-based information is available, the Water Outreach Education Project strives to present *best* practices. Where research-based information is not available, we have worked to identify case studies and the best available information, or *good* practices. *Good* practices are widely established practices, applied by experienced educators, but which may not have been subjected to researched comparisons. Table 3 lists the definitions of good, better, and best education practices used in the Water Outreach Education Project.

We undertook the Symposium and a related project, a target audience literature review, because of our perception that there is a gap in the assessment of the application of education practices

with target audiences of strategic interest to water educators. While many environmental education research papers recommend education practices, few of these papers focus on adult audiences, and few identify education practices that are best for specific audience groups. Few resource management papers test specific education practices, relying instead on the admonition that good resource management needs to be accompanied by outreach to the public or to a target audience.

In our call for research papers, we looked specifically for research that applied outreach and education practices with target audiences that are not well represented in the literature: farmers, producers, local decision makers, policy makers, households, neighborhoods and landowners. Published studies about youth water outreach education are more common, but invited Symposium papers summarized unique developments for work with youth audiences. We planned to integrate Symposium research paper findings with other project research findings.

Table 3. *Definitions of Good, Better, and Best Education Practices*

Good Education Practice	An education practice that yields desired outcomes when applied under a certain set of conditions with the appropriate audience (after Holsman, 2001, p. 2).
Better Education Practice	A good education practice that has been shown, through research, critical reflection, or both, to be more effective in achieving intended changes than some other education practice or practices.
Best Education Practice (BEP)	"…a program or practice that has been clearly defined, refined through repeated delivery, and supported by a substantial body of research" (Fedler, 2001, p. 7).

Essential Best Education Practices

Prior to the Symposium, we summarized an extensive review of education theory in a form we call *Essential Best Education Practices* (See Appendix A, p. 35). These are important not only because they provide a digest of a lot of research about how people learn, but also because we can use them as a guide for comparing target audience findings.

Essential Best Education Practices address typical educator challenges for generalized or broad audiences:

- Every education or learning situation
- The individual
- The class or group
- Web-based learning
- The community
- Beyond the community

This list of essential practices was derived primarily from references that summarized major ideas from many authors in the fields they describe. Sources include, for example, the American Distance Education Consortium's *ADEC Guiding Principles for Distance Teaching and Learning* (2003) and the American Psychological Association Board of Educational Affairs' *Learner-Centered Psychological Principles* (1997).

We present these practices as a foundation that outreach professionals can use to gauge what they know and don't know about how to create effective education strategies. The *Essential BEPs* help professionals determine design considerations to improve their efforts in "transforming" individuals in their target audience so that they are able to use new information and skills.

Research about outreach with target audiences amplifies these theoretical findings with concrete examples. During the Symposium, participants practiced the process of identifying BEPs from theory and research. This experience contributed to participant ability to develop advice about project initiatives.

Participant Activities

The three-day Symposium was designed to include a combination of panel and paper presentations, small and large group discussion sessions, poster viewing, and Web site evaluation. The Symposium planning committee developed an iterative series of discussion questions designed to provide participants with a framework for analyzing their experiences after each major segment of the Symposium. After some initial "warm up" discussions, participants' responses to each discussion were recorded. The results are summarized in this report.

Group Activities and Discussion

We invited symposium papers, posters, panelists and speakers to help us do two things:

1. Identify what we know about audiences of particular interest to water educators.
2. Identify gaps in our knowledge about target audiences. Symposium presentations highlighted audiences in one of three groupings:

   Group 1: Farmers, decision makers, leaders, and community organizations
   Group 2: Households, neighborhoods, and landowners
   Group 3: Youth, youth educators, and volunteers

Post-symposium analysis of the presentations unveiled additional audiences and led us to regroup our findings into the following nine categories:

- Conservation professionals
- Decision makers, leaders, and community groups
- Ethnic groups
- Farmers, producers
- Households and neighborhoods
- Landowners
- Recreational water users
- Volunteers
- Youth and youth educators

Speakers and panelists were also asked to make their presentations in such a way as to build participant skills. Their objectives were to help participants:

- Identify the target audience(s) for any outreach activity.
- Identify the type of education practice that is or could be used with the target audience.

- Determine whether the education practice is a good, better, or best practice based on whether the practice has been repeatedly tested and evaluated.
- Identify standards/benchmarks for measuring the success of any particular education practice.

To begin each day of the Symposium, we engaged one or more well-know water outreach educators to help participants focus their thinking about the quality and content of the Web site, about marketing Web site tools, and about providing advice for policy development.

Participants then listened to presentations, viewed posters, and read abstracts to help develop recommendations regarding strengths and gaps for audience information. Their recommendations about missing audiences, barriers to studying audiences or best practices, and advice to funders and policy makers about best practices are reported later in this summary.

We launched the first full-day by asking participants to reflect about good, better, or best education practices. A case study that incorporated each of the four features of our proposed model (above) set the stage for discussion about BEPs. *Making Our Nonpoint Source Pollution Programs Effective*, the featured case study presentation, described results from a water outreach research project that have been used to guide Wisconsin education efforts (Shepard, 1999).

> The study compared the rate of adoption of nutrient management strategies by farmers in two Wisconsin watersheds over the same five-year period. The educator for one watershed relied on a diffuse communication campaign; the educator for the other relied on one-on-one information transfer techniques. Results supported use of a diverse set of educational approaches and discouraged over-reliance on diffuse information dissemination. Guidance from these findings has been incorporated in forty Wisconsin projects working with over three hundred farmers. Each project uses a comprehensive pre-survey to help segment the audience, followed by conservation planning, soil tests, workshops, and farm visits by educators during the growing season.

Following the plenary, a panel focused on the target audience portion of the outreach equation. Panelists included representatives from two nongovernmental organizations, and two state natural resources agencies. The audiences for their work included youth, county soil and water conservation professionals, businesses, industry, and agency water education professionals. Panel presentations show-cased a variety of techniques for working with these selected target audiences.

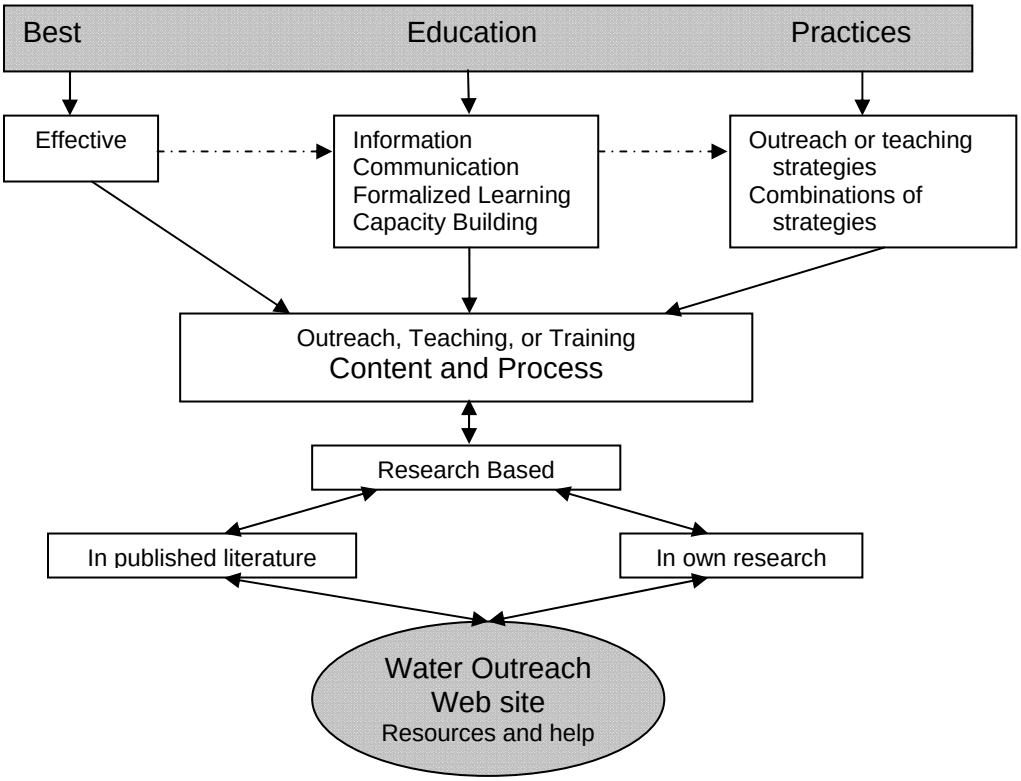
We followed the panel with a small group session where participants were asked to reflect on their own situation. Participants summarized education practices that they used in their work; talked about whether they thought the practices were good, better, or best practices, according to our definitions; and explained how they made their determination. This led to some lively discussions.

Participants spent the remainder of the first full-day reviewing posters and the Web site, attending paper presentations, and participating in a small group discussion about gaps in target audience research. The second day focused on participant response to paper, poster, and panel presentations. Based on their Symposium experiences, participants considered how to move water education to the forefront of water management strategies and how to promote BEPs in our work.

Response to the BEP Framework

Participant discussion groups deconstructed BEPs to mean: Effective – Information, Communication, Formalized Learning, or Capacity Building – Practices, as illustrated in Figure 1. "Practices" refer to application of a teaching or outreach practice, or a combination of practices. Resources on the Water Outreach Education Web site contribute to the educator's ability to use BEPs, but are also built by educator research and case study applications.

Figure 1. The Best Education Practices concept, deconstructed



Participants also identified a number of questions about applying BEPs, which are listed in Table 4. These are considered in the Symposium recommendations.

Target Audience Case Studies

The 51 presentations made throughout the Symposium are summarized by category in Table 5. Research papers, poster papers and abstracts, and panel presentation slides are provided in the printed proceedings and on the Water Outreach Education Web site, http://wateroutreach.uwex.edu. Symposium posters are only available for viewing on the Web site.

Table 4. *Participant Questions about the Concept of Best Education Practices (BEPs)*

1) How do we and where do we find BEPs?
2) How do we move our work from good to best?
   a) Encourage projects to publish outcomes and impacts: Contribute to the profession of water outreach and education.
   b) Provide administrative support.
   c) Disseminate research standards.
   d) Provide resources for quality education – time, money, staff.
3) Can we take the BEP concept to the next step and develop a model that frames "best" for program planning and implementation?
4) How do we sustain education programs through changes in budgets, government, etc.? Is that part of the "best" model?
5) How do we decide when to apply BEPs? Consider:
   a) How the quality of the practice is determined
   b) How the practice should be delivered
   c) How the practice relates to:
      i) Audience
      ii) Strategies
      iii) Accessibility
      iv) Context
      v) Efficiency
   d) Whether the practice has long-term applicability, based on its:
      i) Flexibility
      ii) Adaptability
      iii) Replicability
      iv) Sustainability
      v) Life cycle

Table 5. *Symposium Presentation Types*

Presentation Type	Number of presentations
Research paper	17
Poster	19
Poster paper	6
Panel presentation	9
TOTAL	**51**

After the Symposium, presentation highlights and target audience recommended practices were compiled for every Symposium paper, poster, and panel presentation (Appendix B). The editors applied the meta-analysis process developed for our target audience literature review to interpret data from the research and case studies presented (Stevens & Andrews, 2006). Recommended practices represent a collection of good, better, and best education practices, based on Table 3 definitions.

We also looked at each paper, poster, and panel presentation for specific recommendations related to the water outreach planning *themes*. These themes are listed below. Analysis by theme is described later in this report.

Water Outreach planning themes:

- Audience information
- Message content
- Message delivery vehicle (a special case of outreach strategy)
- Outreach strategy/method of teaching
- Supporting and motivating professionals
- Evaluation

Evaluating the Water Outreach Web Site Resources, Beta version

The National Extension Water Outreach Education Web site, http://wateroutreach.uwex.edu, includes resources that create access to, build on, and link to education research, water management research, and water management information. Project activities focus on building a repository of audience-specific BEPs, and on providing access to those and to other water education resources. Recommended BEPs integrate education theory and water management research, and answer questions about effective water outreach practices.

Over the course of the Symposium, participants were invited to investigate Web site resources and organization. In addition to a large group feedback opportunity on the last day of the Symposium, participants were asked to complete a Web site evaluation. Appendix C (p. 61) provides details about Web site content. Findings were used to revise the draft Web site.

II. Presentation Analysis and Target Audience Recommendations

To identify and explore strengths and gaps in target audience information, the editors applied a meta-analysis process developed for our target audience literature search (Stevens & Andrews, 2006). Presentation highlights and the resulting education recommendations are summarized in Appendix B, p. 39. We then sorted presentation descriptions and recommendations from Appendix B in two ways. Tables 7-15 (Appendix D, p. 63) summarize recommendations by audience for each of nine audiences featured in symposium presentations. Tables 16-22 (Appendix E, p. 75) reconfigure the arrangement, presenting recommendations according to the six outreach themes.

Recommendations by audience

Recommendations for *households* and *neighborhoods* provide the most comprehensive advice of all the groups gathered for the Symposium (Table 11, p. 68). Recommendations for *landowners*, *recreational water users*, and *volunteers* were informative, but were the least comprehensive because there were fewer presentations for these audiences (Tables 12, 13, and 14, pp. 70-72). The lack of Symposium recommendations for these three audiences could be interpreted as a gap, since these audiences were listed in the call for presentations and proposals on these topics were carefully considered by the selection committee (although *volunteers* were not singled out by name from broader categories of organizations and clubs).

A Summary of Recommendations for Each Target Audience

(See Appendix D, p. 63, for a full description of recommendations for each audience studied.)

Conservation professionals

Provide professionals with autonomy in determining content and timing for their own training and enable them to personalize their training objectives. Direct application to work responsibilities, networking, and moral support are keys to learning new outreach or education skills for this audience. (Table 7, p. 64)

Decision makers, leaders, and community groups

Use the internet to provide leaders with access to data and relevant interpretations. Encourage community groups to develop their own environmental assessments and to develop their own outreach strategies. Build community-wide program acceptability. (Table 8, p. 65)

Ethnic groups

Carefully identify education needs that are specific to the group. Apply *place-based* teaching strategies so that education has a direct bearing on the well-being of the places people actually inhabit. (Table 9, p. 66)

Farmers, producers

Emphasize local, direct farmer contact. Use in-depth discussion and interviews to learn about farmer interests and management preferences. (Table 10, p. 67)

Households and neighborhoods

Generate local and detailed information about audience attitudes, interests, and needs with the help of a regional team, if available. Support and rely on stakeholder groups that already have a relationship with the target audience. Test education materials for their applicability with the audience of interest. Provide practical techniques and home assessments for households to apply with help from a trained volunteer to develop new practices. (Table 11, p. 68)

Landowners

Provide landowners with hands-on, practical training in a supportive atmosphere. (Table 12, p. 70)

Recreational water users

Train recreation professionals about water management in collaboration with their professional associations. (Table 13, p. 71)

Volunteers

Tell the story of the program and publicize impacts. (Table 14, p. 72)

Youth and youth educators

Use education materials that are relevant and easy to adapt to the school situation. Use field-based and service-learning experiences to provide problem-solving experiences, interaction with real things, learning that can be applied throughout life, and practice for environmentally responsible behaviors. (Table 15, p. 73)

Recommendations by theme

In Tables 16-22 (Appendix E, p. 75), we sort presentation recommendations by six themes. These themes also either encompass or describe BEPs. This enables us to look broadly at the type of

advice available for the educator. Most presentation recommendations address the theme *outreach strategies and methods of teaching* (Tables 19 and 20). Recommendations for *message content* and *supporting and motivating professionals* were the least comprehensive, although informative (Tables 17 and 21). The lack of Symposium recommendations for these themes could be interpreted as a gap. For each of the other three themes there were recommendations for at least four of the nine audiences.

A Summary of Recommendations for Each Theme

(See Appendix E, p. 75, for a full description of recommendations summarized by theme.)

Audience information

Prior to designing the program, implement a system to investigate the interests and needs of the stakeholders and target audience. Tailor materials to address identified needs. Identify barriers and benefits to recommended behaviors. (Table 16, p. 76)

Message content

Provide clear messages that have immediate utility for the program goal. Assure that different groups and agencies provide consistent messages. (Table 17, p. 77)

Message delivery vehicle

Message vehicles may be people, opportunities, or things. Work with a collaborative, a professional association, or youth leaders to deliver information. Time a message to coordinate with heightened awareness resulting from other public events. Be creative in delivering messages, through vehicles such as Web sites, youth awards, video and audio communication, handbooks, calendars, plants and landscape design, rain barrels, and bus tours. (Table 18, p. 78)

Outreach strategy/method of teaching

We grouped the large number of findings for this theme into two major subthemes: *outreach design components* and *outreach implementation*. Outreach design (Table 19, p. 79) was further subdivided into quality, stability, access, connection, program, and marketing. Outreach implementation (Table 20, p. 82) was subdivided into management, relevant instructional strategies, and recognition of contributors. Subthemes and divisions were selected based on previous work to outline standard elements of success for this theme and are reported on the Water Outreach Education Web site (National Extension Water Outreach Education. 2004).

The richness of recommendations for all but one design and implementation component, *marketing*, indicates a strong understanding among outreach professionals for effective techniques. Consistent application of these recommendations will influence the quality of efforts.

Supporting and motivating professionals

Build skills among conservation professionals to apply best communication practices. Build skills among land use professionals to ask the right questions. (Table 21, p. 85)

Evaluation

Encourage policy makers and stakeholders to report outcomes. Use follow up visits/calls, comparison crop strips, and pre and post surveys to evaluate impacts. Assure that program resources actually reach the targeted audience. (Table 22, p. 86)

III. Identifying Gaps in Target Audience Research

Goals for the Symposium were: to develop recommendations about the gaps in BEPs for target audiences, to make recommendations for proposed future work to facilitate the use of BEPs, and to increase recognition of the value of education to water management strategies. **This section summarizes gaps in information about target audiences identified by the Proceeding's editors as well as those identified by participants.** A summary of strengths and gaps is followed by broader recommendations for next steps. Discussion also highlighted gaps or needs related to the BEP concept itself. Recommendations relate to the need for professional development about the concept and the need for building the validity of the concept.

Project analysis of gaps

Symposium presentations provided outreach recommendations for nine audiences, broadly representing the sixteen audiences originally identified by the Advisory Committee. We were not successful in finding any presentations about *industrial water users*. Recreational water-related businesses or retailers generated only one study (Waltz). Another study about boating and fishing education (Levin) was comprehensive, but related more closely to other studies and reports about work with conservation educators.

Recommendations also broadly addressed all six outreach themes. Those for *message content* and *supporting and motivating professionals* were the least comprehensive, although informative. Their lack of representation in the work, however, could be interpreted as a gap. Apparently, our hand-picked presenters did not focus their work on these themes. There were recommendations for at least four of the nine audiences for each of the other three themes. The richness of recommendations about *outreach design components* and *outreach implementation* indicates a strong understanding of effective techniques among outreach professionals. Consistent application of these recommendations will influence the quality of efforts.

Even from this limited effort to identify audience-specific recommendations based on recognized education principles, pooled findings created gems of advice for each of the nine featured audiences and for the six themes. Our theory is that these well-grounded recommendations for conducting water outreach have been developing for the last decade or more. This Symposium may be one of a very few times, however, when the wisdom of these water professionals has been combined to create unique advice. **The power of the recommendations lies, in part, in their combination with others for the same audience. Together they provide a more holistic picture of water outreach that enables us to see what works.**

Participant analysis of gaps and recommendations

Following paper and poster presentations, participants were asked to start identifying gaps through small group discussion sessions. We prepared participants by asking them to observe certain features about each poster and paper presentation they attended:

- What audiences did the presentation address?
- What education practices were recommended?
- Were the education practices good, better, or best practices?

Facilitators led small groups through a number of questions about their day-long experience, supporting the group while it processed a large amount of information. We asked facilitators to answer three specific questions in their group report:

1. What audiences are important that were not included in presentations?
2. Why didn't we hear about certain audiences? Are there barriers?
3. What advice would you give to funders and policy makers on how to reach selected target audiences with our BEPs to improve information and understanding of water management strategies?

The BEP concept

Participant discussions led to questions and discussion about the BEP concept itself. Participants developed their own analysis and questions about the concept earlier in the meeting, as presented in Figure 1 (p. 21) and in Table 4 (p. 22). Discussion also produced a number of significant recommendations important for improving our understanding about the need for gathering exemplary practices and important for framing professional development needs and strategies that will improve outreach effectiveness.

Participants' recommendations:

- Build a common understanding of BEPs, and especially, find a way to articulate the theory that supports the practice in the minds of the practitioner.
- Encourage education-related professional development among natural resource professionals, and especially help professionals create clearly defined learning objectives.
- Promote rigorous social science research and evaluation methods to build the body of literature about and for BEPs, including the requirement that claims of cause and effect are well supported.
- Assure that BEPs identified through research are tested in practice.

Missing audiences

Participants identified many audiences they felt were not addressed during the Symposium. This should provide researchers and educators plenty of latitude in thinking about what groups they may have missed in their work. More published studies are needed for:

- *Scientists, hydrologists,* and *engineers,* in their roles as partners for collaborative learning about water
- *Groundskeepers* and *facilities managers*, including city/public works staff, golf course and park managers, and commercial landscape maintenance professionals
- *Planners* and *design professionals*, including architects, engineers, city planners, developers, builders, zoning officials
- *Policy maker*s and *influentials*, including journalists, media, legislators
- *Underserved audiences*, including Latinos, non-English speakers, socioeconomic underserved, minorities
- *Recreational water users*, including anglers, golfers
- *Ranchers* and *irrigators*

Barriers to studying audiences or best practices

Responses to this question went beyond the traditional "not enough time," "not enough money." Time was certainly a concern, but groups also identified lack of professional

training, inadequate access to information and research about target audiences, and the fact that there are no BEPs that fit every situation. Participants asked, "How do we make training within our organizations palatable?"

Participants pointed out that state agencies can't keep track of who is being educated and that all the work we do is in a context that is a moving target (as referenced by MacPherson and Tonning [2003] earlier in this section). There was particular interest in stakeholders, both to actively include them and to understand conflicts in their interests. Participants recommend that journalists become partners in the water outreach enterprise, for example. Gaps in information about audiences could be addressed if agency administrators encouraged managers to carry out more rigorous program evaluations.

Advice to funders and policy makers

We didn't ask participants to couch their recommendations in a sound bite, or a one-minute presentation, but the quality of their answers had that effect. Participants identified needs according to several themes.

The following list of "top ten" recommendations is a synopsis of about 75 suggestions participants had for funders and policy makers. The entire list of recommendations is found in Appendix F.

- Education or outreach programs, if based on sound education principles, lead to citizens who know how to make informed decisions and who will take actions that have a positive or desired impact on the community.
- Clearly state *the issue* or provide detail about the issue that would benefit from attention by outreach or education.
- Ask questions before funding. Clearly state *the standard* required for each educational strategy, practice, or program. Ask what combinations of BEPs are proposed? How does the grantee defend or support their use?
- Post education practice standards so that educators can compare their programs to see if they are meeting standards.
- Reach out to audiences beyond youth, farmers, and households.
- Know who the target audience is. Market segmentation research and identification of relevant BEPs to provide "more bang for the buck."
- Study audiences carefully, including the influential leaders. Train educators to address what the target audience knows and needs to know, and require quality programs and methodology.
- Share BEPs for specific audiences among agencies.
- Stay the course: It takes time for outcomes to occur.
- Accept behavioral change resulting from BEPs as a proxy for future water quality improvements.

IV. Challenges for Future Action

We ended the Symposium with a focus on the future from the perspectives of water outreach organizations and agencies, Symposium participants, and a national expert in community-based natural resource management.

Panel Presentations: Facilitating Community Action

To further prepare participants to offer recommendations, we provided one more piece to the outreach puzzle. The last panel session, *Moving Water Outreach and Education from Backwater to Mainstream*, focused on how to apply BEPs for water management in a broader context: How do we make water education and actions part of the mainstream of community life? Panelists provided four examples: Master Watershed Stewards (Godwin); Nonpoint Education for Municipal Officials or NEMO (Liukkonen); a multi-state outreach initiative (Mahler); and USDA Volunteer Water Quality Monitoring National Facilitation Project (Stepenuck).

These presentations offered important insights for how the work of the individual educator relates to the larger questions of making changes in community or group actions. Panelists outlined basic pieces for "making the leap." These included:

- Value a team effort and coordinate the team through a variety of activities.
- Establish baseline information about water education needs to improve ability to show progress and to help establish outreach priorities.
- Build citizen and group skills to ask the right questions.
- Provide avenues for communication among groups.
- Build program acceptability, especially through encouraging decision makers and partners to tell the story of the program and to publicize impacts.

Participants' Advice

Panel presentations were followed by a round-robin opportunity for small groups to provide advice about four points. In this scenario, participants read comments provided by a previous group before adding their own. This reduces duplication and often clarifies points made by an earlier group. The resulting recommendations for each question were superb and are provided as their own resource in Appendix F (p. 87). As we hoped, participants provided a list of suggestions that will keep the project team working hard. We summarize a few main points here.

General comments, suggestions, and reactions to the Symposium

The group agreed with the concept that natural resource professionals, or "accidental educators," need education training. Some went so far as to suggest that a natural resources education master's degree would be useful. There were many discussions about the BEPs themselves. One person suggested renaming the concept, PEPs, for Proven Education Practices in order to provide a more complimentary status for *good* and *better* practices. The group encouraged the Water Outreach Education Project staff to analyze our focus on education, as opposed to communication or community development, and our assumptions about good, better, and best education. Participants also encouraged us to be open to new visions. There was interest in how to acknowledge cultural differences within BEP recommendations and how to link social marketing concepts. Participants requested models of successful BEP applications and examples of how to go from *good* to *best*. The need for *sharing* opportunities also emerged as a theme. Participants suggested regional conferences, regional work groups, and e-mail postings. Finally representatives from federal agencies and national program leaders from USDA Cooperative Extension were encouraged to investigate concepts proposed in the Symposium.

Water Outreach Education Project products: Refinement and promotion

The group viewed the Web site at a draft stage. Following the Symposium, a considerable amount of material was added to the Web site, taking advantage of recommendations where

possible. A number of excellent suggestions are, as yet, unmet. Themes from the discussion suggested the following:

- Develop a market plan.
- Provide a discussion or message board, and feed-back opportunities.
- Promote interconnectivity and provide users with a way to ask for help.
- Announce newly updated information on the Web site.
- Add interactive features and condensed histories of lessons learned.
- Enable users to search information by audience, such as youth, urban, farm, and organizations.
- Ask non-educators to review the site for usability.

Submissions for the water education collection

How do we encourage researchers and educators to submit resources to the Web site database? In addition to standard recommendations like working with state water quality coordinators and posting the opportunity in standard journals, participants suggested a number of other ideas that focused on providing submitters with feedback about their efforts. Participants suggest that the call for submissions emphasizes a "What's in it for me?" message: How will submitting an item help me? Providing a clear message for what is needed would also make it easier for educators to respond. People submitting materials need feedback about their submittal. Suggestions included: a pop-up thank you box; a submission acknowledgement that states the number of the submission (this is submission number 143, etc.); a list of other items in the database similar to the item submitted; a message to the author about the number of "hits" on the item. We were encouraged to use the Project's WaterEducatorsUSA listserv, https://lists.uwex.edu/mailman/listinfo/watereducatorsusa, to provide a monthly update of topics submitted.

Recommendations for future actions

Comments in this section mirrored the general comments. An emphasis on more training, networking, and work groups emerged. Participants are looking for program models and evaluation templates. They would like training on related topics such as program design tools and techniques, and consensus building. Long term evaluation of changes achieved by applying BEPs is an important next step. In searching for how to describe the experience one participant suggested, philosophically, that a lack of clarity experienced by participants probably reflected a growth process for our profession.

Education: A Key Component of Water Management Strategies

The Symposium was designed to bring a diverse group of experienced outreach professionals together to investigate opportunities for applying BEPs and for improving access to resources for professional development. Following a day and a half of critiquing exemplary programs and philosophizing, it was time to bring the discussion back to the concrete challenge about whether education is an essential ingredient for community-based water management. Kevin Coyle kicked off the Symposium by affirming the relevance of water education and by providing some checks that educators could use for answering this question. In the closing address, *Education – Is It an Essential Ingredient for Community-Based Water Management?*, Dr. Cornelia Butler Flora provided a final opportunity to explore how education can play a pivotal role.

Dr. Butler framed her recommendations in terms of *capitals*: natural, cultural, human, social, political, financial, and built. In her words, "Capitals are resources invested to create new

resources over a long time horizon." Educators should maintain a balance among the capitals in their work. In her view, *a lack of knowledge* may be only a small obstacle in moving toward a more sustainable ecosystem and therefore educators need to focus on the "pyramid of social control." We need to understand why structures and actions are in place that lead to ecosystem degradation and identify the best ways to change those structures and actions.

Our concern as water educators is to understand why people act in the public interest. Educators provide citizens with information that helps them do the ecologically responsible thing. If citizens don't know how, then our job is to provide technologies and skills that enable them to perform the responsible actions successfully. Accompanied by sound environmental education practice to foster decision-making skills and civic investment, these steps lead citizens to the literacy level described by Mr. Coyle in the kick-off address.

The next level is to support groups that share values, or to expand *social capital*. Ultimately the educator helps citizens and groups to develop *political capital*, the ability to mobilize in a democratic forum. As Mr. Coyle describes, a potential goal is to build environmental literacy among community influentials who are actively involved in the community and who are "constantly making decisions on every aspect of community life."

These are challenging concepts for educators more familiar with the comfortable role of the neutral or who focus on providing awareness or "personal steps." Exactly how the application of BEPs meshes with an understanding of societal structures is the subject for another symposium. What we can do is to perform well within the structures and settings where citizens or democratic rule have provided clear goals for change or improvement. BEPs apply, no matter where the educator is positioned – with individuals, homeowners, neighborhoods, groups or leaders, and policy makers. Use of BEPs will contribute to building environmental literacy among all members of a community.

The answer to Dr. Cornelia Flora's question "Education – Is it an essential ingredient for community-based water management?" is a resounding YES from Symposium speakers and participants. Participants provided examples of BEPs in practice with specific audiences. They also provided recommendations for building the BEP concept and promoting the use of BEPs.

New directions for the Water Outreach Education Project will include:

- Refining the concept of BEPs, and providing training and networking among water educators.
- Promoting the value of applying BEPs to agencies and funders.
- Providing models and evaluation templates to measure whether we have achieved BEPs and to determine if they have the predicted effect.

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