

From Theory to Practice: Best Practices in Boating, Fishing, and Aquatic Stewardship Education

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Abstract

This paper summarizes the process used by The Recreational Boating & Fishing Foundation to develop Best Practices For Boating, Fishing, And Aquatic Stewardship Education to further RBFF's mission of implementing a national outreach strategy to increase participation in fishing and boating, and stewardship of the nation's aquatic natural resources. A "Best Practice" can be defined as a program or practice that has been clearly defined, refined through repeated delivery, and supported by a substantial body of research evidence. RBFF commissioned a research project that would identify research-based Best Practices in boating, fishing and aquatic stewardship education. The resulting document, *Defining Best Practices In Boating, Fishing, And Stewardship Education* (Fedler, 2001) formed the basis for creating recommended practices for program planning, development and implementation. From the Best Practices research, a professional team developed tools for educators to implement the researched recommendations (Seng & Rushton, 2003). Currently, RBFF is partnering with state agencies and researchers to evaluate the effectiveness of Best Practices tools. As a next step, RBFF plans to facilitate development of instructional tools to assist educators in successfully evaluating their own programs.

Introduction

The need for public involvement with and stewardship of our aquatic natural resources continues to grow, as the average American's connection with those resources continues to diminish. This disconnect portends significant threats to the sustainability of our natural world by diminishing public support for natural resources managers and conservation, as well as decreased knowledge and personal empowerment regarding individuals' impact on those resources.

No longer are agencies that manage natural resources, from the federal to the state to the local government, solely responsible for the water, land, and air. Education has increasingly become a staple responsibility for these entities. For years, efforts at effective aquatic education have suffered from unclear objectives and erroneous methodology.

In this day of tight government budgets and increasing accountability, Best Practices in education have become a necessity. This effort aims to put “professional” in front of aquatic educator, and provide sound practices to make education efforts more effective, as well as provide research-based support for the value and necessity of education as part of holistic natural resources management.

Project Background

In 1998, the Department of Interior’s Sport Fishing and Boating Partnership Advisory Council completed a strategic plan for their Outreach and Communication Program. The initiative sought to increase participation in fishing and boating to complement ongoing conservation efforts by government agencies, and to pass on these American traditions and a legacy of stewardship.

The Recreational Boating and Fishing Foundation (RBFF) was created to carry out this initiative. Its mission is to increase participation in recreational angling and boating and thereby increase public awareness and appreciation of the need for protecting, conserving and restoring this nation's aquatic natural resources. At the time of Best Practices inception, RBFF had five goal areas; the first four were addressed by a group of stakeholders, known as Task Forces. In addition, RBFF has a Stewardship Team to explore the relationship between stewardship and participation.

- Goal 1: Create top of mind awareness campaigns (ad program, external communications/PR, outreach).
- Goal 2: Enable stakeholders to use research and best practices to educate people about boating, fishing and aquatic resource stewardship.
- Goal 3: Provide research basis for making boating and fishing marketing decisions.
- Goal 4: Educate stakeholders on marketing and outreach using RBFF products, tools and services.
- Goal 5: Make availability of and access to information about boating and fishing locations easy and simple.

The Best Practices initiative arose from the work of Task Force 2, in addressing Goal 2.¹ Task Force 2 identified a variety of issues as priority concerns and defined an ambitious

¹ Members of Task Force 2 come from a variety of disciplines and experiences in aquatic and boating education. They are: Mike O'Malley (Chair), Watchable Wildlife Manager, Washington Dept of Fish & Wildlife; Elaine Andrews, Environmental Education Specialist, Environmental Resources Center, UW Cooperative Extension; Eleanor Bochenek, Marine Scientist, Rutgers University; Virgil Chambers, Executive Director, National Safe Boating Council; Mark Cole, CEO, Inner City Fishing Institute; Shari Dann, Assistant Professor & Extension Specialist, Dept. of Fisheries and Wildlife, Michigan State

agenda to answer its charge: *Enable stakeholders to use research and best practices to educate people about boating, fishing and aquatic resource stewardship.* To begin, the task force defined recreational boating, fishing and stewardship education as:

“A complex process by which related skills, attitudes, knowledge, and behaviors are enhanced, developed and supported through a planned series of experiences.”

Boating and fishing education was characterized as:

- Complex
- Life-long
- Linked to stewardship
- Changes behavior over time

They identified these primary and secondary audiences for the work of this task force:

Primary Audiences:

Aquatic educators

Education Service Providers, including their supervisors and administrators

Agency educators – formal and non-formal, including: Extension, Parks and Recreation

“Education brokers” – organizations responsible for providing education services

Secondary Audiences:

Task Force 4

Point of sale staff (state licensing process)

Partners

Enforcement

NGO’s with conservation education programs

Community-based organizations that provide education

Developing Best Practices

A “best practice” can be defined as a program or practice that has been clearly defined, refined through repeated delivery, and supported by a substantial body of research evidence.

Task Force 2 identified developing guidelines for research-based boating/fishing education programs utilizing best professional practices as necessary to facilitate a sound educational process.

The task force included in its initial plans the need to determine which processes provide the best experiences for conveying knowledge, developing skills, and changing attitudes

University; Anne Glick, Educational Programs Coordinator, American Sportfishing Association; Carl Richardson, Aquatic Resource Education Program, Pennsylvania Fish & Boat Commission; and Rich Wehnes, Stream Services Program Supervisor, Missouri Department of Conservation

Best Education Practices (BEPs) for Water Outreach Professionals: Defining BEPs, Refining New Resources and Recommending Future Actions, June 2004 Symposium Proceedings

and behaviors. It was decided that a broad approach, examining multiple disciplines, would provide the best sources of information. The following fields were suggested:

- community-based education
- traditional evaluation
- experiential education
- outcome-based education and evaluation
- drug prevention education
- watershed education
- environmental ethics education
- outdoor education/adventure learning
- risk education
- intervention
- therapeutic recreation
- sports sociology (preferences as to individual/team/watching)
- cognitive/affective/psychomotor domains
- demographic specific
- how to learn
- leisure education
- non-formal education

To accomplish this, RBFF issued a Request For Proposals for a contractor to compile the best professional practices that provide guidance to boating, fishing and stewardship. Dr. Anthony Fedler of Human Dimensions Consulting was selected to facilitate the development of guidelines/standards for research-based education programs utilizing best professional practices.

The first step in developing these Best Practices was to engage academic professionals proficient in the fields of interest to summarize available research on the best methods for achieving learner outcomes. Following, is a list of those papers and authors:

- *Best Practices for Curriculum, Teaching, and Evaluation Components of Aquatic Stewardship Education* - William F. Siemer
- *Elements of Effective Environmental Education Programs* - Julie A. Athman and Martha C. Monroe
- *The Right Tools for the Right Job: How Can Aquatic Resource Education Succeed in the Classroom* - Rosanne W. Fortner
- *Guidelines for Best Practices in Aquatic, Fisheries, and Environmental Education* - Michaela Zint
- *Best Practices in Boater Safety Education* - Alan R. Graefe
- *Defining Best Practices in boating, Fishing, and Stewardship Education: Challenges and Opportunities for Reaching Diverse Audiences* - Myron F. Floyd

- *An Overview of an Issue and Action Instruction Program for Stewardship Education* - Tom Marcinkowski
- *Outdoor and Risk Educational Practices* - Marni Goldenberg
- *Water-Based outdoor Recreation and Persons with Disabilities* - Jo-Ellen Ross
- *Recommended Educational Practices for Youth Environmental Education from a 4-H Youth Development Perspective* - Kathleen E. Vos
- *Best Practices in Marine and Coastal Science Education: Lessons Learned From a National Estuarine Research Reserve* - Janice D. McDonnell

The Best Practices in Boating, Fishing and Stewardship Education project focused on identifying accepted principles and standards generally applicable to boating, fishing and stewardship education.

Research was compiled from the following disciplines:

- Boating education
- Aquatic education
- Environmental education
- Marine education
- Youth development
- Stewardship and environmental ethics education
- Adventure recreation education
- Minority education
- Outdoor education for people with disabilities.

Each expert wrote a review paper distilling the best professional practices from his or her field that would likely result in accomplishing the goals of boating, fishing, and stewardship education programs. The experts also wrote a brief overview of appropriate evaluation methods for gauging the effectiveness of boating, fishing, and stewardship education programs. Gaps in the literature, pertaining to understanding the effectiveness of different educational approaches, were identified and prioritized, as future research needs.

The Best Practices are founded on research and practical experience from diverse fields, and the recommendations for curricula, programs, and leadership are practices that will affect change in aquatic resource and environmental knowledge, attitudes, and behaviors. Recommendations were required to be supported with scientific research, peer recommendations, and practical experience.

After completing their papers, the experts were joined by 14 professional boating, fishing and aquatic education administrators and practitioners in a workshop designed to reach consensus on basic principles and best practices derived from the collection of written papers, and the group's collective practical experience. During the workshop, participants identified 10 general guiding principles for education programs (Table 1). Additionally, the group recommended basic practices for each of four educational areas: 17 for program planning, development and implementation (Table 2); 21 for professional

development (Table 3); 11 for program evaluation (Table 4); and 6 for educational program research (Table 5). Each of the principles and recommendations can be used in forming components of new programs or in evaluating existing programs.

The resulting eleven papers and these guidelines were edited by Dr. Fedler and compiled in a document, *Defining best practices in boating, fishing, and stewardship education* (Fedler, 2001). This document is available for download at <http://www.rbff.org/educational/bestpractices.cfm>.

In the year succeeding publication of the Best Practices, RBFF staff initiated communications with educators individually and at venues such as the Aquatic Resources Education Association West (AREA West) meeting and the North American Association for Environmental Education (NAAEE) conference, to gauge interest in Best Practices as a concept and the usefulness of the document.

Overall, the feedback indicated that people think the idea of having Best Practices in education is good and that the information contained in the document is worthy, but every person indicated s/he would never actually read it and everyone agreed that the guidelines as written were theoretical, not actionable. In addition, most educators were interested in doing a better job of evaluating their programs and using those evaluations to do a better job of educating, but none were comfortable with their ability to effectively evaluate. They requested training and tools to enable them to do a better job in that area.

Translating Theory into Action

Based on this feedback, RBFF requested a contractor to help take the information from the Best Practices and translate it into actionable formats. These formats include information sheets about Best Practices; workbooks that will take aquatic educators through the program development/evaluation process as outlined in the report; a trainer's guide to assist facilitators in teaching Best Practices; and tools to help communicate the importance of the Best Practices, including a PowerPoint presentation (Seng & Rushton, 2003). These tools are available for download at <http://www.rbff.org/educational/bestpractices.cfm>.

To assist in the development of these tools, the contractor engaged a review panel of 30 that included original authors of the Best Practices, as well as practitioners of aquatic education.² The review panel reviewed three drafts of each tool for accuracy and utility.

Following is a brief description of each tool:

Program Development Workbook

The workbook is an interactive, reusable tool that aquatic educators can use to help them develop effective programs and/or evaluate existing programs. It translates the technical

² Editor's Note: Names and positions of review panel members are listed on the website and in the workbook, <http://www.rbff.org/educational/bestpractices.cfm>.

concepts identified in the Best Practices document into guidelines that practitioners can implement in their own situations. The workbook has sections to assist practitioners who are just building a new program, as well as sections designed to help ongoing programs identify and tackle problems using real-world examples (from aquatic education and other education disciplines) and interactive, problem-based learning models. The primary consideration in the development of this workbook is to make it easy for practitioners to fold the workbook guidelines and recommendations into their ongoing work. It is organized in ten chapters:

1. Plan Ahead For Success
2. Building Your Program
3. Well-Trained Instructors
4. Evaluation
5. Diverse Audiences
6. Persons With Disabilities
7. Boating Education Programs
8. Fishing Education Programs
9. Aquatic Stewardship Education
10. Let Research Help

The workbook also contains a Glossary/Index, and A Brief History Of Environmental Education. In addition, there are over 80 worksheets to help guide users through the content and make it personally applicable and relevant.

Information Sheets

The fact sheets are short summaries of the information contained in the Workbook. They describe the kind of information that Best Practices represent, the intention of Best Practices, and the importance of using Best Practices in program development, professional development, and evaluation. They are to be used in association with the Workbook described above, and brochures as communications pieces about Best Practices. Following is a list of the Information Sheets developed:

- Making Your Education Program the Best in the Nation
- Planning Ahead
- Building Your Program on Solid Ground
- Expanding Your Capabilities: Well-Trained Instructors
- How Do You Know If It's Working? Evaluation!
- Expanding Your Reach to Diverse Audiences
- Enhancing Boating Education Programs
- Enhancing Fishing Education Programs
- Enhancing Aquatic Stewardship Education
- Clubs and Grassroots Organization
- Building Support Within Your Agency/Organization

Trainer's Guide

In the absence of a delivery mechanism that clearly demonstrates how and why aquatic educators can/should use the materials described above; the materials will quickly find a spot on a dusty shelf. Even the best materials in the world will remain largely unused in the absence of hands-on training or interpretation. This guide acts as a "cookbook" for conducting a one- or two-day workshop that would walk end users through the Program Development Workbook and motivate them to adopt the information and materials into their programs.

PowerPoint Presentation

The Power Point presentation is a comprehensive presentation that includes text and design elements developed to help various target audiences communicate about the importance of Best Practices. Topics covered in the presentation include:

- Why Best Practices are important
- History and development of Best Practices
- What Best Practices are (basic elements)
- What is needed to implement Best Practices

Use of Best Practices and Next Steps

From February through May 2004, over 300 individuals have requested Best Practices materials. Over 50 individuals from 15 states have been trained in Best Practices in RBFF-sponsored workshops. And, multiple states are implementing Best Practices to build programs from the ground up, or to evaluate existing programs.

In addition, Chicago State University, under the guidance of Dr. Jo-Ellen Ross, developed, implemented and evaluated a two-credit college course on fishing, boating, and aquatic stewardship education based on the Best Practices. Through classroom and field instruction, students were given a chance to participate and learn the basics of developing, implementing and evaluating programs using the Best Practices tools.

Beginning in the summer of 2004, RBFF will be working with partnering state agencies and Chicago State University to evaluate the effectiveness of the Best Practices tools. Reports on their successes and lessons learned will be forthcoming. Results of the evaluations will help shape future iterations of the Best Practices guidelines and the tools that enable their implementation.

Another important next step will be the development of a companion evaluation tool. While the Best Practices emphasize evaluation and the importance of including it in every phase of program development and implementation, very little guidance has been compiled on methodology to assist educators in successfully evaluating programs. RBFF plans to facilitate development of this instructional tool.

Since the project's inception, the aquatic education community's response has been overwhelmingly positive. The tools and the information contained therein have struck a chord with the community, piecing together existing knowledge and resources into a comprehensive guide to program success. Following are a few testimonials:

"I'm blown away by the Best Practices Document. I can't wait to use it. It's about everything I'm trying to champion. It's a fabulous tool..."

Margaret Tudor, Washington Department of Fish and Wildlife

"It's nice to see the things I've tried to piece together for years in one document..."

Barb Gigar, Iowa Department of Natural Resources

"It is really quite a spectacular effort. It gathers so much of what we should use every day and puts it right at your fingertips."

Judy Stokes, New Hampshire Fish and Game Department

"I see Best Practices as integral to our success. We've made copies for everyone in our department involved in education, not just aquatic education. It provides us good direction and is a great path for us to follow. We believe this will help us to leave a true legacy."

Patricia Miller, Tennessee Wildlife Resources Agency

"We plan to teach Best Practices to all of our divisions. The information applies to the hunting side just as much as boating, fishing, and stewardship. We'll then give everyone an opportunity to help us determine where we should go with each of our programs."

M.N. "Corky" Pugh, Alabama Department of Conservation and Natural Resources

For more information on Best Practices in Boating, Fishing, and Aquatic Stewardship Education, and to download materials, visit the web at <http://www.rbff.org/educational/bestpractices.cfm>. Free preview copies are also available through the Recreational Boating and Fishing Foundation.

References

Fedler, A. J. (Ed.) (2001). *Defining best practices in boating, fishing, and stewardship education*. Alexandria, VA: Recreational Boating & Fishing Foundation. Retrieved November 12, 2004 from the Recreational Boating & Fishing Foundation Web site: <http://rbff.org/educational/bestpractices.cfm>

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Table 1: Guiding Principles for Boating, Fishing, and Aquatic Stewardship Education

Boating, Fishing, and Stewardship Education:

- Is learner-centered.
- Constitutes a continuous and lifelong process for individuals, families, and diverse social groups.
- Considers aquatic resources in their totality, including natural, built, technological, and social aspects (e.g., economics, politics, cultural-historical, moral, and aesthetic).
- Provides participants with opportunities to engage in the valuing process (i.e., choosing, affirming, and acting) as it relates to programs, program activities, and their own growth and development.
- Follows the principles of inclusion with regard to program participation by minorities and people with disabilities.
- Begins with goals and objectives that relate to appreciation and awareness, expand to include both knowledge and skills, and culminate in personal responsibility and responsible behavior.
- Builds upon local, state, and national partnerships to support the development, implementation, and evaluation of programs, as well as to support stewardship of the resource.
- Relies on a variety of systematic and continuous approaches to the assessment of participants and evaluation of programs so as to improve and eventually validate those programs.
- Supports, engages in, and makes use of the scientific, social, educational, and other forms of research that have a bearing on programs.
- Recognizes the critical role and the need to adequately support ongoing professional development for all personnel associated with these efforts and programs, including those suggested or implied in the above principles.

Table 2: Best Practices for Program Development and Implementation

Effective Programs:

- Are relevant to the mission of the agency or organization sponsoring the program, the educational objectives of the audience, and everyday life of the learner.
- Use some form of needs assessment to establish a basis for and to help shape individual programs. Assessments should include needs of the agency, community, and participants.
- Involve stakeholders at all levels of their development.
- Empower learners with skills to address environmental issues and with a sense of personal and civic responsibility.
- Present accurate and balanced information incorporating multiple perspectives using an interdisciplinary approach.
- Are accessible to persons with disabilities and incorporate adaptive technology, support staff, and services to meet the needs of all participants in an inclusive manner.
- Receive adequate resources, staffing, and are supported through appropriate resources and staff so that they become sustainable over time.
- Are instructionally sound, utilizing learner-centered and experiential instructional approaches to provide opportunities for collaborative learning and the development of critical thinking skills.
- Are developmentally appropriate, using multiple methods to enhance learning opportunities for diverse learning styles.
- Provide educational opportunities that are frequent and sustained over time.
- Use an interdisciplinary approach to develop skills, formulate concepts, and examine issues.
- Aligns curriculum with national and state educational standards, when appropriate.
- Use curricular materials and other print and electronic resources that present accurate information, and when addressing controversial topics, expose participants to different perspectives in a fair and balanced manner.

Table 2: Best Practices for Program Development and Implementation
<ul style="list-style-type: none"> • Inventory and utilize a variety of educational resources and environments, including community resources (e.g., speakers, offices), and lab and field sites (e.g., hatcheries, marinas, ponds and lakes), in a sustainable manner. • Are planned and carried out in a manner that clearly addresses safety and other regulations, and reduces real risks to everyone involved by utilizing professional safety and risk management techniques. • Rely on experienced, well informed, prepared, and ethical staff to develop, implement, and evaluate programs. • Make use of a variety of teaching and learning methods that are appropriate for a program's goals, objectives and subject matter, and are sensitive to participant age, developmental level, and background.

Table 3: Best Practices for Professional Development
<p>Effective professional development:</p> <ul style="list-style-type: none"> • Clearly presents the agency's or organization's mission and goals. • Inspires active, ongoing, lifelong learning by professional educators. • Addresses diverse learning styles by presenting material in a variety of formats and experiences, and incorporates active learning. • Values diversity and relates to audiences consisting of diverse social, cultural, and economic groups. • Includes opportunities for youth leadership development as well as for adults. • Includes aquatic resource stewardship as an outcome and/or longer-term impact. • Follows a validated process for workshop training to establish consistency, when appropriate. • Offers tiers of training to provide for continuing education using a "roll out" process for increasing learner knowledge and competency over time. • Includes presentation of effective teaching methods and ways to foster learning. • Presents models of good instructional and assessment practices. • Provides opportunities for learning to continue over an extended period through the innovative use of the Internet, listservers, newsletters and networking. • Provides mechanisms for updating existing information and disseminating it to educators and administrators. • Uses attractive and appropriate training materials, and provide hands-on exposure to materials to be used in the classroom. • Provides appropriate models of program evaluation. • Considers audience motivations for participating in professional development (e.g., mandatory or voluntary). • Includes formative, summative and long-term evaluation of the trainer, the program and the trainee. • Includes pre-service (basic training) and in-service (in-depth) training modules and avoids brief one-shot training sessions. • Recruits instructors with experience and knowledge in the subject area. • Incorporates educational theory into training curriculum. • Screens instructors, with criminal background checks, and interviews them for potential, motivation, commitment, ethical behavior, knowledge, and the ability to work diverse groups. • Provide opportunities for mentoring by experienced instructors and staff.

Table 4: Best Practices for Program Evaluation

Effective program evaluation:

- Is envisioned and undertaken as a systematic and ongoing process that begins when a program is being planned or developed, and that included both formative and summative evaluations.
- Receives both administrative support and budgeted allocations as part of program costs.
- Is utilized as a learning tool to support program reflection, decision-making, and improvement.
- Includes pre-assessments of learners and assessments of learning outcomes that are based on program goals and objectives.
- Helps identify program outputs, such as number of participants and participation feedback.
- Is used to help align program inputs (e.g., materials, resources) and processes (e.g., activities, services) with program outcomes.
- Explores and investigates the program's long-term benefits and impacts.
- Encourages the use of assessment methods that include, when appropriate, informal methods (e.g., Q&A, observations), traditional methods (e.g., quizzes, tests), and alternative/authentic methods (e.g., rubrics for performance tasks and projects, portfolios).
- Makes use of curricular materials that have been carefully reviewed against national criteria, or will use these criteria to select, develop and/or revise materials.
- Makes use of evaluators and evaluation methods that involve and empower program staff.
- Allows program staff (i.e., administrators, coordinators, and instructors) to take advantage of professional development opportunities in the areas of assessment and evaluation, so that staff have greater capacity to carry out and use results from sound program evaluations.

Table 5: Best Practices for Research

Effective research:

- Allows program staff to explore and recognize both the value of and the need for research that is relevant to their program.
- Is organized and communicated in ways that provide opportunities for program staff to become aware of and generally familiar with collections, reviews, and summaries and syntheses of research relevant to their program.
- Is organized and communicated in ways that permit program staff to incorporate major research findings into the design, development, implementation, and evaluation of a program.
- Is organized and communicated in ways that help program staff become aware of, explore, and share both apparent gaps in existing research and additional research needs.
- Allows program staff to take advantage of professional development opportunities that enhance their abilities to understand the implications of research for their program and strategies for making use of that research.
- Allows program staff to take advantage of professional development opportunities that enhance their research skills and thereby strengthen their capacity to become meaningfully involved in the research process (e.g., as in action research).