

**FNR 4070C: Environmental Education Program Development  
University of Florida**

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Class Meets Wednesday, periods 7-9 (1:55 – 4:55); Room 222, NZ Hall

Good environmental education (EE) programs are designed to meet environmental and educational goals for specific audiences. They use appropriate teaching strategies to engage learners and build capacity to resolve environmental issues. The development of a good program includes: a comprehensive needs assessment to understand the audience and available resources; a pretest of the materials prior to full-scale implementation; a training program for staff or volunteers; and an evaluation procedure to continue improving the program. This course will introduce students to these techniques of program development for adult and youth-based environmental education activities in the non-formal arena (such as nature centers, extension, residential facilities, environmental organizations, and resource agencies). Students will work together to develop and implement tools for a program evaluation.

**Course Description:**

A comprehensive approach to program development, from needs assessment to evaluation, will be applied to non-formal environmental education.

**Materials and Fees:**

- Readings are in Perusall and linked on Canvas -- <http://ufl.instructure.com>
- *Evaluating Your Environmental Education Programs* – Distributed in class
- *Project Learning Tree Activity Guide* and *Project WET Guidebook* – Distributed in class
- A modest course fee enables us to provide these materials at a reduced cost to students and cover field trip vans.

**Course Policies:**

Students are expected to attend class, engage in discussion, submit assignments on time, and participate in group work. Absences will be excused if accompanied by appropriate paperwork. More than one unexcused absence will result in a reduction in the participation score. Assignments are to be turned in during class or on Canvas on the day they are due. A late assignment will be docked 1% per day from the final score for each day it is late. We are happy to provide feedback on drafts of your assignments to help you improve your writing. If you would like feedback from one of us, please send a draft by email more than 48 hours before the submission deadline.

**Grading Scale:**

A	93 – 100%	C	73 – 76%
A-	90 – 92%	C-	70 – 72%
B+	87 – 89%	D+	67 – 69%
B	83 – 86%	D	63 – 66%
B-	80 – 82%	D-	60 – 62%
C+	77 – 79%	E	below 59%

### **Grades will be determined from these assignments:**

- |                                  |           |
|----------------------------------|-----------|
| 1. EE Activity Review            | 10 points |
| 2. Teaching Unit                 | 15 points |
| 3. Midterm                       | 15 points |
| 4. Evaluation Tool               | 5 points  |
| 5. Group Teaching and Reflection | 10 points |
| 6. EE Proposal                   | 25 points |
| 7. Participation                 | 20 points |

## **University of Florida Policies**

### **Grades and Grade Points**

For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

### **Absences and Make-Up Work**

Students are expected to arrive on time and engage in course discussions. Cell phones should be turned off. Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

### **Academic Honesty**

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."* You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: *"On my honor, I have neither given nor received unauthorized aid in doing this assignment."* The Conduct Code specifies a number of behaviors that are in violation of this code and the possible sanctions. [Click here to read the Conduct Code](#). If you have any questions or concerns, please consult with the instructor or TAs in this class.

It is assumed that you will complete all work independently unless I have asked you to collaborate on course tasks (e.g., project). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel.

### **Canvas Technology Requirements (Fall 2021)**

Computers, Internet, and Web browsers: Canvas runs on Windows, Mac, Linux, iOS, Android, or any other device with a modern web browser. It is recommended to use a computer less than five years old with at least 1GB of RAM. It is recommended to have a minimum Internet speed of 512kbps. It is strongly recommended to not use a wireless connection, phone, tablet, or notepad for critical course tasks such as exams and discussions.

Canvas currently supports the following browsers: Chrome, Safari, Firefox, Edge. Canvas supports the last two versions of most browsers. It is highly recommend updating to the **newest version** of whatever browser you are using. Note that your computer's operating system may affect browser function. Failure to use one of these browsers will cause problems.

For more information on approved computers and browsers please visit:

<https://community.canvaslms.com/t5/Canvas-Basics-Guide/What-are-the-browser-and-computer-requirements-for-Canvas/ta-p/66>

On this web page there is an area titled "Is My Browser up to Date?" Use it to check each computer and browser you may use in this course. There is another important area on "Browser Privacy Settings." Read the section(s) for any browser intended for use. For example, **Note that:** In browsers such as Safari, insecure content will never be displayed in the browser. Return to the page to check for updates on technology issues in Canvas.

If you encounter technical difficulties in this course, **contact the UF Computing Help Desk** right away to troubleshoot. <https://helpdesk.ufl.edu/> or (352) 392-HELP. If the problem cannot be fixed immediately, **notify your instructor, and provide them with the Help Desk ticket number.**

### **Plagiarism**

Plagiarism is using other's words without appropriate citation in your writing. It is perfectly and importantly appropriate to reference other's ideas, but you must do so with citations (to credit their ideas in your words) or quotations (to use their words). In this class, an author-date citation is fine, with a Literature Cited section listed alphabetically with enough information to find the source: author, date, title of paper or book, title of journal or website, publisher, page or website. You can find more information about plagiarism here: <http://www.uflib.ufl.edu/msl/07b/studentplagiarism.html>. We will be using TurnItIn software to check for plagiarism. You can use their site to check your own work before you submit it. In this course, we would like for you to use APA style for citations.

References to periodical articles must include the following elements: author(s), date of publication, article title, journal title, volume number, issue number (if applicable), and page numbers.

More information about APA Citation style can be found here:

- Purdue Owl Writing lab  
[https://owl.purdue.edu/owl/research\\_and\\_citation/apa\\_style/apa\\_formatting\\_and\\_style\\_guide/in\\_text\\_citations\\_the\\_basics.html](https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/in_text_citations_the_basics.html)

Examples of how to cite various sources:

#### **Newspaper article, online**

Hu, W. (2021, June 4). Whose Streets? The Next New York Mayor Will Have to Decide. *The New York Times*. <https://www.nytimes.com/2021/06/04/nyregion/nyc-mayor-election-streets.html?action=click&module=Top%20Stories&pgtype=Homepage>

#### **Journal Article**

Monroe, M. C., Plate, R. R., Oxarart, A., Bowers, A., & Chaves, W. A. (2019). Identifying effective climate change education strategies: a systematic review of the research. *Environmental Education Research*, 25(6), 791-812.

## Software Use:

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

## Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

### Health and Wellness

- *U Matter, We Care*: If you or someone you know is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu), 352-392-1575, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.
- *Counseling and Wellness Center*: [Visit the Counseling and Wellness Center website](#) or call 352-392-1575 for information on crisis services as well as non-crisis services.
- *Student Health Care Center*: Call 352-392-1161 for 24/7 information to help you find the care you need, or [visit the Student Health Care Center website](#).
- *University Police Department*: [Visit UF Police Department website](#) or call 352-392-1111 (or 9-1-1 for emergencies).
- *UF Health Shands Emergency Room / Trauma Center*: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; [Visit the UF Health Emergency Room and Trauma Center website](#).

### Academic Resources

- *E-learning technical support*: Contact the [UF Computing Help Desk](#) at 352-392-4357 or via e-mail at [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu).
- *Career Connections Center*: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.
- *Library Support*: Various ways to receive assistance with respect to using the libraries or finding resources.
- *Teaching Center*: Broward Hall, 352-392-2010 or to make an appointment 352-392-6420. General study skills and tutoring.
- *Writing Studio*: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.
- *Student Complaints On-Campus*: [Visit the Student Honor Code and Student Conduct Code webpage for more information](#).
- *On-Line Students Complaints*: [View the Distance Learning Student Complaint Process](#).

## Services for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-

student disability related issues. Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

### **Course Evaluation Process**

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

### **Free Speech Rights and Responsibilities**

Although students have free speech rights under the United States Constitution, in academic and other workplaces those rights are limited when they infringe upon another person's right to work in an environment free of harassment. In this class it is my intent to establish an environment that supports all students and their opinions and perspectives, allows for the scholarly exchange of ideas, and creates a sense of respect for all.

### **In-Class Recording**

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

## Course Objectives

By the end of the relevant class, students will be able to:

Describe the roots of environmental education in the U.S.

Explain how social and political influences continue to shape EE in the U.S.

Explain how people learn information, concepts, and skills.

Critique and explore how an activity uses experiential learning to teach concepts. Practice leading all elements of experiential learning.

Explain current movements in science education and the impacts they are/may have on EE (No Child Left Behind/No Child Left Inside, service learning, EIC, etc.)

Understand the role of state standards and testing in education reform.

Develop a unit a teacher could use in Florida schools.

Describe the strategies and guidelines for EE materials and program development that should lead to excellence in EE.

Explain the components of a logic model.

Develop a logic model that describes an EE program.

Describe the steps of program development and the purpose of three types of evaluation.

Develop program and behavioral objectives.

Describe the advantages, disadvantages, and purposes of five evaluation tools.

Create and use an evaluation tool.

Explain the qualities of a good survey or interview question.

Create a program that meets a need and the funding guidelines described in a proposal request.

Develop logic model, objectives, program description, evaluation plan, letters of support, budget for your program.

Explain how misconceptions, selective perception, and political agendas can affect environmental education.

Describe bias and explain why environmental and industry groups may be accused of it.

Develop strategies for detecting bias in materials and for creating materials that rise above it.

Describe the challenges that EE programs face in attracting or reaching certain groups and audiences.

Describe strategies that EE programs can use to promote justice, equity, diversity, and inclusion in their programming.

Define culturally responsive programming and evaluation.

Describe education for sustainable development and compare it to EE.

Explain the criteria or objectives of programs that meets the goals of both and of either EE or ESD.

Justify the role of EE or ESD in schools, communities, parks, and agencies.

Describe potential challenges when working in EE in international settings (or in any context or culture that is not your own).

# Course Schedule

Wk	Class	Theme In Class	Prepare for class	Due
<b>What is effective EE?</b>				
1	8/25	Intro, History, Future of EE	Introductions, Discuss field trips & projects; Canvas site;	
2	9/1	Awareness and Knowledge Experiential Learning NAAEE Materials Guidelines	Read readings, comment on Perusall	
3	9/8	Field trip to Sweetwater Wetlands for PLT and WET	Read readings, comment on Perusall	
4	9/15	Standards and Schools Pedagogy for EE	Read readings, comment on Perusall	Assignment 1: Materials Review
<b>Developing and Evaluating a Program</b>				
5	9/22	Logic Model Program Development SMART Objectives	Read readings	
6	9/29	Eval Plans and Tools	Read readings Select a PLT or WET activity you would like to lead with your team	Assignment 2: Teacher Unit
7	10/6	Eval Tools	Read readings Draft an evaluation tool	
8	10/13	Midterm		Assignment 3: Midterm
9	10/20	Addressing controversy Teaching skills	Read readings, comment on Perusall Prepare to teach	Assignment 4: Submit your evaluation tool
10	10/27	With your group lead your activity	Read readings, comment on Perusall	
<b>Writing Proposals for EE Programs</b>				
11	11/3	Writing Proposals	Use workbook to complete first 2 tasks; Read readings, comment on Perusall	Assignment 5: Teaching Plan and Reflection
12	11/10	Writing Proposals	Use workbook to finish orientation to proposal writing	Assignment 6a: Submit 1-page proposal and a logic model for feedback
13	11/17	Visions of Effective EE Diversity & Inclusion Changing Behavior	Read readings; comment on Perusall	
14	11/24	Thanksgiving	No Class	
15	12/1	Proposal Questions International EE Job Opportunities	Read Readings, comment on Perusall	
16	12/8	Present proposals	Course Evaluation	Assignment 6b: EE Grant Proposal

## Assignments

- 1. EE Activity Review:** Using the NAAEE Guidelines for Excellence and Tbilisi objectives, provide a short review of an activity from either the Project Learning Tree or Project WET Guides. Select one activity that does an excellent job of leading teachers through all four phases of the experiential learning cycle and explain why it is exemplary. Two single spaced pages. Due September 15. 10 points.
- 2. Teaching Unit:** Develop a unit of at least 1 week in length (assuming 1 hour of teaching time/day) for a grade level and class of your choice. First identify at least one Florida state standard that you will meet and select at least four activities from PLT or WET that would enable a teacher to achieve that standard. Next, develop SMART objectives for the unit. Provide an explanation of why you have chosen these activities and what additional information or activities you would include to link the activities together and address the standard. Also provide information on how you would assess student learning for the unit. Four to five pages single spaced using template. Due September 29. 15 points.
- 3. Midterm.** This assessment will enable you to review and make sense of the material covered in the first half of the course and will include multiple-choice questions, short answer questions, and essay questions. You will receive a study guide by October 6 to enable you to synthesize the course information and think about your responses. The exam will be hosted using Honorlock and will be available online on October 13 from 2pm – 5pm, but you will only have 2 hours to complete it once you begin. 15 points.
- 4. Evaluation Tool.** You will develop an evaluation tool, probably an observation guide, that other students will use to observe you lead a PLT or WET activity. Consider the types of feedback you would like about your teaching skills. Work with two other students to plan how you will all lead an activity and do so on October 27. Bring a draft of your tool to class on October 6 for feedback. Bring the final version, on paper, on October 20. 5 points
- 5. Group Teaching Plan and Individual Reflection.** You will work with a group to conduct a PLT or WET activity. This may be in the classroom, on campus, or at Sweetwater Wetlands. Each person should have a substantial role in the instruction so that they can be evaluated by participants (see Assignment 4). In your written report, you will briefly explain your plan for the activity your group led (who was the intended audience, what was the context) and your role. Then use the feedback from your evaluation tool to reflect on what you did well and what you can improve as you build your skills as an educator. Due November 3. 2 pages. 10 points.
- 6. EE Proposal.** Writing project proposals is an essential skill for environmental educators. Develop an idea for a project that meets the priorities as specified in the Proposal Workbook. The workbook includes several exercises to help you develop a great proposal and to generate questions. Please put those questions on Perusall! You can dream up the organization or use a real one. You will write the budget, letters of support, and justification for the program. Submit a one-page summary of your plans (single spaced) and a logic model on November 10 for feedback. Submit your final proposal on Dec 8, when you will provide a 3-minute presentation to



the class on why your proposal deserves funding and why the program will be successful. 25 points.

- 7. Class participation.** Timely and thoughtful contributions in class and on Perusall with the readings will earn you points toward participation. We will endeavor to make these in-class discussions integral to your assignments so that everything will flow quite smoothly! For the readings that are in Perusall, you are expected to submit a total of at least 4 questions and comments each week, regardless of the number of readings, in Perusall. But you need to have at least one comment on each reading! This will occur in Canvas for eight weeks as indicated in the assigned reading list (\*). Class discussions are also essential to earning these points. 20 points.

## Assigned Readings

### **Week 1                      Introducing EE: History and Goals**

Biedenweg K., Monroe, M.C. and Wojcik, D.J. 2016. Chapter 1, Foundations of Environmental Education, pp 9-28, in Monroe, M.C. and M. E. Krasny (eds), *Across the Spectrum: Resources for Environmental Educators*. Washington DC: NAAEE.  
<http://naaee.net/publications/acrossthespectrum>

### **Week 2                      Awareness and Knowledge: Experiential Learning**

\*Jacobson, S., M. McDuff, and M. C. Monroe. 2015. Chapter 2 Learning and Teaching with Adults and Youth. *Conservation Education and Outreach Techniques*. Oxford University Press. pp 35-62.  
\*Monroe, M.C., E. Andrews, K. Biedenweg. 2007. A Framework for Environmental Education Strategies. *Applied Environmental Education and Communication*. 6(3): 205-216

### **Week 3                      PLT and WET at Sweetwater Wetlands Park**

\*NAAEE, Guidelines for Excellence: EE Materials and NonFormal Programs. Order or download your own from the National Service Center for Environmental Publications (NSCEP) at  
<http://www.epa.gov/nscep/>  
171B04001 - Nonformal Environmental Education Programs: Guidelines For Excellence  
171B04003 - Environmental Education Materials Guidelines For Excellence

### **Week 4                      Standards and Schools; Pedagogy for EE**

Edwards, H. S. 2015. Leaving tests behind. *TIME Magazine*, 185(5): 28-31. February 16, 2015.  
\*Schusler, T. M. 2016. Chapter 8, Environmental action and positive youth development, pp 141-163. In Monroe, M. C. and M. E. Krasny (eds.) *Across the spectrum*. Washington DC: NAAEE.  
\*Powell, R. B., Stern, M. J., Frensley, B. T., & Moore, D. (2019). Identifying and developing crosscutting environmental education outcomes for adolescents in the twenty-first century (EE21). *Environmental Education Research*, 25(9), 1281-1299.

### **Week 5                      Logic Model and Program Development**

Ernst, J. A., M. C. Monroe, and B. Simmons. 2012. Evaluating Your Environmental Education Program: A Workbook for Practitioners. North American Association for Environmental Education. Chapters 1 and 2, and Appendix A.

### **Week 6                      Evaluation Plans and Tools**

Ernst, J. A., M. C. Monroe, and B. Simmons. 2012. Evaluating Your Environmental Education Program: A Workbook for Practitioners. North American Association for Environmental Education. Chapter 3.

**Week 7 Evaluation Tool Development and Data Collection**

Ernst, J. A., M. C. Monroe, and B. Simmons. 2012. Evaluating Your Environmental Education Program: A Workbook for Practitioners. North American Association for Environmental Education. Chapters 4 and 5.

**Week 8 Midterm**

**Week 9 Teaching Skills; Behavior Change**

\*Chawla, L. and D. Cushing. 2007. Education for strategic environmental behavior. *Environmental Education Research* 13(4): 437-452

\*Monroe, M. C., Plate, R. R., Oxarart, A., Bowers, A., & Chaves, W. A. (2019). Identifying effective climate change education strategies: a systematic review of the research. *Environmental Education Research*, 25(6), 791-812.

\* Jensen, B.B. and K. Schnack. 1997. The action competence approach in environmental education. *Environmental Education Research*, 3(2): 163-178.

**Week 10 Teaching Activities in Class**

\*Kuo, M., Barnes, M., & Jordan, C. (2019). Do experiences with nature promote learning? Converging evidence of a cause-and-effect relationship. *Frontiers in psychology*, 10, 305.

**Week 11-12 Writing Project Proposals**

\*Monroe, Li, and Oxarart. 2019. Writing an Environmental Education Proposal

**Week 13 Effective EE, Diversity and Inclusion, and; Addressing Controversy**

\*Bixler, R. D., & Floyd, M. F. (1997). Nature is scary, disgusting, and uncomfortable. *Environment and behavior*, 29(4), 443-467.

\*Dawson, E. (2014). "Not designed for us": How science museums and science centers socially exclude low-income, minority ethnic groups. *Science education*, 98(6), 981-1008.

Poore, Patricia. 1993. EnviroEducation: Is it Science, Civics--or Propaganda? *Garbage*. April-May 1993, 26-31.

**Week 15 International EE and Education for Sustainable Development**

\*Monroe, M.C. 2012. The co-evolution of ESD and EE. *Journal of Education for Sustainable Development*. 6(1): 43-47.

\*Kuhar, C. W., Bettinger, T. L., Lehnhardt, K., Tracy, O., & Cox, D. (2010). Evaluating for long-term impact of an environmental education program at the Kalinzu Forest Reserve, Uganda. *American Journal of Primatology*, 72(5), 407-413.

**Week 16 Present Proposals**

## For More Information

- Ardoin, N. et al. 2013. EE Research Bulletin Issue 4: Winter 2013. The series is online: <http://eelinked.naaee.net/n/eeersearch/posts/Research-Bulletins-Help-Bridge-Research-to-Practice-Gap>
- Bitgood, Stephen. 1993. What do we know about school field trips? *What research says about learning in science museums*, # 2. Wash. DC: Assoc Science-Tech Cntrs, 12-16.
- Blanchard, Kathleen A. Seabird conservation on the North Shore of the Gulf of St. Lawrence, Canada: The effects of education on attitudes and behaviour towards a marine resource. In Palmer, J. W. Goldstein, and A. Curnow (eds.) *Planning education to care for the earth*. Gland, Switzerland: IUCN CEC. 39-50.
- Lawson, Danielle F., Kathryn T. Stevenson, M. Nils Peterson, Sarah J. Carrier, Renee L. Strnad, & Erin Seekamp. 2019. Children can foster climate change concern among their parents. *Nature Climate Change*, 9, 458-462.
- Louv, Richard. 2019. Outdoors for all. *Sierra*, 104(3): 26-35+ May/June. <https://www.sierraclub.org/sierra/2019-3-may-june/feature/outdoors-for-all-nature-is-a-human-right>
- McDuff, Mallory. 2002. Needs Assessment for Participatory Evaluation of Environmental Education Programs. *AEEC*. 1(1): 25-36.
- Monroe, M. and C. J. Li. 2016. Chapter 6, Evaluation Techniques that Improve Programs, pp 113-126, in Monroe, M.C. and M. E. Krasny (eds), *Across the Spectrum: Resources for Environmental Educators*. Washington DC: NAAEE. <http://naaee.net/publications/acrossthespectrum>
- Munson, Bruce H. 1994. Ecological Misconceptions. *Journal of Environmental Education*. 25(4) 30-34.
- National Research Council, 2009. *Learning Science in Informal Environments*. Chapter 3, Assessment. Washington DC: National Academies of Press. Pages 54-89. Download free pdf - <https://www.nap.edu/catalog/12190/learning-science-in-informal-environments-people-places-and-pursuits>
- Uzzell, D. 1999. Education for environmental action in the community: New roles and relationships. *Cambridge Journal of Education* 29, no. 3: 397-413.

### Nature and Children:

- Weilbacher, M. 2009-2010. Last child in the woods, first book in the field. *Green Teacher*. 87:3-8.
- Gill, T. (2014). "The Benefits of Children's Engagement with Nature: A Systematic Literature Review." *Children, Youth and Environments* 24(2): 10-34. <http://www.jstor.org/action/showPublication?journalCode=chilyoutenvi>.

### Place-based Education

- Sobel, D. 2012. Place-based education: Connecting classroom and community. <http://www.antiochne.edu/wp-content/uploads/2012/08/pbexcerpt.pdf>

### Social Learning

- Wals, A.E.J., N. van der Hoeven, H. Blanken. 2009. *The acoustics of social learning*. Wageningen: Wageningen Academic Publishers. Pages 5-28. <http://www.ecs.wur.nl/NR/rdoonlyres/E635711D-7B4D-43B6-8FE2-249B95D2349E/92733/acousticsdigital.pdf>
- Schusler, T. M., D. J. Decker, & M. J. Pfeffer. 2003. Social learning for collaborative natural resource management. *Society and natural resources*. 16:4, 309-326.
- Muro, M. and P. Jeffrey. 2008. A critical review of the theory and application of social learning in participatory natural resource management processes. *Journal of environmental planning and management*. 51(3): 325-344.

### Citizen Science

- Dickinson, J. L., J. Shirk, D Bonter, R. Bonney, R. L. Crain, J. Martin, T. Phillips, K. Purcell. 2012. The current state of citizen science as a tool for ecological research and public engagement. *Frontiers in Ecology and the Environment*, 10 (6): 291-297.
- Jordan, R. C., H. L. Ballard, T. B Phillips. 2012. Key issues and new approaches for evaluating citizen-science learning outcomes. *Frontiers in ecology*, 10(6): 307-309.