

**FNR 5072: Environmental Education Program Development**  
**University of Florida**

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Class meets asynchronously online and synchronously

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 who have access to a program will be able to evaluate it. Student who don't will have alternate assignments to practice the same skills. Students interested in research will explore the literature to better understand current theories, strategies, and studies in EE and conduct a significant project in program evaluation.

**Course Description:**

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

**Course Objectives:**

By the end of this course, students will be able to:

- Describe the goals and objectives of environmental education (EE) and education for sustainable development (ESD)
- Explain how a variety of educational programs achieve EE goals
- Use a Logic Model for program planning
- Develop objectives and a vision for an EE program
- Apply learning theory and teaching strategies to environmental education programs
- Develop and use evaluation tools
- Write a fundable grant proposal for EE program development
- Collect and analyze evaluation data and design an evaluation plan for a client

**Materials:**

- Readings on Canvas and UF Library reserve –<https://ares.uflib.ufl.edu/>– Find this course.
- *Evaluating Your Environmental Education Programs* – Order from [naaee.net/publications](http://naaee.net/publications).
- *Guidelines for Excellence in EE: Materials (171B04003) and Nonformal Programs (171B04001)* – Order from USEPA <http://www.epa.gov/nscep/index.html> or <https://www.epa.gov/nscep>

**Course Policies:**

Students are expected to complete readings, engage in discussion, and submit assignments on time. Given the potential conflicts between distance courses and full-time employment, travel for conferences, and other challenges, I anticipate you will be able to predict when you have scheduled trips and complete coursework in advance. When conflicts arise, please communicate as soon as possible to discuss how you will complete assignments. The most critical component will be online discussions and any group exercises. It will be important to keep up to date. Assignments are to be turned in each Sunday evening. Weeks of online discussions should occur in two stages, by Friday evening and by Sunday evening. Some weeks (we'll decide together which ones) we will have synchronous discussions on Tuesday evening.

**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%

**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**

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.”*

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. It is your

individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/SCCR/honorcodes/honorcode.php>.

### **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.

### **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.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, [www.counseling.ufl.edu/cwc/](http://www.counseling.ufl.edu/cwc/)*
  - Counseling Services
  - Groups and Workshops
  - Outreach and Consultation
  - Self-Help Library
  - Training Programs
  - Community Provider Database
- *Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)*

### **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 requesting classroom accommodation must first

register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. 0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)

**Technical Assistance:**

Please contact [sfrc-online@ifas.ufl.edu](mailto:sfrc-online@ifas.ufl.edu) if you have difficulty reaching the Canvas site, readings, or discussions. The best way to reach them, however, is through the Technical Help site on Canvas.

**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.

Explain current challenges and opportunities in education and the impacts they are/may have on EE.

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

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

Explain the component of a logic model.

Develop a logic model that describes an EE program.

Develop program and behavioral objectives.

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

Create items for evaluation tools for different types of evaluation.

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.

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

Describe education for sustainable development and compare it to EE.

Enhance environmental education skills by conducting an evaluation or completing portions of an evaluation for practice.

## Schedule

Each week begins on Monday. If we meet concurrently, we will decide when and how, though Tuesdays are indicated on this chart to match the course schedule. Please make your initial reading posts by Friday, and then come back to respond to others by Sunday. All assignments are due on Sunday before midnight, local time.

### -----Tracks-----

Wk	Class	Themes for discussion	1: Current Practice	2: Future Practice	3: Research
<b>What is Effective EE?</b>					
1	8/20	Intro, History, Future of EE	Review expectations; Order materials; Peruse Canvas site	Review expectations; Order materials; Peruse Canvas site	Review PLT project options Order materials
2	8/27	How people learn EE vs Science Ed ESD	Introduce project Assignment A:1	Observe EE program or materials	Become familiar with PLT
3	9/3	Quality Programs Schools & Standards Project-based Learning		Assignment B: 1	Review eeWORKS and research paradigms
<b>Developing a Program</b>					
4	9/10	Logic Model Program Development	Assignment A: 2	Assignment B: 2	Develop logic model Sketch eval plan
5	9/15	Eval Plans and Tools Assessing Connection to Nature	Assignment A: 3 (draft) Draft tools Consider using a C2N tool		Draft focus group / interview guide Critique Guide
6	9/24	NAAEE Guidelines for Excellence	Assignment A: 3 Revise tools and implement	Assignment B: 3 Revise tools and implement	Revise tools and implement
<b>Writing Proposals for EE Programs</b>					
7	10/1	Writing Proposals	Use workbook to develop a proposal		
8	10/8	Proposal Questions Getting to Details	Collect data		Collect data
9	10/15	Evaluation Implementation Data Analysis Questions	Assignment D due Collect data	Assignment D due	Assignment D due
10	10/22	Discuss posted proposals Educational Research	Collect data		Collect data
<b>Advancing the Field</b>					
11	10/29	Behavior and Backlash	Analyze data	Assignments B: 4&5	Analyze data
12	11/5	Diversity Equity Inclusion Justice	Analyze data		Create survey
13	11/12	Citizen Science	Draft report due for feedback (optional)		Revise survey
14	11/19	Community Capacity			
15	11/26	Thanksgiving – no class	Assignment A:5 due	Assignment E due	Post Voice Thread
16	12/3	Discuss projects	Assignment A:4 due		Assignment C/F due

## Student Tracks

Graduate students come to this course with varying amounts of experience in environmental education. Some are employed as environmental educators and want to advance their existing knowledge and skills, while others are newer to environmental education. We also have students who are interested in environmental education research and completing a thesis or dissertation on related education and communication topics. To help everyone achieve their goals, we have created three student tracks 1) Current Practice, 2) Future Practice, and 3) Research. There will be common readings and assignments for all students, along with readings and assignments tailored for the three tracks. Please select the track that applies to you and join the appropriate group on the Canvas site. If you have different ideas of what you'd like to achieve in this course, set up a time to talk to me in the first week of class to discuss options. It may be possible to "mix and match" options.

### **Track 1: Current Practice (Probably Online)**

You are currently involved in environmental education, either through your job or volunteer work. You are not conducting research related to education for your graduate degree. On this track, students will

- Read and discuss articles (see reading list),
- Evaluate your program (A)
- Develop an environmental education grant proposal (D)

### **Track 2: Future Practice (Probably Online)**

You are not currently involved in environmental education programming, but hope to be in the future. You are not conducting research related to education for your graduate degree. On this track, students will

- Read and discuss articles (see reading list),
- Introduction to Program Evaluation (B),
- Develop an environmental education grant proposal (D), and
- Write an issue paper around a topic of interest (E).

### **Track 3: Research (Probably in Gainesville)**

You are conducting research related to education for your graduate degree. On this track, students will

- Read and discuss articles (see reading list – regular and those with (R) designation),
- Develop an Evaluation Plan (C), or
- Write a literature review, paper, or practitioner article on an EE topic or issue of interest (F), and
- Develop an environmental education grant proposal (D).

## Assignments and Points

For a wee bit of consistency and clarity, all assignments will be due on the Sunday following "class."

### **Readings and Discussion (25 points)**

Students in all tracks are expected to engage in weekly discussions, based on readings. Some of these discussions will be online as asynchronous posts and some will be live online on Tuesday evening. We

can decide how frequently to meet together, but I suggest it be about twice a month. We will have common readings each week, along with readings that are specific to the research track only (designated by "(R)" in the reading list). Timely and thoughtful contributions in these discussions will earn you points toward participation. Online discussions occur in two phases 1) make your initial posts and comments from Tuesday through Friday and 2) come back to the discussion Friday through Sunday to respond to comments. 25 points total, with 2 points most weeks and an additional 2 points for facilitating one week.

#### **A. Evaluate Your Program (Current Practice Track) (50 points)**

You have access to a program, an audience, and will be able to conduct an evaluation. This could be a needs assessment or a formative evaluation – you just need to have an organization that wants or has a program, and access to an audience or other stakeholders. Below are the steps in the program evaluation process that parallel the textbook and will keep you on track.

1. Program Description: Describe the program, purposes, audiences, mission, and setting. Describe evidence of experiential learning and other educational techniques that suggest quality learning experience. List (or develop) objectives, and describe them in the context of EE Tbilisi objectives, science education, and/or ESD goals. Use Guidelines for Excellence to critique program materials and/or non-formal program and/or learning objectives. Two single spaced pages. 5 points. Due September 1.
2. Logic Model and Evaluation Plan: Based on your insider information about this program, complete a logic model chart to describe this program. By determining and specifying the intended outcomes, and thinking about what stakeholders would want to know, you will also convert these goals to an evaluation plan. This is the plan that will guide your evaluation. Due September 15. 5 points each (total of 10).
3. Evaluation Tools: Design a survey, interview guide, and observation guide and plan to use at least two tools in the evaluation of your program. These tools will help determine the value and worth of your program and/or provide program implementers or instructors useful feedback for improvement. Consider which group of people can provide you with useful information and specify the audience on your draft. Share your draft tools with two other students in the class during week 5 and 6, providing enough information about the program (perhaps your observation and logic model) so students can provide useful feedback. Revise your tools and submit them by September 29. Plan to collect data with these tools in October and early November. 10 points
4. Evaluation Report. Using all the pieces you have developed, write a report of your evaluation for the program staff and administrator. Begin with a description of the program and your logic model, then describe the goals of your evaluation and plan. Report on who provided information and how the information was obtained (methods and tools). Summarize the results of your data collection and synthesize these data into findings. If you want feedback on your data and how you are analyzing it, you have the option of submitting that November 17 so I can discuss it with you. Finally, use your insights about the program to develop three recommendations that are supported by your data, and recommendations about how they might evaluate future programs. Due December 8 for 20 points.

5. Presentation. Develop a brief presentation to describe your program and recommendations to the rest of your classmates. Please also describe what you learned about program evaluation, including what you might do differently the next time! Post to Voice Thread by Dec 1 for 5 points.

## **B. Introduction to Program Evaluation (Future Practice Track) (35 points)**

You do not have access to a program and audience to conduct an evaluation, so you will practice all the pieces of program evaluation with other existing programs and materials.

1. Program Description: You will be exploring the Southeastern Forests and Climate Change (SFCC) module. A brief introduction and purpose of the program is available on the Canvas assignment page which should help you get started. Then explore as much of the website as you wish (2 activities may be sufficient!). You'll find 14 activities, background information, and gobs of resources for high school teachers to convey information about climate change and forest ecosystems ([www.sfrc.ufl.edu/extension/ee/climate](http://www.sfrc.ufl.edu/extension/ee/climate)). Use this information to describe the program, purposes, audiences, mission, and setting. Describe evidence of experiential learning and other educational techniques that suggest quality learning experience. List (or develop) objectives, and describe them in the context of EE Tbilisi objectives, science education, and/or ESD goals. Use Guidelines for Excellence to critique program materials and/or non-formal program and/or learning objectives. Two single spaced pages. 5 points, due Sept 8.
2. Logic Model and Evaluation Plan: Now use all that information to create a logic model of SFCC. Then, based on the logic model and considering what stakeholders would want to know about the outcomes of this program, convert these goals to an evaluation plan. 10 points (5 points each), due Sept 15.
3. Evaluation Tools: Critique 4 draft evaluation tools for the program (files located on Canvas): the draft student survey based on activities 7 and 8, the draft student interview guide from activities 7 and 8, the draft teacher workshop pre/post evaluation, and the pilot tested needs assessment survey. Use tracked changes and the comment option to make suggestions about any item that can be improved, and summarize your thoughts in one paragraph per tool. 10 points, due September 29.
4. Quantitative Analysis Exercise: You will use the spreadsheet in Canvas and analyze data collected from the SFCC online summative survey. Identify at least three evaluation questions you should be able to answer with these data using several different statistical tools (at least one correlation, at least one descriptive, and at least one comparison) and provide a report of your findings (2 pages). 5 points, due Nov 3.
5. Qualitative Analysis Exercise: Use the file in Canvas and analyze teacher responses to the question asking them to provide evidence of student learning. This is from a summative evaluation after they completed five activities from SFCC. Identify key themes and develop a two-page report of your findings, including quotes to illustrate your points. 5 points, due Nov 3.

## **C. Develop an Evaluation Plan (Research Track) 50 points**

You will work as a group to develop a comprehensive evaluation plan for the Florida Project Learning Tree (PLT) program. This program provides facilitated professional development trainings to teachers



and non-formal educators to distribute the PLT instructional materials and provide support. It is a national, award-winning program that is highly respected among educators. To convince administrators that PLT trainings and materials will be beneficial to their teachers, the program needs data on impact and value from research and evaluation. You will have access to previous evaluations (both Florida and national) and will use the literature to develop a plan for the Florida program. On approval, you will begin to collect the first round of data through focus groups with teachers who use PLT. Your final product will be a revised plan, draft survey, and synthesis of the focus group reports. Funding for reasonable travel will be provided. Develop a Voice Thread presentation for the other students and post by December 1. 20% of the points will come from a peer evaluation.

**D. Grant Proposal (All Tracks) 25 points**

Writing project proposals is essential to obtain funding to support EE programs. The act of writing a proposal is also a wonderful review of program development and evaluation concepts, which makes it an ideal substitute for a midterm. Develop an idea for a project that meets the priorities of an agency that funds EE programs. The Workbook on Writing an Environmental Education Proposal provides descriptions of agency priorities, along with several exercises and examples to help you develop a successful proposal. This exercise will incorporate much of what we have discussed about program development, logic models, objectives, evaluation, training, learning, etc. You can dream up the organization or use a real one. You will write the budget, letters of support, and justification for the program. You will have a chance to discuss your proposal ideas on the discussion board during weeks 7 and 8 to get class feedback. Submit your final proposal on October 20 and post the summary page for everyone to read.

**E. Issue Paper (Future Practice Track) 15 points**

Select a current issue in EE that is of interest to you (you can use one of the current issues that we discuss, or a topic relevant to your work or research) and write a 4-6 page literature review using at least 4 current (post 2000) research papers. You may write the paper as if you are communicating with EE practitioners, summarizing what they need to know about this topic (see [Across the Spectrum](http://naaee.net/publications/acrossthespectrum) (naaee.net/publications/acrossthespectrum) for models). Or you may use this opportunity to write a fact sheet for EDIS (see McIntosh and Gommerman). Develop a short presentation and post on Voice Thread to share your insights with the class. The paper and a presentation are due Dec 1.

**F. Literature Review (Research Track) 50 points**

For those who are less interested in working on the evaluation plan for PLT, you can select a current issue in EE that is of interest to you and make a significant and scholarly contribution to the field. This could take the form of writing an article (perhaps following the model of Duvall and Zint) or the lit review section of your thesis or dissertation. Please meet with me to review options of interest. See Duvall, J. and M. Zint. 2007. A review of research on the effectiveness of environmental education in promoting intergenerational learning. *Journal of Environmental Education* 38(4): 14-24. Due Dec 1.

## Assigned Readings

(R) = Readings that will be discussed by the Research Track, but could be relevant and interesting to others as well.

### Week 1                      Introducing EE: History and Goals

- Monroe, M. 2001. Just Say Yes to Youth Environmental Stewardship. EDIS Fact Sheet. University of Florida. <http://edis.ifas.ufl.edu/FR120>
- Biedenweg K., Monroe, M.C. and Wojcik, D.J. 2016. 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>
- (R) Hungerford, Harold R., R. Ben Peyton, Richard J. Wilke. 1980. Goals for Curriculum Development in Environmental Education, *Journal of Environmental Education*. 11:3, 42-47.
- (R) Stapp, W. B. et al. 1969. The concept of environmental education. *Journal of Environmental Education*, 1:1, 30-31. [10.1080/00139254.1969.10801479](https://doi.org/10.1080/00139254.1969.10801479)

### Week 2                      Learning and Teaching

- 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.
- Stern, Marc. J., Robert B. Powell & Dawn Hill (2014) Environmental education program evaluation in the new millennium: what do we measure and what have we learned?, *Environmental Education Research*, 20:5, 581-611, DOI: [10.1080/13504622.2013.838749](https://doi.org/10.1080/13504622.2013.838749)
- Monroe, M.C. 2012. The co-evolution of ESD and EE. *Journal of Education for Sustainable Development*. 6(1): 43-47.
- (R) Wals, A.E.J. and J. Dillon. 2013. Conventional and Emerging Learning Theories, pp 253-261. In Stevenson, R. B., M. Brody, J. Dillon and A.E.J. Wals (eds) *International Handbook on Environmental Education Research*. NY: Routledge.
- (R) Monroe, M. C., A. E. Adams, A. Greenaway. 2019. Considering research paradigms in environmental education: A primer for students. *Environmental Education Research*. 25(3): supplemental reading pages 1-10. <https://doi.org/10.1080/13504622.2019.1610863>
- (R) Kuo, Ming, M. Barnes, and C. Jordan. 2019. Do experiences with nature promote learning? *Frontiers in Psychology*, 10: 1-9.

### Week 3                      Quality Programs

- Edwards, H. S. 2015. Leaving tests behind. *TIME Magazine*, 185(5): 28-31. February 16, 2015.
- Tilbury, D. 2011. What are commonly accepted learning processes aligned with ESD? *Education for Sustainable Development: An expert review of processes and learning*. Paris: UNESCO. Pages 19-39. <http://www.iucn.org/?uNewsID=7368>
- Schusler, T. M. 2016. Environmental action and positive youth development, chapter 8, pp 141-163. In Monroe, M. C. and M. E. Krasny (eds.) *Across the spectrum*. Washington DC: NAAEE.
- 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.

(R) Ardoin, N. M., A. W. Bowers, N. Wyman-Roth & N. Holthuis. 2018. Environmental education and K-12 student outcomes: A review and analysis of research. *The Journal of Environmental Education*, 49:1, 1-17, DOI: [10.1080/00958964.2017.1366155](https://doi.org/10.1080/00958964.2017.1366155)

(R) Powers, A. L. 2004. An Evaluation of Four Place-Based Education Programs, *The Journal of Environmental Education*, 35:4, 17-32, DOI: [10.3200/JOEE.35.4.17-32](https://doi.org/10.3200/JOEE.35.4.17-32)

#### **Week 4 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.

Israel, G. 2001. Using Logic Models for Program Development. IFAS Fact Sheet. University of Florida. AEC 360. <http://edis.ifas.ufl.edu/wc041>

Logic Model Development Guide: W.K. Kellogg Foundation 2004. Battle Creek MI: Kellogg Foundation. Item #1209 when ordered from 1-800-819-9997. Or download from [www.wkkf.org](http://www.wkkf.org), search for logic model, and click on the pdf symbol

Website from Univ of Wisconsin, Program Development and Evaluation program on Logic Model <http://www.uwex.edu/ces/pdande/evaluation/evallogicmodel.html> -- and <http://www.uwex.edu/ces/lmcourse>

#### **Week 5 Evaluation Plans**

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 3 and 4.

Draft *Guide to Assessing Connection to Nature*. Posted on Canvas.

(R) Restall, B. & Conrad, E. 2015. A literature review of connectedness to nature and its potential for environmental management. *Journal of Environmental Management*, 159: 264-278.

(R) National Research Council. 2009. *Learning Science in Informal Environments: People, Places, and Pursuits*. Chapter 3, Assessment. National Academies Press, Pages 54-89.

<https://doi.org/10.17226/12190>.

#### **Week 6 NAAEE Guidelines for Excellence**

Monroe, M.C., E. Andrews, K. Biedenweg. 2007. A Framework for Environmental Education Strategies. *Applied Environmental Education and Communication*. 6(3): 205-216

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

Simmons, B., Y. Bhagwanji, and R. Ribe. 2016. Promoting excellence in environmental education, pp. 85-112. In Monroe, M.C. and M. E. Krasny (eds), *Across the Spectrum: Resources for Environmental Educators*. Washington DC: NAAEE.

<http://naaee.net/publications/acrossthespectrum>

(R) Monroe, M.C., Richard R. Plate, Annie Oxarart, Alison Bowers & Willandia A. Chaves (2017) Identifying effective climate change education strategies: a systematic review of the research, *Environmental Education Research*, DOI: [10.1080/13504622.2017.1360842](https://doi.org/10.1080/13504622.2017.1360842)

### **Week 7 Writing Proposals**

Monroe, Li and Oxarart. Writing an Environmental Education Proposal – On Canvas

### **Week 8 Proposal Questions and Project-Based Learning**

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

(R) Uzzell, D. 1999. Education for environmental action in the community: New roles and relationships. *Cambridge Journal of Education* 29, no. 3: 397-413.

(R) Ernst, J. A. and M. C. Monroe. 2004. The effects of environment-based education on students' critical thinking skills and disposition toward critical thinking. *Environmental Education Research* 10:4, 507-522.

### **Week 9 Evaluation Implementation**

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 5 and 6.

Monroe, M. and C. J. Li. 2016. 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>

(R) Zint, M. 2013. Advancing Environmental Education Program Evaluation, pp 298-309. In Stevenson, R. B., M. Brody, J. Dillon and A.E.J. Wals (eds) *International Handbook on Environmental Education Research*. NY: Routledge.

(R) Heimlich, J.E. 2010. Environmental education evaluation: Reinterpreting education as a strategy for meeting mission. *Evaluation and Program Planning*, 33: 180-185.

### **Week 10 Discussion of Proposals and Educational Research**

Davis E.A., Krajcik J.S. 2005. Designing educative curriculum materials to promote teacher learning. *Educational Researcher* 34: 3–14.

McNeal K.S., Libarkin J.C., Ledley T.S., Bardar E., Haddad N., Ellins K., Dutta S. 2014. The role of research in online curriculum development: The case of EarthLabs climate change and Earth system modules. *Journal of Geoscience Education* 62: 560–578.

Shulman LS. 1986. Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2): 4–14.

(R) Sadler TD. 2004. Informal reasoning regarding socioscientific issues: a critical review of research. *Journal of Research in Science Teaching* 41(5): 513–536.

(R) Park S, Oliver JS. 2008. Revisiting the conceptualization of Pedagogical Content Knowledge (PCK): PCK as a conceptual tool to understand teachers as professionals. *Research in Science Education* 38: 261–284.

### **Week 11 Behavior and Backlash**

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

Salmon, J. 2000. Are we building environmental literacy? *Journal of Environmental Education*. 31:4 (4-10).

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### **Week 13 Citizen Science**

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### **Week 14 Community Capacity**

Wals, A.E.J., N. van der Hoeven, H. Blanken. 2009. *The acoustics of social learning*. Wageningen: Wageningen Academic Publishers. Pages 5-28.

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## Week 16

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## Additional Resources (see also Optional readings on course reserve)

### Nature and Children:

Weilbacher, M. 2009-2010. Last child in the woods, first book in the field. *Green Teacher*. 87:3-8.

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### Place-based Education

Sobel, D. 2012. Place-based education: Connecting classroom and community.

<http://www.antiochne.edu/wp-content/uploads/2012/08/pbexcerpt.pdf>

Smith, G. A. 2013. Place-based education: Practice and Impacts. In Stevenson, R. B., M. Brody, J. Dillon, and A. Wals (Eds) *International Handbook of Research on Environmental Education*, 213-220.

### Social Learning

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.

Keen, M., V. A. Brown, and R. Dyball. 2005. Social learning: a new approach to environmental management. *Social Learning in environmental management: Towards a sustainable future*. London: Earthscan, 3-21.

### Systems Thinking

Sweeney, L. B. (2010). Systems thinking: A means to understanding our complex world. *Pegasus Communications*. Available online at <https://www.leveragenetworks.com/>

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### An excellent resource:

Ardoin, N. et al. 2013. EE Research Bulletins. The series is online:

<http://eelinked.naaee.net/n/eeresearch/posts/Research-Bulletins-Help-Bridge-Research-to-Practice-Gap>

## For More Information

- Ardoin, N.M., M. DiGiano, J. Bundy, S. Chang, N. Holthuis, K. O'Connor. 2013. Using digital photography and journaling in evaluation of field-based environmental education programs. *Studies in Educational Evaluation* 41: 68-76.
- Bennett, Dean B. 1988-89. Four steps to evaluating environmental education learning experiences. *Journal of Environmental Education*. 20:2,14-21.
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- Cooper, C. B., Dickinson, J., Phillips, T., and Bonney, R. 2007. Citizen science as a tool for conservation in residential ecosystems. *Ecology and Society*. 12:11.
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- Environmental Education Research Special Issue on Resilience in Socio-Ecological Systems: 16(5-6), Oct-Dec 2010.
- Environmental Education Research Special Issue on Schooling and EE. 13(2), April 2007