

FNR 5072: Environmental Education Program Development

University of Florida

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Class meets online

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.

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
- Critique EE and ESD materials
- 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 for a client

Materials:

- Readings on reserve –<https://ares.uflib.ufl.edu/>– Find this course.
- *Evaluating Your Environmental Education Programs* – Order from naaee.net/publications.
- *Guidelines for Excellence in EE: Materials (171B04003) and Nonformal Programs (171B04001)* – Order from USEPA <http://www.epa.gov/nscep/index.html>
- Other materials can be downloaded from Canvas, <http://lss.at.ufl.edu> – Find this course.

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. Each week discussions should occur in two stages, by Friday evening and by Sunday 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/*
 - 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/*

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/

Technical Assistance:

Please contact sfrc-online@ifas.ufl.edu if you have difficulty reaching the Canvas site, readings, or discussions. Sandi, Jenny, and Rob are quick to respond and extremely helpful! 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.

Use the learning cycle to develop and critique educational activities and program plans.

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.

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.

Use the learning cycle and research on education to develop logic models and programs.

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 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.

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 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.

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

Each week begins on Monday						
Discussions occur in two phases, from Tuesday through Friday and again Friday through Sunday. Assignments are due by Sunday evening						
Week Beginning	Purpose	Watch	Read	Do	Discuss	Assignment Due
1 Aug 21	Course Intro and welcome History and Future of EE	Video: Course Welcome Video: History of EE Video – ESD and EE	Just Say YES Biedenweg - ATS Monroe Gough	Record your introduction on VT Order materials Get oriented	EE programs you've experienced EE programs you are interested in What is and isn't EE?	Aug 27: Introduce yourself on Voice Thread
2 Aug 28	Learning and Teaching	Three videos on Learning.	Jacobson Chpt 2 Framework for EE Wals, Dillon	Think about educational strategies that you've seen or led; what is effective?	Discuss selected activities with regard to learning theory, EE objectives, evidence leading to guidelines	Sept 3: Track 1 submit paragraph describing the program you wish to use for the course evaluation project
3 Sept 4 Monday holiday	Learning and Teaching: Schools and Standards	Video: EE Reform	Edwards Tilbury Hungerford	Consider Schools... and other venues for effective education	Tests and Standards Do teachers have time for the important stuff? What could improve education?	
4 Sept 11	Guidelines for Excellence	Video: Guidelines	Guidelines for Excellence: NF and Materials Simmons - ATS		Reasons for having guidelines for excellence Evidence of excellence in the programs you observed Diversity of EE programs	Sept 17: Track 1 and 2 submit assignment 1
5 Sept 18	Program Development Logic Models	Videos on program development and logic models	Evaluating EE, 1 & 2 & Appen A Logic Models PARTNERS		What makes program models logical? What can be evaluated?	
6 Sept 25	Evaluation Plans		Disinger NRC, Informal Assessment		How should nonformal programs be assessed?	Oct 1: Track 1 and 2 submit assignment 2
7 Oct 2	Evaluation Tools	Videos on tools and revising survey items	Evaluating EE, 3	Track 1: Draft tools Track 2: Critique tools	Quality items Workbook questions	Oct 8: Track 1 share draft evaluation tools
8 Oct 9	Evaluation Tools, Data Collection & Analysis	Videos on data collection and analysis	Evaluating EE, 4&5 Monroe, Li – ATS Zint	Conduct critiques of other's tools	Analyzing data	Oct 15: Tracks 1 and 2 submit assignment 3

9 Oct 16	Engaging Youth in Action Projects		Jensen & Schnack Chawla & Cushing Uzzell	Track 1: collect data Track 2: analyze!	What types of education lead to skills & behavior change	
10 Oct 23	Advocacy and Backlash		Poore Duvall & Zint Mappin & Johnson		Place examples on continuum	Oct 29: Track 2 submit assignments 4 and 5
11 Oct 30	Writing a Proposal	Writing proposals 1 and 2,	Archie Israel Solicitation Notice	Contemplate ideas for proposal	Exercise on matching proposal purpose and activities Share proposal ideas with each other; provide feedback	
12 Nov 6	More on Writing Proposals		Con't	Keep imagining a program to propose	Questions about proposal writing	Nov 12: Track 1 has option of submitting draft data and findings
13 Nov 13	Data Analysis, Writing reports		Evaluating EE, 6 Heimlich		Advancing EE evaluation	
14 Nov 23	Finish up proposals				--	Nov 26: Submit proposals
15 Nov 27	Putting it all together (issues skills and schools) (cont from week 9)		Hart Schusler - ATS Ernst Monroe Jordan et al.		How can teachers and nonformal educators make a difference?	Dec 3: VT presentation of your evaluation (Track 1) or issue paper (Track 2)
16 Dec 4 Class ends Dec 9	Evaluation Experience And Issue Papers	Watch all VT presentations	Jickling Ardoin et al.		Evaluation reports and Issues	

Assignments and Points

This course has several assignments that everyone will complete and two parallel tracks for the project. If you are engaged in designing and evaluating programs, you should take Track 1. If you don't have access to a program, please take Track 2.

Track 1

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.

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. Submit brief description August 27 for guidance; assignment due Sept 17.
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. 10 points, due Oct 1.
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 on Oct 8, and provide enough information about the program (perhaps your observation and logic model) so students can provide useful feedback. Revise your tools and submit them by Oct 15. 10 points
4. Evaluation Report. Using all the pieces you have developed, write a report of your evaluation for the program staff. 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 early so I can discuss it with you. Please send something by November 12. 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 3 for 25 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 3 for 5 points.

Track 2

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. This is the first year for these exercises, so they might be a tad rough and could use your assistance. Please ask questions!

1. **Program Description**: You will be exploring the Southeastern Forests and Climate Change 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). 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. 10 points, due Sept 17.
2. **Logic Model and Evaluation Plan**: Now use all that information to create a logic model of SFCC. Then, based on the case study and the logic model, and thinking about what stakeholders would want to know, convert these goals to an evaluation plan. 5 points for each, due Oct 1.
3. **Evaluation Tools**: Critique each of the draft evaluation tools: draft student survey based on activities 7 and 8; draft student interview guide from activities 7 and 8; draft teacher workshop pre/post evaluation; and 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 Oct 15.
4. **Quantitative Analysis Exercise**: You will use the spreadsheet in Canvas assignment to 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 Oct 29
5. **Qualitative Analysis Exercise**: Use the attached file to 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 Oct 29.
6. **Issue Paper**. Select a current issue in EE that is of interest to you (you can use one of the Current Trends posted in this assignment, 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 3 for 15 points

Common Assignments for Everyone

Engage in weekly discussion posts, based on readings. Timely and thoughtful contributions in class will earn you points toward participation. 25 points total

Project Proposal. Writing project proposals is essential to obtain funding to support EE programs. Develop an idea for a project that meets the RFP criteria and write a proposal following EPA's former Small Grants for EE Request for Proposals. 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. If your ideal program is better addressed with a different funder or RFP, you can propose one to the teaching team. You will have a chance to discuss your proposal ideas on the discussion board during weeks 11 and 12 to get class feedback. Submit your final proposal on Nov 26. 20 points

Assigned Readings

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>
- Monroe, M.C. 2012. The co-evolution of ESD and EE. *Journal of Education for Sustainable Development*. 6(1): 43-47.
- Gough, A. 2002. Mutualism: a different agenda for environmental and science education. *International Journal of Science Education*. 24(11): 1210-1215.

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

Week 3 **Learning and Teaching**

- 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>
- 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.

Week 4 **NAAEE Guidelines for Excellence**

- 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>

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.

Monroe, M. J. Washburn, T. Goodale, and B. Wright. 1997. National Park Education Programs Making a Difference: Evaluating PARTNERS, A Parks as Classrooms Program. Washington DC: National Park Foundation.

On Logic Models: W.K. Kellogg Foundation 2004. Logic Model Development Guide. Battle Creek MI: Kellogg Foundation. Item #1209 when ordered from 1-800-819-9997. Or download from 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 6 Evaluation Plans

Disinger, John.1993. Environment in the K-12 Curriculum: An Overview. In Wilke, R.J. (ed) *Environmental Education: Teacher Resource Handbook*. Arlington VA: NSTA and Kraus International Publications.

National Research Council, *Learning Science in Informal Environments*. Chapter 3, Assessment. Pages 54-89.

Week 7 Program Evaluation – Tool 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. Chapter 3.

Week 8 Program Evaluation – Tool 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 4-5.

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>

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.

Week 9 Youth Action 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.

- Chawla, L. and D. Cushing. 2007. Education for strategic environmental behavior. *Environmental Education Research* 13(4): 437-452
- Uzzell, D. 1999. Education for environmental action in the community: New roles and relationships. *Cambridge Journal of Education* 29, no. 3: 397-413.

Week 10 Backlash and Advocacy

- Poore, Patricia. 1993. EnviroEducation: Is it Science, Civics--or Propaganda? *Garbage*. April-May 1993, 26-31.
- 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.
- Mappin, M. J. and E. A. Johnson. 2005. Changing perspectives of ecology and education in environmental education, pp 1-27 in Johnson, E. and M. Mappin (eds) *Environmental Education and Advocacy*. Cambridge UK: Cambridge University Press.

Week 11-12 Writing Project Proposals

- Archie, Michele. 1993. *Grant funding for your environmental education programs: Strategies and Options*. Troy, OH: NAAEE. Focus on pages 13-22.
- Israel, G. 2001. Using Logic Models for Program Development. IFAS Fact Sheet. University of Florida. AEC 360. <http://edis.ifas.ufl.edu/wc041>
- USEPA Office of Environmental Education Solicitation Notice for 2008. Environmental Education Grants. EPA-EE-08-02
- Review Guidelines for Excellence!

Week 13 Reporting Evaluation Findings

- 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 6.
- Heimlich, J.E. 2010. Environmental education evaluation: Reinterpreting education as a strategy for meeting mission. *Evaluation and Program Planning*, 33: 180-185.

Week 15 Putting it all together

- Hart, R. A. 2008. Stepping back from 'The Ladder': Reflections on a model of participatory work with children, pp 19-31. In Reid, A., B. B. Jensen, J. Nikel, and V. Simovska (eds.) *Participation and Learning*. Springer.
- 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.
- 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.
- 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.

Week 16 Future of EE

- Jickling, B. 1992. Why I don't want my children to be educated for sustainable development, *Journal of Environmental Education*, 23(4): 5-8.

Ardoin, N.M., C. Clark, E. Kelsey. 2013. An exploration of future trends in environmental education research. *Environmental Education Research* 19(4): 499-520.

Potential Issue Paper Topics for Track 2

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>

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.

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.

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/ronlyres/E635711D-7B4D-43B6-8FE2-249B95D2349E/92733/acousticdigital.pdf>

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.

Environmental Justice

Agyeman, J. 2005. Where justice and sustainability meet. *Environment*, 47(6): 10-23.

Systems Thinking

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

Forrester, J. W. 2009. Learning through systems dynamics as preparation for the 21st century. Online document available at http://static.clexchange.org/ftp/documents/whyk12sd/Y_2009-02LearningThroughSD.pdf

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.

Advocacy and Backlash

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

Are they building environmental literacy? *ZPG Fact Sheet*.

Holsman, R. H. 2001. Viewpoint: The politics of environmental education. *Journal of Environmental Education*. 32:2. 4-7.

An excellent resource:

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>

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.

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.

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.

Ernst, J. 2009. Influences on US middle school teachers' use of environment-based education. *Environmental Education Research*, 15(1): 71-92.

Fien, John, William Scott, and Daniella Tilbury. 2002. Exploring Principles of Good Practice: Learning from a meta-analysis of case studies on education within conservation across the WWF network. *AEEC*, 1(3): 153-162.

Heimlich, J.E. and N. M. Ardoin. 2008. Understanding behavior to understand behavior change: a literature review. *Environmental Education Research* 14(3): 215-237.

Jacobson, Susan K. 1991. Evaluation model for developing, implementing, and assessing conservation education programs: Examples from Belize and Costa Rica. *Environmental Management*. 15:2, 143-150.

Jickling, B. and H. Spork. 1998. Education for the environment: a critique, *Environmental Education Research* 4(3): 309-328.

Lane, Jennie, Richard Wilke, Randy Champeau, and Dan Sivek. 1995. Strengths and weaknesses of teacher environmental education preparation in Wisconsin. *Journal of Environmental Education*. 27:1, 36-45.

- McDuff, Mallory. 2002. Needs Assessment for Participatory Evaluation of Environmental Education Programs. *AEEC*. 1(1): 25-36.
- McKenzie-Mohr, D. 2000. Fostering sustainable behavior through community based social marketing. *American Psychologist* 55:5, 531-537.
- Munson, Bruce H. 1994. Ecological Misconceptions. *Journal of Environmental Education*. 25(4) 30-34.
- 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