

Hamline University Graduate School of Education
ENED 6126: Overcoming Climate Change Misconceptions
Online Course: 2 semester credits
October 31-December 4, 2011

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Class Meets: Online with weekly assignments due by 12:00 every Sunday

Course Description

The goal of this course is to provide educators from a variety of backgrounds with an overview of the fundamentals of environmental education and climate literacy and introduce them to the knowledge and skills necessary to effectively communicate the topic of climate change in their educational setting. An “effective” environmental educator is one who develops a citizenry that is able and willing to help solve current environmental problems, such as climate change, and help prevent future environmental problems. To achieve this goal students will learn about theories and pedagogy in environmental education and climate literacy, as well as resources for communicating about climate change. Please note this course will provide resources for those looking interested in a deeper understanding of climate science, but assumes participants have some baseline understanding of the science of climate change.

The course uses online readings and website information. Students will read and discuss the themes via an online discussion forum. Students will explore how those themes relate to their own personal and professional lives. Assignments will include weekly discussions and a final reflection paper.

Course Outcomes

Through online web-based discussions and short reflection papers, students will:

- explain the evolution and basics of environmental education and the principles of climate literacy and climate change education
- understand the basic processes and underlying causes of climate change
- become familiar with climate change educational resources and age appropriate techniques for discussing climate change with various audiences.
- become familiar with the NWF/NAAEE Guidelines for Climate Change Education curricula
- become familiar with the Climate Literacy Principles
- select a climate change education resource and review it
- write a final two page reflection that combines their knowledge of climate change, challenges with communicating climate change, and strategies and activities that will help address the topic in their educational setting.

Course Expectations

This is a 5-week, 2 credit (24 hours) web-based class. Although this class does not meet in a classroom, it IS NOT an independent study. Students will be asked to interact with each other weekly, online by commenting on each other's posts and asking questions of each other and the instructor. Students will be asked to read and explore internet resources for approximately 1.5 hours per week. They will participate in web-based discussions for approximately 1.5 hours a week, and will be asked to post to a mandatory topic based forum for approximately 1 hour per week. Students will be asked to bring examples from their own lives to the discussion that illustrate theoretical ideas explored in the readings. Students should plan on spending at least four hours on their final reflection.

Course Outline

Please use the framing questions as a starting point for your forum posts, but not necessarily as questions to ask linearly. Your responses should bring in your own ideas and reflections as well as examples from the readings.

Week	Framing Question	Readings /Videos	Assignments due this week
0 (Due by Nov. 2)	Who are you? 1) Why were you interested in taking this course and what do you hope to get out of it? 2) Where have you or will you be teaching about climate change? 3) What else should we know about you?	Background Reading on Climate Science. These Readings and videos are meant to provide review and background on the science of climate change. Read or watch what is helpful for you. <ul style="list-style-type: none"> NASA Global Climate Change Pew Center for Global Climate Change. "Climate Change 101: Understanding and Responding to Global Climate Change." January 2009. Union of Concerned Scientists. "Confronting Climate Change in the Midwest." July 2009. 	Post your answers to the questions listed here. If you are new to Blackboard, explore the options and practice commenting on other student posts.
1 (Due by Nov 6th)	How do environmental education and climate change education fit together? 1) What is environmental education?	<ul style="list-style-type: none"> Hungerford, Harold and Trudi L. Volk. "Changing Learner Behavior Through Environmental Education," <i>The Journal of Environmental Education</i> 21, no 3 (1990). ICEE: Climate Literacy and the Challenge of Integrating 	Post at least two critical questions from the readings for discussion Post at least 100 words to the discussion forum on line in a reflection. Comment on at least two

	<p>2) How do you think climate change education fits In EE?</p> <p>3) What is the ultimate goal of EE and climate change education?</p> <p>4) Why is climate literacy and education important?</p>	<p>Climate Science and Solutions Education, CIRES Education & Outreach.</p> <ul style="list-style-type: none"> • Leiserowitz, A., Smith, N. & Marlon, J.R. (2010) Americans' Knowledge of Climate Change. Yale University. New Haven, CT: Yale Project on Climate Change Communication. • Niepold, Frank et. al. "The Case for Climate Literacy in the 21st Century." Fifth International Symposium on Digital Earth. June 5th, 2007. • Investing in Civic Education about Climate Change: What Should Be the Goals? Matthew C. Nisbet on October 19, 2010 • Stapp, W. B. "The concept of environmental education." In Hungerford et al. (eds.), <i>Essential readings in environmental education</i>, Stipes Publishing, Champaign, IL., (1998) • Stapp, W. B. 1998. Epilogue for "The concept of environmental education." In Hungerford et al. (eds.), <i>Essential readings in environmental education</i>, Stipes Publishing, Champaign, IL (1998). • Climate Literacy: The Essential Principles of Climate Sciences. March 2009. 	<p>other student reflections, or answer their questions.</p>
<p>2 (Due by Nov</p>	<p>What are important concepts in climate change</p>	<ul style="list-style-type: none"> • Abassi, Daniel R. "Americans and Climate Change: Closing the Gap between Science and 	<p>Post at least two critical questions from the readings for discussion</p>

13th)	<p>education?</p> <p>1) Explain and define uncertainty, consensus, longitudinal data, corroborating evidence, the difference between weather and climate, misconceptions, skeptics, and climate deniers, and why they are important to understanding and teaching about climate change. Are there other important concepts?</p> <p>2) Describe how you might talk with someone who is questioning climate change.</p> <p>3) Why is communicating climate change challenging?</p>	<p>Action.” edited by Jane Coppock, 221. North Branford, CT: Yale School of Forestry and Environmental Studies (2006).</p> <ul style="list-style-type: none"> • Cook, John. <i>The Scientific Guide to Global Warming Skepticism</i>. • Everthing you need to know about climate change in 6 slides: John Cook • Evidence: NASA • Misconceptions and Skeptics Presentation: Kristen Poppleton • Naomi Oreskes, Public Forum on Doubt in Communicating Climate Change (start at 13:00) • Oreskes, Naomi (2007). "The scientific consensus on climate change: How do we know we're not wrong?". In Joseph F. DiMento, Pamela Doughman. <i>Climate Change</i>. MIT Press. • Rachel Pike: The science behind a climate headline • Union of Concerned Scientists: Certainty vs. Uncertainty • What's the Difference Between Weather and Climate? 	<p>Post at least 100 words to the discussion forum on line in a reflection.</p> <p>Comment on at least two other student reflections, or answer their questions.</p>
3 (Due by Nov 20th)	<p>How can I teach climate change in my educational setting?</p> <p>1) What are some ways to engage students on the topic of climate change?</p> <p>2) How does</p>	<ul style="list-style-type: none"> • Climate Change Solutions Presentation: Kristen Poppleton • Communicating and Learning About Global Climate Change: An Abbreviated Guide for Teaching Climate Change, from Project 2061 at AAAS. • Doering, Aaron. <i>Adventure</i> 	<p>Post at least two critical questions from the readings for discussion</p> <p>Post at least 100 words to the discussion forum on line in a reflection.</p> <p>Comment on at least two other student reflections, or answer their questions.</p>

	<p>climate change fit into your educational setting or school/district curriculum?</p>	<p><i>Learning.</i> University of Minnesota, Department of Curriculum and Instruction.</p> <ul style="list-style-type: none"> • Minnesota State Standards: Which standards do you need to incorporate in your educational setting? Various websites • Nalani McCutcheon, Founding Director Cannon River STEM School Video: The Importance of Connecting with Place in Climate Change Education • “Overview of Educator Guidelines for K-12 Global Climate Change Education.” National Wildlife Federation, June 2007. • Student Testimony: Minnesota State Senate • Sobel, David. “Climate Change Meets Ecophobia.” <i>Connect</i>, November/December 2007, p. 14-21. 	
<p>4 (Due by Nov 27th)</p>	<p>What curriculum resources are there? 1) How do you decide whether an activity is an appropriate activity? 2) What are the guidelines for the activities that are included in CLEAN? 3) Choose an activity and try it out if you have an educational</p>	<ul style="list-style-type: none"> • Will Steger Foundation K-12 Education Program and Curriculum • CLEAN-Climate Literacy and Energy Awareness Network • Union of Concerned Scientists: Global Warming: Early Warning Signs. High School. • Facing the Future Climate Change Curriculum, 6-8 and 9-12. • Wisconsin DNR Climate Change Activity Guide, 7-12 • North Cascades National Park Electronic Field Trip: Climate Challenge 	<p>Post at least two critical questions from the readings or activities for discussion</p> <p>Post at least 100 words to the discussion forum on line in a reflection.</p> <p>Comment on at least two other student reflections, or answer their questions.</p>

	setting in which to do it, otherwise review it in your reflection assignment.	<ul style="list-style-type: none"> • National Wildlife Federation Climate Classroom Kids • The EPA Kids Site • Parks Climate Challenge Curriculum Resources 	
5 (Due by Dec 4 th)	<p>How will you bring climate change to your educational setting?</p> <p>How can you incorporate what you've learned to appropriately address climate change in your setting?</p>	Think about what you have read or watched the last few weeks and review some of the climate change curriculum offered as examples, or find one of your own.	Final 2-3 page (double spaced) reflection paper that synthesizes the readings and reflections and shares how you plan to apply what your learned in your educational setting. Post to Blackboard.

COURSE ASSIGNMENTS AND EVALUATION

Assignments

Readings

Please read thoroughly the readings provided and keep track of questions or comments that come up as you read. Reflections on these readings are integral to your discussions on blackboard.

Critical Questions (15)

While going through the readings keep track of questions, content or theoretically based, that arise. Post two of them to the Blackboard.

Reflections (15)

These do not need to be formal, but need to demonstrate not only comprehension of the readings, but a deeper analysis as they may relate to your setting or to the world.

Comments(15)

Students are encouraged to interact with each other in the online environment and are required to post at least two comments to other student reflections or questions.

Final Synthesis Paper (40)

Students are required to write a three page paper that explains how and what they will apply from the course in their own particular classroom settings.

TOTAL of 100 points possible

Evaluation

Students will be graded on forum participation and quality and detail of reflection and critical questions posted that are due each week. Each Week 15 points will be awarded for participation in the forum. A "15" requires a minimum of two postings with a critical question that clearly show understanding and a 100 reflection on the assigned readings. A "10" will be given to those students who submit only one post and/ or the quality of their posts to not add to the discussion and show a connection to the readings. A "5" will be given to those students who submit only one post that is not connected to the readings or purpose of the discussion. There is a total of 60 points available for the forum, including 15 for the first week of introductions

The final reflection assignment will be worth 40 points. A score of "40" will be given to those reflections that meet the assignment criteria, are well written, lack grammatical and spelling errors, and that demonstrate an understanding of the course material and synthesis of readings and discussions. An "A" requires that the pieces have references that demonstrate that the student has done some research and tied their comments to the readings. An "A" for the final reflection paper must offer information that adds to the course content and does not just reflect what was already posted and readily available on Blackboard. There are 100 total possible points for the course.

Required Readings, Texts and Videos

Additional readings may be included based on the background of the educators in the course and their needs.**

Week 0: Who are you and what do you know?

Thompson, Lonnie G. "Climate Change: The Evidence and Our Options," *The Behavior Analyst* 33, No 2 (2010).

Optional Additional Background/Websites to Visit:

NASA Global Climate Change

<http://climate.nasa.gov/>

United States Global Change Research Program

<http://www.globalchange.gov/>

Pew Center for Global Climate Change. "Climate Change 101: Understanding and Responding to Global Climate Change." January 2009.

<http://www.pewclimate.org/docUploads/Climate101-Complete-Jan09.pdf>

Union of Concerned Scientists. "Confronting Climate Change in the Midwest." July 2009.

http://www.ucsusa.org/assets/documents/global_warming/climate-change-minnesota.pdf

Week 1: How do environmental education and climate change education fit together?

Hungerford, Harold and Trudi L. Volk. "Changing Learner Behavior Through Environmental Education," *The Journal of Environmental Education* 21, no 3 (1990).

ICEE: Climate Literacy and the Challenge of Integrating Climate Science and Solutions Education, CIRES Education & Outreach.
<http://vimeo.com/19807841>

Leiserowitz, A., Smith, N. & Marlon, J.R. (2010) Americans' Knowledge of Climate Change. Yale University. New Haven, CT: Yale Project on Climate Change Communication.
<http://environment.yale.edu/climate/files/ClimateChangeKnowledge2010.pdf>

Niepold, Frank et. al. "The Case for Climate Literacy in the 21st Century." Fifth International Symposium on Digital Earth. June 5th, 2007.

Investing in Civic Education about Climate Change: What Should Be the Goals? Matthew C. Nisbet on October 19, 2010
<http://bigthink.com/ideas/24578>

Stapp, W. B. "The concept of environmental education." In Hungerford et al. (eds.), *Essential readings in environmental education*, Stipes Publishing, Champaign, IL., (1998)

Stapp, W. B. 1998. Epilogue for "The concept of environmental education." In Hungerford et al. (eds.), *Essential readings in environmental education*, Stipes Publishing, Champaign, IL (1998).

Climate Literacy: The Essential Principles of Climate Sciences. March 2009.
<http://cleanet.org/cln/climateliteracy.html>

Week 2: What Are Important Concepts in Climate Change Education?

Abassi, Daniel R. "Americans and Climate Change: Closing the Gap between Science and Action." edited by Jane Coppock, 221. North Branford, CT: Yale School of Forestry and Environmental Studies (2006).
http://environment.yale.edu/climate/americans_and_climate_change.pdf

Cook, John. *The Scientific Guide to Global Warming Skepticism*. www.skepticalscience.com

Everything you need to know about climate change in 6 slides: John Cook
<http://www.skepticalscience.com/Everything-you-need-to-know-about-climate-change-in-6-pics.html>

Evidence: NASA
<http://climate.nasa.gov/evidence/>

Misconceptions and Skeptics Presentation: Kristen Poppleton
<http://www.slideshare.net/kpoppleton/misconceptions-skeptics-ened6126>

Naomi Oreskes, Public Forum on Doubt in Communicating Climate Change (start at 13:00)
<http://vimeo.com/14809445>

Oreskes, Naomi (2007). "The scientific consensus on climate change: How do we know we're not wrong?". In Joseph F. DiMento, Pamela Doughman. *Climate Change*. MIT Press.

Rachel Pike: The science behind a climate headline

http://www.ted.com/talks/lang/eng/rachel_pike_the_science_behind_a_climate_headline.html

Union of Concerned Scientists: Certainty vs. Uncertainty

http://www.ucsusa.org/global_warming/science_and_impacts/science/certainty-vs-uncertainty.html

What's the Difference Between Weather and Climate?

http://www.nasa.gov/mission_pages/noaa-n/climate/climate_weather.html

Week 3: How can I teach climate change in my educational setting?

Climate Change Solutions Presentation: Kristen Poppleton

<http://www.slideshare.net/kpoppleton/cc-solutions-ened6126>

Communicating and Learning About Global Climate Change: An Abbreviated Guide for Teaching Climate Change, from Project 2061 at AAAS.

Doering, Aaron. *Adventure Learning*. University of Minnesota, Department of Curriculum and Instruction.

Minnesota State Standards: Which standards do you need to incorporate in your educational setting? Various websites

Nalani McCutcheon, Founding Director Cannon River STEM School Video: The Importance of Connecting with Place in Climate Change Education

<http://vimeo.com/14739534>

"Overview of Educator Guidelines for K-12 Global Climate Change Education." National Wildlife Federation, June 2007. (Available for download at:

http://online.nwf.org/site/PageNavigator/ClimateClassroom/cc_teachers_guidelines

Student Testimony: Minnesota State Senate

<http://youtu.be/6pqU4yiJBnM>

Sobel, David. "Climate Change Meets Ecophobia." *Connect*, November/December 2007, p. 14-21.

<http://www.edutopia.org/climate-change>

Week 4: What curriculum resources exist to teach climate change?

Will Steger Foundation K-12 Education Program and Curriculum

<http://www.willstegerfoundation.org/programs/k-12-education-program>

CLEAN-Climate Literacy and Energy Awareness Network
http://cleanet.org/clean/educational_resources/index.html

Union of Concerned Scientists: Global Warming: Early Warning Signs. High School.
http://www.climatehotmap.org/curriculum/climate_change_guide.pdf

Facing the Future Climate Change Curriculum, 6-8 and 9-12.
<http://www.facingthefuture.org/Curriculum/DownloadFreeCurriculum/tabid/114/Default.aspx>

Wisconsin DNR Climate Change Activity Guide, 7-12
<http://dnr.wi.gov/org/caer/ce/eeek/teacher/Climateguide/PDF/WisCCGuideALL.pdf>

North Cascades National Park Electronic Field Trip: Climate Challenge
<http://www.northcascadeseft.org/>

National Wildlife Federation Climate Classroom Kids
<http://www.climateclassroomkids.org/index.aspx>

The EPA Kids Site
<http://epa.gov/climatechange/kids/index.html>

Parks Climate Challenge Curriculum Resources
<http://parksclimatechallenge.org/train.php>

ACADEMIC INTEGRITY

Dishonesty of any kind in relation to academic work threatens the integrity of the academic enterprise and is prohibited. Such dishonesty includes plagiarism, ghost writing, and falsifying official information concerning one's academic background or status.

Plagiarism is the unacknowledged use of another person's work or ideas. Any passage copied verbatim, with small changes, or in paraphrase must be acknowledged with a citation. Ghost writing is preparing work for another or having another prepare one's own work.

When a student is found to be in violation of the Academic Integrity Policy, academic penalties may be prescribed by the instructor of the course in question, including but not restricted to, the requirement of additional work, an assignment of a failing grade on the work in question, or a failing grade for the entire course.