

Earth Systems K-4 Syllabus

Rationale

Understanding individual earth systems and their interactions is an essential underpinning of environmental literacy. This professional development opportunity will equip kindergarten through fourth grade teachers with the knowledge, skills and resources to integrate hands-on instruction about earth systems into their classrooms.

This class consists of three parts: an independent online session, classroom session and field work. The three are designed to mutually enhance each other. There is also an assignment of developing a lesson plan utilizing the resources or content from the class.

Independent Study

An essential part of understanding earth systems is to observe them over time. In order to do this, a nature journal is the tool of choice. The independent study is dedicated to delving into the nature journal. The first part of the independent study is to think reflectively about the nature journal and using it as an on-going class activity. This reflection is posted to the online classroom.

The second part of the independent study is to create a photographic nature journal in the field. The photo journal should feature 7 photos of the interaction of earth systems, with each system – water, air, soil, sun, and living things – featured at least once. Each photo should have a 3-5 sentence explanation of how that photo represents the earth system interaction.

Classroom Session

The classroom session will be dedicated to understanding earth systems, learning hands-on activities to teach about earth systems, and becoming familiar with citizen science projects that collect data on earth systems. We will also practice field study activities and review the online classroom technology.

Field Study

Two days and one night will be spent in the field, kayaking a river in South Dakota. While in the field, participants will collect information on water speed, temperature and clarity and soils. Participants will also keep their photo journals. After dark, we will practice using star charts to identify constellations.

Assignment

As a final assignment, participants are required to submit a lesson plan, utilizing the content or a resource presented in class.

Objectives

By the end of the class, participants will:

1. Be able to utilize a nature journal as part of earth systems study.
2. Understand earth systems.
3. Be able to teach hands-on activities that instruct about earth systems.

Requirements

In order to receive credit, participants:

1. Complete the independent study by June 17, 2011.
2. Participate in all classroom and field activities.
3. Submit an assignment by June 17, 2011.

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Resources

Elementary GLOBE. 2006. University Corporation for Atmospheric Research. Boulder, CO.
<http://globe.gov/k-4>

Make a Splash with Project WET: An Educator's Water Festival Activity Guide. 2000. Project WET.
Bozeman, MT

Painting with Soil. Natural Resource Conservation Service. USDA.
<http://soils.usda.gov/education/resources/lessons/painting/> Accessed May 20, 2011.

Journey North. Annenberg Learner Division of the Annenberg Foundation.
<http://www.journeynorth.org/> Accessed May 20, 2011

Shout Learning: Tree Banding Project. Smithsonian Institution.
<http://shoutlearning.org/treebanding.html> Accessed May 20, 2011.

World Water Monitoring Day. Water Environment Federation. International Water Association.
<http://www.wvmd.org> Accessed May 20, 2011

Assessment

	0	1	2	3
Independent Study	Nothing turned in	Incomplete, missing either the reflection or the photo journal	Complete and is of quality expected of graduate work with regards to grammar, spelling and content.	Complete and evidences superior quality. The reflection is robust and the photo journal shows deep and c
Classroom Participation	Does not attend	Attends but does not participate.	Participates at a level expected of graduate students.	Shows leadership and content mastery.
Field Session	Does not attend	Participates minimially, incomplete field session notes.	Participates at a level expected of graduate students.	Shows leadership and content mastery.
Assignment	Does not turn in an assignment.	Turns in assignment but shows no application to unique teaching situations	Turns in assignment which is at a level expected of graduate students.	Assignment shows robust or unique application of class content and/or resources, particular to that teaching assignment.

Participants must score an 7 out of 12 in order to receive credit for the class.

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Agenda

Independent Study: Part 1

Read *Introduction to the Nature Journal* and watch the video of marine biologist Carole Baldwin. In the discussion forum of the class website, write a short reflection about the benefits and challenges of keeping a nature journal as an on-going class activity.

Independent Study: Part 2

Create a photographic journal of your time in the field with at least 7 photos. Each photo should be of an interaction of an earth system and should have 3-5 sentences explaining how that photo represents the interaction. Each earth system (air, water, soil, sun, living things) should be featured at least once.

SESSION CONTACT HOURS: 8

June 7, 2011: Classroom session

8:00AM – Icebreaker & Housekeeping
12:00PM Model: Earth Systems Unit
15 minute Water, Clouds, & Soil
break Make & Take: Incredible Journey Spinners
around Elementary GLOBE curriculum and the Nature Journal
10AM Earth Systems: An overview (video)
Earth Systems: Story and We Are All Connected Activity
Peer teaching. Select an activity from the Water, Soil or Clouds Unit to present. Prepare and Present
12:00 PM – Working Lunch: Tree banding DVD
1:00PM Activity: Banding Trees
15 minute Seasons: Story and Activities
break Journey North robin project
around World Water Monitoring Day
3PM Water quality monitoring experiences
Technology: Exploring the Taking It Global site
Expectation for Assignment
Outfitter debrief
5:00PM Dismissal
SESSION CONTACT HOURS- 8.5

June 8, 2011: Field session

8:00AM – We will measure water clarity, water temperature & water speed. We will make
9:00PM observations of weather, plants, soil color and texture, and animal signs. Participants will maintain a written journal and take photos for their final assignment. At camp, we will have time to work on our journals. At dark, we will use our star charts and practice finding constellations, weather permitting.

June 9, 2011: Field Session

8:00AM – We will continue with our field studies and activities in the field. We will return to
2:00PM Pierre. Digital field journals and a lesson plan are due within two weeks.

SESSION CONTACT HOURS - 16

TOTAL CONTACT HOURS 32.5