Using the Standards – A Guide for Teachers

Presented by Linda Hoyer

Included are sections from the following documents:

- Arizona State Science Standards
- Next Generation Science Standards (Released April 2013)
- Arizona Common Core Standards – English Language Arts (September 2012)
- Lesson Design for Butterfly Wonderland (July 2013)

The sample lesson design is titled: The Amazon, A Tropical Rainforest, grades 3-5. The instructional objectives are aligned with the performance objectives in the appropriate strand and concept area reflected in the Arizona State Science Standards as noted per grade level.

Lesson Design: The Amazon, A Tropical Rainforest

Objective: ← **Instructional objectives**

1. Students will demonstrate an understanding of relationships among various organisms in an ecosystem.
2. Students will demonstrate a general knowledge of the plant cycle as it relates to the decomposition of matter on the rainforest floor.
3. Students will demonstrate an understanding of conservation and the interactions between human populations, natural resources and the environment.

Performance Objectives:

Grade 3: SS Strand 3: Concept 2 – PO 2; Strand 4 - Concept 3 – PO 3

Example:
Grade 3: SS Strand 4 Concept 3 – PO 3

Grade 4: SS Strand 4: Concept 3 – PO 1-4;
Concept 4 – PO 2
Grade 5: SS Strand 3: Concept 1 – PO 1-3
NGSS 3-LS 2. D; 4-LS 1. A; 5-LS 2. A **Example:** NGSS 3-LS 2
CCSS 3.W.2; 4.W.2: 5.W.2 **Example:** CCSS 3.W.2

SCIENCE STANDARD ARTICULATED BY GRADE LEVEL

GRADE 3

Strand 4: Life Science

Concept 3: Organisms and Environments
Understand the relationships among various organisms and their environment.

PO 1. Identify the living and nonliving components of an ecosystem.

PO 2. Examine an ecosystem to identify microscopic and macroscopic organisms.

PO 3. Explain the interrelationships among plants and animals in different environments:
- producers – plants
- consumers – animals
- decomposers – fungi, insects, bacteria

PO 4. Describe how plants and animals cause change in their environment.

PO 5. Describe how environmental factors (e.g., soil composition, range of temperature, quantity and quality of light or water) in the ecosystem may affect a member organism's ability to grow, reproduce, and thrive.

Example: PO 3

PO 3 – This instructional information is found throughout the content of the lesson. Detailed information related to the ecosystem in the rainforest is presented with examples of the interdependence of living organisms.

Next Generation Science Standards:

The example is 3-LS2. This is a grade 3 standard related to ecosystems. Part D involves the interdependence of living organisms in an ecosystem and how they function in maintaining survival.

3-LS2 Ecosystems: Interactions, Energy, and Dynamics

3-LS2 Ecosystems: Interactions, Energy, and Dynamics

Students who demonstrate understanding can:

3-LS2-1. Construct an argument that some animals form groups that help members survive.

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Engaging in Argument from Evidence Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed worlds. ▪ Construct an argument with evidence, data, and/or a model. (3-LS2-1)	**LS2.D: Social Interactions and Group Behavior** ▪ Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size *(Note: Moved from K–2).* (3-LS2-1)	**Cause and Effect** ▪ Cause and effect relationships are routinely identified and used to explain change. (3-LS2-1)

Connections to other DCIs in this grade-level: will be available on or before April 26, 2013.

Articulation of DCIs across grade-levels: will be available on or before April 26, 2013.

Common Core State Standards Connections: will be available on or before April 26, 2013.

ELA/Literacy –

Mathematics –

Related instructional content is interwoven in the background information of the lesson.

The Common Core Standards are for Language Arts. Literacy is a significant part of the instructional program and supported by the standards. Note the type of writing for a student in grade 3.

ARIZONA'S COMMON CORE STANDARDS

Arizona's Common Core Standards

Grade 3 students:	Grade
Text Types and Purposes	
2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly. a. Introduce a topic and group related information together; include illustrations when useful to aiding comprehension. b. Develop the topic with facts, definitions, and details. c. Use linking words and phrases (e.g., *also, another, and, more, but*) to connect ideas within categories of information. d. Provide a concluding statement or section. **(3.W.2)**	2. Write informative/exp topic and convey ideas a. Introduce a topic information in par formatting (e.g., h multimedia when comprehension. b. Develop the topic concrete details, q information and e c. Link ideas within c words and phrase *also, because*). d. Use precise langua vocabulary to info e. Provide a concludi related to the info presented. **(4.W.2**

Multiple measures are appropriate in evaluating student performance.

Measuring the learning:

1. Open-ended discussion with specific questions related to the topic
2. Note taking – check for complete work
3. The food chain worksheet will reflect the students' understand of the concept of living organisms as part of the food chain and where they fit in the chain.
4. The cryptozoologist activity allows students to be creative and apply writing skills. This activity meets the CCSS 3.W.2
5. The rainforest mural is another way to measure the understanding of living organisms in the rainforest, where they are located and how they are interdependent. Discussions related to the project are encouraged to engage and evaluate all students.
6. Class presentations provide a means to check for understand and to clarify details as needed.