Fourth – Life Science Standards

* All organisms have structures and systems with separate functions that help keep them alive.

* There is interaction and interdependence between and among living and nonliving components of systems.

Fifth – Life Science Standards

* All living things share similar characteristics, but they also have differences that allow us to describe and classify them.

Measuring Results in Education Projects

Karen Hollweg

5th Annual Sustaining Colorado Watersheds Conference
Tuesday, Oct 5, 2010
Vail Cascade Resort

Measuring Results in Education Projects

Karen Hollweg

I. Background/Context – My experiences

II. A Specific Example – Using drawings

III. My recommendations – Take-home messages

Denver Audubon Urban Educ. Project

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To provide children (8 – 11 year-olds) growing up in cities with enjoyable neighborhood **experiences** that heighten their awareness, expand their knowledge, and develop their respect for the plants & animals living in their urban world.

Denver Audubon Urban Educ. Project

To provide children (8 – 11 year-olds) growing up in cities with enjoyable neighborhood experiences that heighten their awareness, expand their knowledge, and develop their respect for the plants & animals living in their urban world.

- **Explore their local natural environment**, … the plants & animals & ecological interactions.
- **Interact with adults** who demonstrate interest in & **share enthusiasm** for investigating nature
- **Develop the skills** necessary to observe, use scientific tools, record, compare, quantify & analyze data, and apply critical thinking to reach conclusions.

Two big take-home lessons:

- Evaluation, like education & research, is an on-going process which provides both answers and new questions.

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- Evaluations that begin with clearly articulated objectives and expectations run more smoothly.

Questions we asked and things we learned:

- **Who** are we reaching?

- Are we providing participants with **new and different experiences**?

- How **satisfied** with the program are participants, their parents, teachers and volunteer leaders?

- What does the program **cost**?

- Is the program being **implemented as intended**?

- What is the program's **impact on participating students**?

- Who are the **teachers** we work with? Does the program influence them?

One Example:

"Students Learned Something New ?"

	Yes	Somewhat	No
Students	72 – 74	20 - 18%	6 – 10%
Teachers	89 – 93%	11 – 7%	0%

…How do you know?

So, to try to gain insights into *WHAT* it was that students had learned, …

Asked students to "draw and label what they had seen living in their schoolyard, locating the things in the places where they had seen them."

students - enjoyed

teachers and program coordinators – easy, straightforward, visual
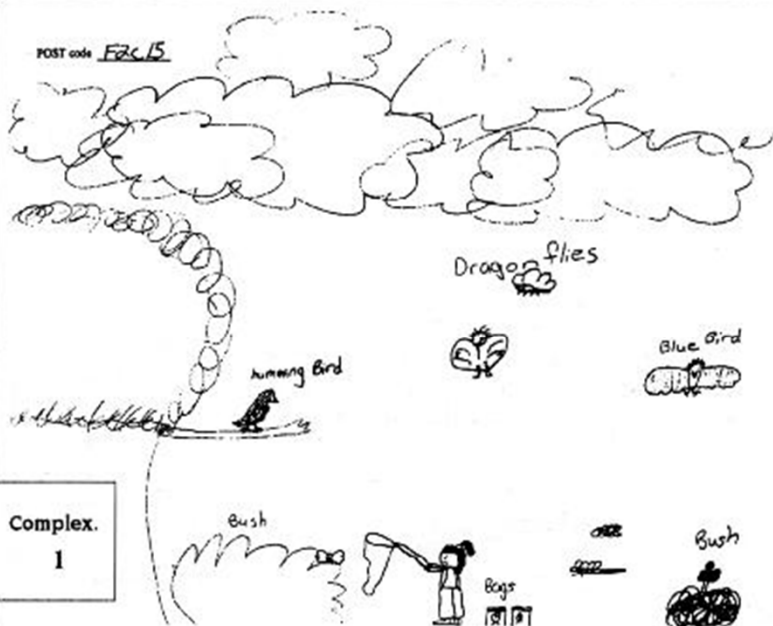
Enhanced initial trial usage by…

Figure 12-a. Sets of Pre- and Post-VINE Schoolyard Drawings with Scores Indicating Amount of Change

Pre - code _57A25_

Appl.	Context	Complex.
3	3	3

Calapilar

Black Jack Bee

bird

Spider

POST code _57A25_

squirrel getting an acorn

Bird looking for food

catapiller crawling onea fence

ant retne away

spider

Bee

spider mile

mole going in a hole

grass

Pre - code _D16-15_   Brids

tree

gril

gril tenr

ant hill

Rock

ant hill

Appl.	Context	Complex.
3	1	2

POST code _D16-15_

beaterful

egg

Ladybug

ant

Spider

brid neast

Wram

Sanoped

Snall

Watlepalle

Slag

Pre - code F2c 15

Ant

butterfly

Spider

Lizard

bugs

Caterpilliars

Birds

Warm

Appl.	Context	Complex.
1	3	1

POST code F2c 15
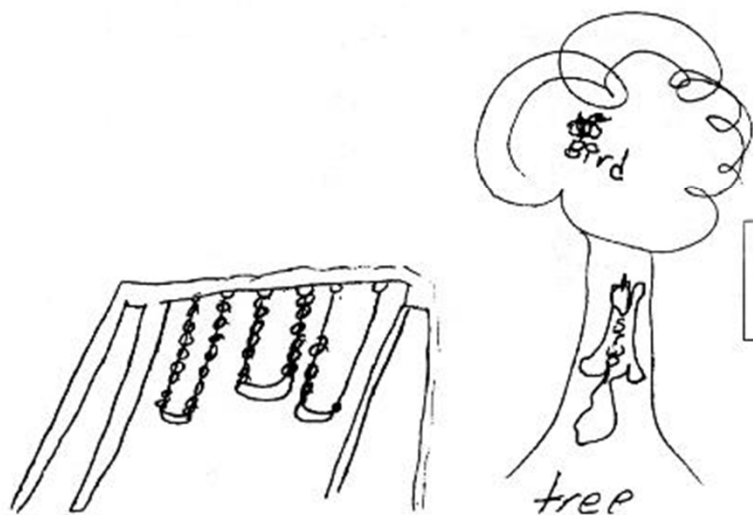
Dragon flies

humming Bird

Blue Bird

Bush

Bugs

Bush

Pre - code D 3b-15

Bird

tree

Appl.	Context	Complex.
3	3	2

POST code D 3b-15

bird in tree

nest in tree

spider on tree

on ants sidewalk

rolly polly Grass

worms Grass

Pre - code S2a5

POST code S2A5

Appl.	Context	Complex.
2	2	1

ant

bee

fly

squirl

human being

Pine tree →

← dog

grass

spider web

bee

spider

worm

potter bug

Pre - code F2▨c26

POST code F2c26

Appl.	Context	Complex.
1	1	1

spider web

ant hill

caterpiller

yellow jacket

Bird

Butterfly
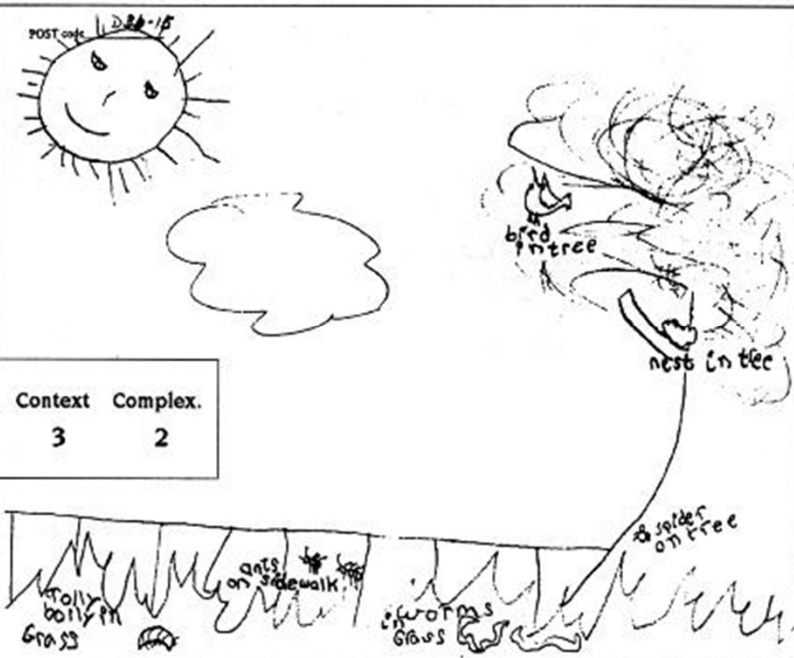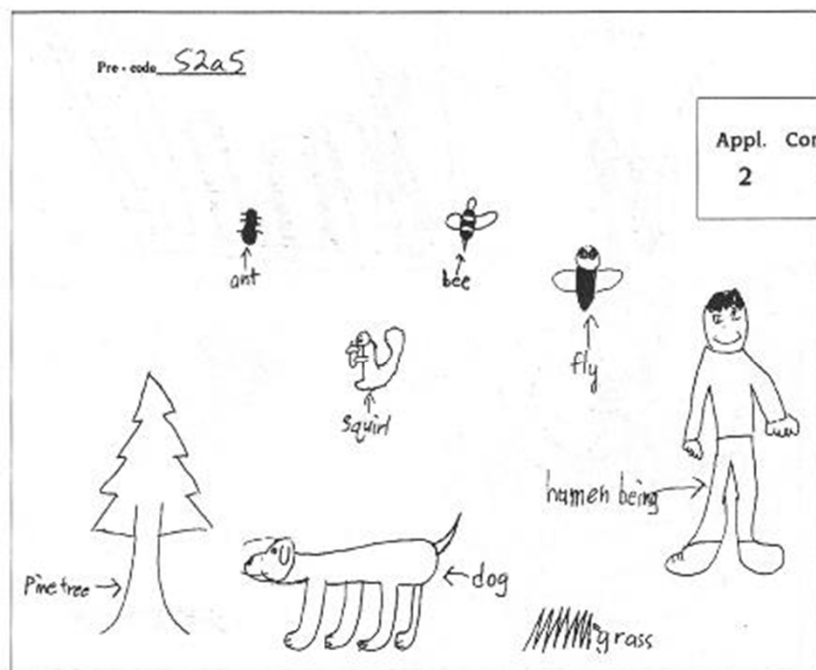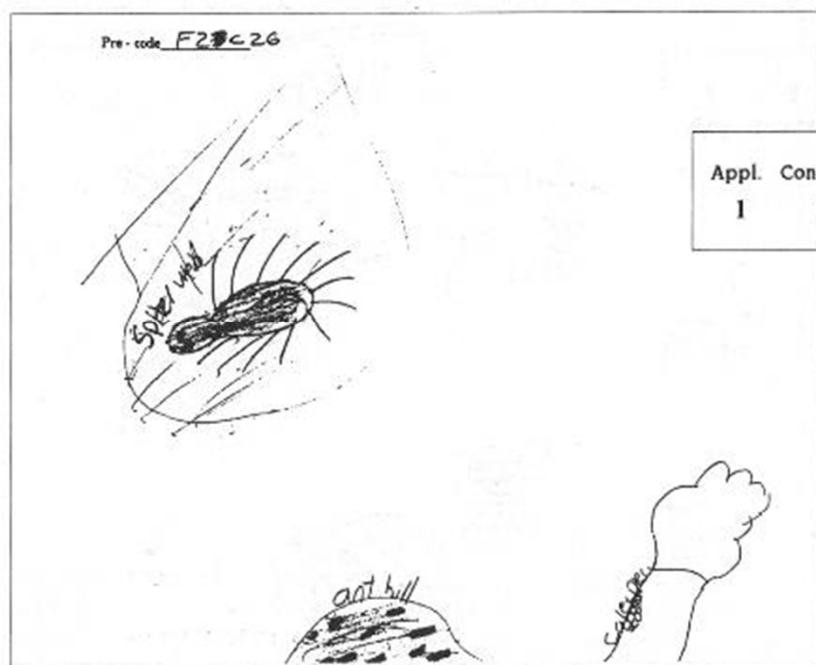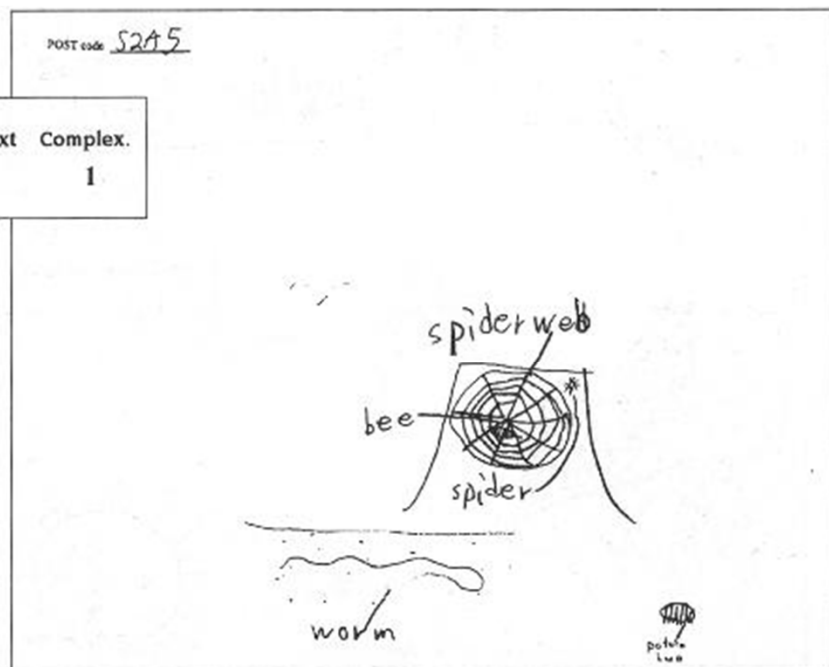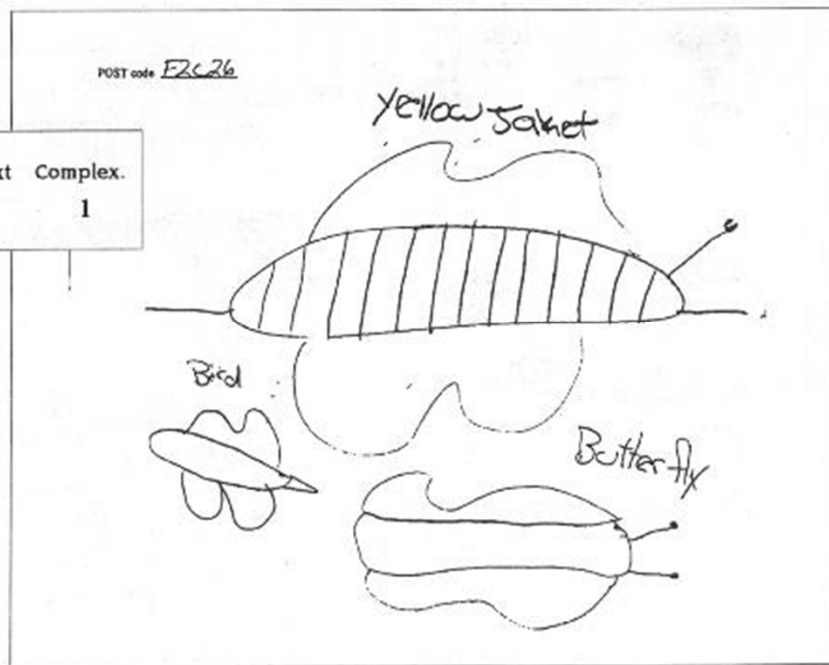
2nd year, 3 cities, a random sample of drawings showed:

% of drawings showing pre – post change

- Application   75%

- Organization or Context   47%

- Complexity   40%

What we could have done better… would do differently:

Additional suggestions:

- Read about others who have used drawings. (Hein & Price; Covitt, Gunckel, & Anderson)

- Base your rubric on learning progressions for your major concept.

- Get students to write or talk about their drawings – to explain them – and gain insights into their conceptual understandings/concept development.

We get water out of the ground using a well. Draw a picture of what it looks like under the ground where there is water. Label the things that you draw. Also, draw how we get water out of the ground.
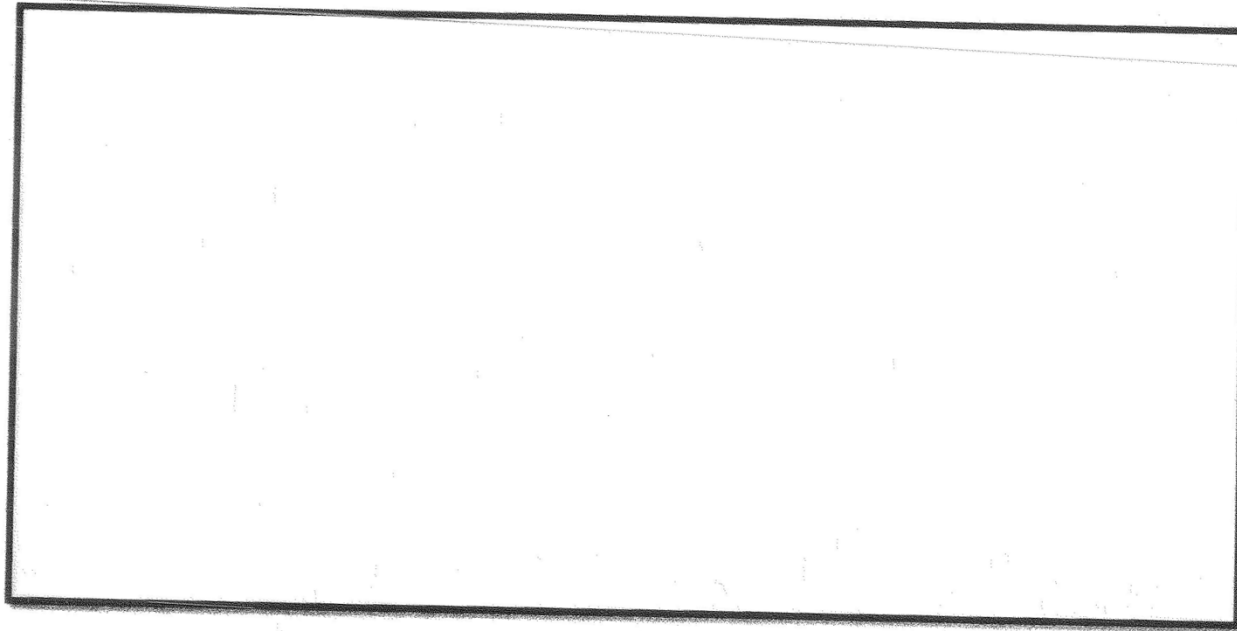
Ladue, MSU

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