Interdisciplinary Science Connections

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Science and Engineering Saturday Seminar Series

February 7, 2015

Beneski Museum of Natural History

Amherst College – Your host is Fred Venne
Interdisciplinary Science Connections

- 8:30 AM – Light Refreshments
- 9:00 AM – Program Begins – PAINO
  - Welcome/Introductions etc
  - Morning Warm Up
  - Overview of the day
- 9:30 AM – Guided Visit – BMNH
- 10:20 AM – Break
- 10:30 AM – Lab/Field Guides (Intro) – PAINO
- 10:45 AM – Lab/Field Guide work – BMNH
- 11:45 AM – Small Groups Share – PAINO
- 12:10 – Visual Scanning/Observation Activity – BMNH
- 12:40 – Closing and Feedback
- 1PM – Next Session

February 28. Introduction to Scratch Programming. John Heffernan,
A little morning math warm-up

• Pick a number between 1-5
  – 1
  – 2
  – 3
  – 4
  – 5
Now Multiply Your Number by 9

- \( 1 \times 9 = 9 \)
- \( 2 \times 9 = 18 \)
- \( 3 \times 9 = 27 \)
- \( 4 \times 9 = 36 \)
- \( 5 \times 9 = 45 \)
- \( 6 \times 9 = 54 \)
If your new number is 2 Digits Add them together.

- # + # = ?
- If your new number is one digit you will use that
Now Subtract 5 from your number

\[
\# - 5 = ?
\]

This is your final number

(Keep this in mind, don’t share)
Now take your number and convert it to a letter.

- 1 = A
- 2 = B
- 3 = C
- 4 = D
- 5 = E
- 6 = F
NOW QUICKLY PICK A COUNTRY THAT BEGINS WITH THAT LETTER

• C O U N T R Y
• ___ ___ ___ ___ ___ ___ ___ ___ ___
NOW TAKE THE LAST LETTER OF THAT COUNTRY AND THINK OF AN ANIMAL THAT STARTS WITH THAT LETTER.

• A N I M A L

• ___  ___  ___  ___  ___  ___  ___  ___  ___
NOW THINK OF A COLOR THAT STARTS WITH THE LAST LETTER OF YOUR ANIMAL

- COLOR

- ______  ______  ______  ______  ______  ______
Were you of thinking...
The Beneski Museum of Natural History – in a warmer season.....
Charles Upham Shepard

- Amherst College
  Class of 1824
- Largest Mineral Collection
- Meteorite collection
- Mastodon
Mastodon—Found in South Carolina
Frederic Brewster Loomis

- Amherst College
- Class of 1896
- Professor 1903-37
- Vertebrates
- Patagonia
- Wyoming
- Florida
Columbian Mammoth – Found in Florida
Edward Hitchcock

- Amherst College
- Prof. 1825-45
- Pres. 1845-54
- State Geologist
- Ichnology – Tracks & Traces
- Lake Hitchcock
Greenfield Massachusetts – Bank Row
Sidewalks on Bank Row Today
Sidewalks of yesterday
Noah’s Raven...
What do we see in the tracks and traces today?
“This is an investment in Amherst College and the liberal arts education that exposes students to myriad academic disciplines and trains them how to think, analyze and solve problems across a broad array of subjects. We believe investments in this type of education will help us find the next generation of solutions in science, medicine, law and business and therefore serve to positively advance our global society.”
Shark Teeth are primarily the most common vertebrate fossils — one individual can drop thousands of teeth over its lifetime.
“Leigh and I are always pleased to be able to support Amherst,” said Middleton. “But this gift is especially meaningful to me personally, as it will reside in a museum named for our good friend Ted Beneski whose generosity made the museum possible.”
NEW TO THE MUSEUM – Dryosaurus altus (150 mya)
On to the Museum (9:30AM)
Break Time 10:20AM
Lab/Field Guide

Introduction (10:30AM)

✧ Geologic History
  ✧ (Ct. River Valley Focus)

✧ Visual Scanning and Observation (We will do this together)
  ✧ Divergent Thinking

✧ Illustrating the past
  ✧ Connecting visual arts, language arts and science

✧ Vertebrate Hunting
  ✧ Finding primary source material – Data collection

✧ Lessons in Evolution

✧ Evolution and Speciation

✧ Postcards from the Past – Four Rivers

✧ Experiential program – McAuliffe School
Small Groups – Lab work in the Museum 10:45AM

✧ Geologic History
✧ Illustrating the past
✧ Vertebrate Hunting
✧ Lessons in Evolution
✧ Evolution and Speciation

Instructions:
1) 6 – 7 people will work with one of the field guides
2) We will have about 50 minutes to begin work in the Museum
3) At 11:45 we will meet back in Paino lecture hall to share back
Field Guide Sharing

1) Take 5-10 minutes with your group to address the following questions.

- What is your one takeaway from the activity?
- What would activity and/or question would you add to the lab and why?

Please write the questions and answers on a piece of chart paper.
Quick Break...
Visual Scanning/Observation Activity & Divergent thinking

12:10PM

• Divergent thinking occurs in a spontaneous, free-flowing, 'non-linear' manner.
  – Preschoolers do this best...
  – Convergent thinking begins taking over
  – Middle school divergent thinking is almost gone
  – We re-teach divergent thinking in high school and beyond..
Effects Nature has on the Earth – Using Primary Sources

• **Problem:** What can we learn about the effects of nature on the Earth using primary sources (A primary source is a document or a physical object which was written or created during the time under study. These sources were present during an experience or time period and offer an inside view of a particular event. Relics and artifacts, such as fossils are one kind of Primary Source)

• **Hypothesis:** By using a visual scanning technique, we should be able to see some effects of nature on Earth in some of the Primary Sources in the museum
Procedure:
Use the following visual scanning cues to identify the effects that nature has had on the earth. Look for and record the following characteristics of the source.

**Qualitative**
- Color
- Pattern
- Texture
- Depth
- Shape

**Quantitative**
- Size (how big/long)
- Depth
- Number (how many)
- Proximity (how close is what you are noticing to something else?)

Record just what can actually be seen
To the Hitchcock Gallery – Bring our Visual Scanning/Observation Lab – Turn to the back...
Closing and Feedback

1) On a sticky note please write one take away from today.

2) Please complete the Seminar Evaluation.

3) Sticky notes on the chart paper and evaluations in the folder as you leave.

4) Fred Venne (avenne@amherst.edu)

Next session “Introduction to Scratch Programming” Feb 28 w/John Heffernan