NATIONAL CENTER FOR EARTH-SURFACE DYNAMICS

BUILD YOUR OWN STREAM TABLE: INTERPRETING CURRENT RESEARCH THROUGH CLASSROOM ACTIVITIES

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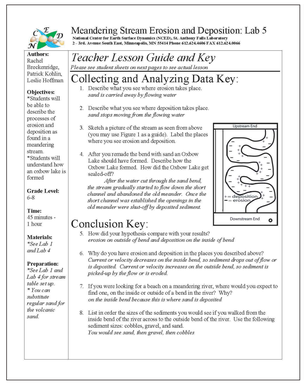
FRIESEN, Benjamin
CAMPBELL, Karen
BAUMTROG, Jill

National Center for Earth-surface Dynamics
St. Anthony Falls Laboratory
2 Third Ave. SE
Minneapolis, MN 55414



Meandering Stream Erosion and Deposition: Lab 5

Teacher Lesson Guide and Key

Please see student sheets on next pages to see actual lesson

Collecting and Analyzing Data Key:

1. Describe what you see where erosion takes place.
   sand is carried away by flowing water
2. Describe what you see where deposition takes place.
   sand stops moving from the flowing water
3. Sketch a picture of the stream as seen from above (you may use Figure 1 as a guide). Label the places where you see erosion and deposition.
4. After you remade the bend with sand an Oxbow Lake should have formed. Describe how the Oxbow Lake formed. How did the Oxbow Lake get sealed-off?
   After the water cut through the sand bend, the stream gradually started to flow down the short channel and abandoned the old meander. Once the short channel was established the openings in the old meander were shut-off by deposited sediment.

Conclusion Key:

5. How did you hypothesis compare with your results?
   erosion on outside of bend and deposition on the inside of bend
6. Why do you have erosion and deposition in the places you described above?
   Current or velocity decreases on the inside bend, so sediment drops out of flow or is deposited. Current or velocity increases on the outside bend, so sediment is picked-up by the flow or is eroded.
7. If you were looking for a beach on a meandering river, where would you expect to find one, on the inside or outside of a bend in the river? Why?
   on the inside bend because this is where sand is deposited
8. List in order the sizes of the sediments you would see if you walked from the inside bend of the river across to the outside bend of the river. Use the following sediment sizes: cobbles, gravel, and sand.
   You would see sand, then gravel, then cobbles

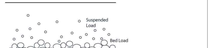
Braided Streams and Sediment Transport: Lab 2

Teacher Lesson Guide and Key

Please see student sheets on next pages to see actual lesson

Collecting and Analyzing Data Key:

1. Sketch a drawing of your braided stream. Show and label the channels, banks, gravel, regular sand, and volcanic sand.
   answers will vary
2. What does a suspended load and bed load look like moving in the stream? Describe in words or draw a picture. Were most of the sediments being carried in the bed load or the suspended load?



3. What happened to the water around the larger rocks?
   There was erosion on the upstream side and deposition on the downstream side.
4. Sturgeon and other fish lay their eggs in streams. Why do you think that it is important for these large rocks, or boulders, to be there?
   The water is calmer on the backside of these rocks so the eggs will have a better chance of staying in one spot. If the eggs moved downstream they could get crushed. The deposition behind the rocks will be gentle and will protect the eggs from predators.

Conclusion Key:

5. How did your hypothesis compare with your results?
   Furthest Traveled, greatest to least: volcanic sand, regular sand, gravel
   The volcanic sand traveled the furthest because it is small (sand sized) and light (lower density than other sand.
6. The volcanic sand is about the same size as the regular sand. Why do you think the volcanic sand behaved differently from the regular sand?
   The volcanic sand is less dense, so it will be more easily transported by the water flow.

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The National Center for Earth-surface Dynamics (NCED) is an NSF-funded Science and Technology Center based at the University of Minnesota. NCED is a multidisciplinary research institution whose research is primarily focused on the physical and ecological processes shaping rivers and river networks. NCED is actively working to support in-service teachers in getting current research into the classroom relating to primary areas of research by developing the Earth-Science Teacher/Researchers Exploring Active Modeling (ESTREAM) program.

Practicing K-12 teachers and research staff at NCED develop materials that promote greater understanding of “source to sink” processes of erosion, transport and deposition for the K-12 classroom. Participants in the ESTREAM summer program are compensated and are active participants in current Earth science research. Program participants develop virtual fieldtrips, quantitative analyses, and stream table activities and more for the K -12 classrooms. A website and educator workshops provide ongoing support to educators. This session will highlight some of the activities developed by ESTREAM teachers and give you a blueprint for your own stream table.