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## **Project Development: A Fossils Learning Cycle**

### **Project Description**

My project is to develop a learning cycle on the concept of Devonian age fossil identification and fossil environments. The development of this learning cycle includes the following:

- Field trip development
- Fossil collection development
- Classroom activities.

### **Objectives/Goals**

The objectives for my students are the following::

- Identify and understand Devonian plants and animals.
- Explain the Devonian environment of Iowa through fossil observations.

### **Implementation**

This learning cycle will be implemented in the Buchanan County Geology course I teach during the spring trimester. Field trips and teacher collected and student collected fossil specimens will show some of the species that lived during the Devonian. Classroom discussions will center around the environments and conditions that produced the fossils leading the students to an understanding of the conditions in Iowa at the time. Students will be required to draw sketches of fossils observed in the field, collect fossils to be contributed to a class collection, and identify fossils observed and collected.

### **Evaluation**

Students will be assessed on the following:

- Fossil sketches and identification.
- Fossil collection and identification.
- A summative concept map of learned concepts during the learning cycle.

## Project

### *Exploration Activity: Devonian Fossil Gorge Field Trip*

During this exploration activity, students will have the opportunity to observe fossils uncovered by the flood of 1993 at the Coralville Spillway. Students will be required to make sketches of several fossils observed which will be identified and discussed during the concept development of Devonian plants and animals and the environment of fossil formation.

### *Concept Development*

Students will use the fossil collection developed for this project to physically handle and observe representative plants and animals of the Devonian. They will then attempt to identify the sketched fossils observed at the Devonian Fossil Gorge.

Development of fossil environments will occur through readings, classroom discussions, and teacher lectures.

### *Application Activity: Floyd County Fossil and Prairie Area Field Trip*

Students will collect fossils at this site which will then be identified in the classroom. Other observations to be made at this site include the material in which the fossils are deposited and the relative abundances of fossils at different stratigraphic locations. Students will hypothesize about the Devonian environment that produced these fossils. Fossils collected and identified from this site will collectively create a class collection.

### *Application Activity: Werling Road Cut Field Trip*

Students will make observations of the fossil deposits of the area and collect fossils to be identified in the classroom. Hypothesis will be made as to whether or not the fossils at this site are of the same relative age as those observed from previous sites.

### *Application Activity: Microfossils*

Students will search and attempt to identify microfossils in shale samples collected from the Floyd County Fossil and Prairie Area.