Stacie Nign
LABS- 2001-2002

Subject: Inquiry Activity on Biodiversity
Title: Is a parking lot an ecosystem?
Lesson summary: While observing the characteristics of a parking lot, students will gather data to support or refute the hypothesis that a parking lot is not an ecosystem.
General Goal: Students will identify even the most unlikely habitats and recognize them as ecosystems. Students will identify organisms' abilities to adapt to extreme changes in an environment. Students will determine the characteristics of an ecosystem and the resources utilized in the ecosystem by organisms. Students will develop skills of observation, prediction and hypothesizing, collection and analysis of data. Students will synthesize hypotheses and ideas of how biodiversity relates to adaptability of organisms in any ecosystem. Students will recognize where parking lots take place in nature (i.e. lava flows). Students will process the idea of disturbance and how the process of succession comes into play. Parking lots? Disturbance? Succession?
Duration: One lab period (2-42 minute periods) during the first 3-6 weeks of school.

Specific Learning Objectives:
Process: Observe and collect data. Develop hypotheses and use data collected from all classes to synthesize graphic representations of evidence gathered that supports/refutes their hypotheses. Develop humane collection and storage of specimens.
Factual/Content: Define what constitutes an ecosystem. Recognize the change in diversity of organisms through time. Identify increased diversity of organisms in niches/cracks in pavement. List Abiotic and biotic factors in an environment. Define succession.
State/National Science Objective: Provide evidence for idea/hypothesis from collected data and reflect on interpretations of information collected and methods of collection.
Prerequisite Student Knowledge: School campus and surround areas, the characteristics of pavement/sidewalks, some familiarity with conditions organisms need to survive.
Teacher Preparation for Lesson: The definition of an ecosystem. At least 3 paved or cemented areas outside located and surveyed for appropriateness.
Teacher Background Information: Familiarity with school campus, the organisms present in these areas, the ideas of succession, disturbance, niche, ecosystem, habitat, and biotic and abiotic factors. Familiarity with the development of graphs, tables, and data collection.

Instructional strategy:
1. State definition: An ecosystem is the interacting populations of organisms and their non-living environment.
2. Take students outside, point to parking lot/ sidewalk, and say,"is that an ecosystem. Hypothesize and support or refute the hypothesis.
3. Students decide to support or refute my hypothesis. Record their idea.
4. Students then decide on methods to collect data to support or refute their hypothesis.
5. Once a course of action(s) is planned, materials are supplied for student use in gathering data.
6. Once data is gathered, students are to synthesize their data graphically to provide evidence that supports or refutes their hypothesis.
7. Bring class together for tallying of results.

Teacher will point students in the direction of data collection for support or refute of their hypothesis of if a parking lot is an ecosystem or not. Teacher acts as a facilitator or guide, not a source of immediate knowledge/easy answer. Students are to develop the methods to answer their question on their own. After data is collected and processed, teacher can give names to the concepts students have developed i.e. succession, niche, and habitat.

Engagement: Is a parking lot an ecosystem? Plus* the bonus of getting to work outdoors.

Exploration: Students will be able to conduct any test they desire, as long as I have the supplies/equipment to help them along. Students keep journals in this class and will keep information logged in them. Students, if specimens cannot be collected, will make drawings of what they see and if need be identify these organisms in the classroom.

Discussion/Explanation: After all data is collected and interpreted, students will present their hypothesis, procedure for data collection, and results to the rest of the class.

Assessment: 3x5 cards with answers to following: What are the characteristics of an ecosystem? What is succession? What is disturbance? Students will get graded on graphic interpretations of data, methods of data collection, and synthesis of data will also be assessed after the final collections, and the student makes interpretations.

Comments: After the initial question is given is when students will develop the inquiry or students will begin to process and synthesize knowledge about ecosystems and conditions for biodiversity. They are provided with one definition and expected to run with it. Students are given materials and equipment such as thermometers, psychrometer, pH tests, soil tests, etc. anything they would need to help develop and collect data for the tests they develop to answer the question posed to them. The lesson could be used to introduce such topics as swabbing plates, weathering, pH scale, soil testing, taking temperatures, food webs, nutrient and gas cycling, and erosion.