

Microscopic Explorations Adapted for a Saturday Science Class

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Microscopic Explorations [1] was designed as a festival format curriculum to introduce children from 4th to 8th grade to microscopy. This program was adapted for a five week Saturday morning science class entitled "Microscopic Investigation." The class was an offering in the Super Saturday program which offers enrichment classes on a wide variety of topics for interested students from Kindergarten through 8th grade. The class topics cover a wide range of disciplines including foreign languages, fine arts, drama, cooking and science. Class sizes are small (typically 8 to 10 students) to allow more individual instruction and the classes are intended to emphasize hands-on activities with limited lecture time. The number and variety of science classes offered are somewhat limited due mainly to lack of facilities and instructors; Microscopy was an ideal topic for a science class for older elementary students with hands-on experiments.

The class format is 50 minutes on five consecutive Saturday mornings. The classes are held at a local Middle School where a science classroom was made available for this class along with basic student compound microscopes. Each student had a compound microscope to use (Fig. 1 and 2). The class room also had several small stereomicroscopes that were very useful for some of the lessons. Each student also received a magnifying glass to use for the class that he or she could keep. For most experiments, we used punch-hole slides made from manila folders and clear tape. For experiments using water, plastic well slides were used. Flashlights were used to provide "oblique" light. Students were asked to look at samples with their eyes, the hand lens and then with the microscope. In some cases, they were asked to draw what they saw. Several "Mystery" exercises, where students could identify samples by comparing them to standards, were very popular.

Microscopic Explorations is divided into ten stations or activities with some introductory material. The time allotted for the festival was about 90 minutes. The lesson plan for the classes incorporated two of the stations for each session with additional samples added as needed to fill the time. The Up Close unit was combined with pre-festival section on Magnifiers and Microscopes and several demonstrations using lenses. Fingerprint Ridges was combined with Dots and Dollars and Fabrics for a Forensic session. The Salts and Kitchen Powders units were combined with several unknown mystery mixtures for identification. The units on Sand, Small Creatures (Insects), Brine Shrimp and Pond Life were combined with additional samples for the last two sessions. The content of each session was modified each time it was offered to accommodate different class dynamics and student interests.

References

- [1] S.Brady and C. Willard, *Microscopic Explorations*, **GEMS, Lawrence Hall of Science**, University of California at Berkeley 1998.
- [4] The author would like to thank The McCrone Group for supporting this presentation and is indebted to several colleagues for advice and assistance, Elaine Schumacher, Carol Injerd, Heidi Ullberg and Anna Teetsov. The author would also like to thank the O'Neill Middle School Administration and Mr. Jim Williams for letting us use the room and the microscopes.



FIG. 1. Classroom used for Microscopic Investigation. Most of the elementary students needed stools to reach the bench.



FIG. 2. Students examining samples on punch card slides.