HABITAT TRACKER:
Learning About Scientific Inquiry through Digital Journaling in Wildlife Centers

Purpose. Field trips to museums and wildlife centers are a common activity in schools, and it is widely believed that they have educational and motivational impacts, yet research shows field trips frequently have limited educational benefits and a lack of integration with science curricula. National reform efforts in science education emphasize the need for students to participate in scientific inquiries, yet inquiry-based instruction remains a rarely seen practice in most elementary classrooms. To address these problems, this project will develop an intervention to foster fourth and fifth grade student understanding of scientific inquiry and the nature of science, through student-led data collection and analysis, before, during, and after visits to a local wildlife center.

Setting. The investigators will collect data from schools in three districts (one urban, one rural, and one mixed) that have highly diverse populations of students. Data will be collected in the classroom during pre-visit and post-visit activities, as well as on field trips to the wildlife center.

Population. The project will involve 36 participating teachers, each teacher serving up to 50 fourth and fifth grade elementary students each year (1500 during the duration of this project). The project's goal is to develop a field-tested version of an intervention supporting student scientific inquiry through data collection in informal settings that is easily transferable to schools nationwide.

Intervention. The intervention will be designed to support student participation in scientific inquiry through two interrelated systems: 1) the Habitat Tracker Digital Journal, an application for a handheld device (such as an iPod Touch) through which students can record their own observations, answer their own questions about natural science, and access multimedia content and expert commentary about wildlife habitats; and 2) the Habitat Tracker Community Website, an interactive forum where students can read and edit their digital journal entries, and contribute data about natural habitats observed at other wildlife centers. This intervention will support the state's newly adopted science education standards (which feature inquiry and the nature of science).

Research Design and Methods. The investigators will use an iterative user-centered design process with continuous formative evaluation of the students' experiences with the systems. During year one, student surveys, interviews with teachers, and observations of classroom practice will provide baseline data while an initial version of the intervention is developed. Toward the end of year one and throughout years two and three, incrementally expanded and improved versions of the intervention will be evaluated through functional, content, and usability testing. During year three, a pilot study will be conducted to demonstrate the feasibility of the intervention for elementary classrooms across the country, and its promise of positive outcomes for student science learning.

Key Measures and Data Analytic Strategy. The value of participation in scientific inquiry featuring data collection and journaling activities in wildlife centers and in the classroom will be determined by examining student science learning (cognitive and affective). Students will be asked to complete three different instruments measuring their understanding of scientific inquiry and the nature of science as well as their attitudes toward science before and after visits: Views of Scientific Inquiry (Schwartz et al., 2008), Understanding of the Nature of Science (Kang & Scharmann, 2004), and Attitudes Toward Science (Moore & Foy, 1998). Gain scores on these instruments will be examined to search for differences in achievement for students from different demographic backgrounds to inform necessary changes for the intervention based on the needs of different groups of children.