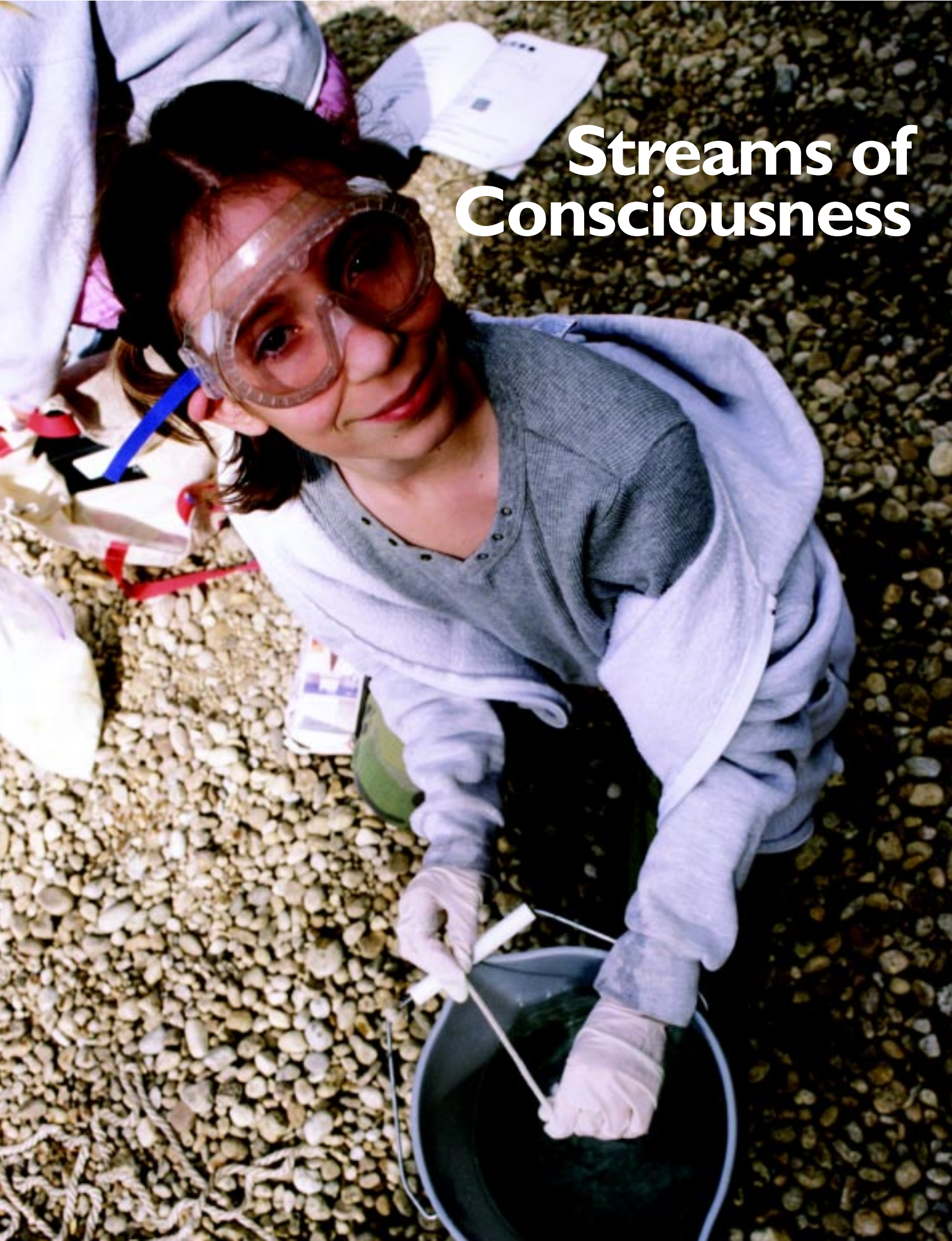


Streams of Consciousness



Environmental Learning Ripples from UI's McCall Outdoor Science School

On a crisp October morning, the shouts and laughter of more than 50 fifth and sixth graders welcome the first real autumn day to central Idaho.

Nine students stand on a dock on Payette Lake and take the first meteorological measurements of the day. Their teachers and parent chaperones nervously glance upward at the gray sky wondering whether their day will be interrupted by rain. Meanwhile, two girls pass the time before their morning field science class by jumping rope, proving it is possible to jump rope while wearing a backpack and hiking shoes.

Graduate student Jeanette Gara takes the reins of the "dinner bell" — a bell that once rode atop a Union Pacific steam engine — and signals the end of play. As the students quietly line up at the classroom door, another day is

originated as a place for training foresters. "We're not using the field campus to educate foresters anymore, but we are using it to prepare educators to teach about our natural world."

Now in its third year, the MOSS program brings fifth- and sixth-grade students from schools across the state to spend a week learning how science is used to monitor the Earth's environmental systems — and the learning is definitely hands-on.

"What kind of clouds do you see?" asks UI graduate student Katie Wilson. The nine sixth-graders from St. Stanislaus Tri Parish School in Lewiston consult their cloud charts and start calling out names. The students eventually agree on cloud types and move on to the weather station to make temperature and precipitation readings.

Later in the day, the student group records their readings on the blackboard in the field campus classroom so that all of the students can mark them down in their field notebooks. The exercise emphasizes the cooperative nature of scientific study, and thus, the need for accuracy. The other students depend on each group's readings.

Last fall, nine UI graduate students spent 10 weeks at the field campus as course instructors, learning what it takes to teach environmental science in the field. One graduate student is assigned to each of the six student groups along with their schoolteacher and at least one parent. During the week, each group conducts scientific observations in a lake, stream, marsh, meadow and sage brush environment. Students also spend a full day hiking through the Ponderosa pine forest system, to study fire ecology and



Students conduct scientific observations stream-side, and discuss how water moves down through the hills and how conditions work their way into the streams.

By Ray Doering

Photographs by Pam Benham



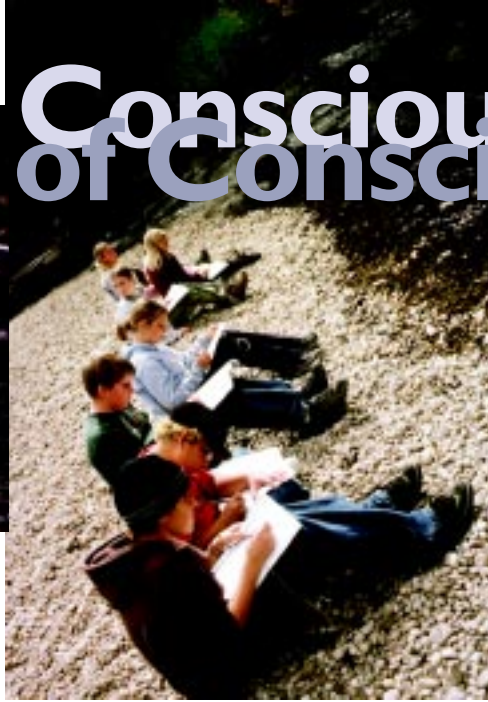
The dinner bell at the McCall Outdoor Science School calls students to class.

beginning at the UI's McCall Outdoor Science School, or MOSS.

The MOSS mission may be best summarized on the plaque beneath the brass bell, which was a gift from the Union Pacific Railroad Company to the UI College of Forestry in 1952. The plaque reads, "From the railroad that opened the West to the youth charged with conserving its resources for the future."

Steven Hollenhorst, resource recreation and tourism department chairman, notes that the field campus

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bird habitat.

The McCall Field Campus sits on property along Payette Lake between the City of McCall and the state park. The property is owned by the Idaho Department of Lands and is leased on a long-term basis to UI, which owns the buildings.

Hollenhorst points out that the science school has benefited significantly from its close cooperative relationship with the state park. He said Park Director Dennis Coyle has actively supported the MOSS program and has made important contributions to the curriculum.

The real impact of the school can be seen in the field. After a short van ride and a climb down the bank, the members of Carol Bickford's sixth-grade class at St. Stanislaus are sitting quietly on the rounded pebbles along a small stream. In an ice-breaking exercise designed to test their powers of observation, graduate student Travis Dickson has the students seeing, hearing and smelling what is around them, and then writing about or drawing what they experience.

The students share their drawings and read a few sentences out loud. Their teacher and two parents find a comfortable spot on the bank in the emerging sunshine and listen to the students' answers, the water running over the rocks and the bird songs echoing in the woods.

The program's focus on fifth- and sixth-graders during its formative years has been partly by design and partly through logistical necessity. Hollenhorst notes that this age group is advanced enough to understand the more technical aspects of the program. Of course, there also is the youthful curiosity and

enthusiasm they bring to the program. On the practical side, Hollenhorst explained that these are the last years that students are in a single classroom situation. This allows teachers to take their full classes to the field campus. The program seeks to teach the teachers as well as the students.

"We want the teachers and the students to take their experiences back to their schools and build excitement for science," Hollenhorst said. "Our studies have shown that students have a greater interest in science after their experiences here. The same holds true for their teachers and the parents who volunteer their time here."

Back at the stream, the scientific observations are about to begin. Dickson asks his group, "Is a stream a good indicator of how healthy the earth is?" They discuss how water moves down through the hills and how conditions in the atmosphere and the hillsides will work their way into the stream.

"The whole program is based on recognizing and monitoring what we call the Earth's vital signs," Hollenhorst observed. "If we understand how natural systems are linked together, then we can use science to take indicators of the health of our environment. The long-term goal is to provide a base of knowledge for our students so that they can become better citizens and make more informed decisions about natural

resource issues as adults.

"Many of the students are becoming monitors of environmental vital signs in their own communities," he added. "Some are taking part in an online global database that is collecting observations contributed by children all over the world."

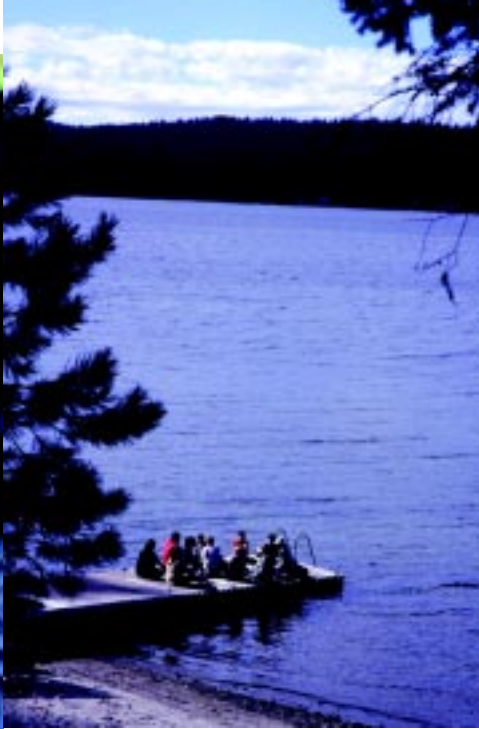
At the stream, students conducting scientific observations don rubber gloves and goggles as they begin testing the water's temperature, pH levels, conductivity and turbidity. Chemicals are mixed to test the level of dissolved oxygen. While three students conduct their observations, the rest of the group waits their turn. They will conduct the series of observations three times and then average the results. Thus they are introduced to the rigors of science.

"One important aspect of the program is to familiarize students with the protocols of science," Hollenhorst explains. "It is important for students to understand the work that lies behind scientific findings reported in the media."

As the observations continue along the stream, Dickson notices a growing impatience among the students waiting their turn. He announces that there will be time allotted for a stone skipping contest after the last set of observations. Immediately, the search is on for the best skipping stone. Sometimes the protocols of science must recognize the playfulness of youth.

Similar activities take place in each of

"Our studies have shown that students have a greater interest in science after their experiences here."



the environmental areas. Graduate student leaders listen carefully to the reactions of their students. At the end of each week, the grad students compare notes, offer constructive criticism and look for ways to do it better next week. According to Hollenhorst, this is how the MOSS curriculum has evolved over the past three years.

“Adaptive management, that’s the name of the game,” he said. “We have moved away from a canned curriculum to one that is more related to this site.”

These skills will be particularly important as program planners seek to expand their offerings to junior high and senior high students while also looking into a year-round program. After a two-week first year and a three-week second year, this year’s program ran 10 weeks and ended Nov. 15. As the McCall weather gets colder, this year’s instructors experienced their first indications of what it will be like to develop a winter curriculum for the site.

Meanwhile, the stream group is arriving back on campus. Two buckets filled with stream water will be taken to the classroom for the invertebrate lab. Different samples from the other groups soon will be arriving for additional lab sessions.

Dinner, clean-up and a team-building activity also are on the schedule, followed by an evening program that will include performances by each of the groups that reinforce the lessons of the day. Staff members have made sure that ingredients for s’mores were procured. No science camp would be complete without them. ❶

How MOSS Came to Be

Three years ago, Clara Bleak ’46 wanted to do something new in the area of environmental science education. That something new became the UI’s McCall Outdoor Science School. This year, her \$50,000 gift was instrumental in the expansion of the program to 10 weeks.



Clara Bleak

“There would be no McCall Outdoor Science School without Clara Bleak,” says Steven Hollenhorst, chair of the resource recreation and tourism department and director of the MOSS program. “Her initial contribution got the whole thing started.”

Since the school began operations, it has been able to attract government and foundation contributions, including grants from the Christensen Fund and the federal Environmental Protection Agency. Further operating expenses come from per-student fees charged to participating schools.

Hollenhorst said schools participate in a variety of fund-raising activities to support student participation. He said two rural districts with limited resources were able to send students with the support of the Idaho Forest Products Commission.

“We are at the limit of our resources now,” Hollenhorst added, “and we are looking at new ways of building financial support for the facility upgrades that will allow us to expand the program year-round.”