

# Sound Scientists: Gear Up with Music

## Final Report

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## **Introduction**

Society is becoming increasingly separated from nature. People are also becoming more distanced from science and the ways that we come to understand the natural world. This is especially true of urban and rural youth who have little contact with nature and who may have negative experiences with learning science in schools. To provide a positive experience that associates science with activities that are enjoyable and meaningful to youth, three collaborating organizations created a unique program – *Sound Scientists: Gear Up with Music*. In this week-long project, scientists presented aspects of field biology and the study of nature to urban and rural middle school children and provided them the means to express their experiences in music, mainly rap music and spoken word poetry. The participating groups – the Research Ambassador Program, GEAR UP at The Evergreen State College, and Sound Adventures – provided content, structure, technical support, and evaluation for this endeavor. This experiential and discovery-based educational program took place July 12 – 16, 2004 at The Evergreen State College, in Olympia, Washington.

## **Participating Organizations and Students**

The **Research Ambassador Program** is funded by the National Science Foundation (Informal Science Education Program). It provides incentives to academic researchers to directly communicate their research to non-scientists, particularly to non-traditional audiences.

**Sound Adventures** is a non-profit organization that provides experiential life-long learning opportunities for youth and adults in formal and informal settings. Their other workshops have focused on topics such as violence, self-image, and college preparation.

**GEAR UP** is funded by the Department of Education to increase awareness of college and educational opportunities for middle-school children, particularly at-risk youth.

**Students** included 40 sixth, seventh, and eighth-graders from Lochburn, Woodbrook and Oakville Middle Schools. The latter two are located in the urban habitat of Tacoma, Washington; the latter is in a rural area dominated by military families.

## **Curriculum Content and Skill-Building**

The Research Ambassadors were Dr. Nalini Nadkarni (forest ecologist), Dr. John Longino (entomologist), and Dr. Gerardo Chin-Leo (marine biologist), all faculty members at The Evergreen State College. On each of the first three days, one of the scientists led outdoor and laboratory activities designed to expose students to the hidden worlds of nature and to involve them in the active study of one part of it. Dr. Nadkarni brought students to the campus forests, did a demonstration climb with rope techniques, and taught a professional rap artist how to climb, after which he created a rap song about his experience. Dr. Longino led an experiment with the thatch mound ant colonies in the College parking lot, and students learned how to test a hypothesis about homing abilities in the ants. Dr. Chin-Leo led students in collecting marine organisms in the intertidal zone, and later showed gave them a microscopic perspective of these organisms in the lab.

On the afternoons of the first three days, the students began working singly and in small groups to develop musical interpretations of their field experiences. On the last two days, two audio engineers recorded the original lyrics created and performed by the participants. All participants engaged in journal-writing each day of the five days and were coached by four staff provided by GEAR UP and three staff from Sound Adventures. Each afternoon, after the end of activities, all participants formed a “talking circle” and discussed what they had learned from that day’s experience. This was also a time for feedback on content and logistics.

### **Program Logistics**

Student participants were recruited by staff from the GEAR UP office at the College through previous contacts, posters, and telephone calls. This occurred during the two months before to the start of the program. Each day, prior to the arrival of the students, all of the staff met for an hour to plan the day, work out logistics, assign group leaders, and verify field equipment was present and working. Students were bused in from their schools under the guidance of GEAR UP counselors. These staff members had worked with the students at the resident schools for at least two weeks, and so were familiar with these individuals. The ratio of staff to students was 1:5. Groups of students (5-7) were assigned on the first day to an individual staff person so that movement from place to place and field exercises could be closely supervised. Media Services of the College provided equipment. Food for snacks was provided by local merchants who donated healthy food and drinks. The Superintendent of Public Instruction’s Summer Lunch Program provided lunches. At the end of the day, students were escorted to their buses by GEAR UP staff.

### **Results**

The students and sound engineers produced a CD comprised of 12 pieces of music, rap and spoken word poetry. The level was very high due to the guidance of the professional audio engineers. Students evidenced a great deal of pride in the final product, and vocalized their eagerness to share the CD with their friends, family, and schoolmates. At the closing activity, 90% of the participants concurred scientific learning was fun and that they had learned a lot about the hidden worlds living in the canopy, insect behavior, and marine biology. In the final talking circle, 85% stated that they would recommend their friends attend future Sound Scientists programs.

The Research Ambassadors also articulated a high level of satisfaction in having participated in these activities. A formal exit interview revealed that in all three cases, the experience exceeded the expectations in terms of a sense of professional and personal achievement. All three stated that they would repeat their participation in such an exercise, and also recommend it to their scientific peers.

### **Conclusions**

This program fulfilled its educational mission by:

- aligning organization-specific learning objectives and finite resources to advance life-long learning in youth and adults.

- employing experiential and discovery-based learning activities to advance the knowledge of and appreciation for science and our natural world.
- supporting individual learning styles and respecting individual and cultural differences.
- having clear and measurable outcomes,
- providing safe learning opportunities and practical strategies for youth and adults to develop personal assets and meaningful relationships.

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