

## Science Outreach to Children in Rural China

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Since 2009, I have been serving as a volunteer Project Manager for the Education and Science Society (ESS) Summer Science Camp Program in rural China. Chinese-American scientists and educators have cooperated with partners in China to form teams that organize 40 week-long Summer Science Camps that have provided opportunities to more than 3,800 students from rural elementary and middle school students. Most of the camps have been located in schools in mountainous areas with large minority populations, where educational resources are limited and science education is particularly weak. Many of these schools have limited facilities, only a few outdated computers, and no equipment for hands-on experiments in science classes. At one school with more than 100 students, the only science teacher burst into tears when she saw the computers and experimental equipment brought by the camp team. The major purpose of these camps is not to teach science but to inspire student to learn about the outside world through lab demonstrations and hands-on activities. For example, one group of 10-year old campers learned to proudly explain to their parents why birds can stay on power lines and how to make a sundial using only a pencil and a piece of paper. During the summer of 2013, twelve camps were held in six provinces. Students from universities in mainland China, Taiwan and other countries as well as other volunteer educators formed teams of camp counselors.

***The ESS Summer Science Camp program has been devoted to promoting conservation and environment awareness. Several camps adopted the theme of environmental protection.***

A camp in Liuyang, Hunan Province adopted the theme of “Liuyang River, Mother River.” All campers live along this once beautiful river. Volunteers from Hunan Agriculture University demonstrated the infiltration process on grassed and bare soils, and the campers observed how vegetation reduced erosion and improved water quality. Campers were led to the river to observe how careless actions such as littering damaged water quality of the Mother River. At the end campers were asked to draw pictures of the images of polluted and clean rivers (Figures 1, 2). They vividly portrayed the contrast.



Figure 2 - Mother River Polluted  
- by Liao Xunwei, Liuyang Science Camp



Figure 2 - Mother River Clean and Happy  
- by Liao An, Liuyang Science Camp

Each year inspires new ideas for the following summer. I just came back from a planning trip for 2014. Teaming up with Shaanxi Normal University, we are planning a camp with the theme of “A Tale of Two Rivers” at a middle school in Shaanxi Province. There, the Jing River is a major tributary of the Wei River (Figure 3). Past serious land erosion in the Jing Basin has made that sediment-laden river historically famous for the red-yellow color of its water. In contrast, the Wei River water has been relatively blue. At their confluence, the difference in turbidity forms a clear boundary. Since ancient times, the Chinese phrase “泾渭分明” (clear distinction between the Jing and Wei Rivers) has been used to describe the clear difference between two things, as between purity and impurity. However, consistent efforts of basin conservation have changed the Jing River. Once barren hills are now covered by vegetation which has effectively reduced the erosion. On the other hand recent human-caused environmental degradation in the upper basin has been increasing the sediment content as well as other polluted discharges in the Wei River. One is still able to observe the water boundary at the confluence but now the Wei River shows darker muddy color. The ancient Chinese phrase provides a solid introduction to the concepts of basin soil conservation and water quality. We plan to take the campers to observe the confluence, examine watershed conditions, and introduce concepts of watershed conservation and impacts of human activities. We will also introduce the campers to a water quality lab, teach them a few basic lab skills, and guide them using these skills to examine water quality in these two rivers. Finally, we will help them connect water quality with watershed conditions and see if they can identify pollution sources within the watersheds. Campers will then prepare their report and make a presentation.



Figure 3 - Jing River and Wei River

In contrast to the traditional educational goal of “passing exams”, the science camp program has the ambitious focus of encouraging critical thinking, quantitative observation, and analytical ability. We are excited to introduce such discovery methods through the summer camp project. Much more work is needed, but we have made a solid start.

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Source: Wikimedia Commons

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More photos from Liuyang Science Camp

