The Nexus of Science and Science Education: Using a Digital Information Technology of American Grizzly Bears and Chinese Panda Bears to Engage Public Interest and Knowledge in Science.

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Over the summers of 2001 and 2002, researchers, teachers, students, and the public operated a remote-control video camera system installed and maintained by Seemore Wildlife Systems Inc. at McNeil River Sanctuary on the Katmai Penninsula in Alaska. During the summer of 2002, a plan was developed and implemented for archiving the video footage for digital image processing and analysis to test three hypotheses:

- Video recordings and advanced image processing would enable researchers, the students and the public to identify individual bears engaged in social foraging.
- Bear body condition and development can be monitored during feeding in a non-perturbing fashion without influencing current ecotourism at the site.
- A new model of kleptoparasitism (producer-scrounger games) in bears "fits" bear social foraging.

River-wide scans documenting as many as twenty-six bears at one time recorded population numbers and positions of the bears over a forty-five day period that corresponded to the historically most active time of fishing (usually, but not always, correlated with peak salmon runs). Close-up focal observation recorded detailed images of the bears for individual identification.

Web-based participants learn about bear biology through accessing the video as it is recorded and after it has been archived. There is some opportunity for students to control the web camera. Web participants and researchers can use archived video for science research and science education. One project in science education monitored critical thinking skills that are developed through watching the videos and categorizing observations as simple statement of fact, inferences, or as a question. The students significantly improved their critical thinking skills with the project. We plan to integrate some of these learning experiences into a web site that parallels the Virtual Science Museum of China Panda Bear exhibit.

We are continuing the project and have obtained funding through a supplement to NSF-funded ITS Center at TAMU to expand the work to include analysis of the Giant Panda at the Wolong Reserve in China, allowing web participants to view the video live and in archived form. Using archived video, comparisons will be made of the life histories of the Giant Panda and the Grizzly Bear.

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