

## **Engaging Rural Alaskan Students in Geoscience**

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In rural Alaska, the teaching of university level geosciences at University of Alaska Fairbanks (UAF) has been limited to a few 100 and 200 level courses offered through the UAF's College of Rural and Community Development (CRCD). CRCD has 5 rural campuses across the state that traditionally has focused on English and math instruction, tribal management, and courses to meet community needs. Recently, there has been a growing interest in science to better understand the rapid pace of change due to a warming climate and globalization, both of which influence the health of social and environmental systems. Further, there has been much controversy and conflict generated as a result of new resource extraction activities in remote regions where culture is still based on subsistence. This sets the stage to engage rural Alaskan students and teach more science. Since 2008, 4 new CRCD science programs have been designed to promote place based learning. These programs hope to expand local knowledge and continue the local management and conservation of resources. However, since ability to approach and resolve global problems at a local level is problematic because of size of external drivers the main goal is to allow rural communities to better adapt to change and help keep ecosystems resilient and healthy.

The growing global demand for energy and minerals is increasing the rate of resource development. For example, Bristol Bay in southwest Alaska has much mineral wealth and the Pebble Partnership LTD hopes to mine copper, gold, and other metals for world markets. However, local reaction to the proposed mine has generated controversy and conflict over legitimate concerns that the mine would negatively influence cultural and ecosystem health. Local view the abundant ecosystem services of pristine nature as having value beyond mineral wealth. Fisheries, account for nearly 75% of local jobs and a subsistence lifestyle is practiced by 90% of the residents. The region has been able to maintain its high ecosystem value due to the low human population, remote geography, and limited accessibility. The influences of a large mine(s) and its infrastructure sets the stage for investigations into the value of the region beyond economic measures. Given the pace of broad scale anthropogenic change, the region could become a laboratory for the way nature and society responds to external drivers.

The needed discussion of the issues through stakeholder collaborations and industrial ecology depends on an educated local populace. To help in this endeavor, the UAF Bristol Bay Campus has designed an Environmental Science Program to support and prepare students for future degrees or careers. Its main goal is to encourage students to investigate local environmental issues while participate in data collection. The hope is to allow graduates to become better informed of the science behind an issue and help improve decision making. These are increasing needed skills in rural Alaska as oil/gas and minerals exploration expands into remote regions. Geoscience plays an important role in decision making as it brings the data needed to help solve resource use issues. Although most agree to the value of such a program there have been many challenges. The largest is sustained enrollment. Even though the program offers both a Certificate and AAS degree, many students don't finish. Reason for the low graduation rate are in part based on issues similar to other two-year institutions (time demands of work, family, and leisure) but there unique reasons as well that stem from cultural differences in how rural Alaskan communities and a university system work. Engaging students in controversial local issues has been a successful way to demonstration the importance of geoscience education.