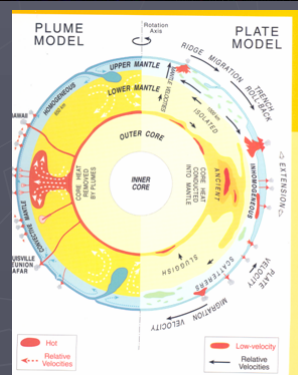
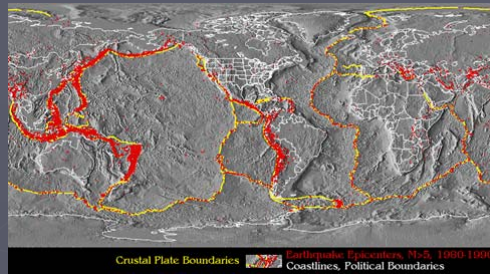
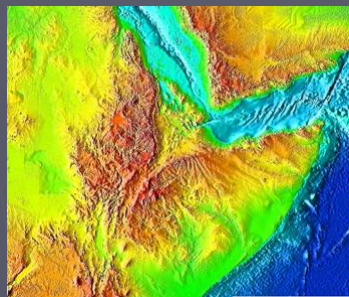
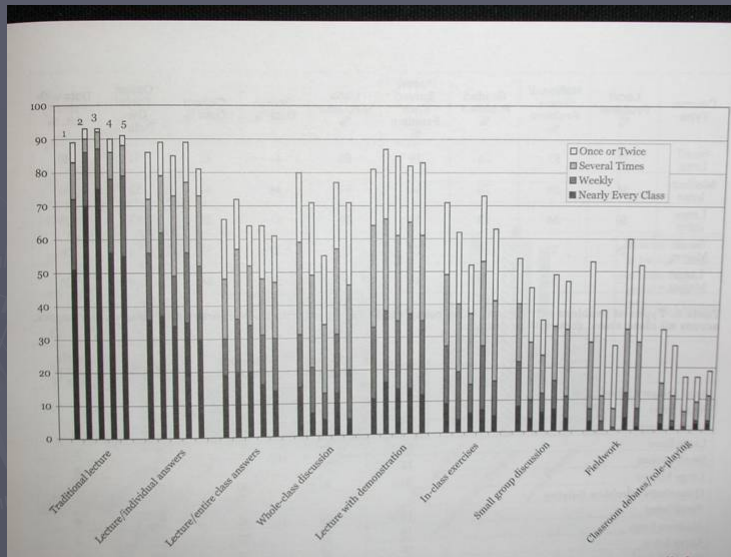


# National motivation for teaching enhanced with technology

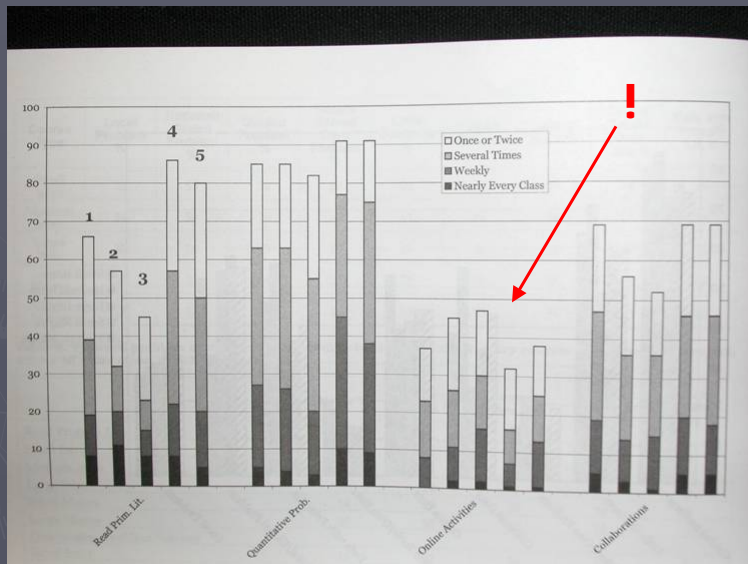


Teaching methods in undergraduate geoscience courses: Results of the 2004 On the Cutting Edge Survey of U. S. Faculty,

Macdonald et al., 2005.  $n=2,207$



$N=2,207$ ; intro courses=858; majors courses=932



## Available resources

Digital Library for Earth Science Education  
(DLESE) [www.dlese.org](http://www.dlese.org)

On the Cutting Edge Professional  
Development for Geoscience Faculty

*Participant Teaching Petrology Workshop, July 2003*

## Geodynamics and Petrology Working Group

"Whereas plate tectonics, [geochemistry] and geochronology are often not taught in required courses... [and] these concepts are central to understanding earth and petrologic processes, we resolve.... that these topics be taught in an integrated manner."

*<http://serc.carleton.edu/NAGTWorkshops/petrology/>*

## KSU-Olivine Preferred Inclination Educational Experience (OPIEE)

- ▶ Motivation: Geology undergrads: learning optics, rock-mineral ID, electron microscopy. Emphasize physical and chemical evidence for plate tectonics.
- ▶ Geophysics M.Sc. Students: often physics, math or engineering background. What are realistic physical questions to address with modeling? How is a mineral phase change at depth different from the phase of a seismic wave? What is basalt?

Home	SEM Section	Search	Exit
<p>The SEM analysis of an opaque grain in thin section turned out to be at least three different grains of differing composition. The first analysis (BSE KP 1a) was of the brighter region making up the bottom center. It has been calculated to be an iron-nickel oxide ((Fe<sub>0.21</sub>Ni<sub>0.79</sub>)O<sub>1.00</sub>), most likely bunsenite. The second analysis (BSE KP 1b) focused on the light gray center of the grain. The composition of this region was more difficult to ascertain, but is an iron-nickel sulfide ((Fe<sub>0.36</sub>Ni<sub>0.24</sub>)S<sub>0.96</sub>) probably pentlandite. The final region (BSE KP 1c), the darker gray part to the top-right, was yet another composition. This is an iron oxide (Fe<sub>0.97</sub>O<sub>1.00</sub>) probably wustite.</p>			

Home	SEM Section	Search	Exit
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General SEM Information

This figure is a schematic showing the basic working parts of a scanning electron microscope. See the [General SEM Information](#) part of this section for a more detailed description.

Fig. SEM-1

## Improvements to KSU from EPSCoR Geology Technology Classroom

# Onward and upward

- ▶ New collaborators
- ▶ Ophiolites in their varieties – field evidence module
- ▶ Seismology and preferred orientation of minerals – integrating the surface with the interior, even beneath KS