

## The Physical Setting > Changes in the Earth's Surface

### Research on Student Learning

Students of all ages may hold the view that the world was always as it is now, or that any changes that have occurred must have been sudden and comprehensive. [1] The students in these studies did not, however, have any formal instruction on the topics investigated. Moreover, middle-school students taught by traditional means are not able to construct coherent explanations about the causes of volcanoes and earthquakes. [2]

### References

[1] Freyberg, P. (1985). Implications across the curriculum. In Osborne, R. (Ed.), *Learning in science* (pp. 125-135).

[2] Duschl, R., Smith, M., Kesidou, S., Gitomer, D., Schauble, L. (1992). Assessing student explanations for criteria to format conceptual change learning environments. *Assessing student explanations for criteria to format conceptual change learning environments.*