

Stereo Visualizations as Training Tools for Comprehending Topographic Maps

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Over 80% of the students entering our 'introductory' earth science classes, have no intention of ever taking another physical science class, and less than 1% foresee any possibility of continuing on in earth science. For most of the students, this is really their concluding science course.

Our goal, funded by a three year FIPSE grant, is to design an effective 'concluding earth science course' - one that provides students with the knowledge and skills they need to become more informed citizens in the global community.

Our approach is based on the integration of three essential components:

Use of regional (Upper Midwest) earth science case studies.

A comprehensive evaluation of students' knowledge and misconceptions.

Use of 'GeoWall' stereo projection systems and anaglyph maps to level the playing field for students who have little experience with map interpretation.

In earth science, map interpretation is probably the critical restriction curtailing students' ability to access and explore course concepts. So much of our discipline's information is encoded in maps, that students who are not innately predisposed to understanding maps find it difficult to understand much of the course content and methodology. We believe that GeoWall stereo projection systems and anaglyph maps can reduce the efficiency of this 'gate-keeping' process, allowing students of diverse backgrounds and abilities to understand map data and succeed in the course. If we are successful, we may not only succeed in increasing the students' scientific literacy, but may also actually increase the diversity of students who do go on to consider earth science as a potential career - in effect making the course a true 'introductory' experience for more of the students.



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Traditional Topographic Map



Shaded Topographic Map



Stereo Topographic Map (Use the colored glasses!)



Shaded Stereo Topographic Map (Use the colored glasses!)

Effectiveness of Students' Use of Shaded and Stereo Maps

We are currently studying the effectiveness and hidden pitfalls of using shaded and stereo versions of traditional topographic maps in undergraduate earth science classes. Students are asked to complete a suite of exercises, using one of the four map versions shown, and at the end compare their map version to the other three. Study is ongoing, but feel free to ask about the preliminary results!