

No Child Left Behind ... Except in Geography? **GeoMath** in Arizona Answers a Need

Elizabeth R. Hinde and Gale Olp Ekiss

It is no secret that language arts and math are the dominant features of the elementary curriculum. This is especially the case in Kindergarten through third grades. In many states, the thrust of the curriculum in the primary grades is on learning to read. After that, it is thought that students will then be able to read to learn. With that philosophy in mind, many elementary teachers and their administrators consider social studies as secondary to language arts and math. They teach social studies if there is time in the day after the subjects included on mandated assessments have been taught. Time and instructional emphasis is placed on those subject areas that are covered on tests.

In order to combat the curtailment of social studies (geography in particular) at the elementary level, the Arizona Geographic Alliance has produced innovative programs that teach elementary geography content integrated with the tested content areas of language arts and math. These programs, GeoLiteracy and GeoMath, are described in this article, with special emphasis on GeoMath.¹

A New Approach to Elementary Geography

The GeoLiteracy and GeoMath programs were initiated in response to middle school and high school social studies teachers' concerns that the testing mandates of the federal No Child Left Behind Act (NCLB), which do not include social studies, would further curtail the teaching of history, geography, civics, and economics in the elementary grades. These

secondary teachers were finding it necessary to teach concepts and information that should have been taught to students in earlier grades (e.g., that the world has seven continents) before they could even begin to teach a more enriching and grade-appropriate curriculum.

Their fears were not unfounded. Anecdotal reports as well as research literature have concluded that social studies in the elementary schools is in trouble. In a recent study, the Council for Basic Education (CBE) revealed significant decreases in instructional time in social studies, civics, and geography in K-5 classrooms across the country.² Perhaps most disturbing about the CBE study is that the decreases in instructional time were especially prominent in schools with high-minority populations. In addition to the broad CBE study, elementary teachers from the state of Washington to Maryland report that they have seriously curtailed their teaching of anything not tested on mandated assessments.³ As a result, elementary social studies was on the chopping block in many schools.

Since the passage of NCLB with its testing mandates, elementary schools have focused their energy, money, and other resources on improving reading and math scores. Consequently, the teaching of untested content areas, especially social studies and the arts, has been severely curtailed. "Because so much money is at stake, school district after school district is reducing the time given to other subjects in K-8 so as to intensify the teaching of reading and math, which alone are tested under

the provisions of NCLB. History, civics, geography, the social studies in general, and the arts are being virtually wiped out.”⁴ Although members of the US Department of Education decry the curtailment of social studies and the arts, elementary teachers continue to feel pressure to teach only those subjects that are tested.⁵

Looking at Motivation

As experienced elementary teachers and now college social studies methods instructors, the authors realize that the reasons many teachers do not teach social studies are not entirely due to the pressures posed by the mandated tests. The fact is that many elementary teachers are more comfortable and knowledgeable in teaching reading and math than they are teaching social studies, science, or the arts. In addition, the bulk of professional development offered to elementary teachers by their respective districts addresses reading and math concepts and methods—rarely geography.

Another problem in social studies education that we have encountered is that preservice teachers frequently have relatively negative attitudes regarding their own experiences in social studies. College students in our undergraduate methods courses often enter our classes with attitudes that reflect a lack of enthusiasm for social studies education. When asked to relate their thoughts about elementary social studies education, students have used words like “boring”, “irrelevant”, “textbook-driven”, “dry”, and other equally critical words. Many of them remember their elementary social studies experiences as rote learning of place names, uninspired country reports, building “Egyptian” pyramids, or eating foods purportedly from other cultures, all equating to a negative impression of social studies education. The attitude that social studies is boring and unnecessary, along with the fact that it is not included on mandated assessments, is ammunition enough for many elementary teachers not to teach social studies at all or to limit instructional time.

One possible solution to the problem of the curtailment of social studies education in the curriculum is to include social studies on mandated assessments. Although including social studies on mandated tests might have the effect of encouraging reluctant teachers to teach the content, it does not guarantee that the instruction will be meaningful or relevant. In fact, “the faith that high-stakes tests will improve teaching and learning is contradicted by research.”⁶ “The standards movement, through its imposition of a technology of testing, may freeze out the possibility of alternative approaches to social studies.”⁷ Teachers will teach only those skills and concepts that are tested, sacrificing in-depth lessons requiring critical thinking and real life applications.

The Arizona GeoLiteracy Project

In 2002 the Arizona Geographic Alliance (AZGA) launched a program intended for grades K-8 known as GeoLiteracy, which

integrates social studies with language arts. While the national debate concerning the narrowing of elementary curriculum continued, AZGA gathered twenty teachers from around the state to develop lesson plans that integrated geography with the area of the elementary curriculum where teachers spend most of their time teaching—language arts. The idea was that regardless of one’s position concerning the teaching of social studies, language arts instruction reigns supreme in elementary classrooms. Integrating anything with language arts in creative and applicable ways will get teachers’ attention. Thus, GeoLiteracy was born.

The project was funded by a Grosvenor grant from the National Geographic Society Education Foundation. It was also supported by Arizona State University and the Arizona Department of Education. With the money, AZGA was able to pay teachers to write over 80 complete lessons, create and market a CD that includes not only the lessons but numerous supplemental materials, and pay for numerous administrative costs as well as travel around the state to conduct workshops for teachers and curriculum developers.

Even as GeoLiteracy⁸ continued to gain momentum in the state, AZGA began another integrated curriculum series: GeoMath. The Arizona Geographic Alliance was awarded another grant from the National Geographic Society Educational Foundation to use the same procedures that were used to create GeoLiteracy to produce lessons that integrate geography concepts with math skills for K-8 students. Teacher Consultants with AZGA as well as active members of the National Council of Teachers of Mathematics collaborated to create over 80 more lesson plans for K-8 classrooms. Although still a new program, in its first year of implementation, one study concluded that students who were taught using GeoMath showed gains in math achievement as well as geographical knowledge.⁹

A Sampler of GeoMath Lessons

Since it is not feasible to describe all of the lessons in the GeoMath program in this article, we will portray a few of them here. Lessons for Kindergarten through third grade, for instance, have students use geography and math skills to find a lost cat on a map, construct graphs and tally sheets of local golf courses, recognize geometric shapes in order to construct a classroom map and many other similarly engaging activities alliance.la.asu.edu/geomath/ShapeofMyWorld/nixon_shape.html.

In the lesson, “Shape of My World,” by Susan Nixon of John F. Long Elementary School in Phoenix, Arizona, kindergarten-first grade students identify shapes of large furniture and structures in the classroom. They trace the appropriate number of geometric shapes, using templates provided by the teachers. These shapes are then placed in the appropriate location on an outline map of the classroom. This lesson not only teaches “birds eye view,” but also gives students practice in identifying the shapes of triangles, rectangles, squares, and

circles. One of the unique features of this lesson is a set of two maps created by Barbara Trapido-Lurie and Rebecca Eden of the Arizona State University Department of Geography Cartography Division specifically for this lesson. These maps help primary-age students understand how maps are made, giving their classroom maps more accurate perspective.

River Rafting

In Grades 4-5, lessons include activities requiring students to use latitude and longitude, to use supermarket ads to learn about U.S. regions, to learn about ZIP codes then perform calculations using them, and much more. Described here is a lesson (see pp. 30-32) where students learn to use topographic maps and practice using measures of central tendency while learning about the Grand Canyon. In the lesson, "Grand Canyon: A River Rafting Trip," by Joanne Munson of Carl Hayden High School in Phoenix, Arizona, students interpret a topographical map of the Colorado River through the Grand Canyon. Using the information from the map, elevations of various sites are determined. The elevations are then used to calculate the mean, median, mode, and range of data. This lesson captures the grandeur of the canyon not only by examining its size but also through photographs of various spots on the provided map. This link between the math problem and the landscape presents students with real world uses for math.

The lessons for grades six through eight address topics such as Columbus's effect on indigenous populations, using a compass and protractor, and creating a culture wheel. The lessons address state and national standards relating to world cultures, immigration trends, and many other geographic issues. In the lesson described here, students make and solve problems using scatter plots created by using data from a variety of countries. "Can You Hear Me Now?" by Denise Dorn of McKemy Middle School in Tempe, Arizona, has students create and analyze scatter plots to investigate how the wealth of a country influences the ability of people to obtain access to communication from electronic sources (TV, cell phones, Internet). This lesson capitalizes on the teenage desire to acquire modern technology while identifying and making predictions from trend lines from each scatter plot generated.

The lessons are available on a CD produced by the Arizona Geographic Alliance, and they can also be found at alliance.la.asu.edu/geomath/general.html.¹⁰

Conclusion

Are GeoMath and GeoLiteracy the saviors of elementary geography in Arizona? It is doubtful that these programs, as innovative as they are, can change teachers' longstanding habits of not teaching social studies. It is also unlikely that GeoMath and GeoLiteracy will change the pressure that NCLB's testing mandates place on elementary teachers and administrators to emphasize only the tested areas. However, GeoLiteracy and GeoMath have proven themselves to be popular among the

teachers who have used them, and they have brought social studies education into some classrooms that have nary a map on the wall, much less quality geography instruction taking place.

It is evident that in many states geography education will continue to be curtailed until either it is included on standardized assessments or standardized assessments attain a place of lower priority in the school year (or are eliminated altogether). Neither of these options appears to be on the horizon, so programs that provide wonderful, creative learning experiences for students, such as GeoLiteracy and GeoMath, are proving to be vital in the fight to keep geography an integral part of the elementary curriculum. 🌐

Notes

1. Elizabeth R. Hinde, and Gale Olp Ekiss, "GeoLiteracy in Arizona: K-8 Reading, Writing, and Geography," *Social Studies and the Young Learner* 15, no. 2 (November/December, 2002): 31-32.
2. The Council for Basic Education, *Academic Atrophy: The Condition of Liberal Arts in America's Public Schools* (Washington, DC: Council for Basic Education, 2004).
3. Deborah Bach, "Standards-based Focus to Schooling Gets a Failing Grade," *Seattle Post-Intelligencer* (March 4, 2004); Linda Perlstein, "School Pushes Reading, Writing, Reform," *Washington Post* (May 31, 2004): AO1.
4. Theodore K. Rabb, "NCLB: Leaving history behind?" *History Matters* 16, no. 8 (2004): 1.
5. Susan Sclafani, Counselor to the Secretary and Assistant Secretary for Vocational and Adult Education, U.S. Department of Education. In a speech she gave at the Preparing America's Future Regional High School Summit in Phoenix, AZ on April 16, 2004, Sclafani pointed out that schools must not narrow the curriculum because students' interests are varied. She stressed that not only should high school administrators and teachers be aware of this, but that elementary and middle school principals must get the message that subjects not tested, like social studies and the arts, are just as vital as those that are tested.
6. David Hirsh, "Social Studies within the Neo-liberal State," *Theory and Research in Social Education* 29, no. 2 (Spring 2001): 349-356.
7. Ronald W. Evans, *The Social Studies Wars: What Should We Teach the Children?* (New York: Teachers College Press, 2004).
8. Results are pending on a study of GeoLiteracy's efficacy on reading comprehension. The study involves students in grades three through seven in Arizona and Michigan. The study aims to examine the effects, if any, of GeoLiteracy on reading comprehension.
9. Ronald I. Dorn et al., "Learning Geography Promotes Learning Math: Results and Implications of Arizona's GeoMath Grade K-8 Program," *Journal of Geography* 104, (2005) 95-103.
10. For more information about the GeoLiteracy and GeoMath Projects, contact the Arizona Geographic Alliance at GBEkiss@aol.com or 480-965-5361, or explore the project home pages at alliance.la.asu.edu/geoliteracy/general.html or alliance.la.asu.edu/geomath/general.html, respectively.

ELIZABETH R. HINDE is an assistant professor of elementary education, social studies, at the College of Teacher Education and Leadership at Arizona State University in Mesa.

GALE OLP EKISS is co-coordinator of the Arizona Geographic Alliance, Arizona State University in Tempe.