

The “Big Map”: A Hands-On, Shoes-Off Tool for Geographic Education

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Abstract: The floor of a classroom or a gymnasium can be turned into an enormous walk-on map using United States government aeronautical charts, which cover the land area of the earth at scales of 1:1,000,000 or 1:500,000. When students are invited to kick off their shoes and crawl around on this map, they get a graphic sense of “facts on the ground” in a way that lectures, readings, and other instructional modes cannot provide. The map is striking in showing the immense size and intricacy of the world and also gives a graphic sense of relative scale. The combination of high tech (the maps are the product of enormously complex technology, including satellite imagery and computer graphics) and high touch (the students can literally walk over the world) make the large-scale map a highly effective teaching tool. Techniques include map setup, map-reading games, roving lectures, role playing, use of props, personal histories, and class displays.

Introduction

IMAGINE A GYMNASIUM or large classroom cleared of chairs and desks. Covering the floor is a huge map—laminated, brightly colored, and accurate at a scale of eight or sixteen miles to the inch—on which students can crawl or walk at will (with their shoes off, of course, to spare wear and tear on the map). The map covers familiar territory, such as students’ home states, and also shows Inner Asia, New Guinea, or the Amazon Basin at the same scale and level of detail. Since the map is laminated, students can draw on it with erasable markers and tape things to its surface. Students studying American history may trace the route of the Lewis and Clark expedition or mark the dams and reservoirs of the Tennessee Valley Authority. Students in world geography may trace the route of Marco Polo, follow oil pipelines across Middle Eastern deserts, or locate Mt. Kilimanjaro. The possibilities are endless.

In fact, such a map does exist and is available to any teacher or school district for a very modest outlay of funds, time, and effort. The map is simply a composite of colorful aeronautical charts published by the U.S. Defense Department. Besides flight data, the charts contain a wealth of detailed information on elevation, human settlement, lakes and rivers, and vegetation and landforms. A set of charts can be laid out on any floor, taking care that adjoining maps are positioned correctly, and the result is a "Big Map" (Figure 1). When not on display, the charts can be rolled up individually or in rows and stored for the next use (a numbering system helps preserve their order).

Big Map Exercises

A map of this scale is a boon for teachers, who can use it for their own research and as a powerful teaching tool to give their students a sense of "facts on the ground" that ordinary maps and readings cannot convey. On charts of China, for example, it is possible to follow the Great Wall as it stretches for hundreds of



Figure 1.—Humboldt State University students crawl over a 1:1,000,000 map of the Eurasian landmass. Students on left pore over the Mediterranean region.

miles across mountains and deserts. Following are a number of strategies and techniques a teacher can employ that make use of the Big Map.

Map Reading and Interpretation Games

The Big Map can be used to help students learn a variety of map-reading, orientation, and interpretation skills. Start by familiarizing them with the common graticule—the pattern of meridians and parallels on the earth. After they have learned the system of degrees, minutes, and seconds of latitude and longitude, you can send them on a “treasure hunt.” Using an atlas whose index contains the geographical coordinates for places (*Goode’s World Atlas* is a good source), write a place name and its geographical coordinates on a slip of paper and send students individually or in groups in search of the place on the Big Map.

Once students have become proficient using the coordinate system to find locations, they can be taught to recognize various features on the map and increase their analytical skills. Students will become familiar with the look of represented physical features such as volcanoes, river deltas, fjords and estuaries, glaciers, longitudinal sand dunes, alluvial fans, and rift valleys.

The aeronautical charts also present a wealth of cultural, economic, and political data. Let students look at the glossaries on the margins of each chart to see the variety of place names in different languages. In China, they can search for the Great Wall (Figure 2), the Grand Canal, and the rectangle of the ancient city walls of Xi’an. In South America, they can look for Trinidad and Tobago or offshore oil platforms in Lake Maracaibo. In Russia, students may be directed to find the vast peat cuttings to the east of Moscow. More adventurous students might want to follow the trans-Siberian railroad or cross from Pakistan into western China along the Karakoram Highway. All of these features and many more are visible on the Big Map.

Sometimes the brutal realities of international politics can intrude into flight information presented on the charts. In troubled parts of the world, the charts contain frequent warnings to pilots that “Aircraft infringing upon non-free flying territory may be fired on without warning.” Students can look for these and other indications of conflict, such as notices of “boundary in dispute” or “Air Defense Intercept Zones (ADIZ).” Older editions of maps of Europe show the flight corridors into West Berlin and



Figure 2.—Students trace the Great Wall of China on Operational Navigation Charts. Tactical Pilotage Charts, at a scale of 1:500,000, create a map four times as large as this one.

other evidence of East-West confrontation during the Cold War. Such troubling reminders of international conflict can serve as wonderful launching pads for discussions of international politics and bring home the human cost of such conflict in ways that leave a bigger impression than lectures or readings.

Roving Lectures

The Big Map makes a wonderful complement for roving lectures. The technique is fairly simple: use the Big Map as the focus of your lecture, and have your students follow you around on it as you give a guided tour of the topic under consideration.

I have been experimenting with this technique for the past five years, and have found that a new insight or relationship never fails to present itself each time the Big Map is used in a roving lecture. During a lecture on water issues in the Middle East, for example, students were able to walk over the Nile and Tigris-Euphrates watersheds and see the upstream dams that made downstream states nervous. In Iran and Central Asia, the settle-

ment pattern along alluvial fans seemed to jump out, especially when students could see the myriad *qanats* (underground aqueducts, demarcated on the map) that tap the groundwater under the alluvial fans, making irrigated agriculture possible in the dry interior basins of the Asian continent. On another occasion, while lecturing on the shifting balance of power in early modern Asia, I showed my class how Moscow's placement fifty miles inside the great Eurasian forest belt provided it some protection from nomadic raiders in the age of archery and also placed it in an ideal position to conquer the steppes once the Muscovites had mastered the use of gunpowder.

Each teacher will bring to the Big Map his or her own knowledge, talents, and special skills. Lecturing on the Big Map offers the opportunity for a memorable teaching and learning experience to those willing to take the chance. I have found that my own students remember and comment favorably on my Big Map lectures in course evaluations and that they tend to retain material presented in the context of roving lectures on the Big Map longer than information presented in the normal lecture format.

Role Playing

Of course, it is not necessary for the teacher to monopolize the Big Map as a stage. Students can also play roles. They may be "placed" in various parts of the world and invited to explain their situation to the rest of the class. In this way, students can become more aware of the truism that "geography is destiny." They can see how the world looks from Moscow or Buenos Aires or Pretoria or Baghdad.

The opportunity to role-play is not limited to the present day. Take advantage of the intrinsic link between time and place by having students explore the contrasting worlds of Romans and Carthaginians, Toltecs and Mayas, or Chinese and Mongols. When I teach the historical geography of the Mediterranean, for example, I have students place themselves in the shoes of King Philip II of Spain, the Ottoman sultan, the Russian czar, and other major players in the sixteenth-century "Great Game." Positioning students at the correct geographical vantage point on the Big Map adds immeasurably to their understanding of the stratagems and motivations of the participants.

Students can also prepare more elaborate portrayals for end-of-semester spectacles. During the climactic presentations in a special interdisciplinary class on the Silk Road, one of my students assumed the identity of Franciscan Friar Giovanni del Pian Carpini, complete with monk's cowl and tonsured scalp. This student took the class along with him on his journey from Rome to China to visit the Great Khan, describing places he had seen and people he had met along the way. It was a masterful performance. In the next presentation, a young woman assumed the identity of none other than the Black Death itself—the uninvited hitchhiker along the Eurasian trade routes opened up by the Mongols and followed by the likes of Friar Carpini. There really is no limit to the dramatic possibilities presented when inspired students are introduced to the Big Map—especially if they are hams.

Using Props

If the Big Map lends itself to drama, it also invites the use of props. One of the best ways to engage students is to prepare “data cards” for each country in the world. The series of data cards would include country name, capital city, and location (so the card can be placed on the Big Map), as well as socioeconomic data on population and GNP. This type of information can be gleaned fairly easily from a couple of sources.

Once the data cards are placed on the Big Map, it becomes easy to assign groups of students to use other props to display the data contained on the cards in a more dramatic way. I have experimented with using color-coded poker chips (each chip representing ten million persons) to show the size and relative growth of the world’s population. If time permits, I combine population props with other props to represent income. The differences in income levels between countries are so enormous that it takes imaginative approaches, such as using grains of rice, lentils, popcorn, or other cheap, bulk items, in order to show the enormous disparity between “haves” and “have-nots” effectively.

Props I have found successful in showing the impact of colonialism include miniature cocktail flags. With some creative additions of handmade flags colored onto self-adhesive labels and wrapped around toothpicks, I have been able to represent most

of the great colonial powers of the nineteenth century. I have my students plant flags of the colonial powers onto lumps of modeling clay and then take a tour of the colonial world. The immense reach of both the British and French empires, as well as the influence of Spain and Portugal, show up clearly in this exercise. In the case of the Middle East, Africa, and Asia, the heavy imprint of colonialism sheds light on many contemporary problems and explains some of the lingering resentments in these regions.

Personal Histories

The Big Map can also be used to tell personal stories of travel, migration, and adventure. It makes a wonderful supplement to class readings of biographies, travel journals, or histories of exploration. History is full of intrepid explorers, from Marco Polo to Lewis and Clark to Amelia Earhart. Following the journeys of these adventurers on the Big Map contributes to the immediacy of the experience, and helps bring their accounts to life for your students. And don't forget the stories of your own students. Especially in the multicultural classrooms of California, students' family histories provide rich fodder for learning and connecting their own life stories to larger historical and geographical patterns.

Class Displays

A final suggestion is to let your students create a display of their own on the Big Map. Last year I had my students create an exhibit using the map. Each group chose a particular topic, did research on the topic, and created an exhibit. Topics included crucial battles in Islamic history, the cities of the Roman Empire, upstream-downstream water conflicts, and the proliferation of weapons of mass destruction.

Student groups were allowed, with some guidance, to devise their own forms of presentation. The arms race was represented by model soldiers and tanks. Caravan routes were laid out on the map with colored yarn. To provide further information, background notes were written on cards that were then laminated and taped to the map surface. The exhibit was set up in a large room in the student union and opened to the public for two days. The prospect of presenting to the larger public has a won-

derful way of concentrating the mind. Challenged with a public display of their work, the students put out their best effort and came up with some remarkable results.

Acquiring and Tailoring the Map to Your Needs

Operational Navigation Charts (ONCs), Tactical Pilotage Charts (TNCs), and other Department of Defense maps can be obtained from the Federal Aviation Administration; they will send a free catalogue if you call or write. (FAA, 6303 Ivy Lane, Suite 400, Greenbelt, MD 20770. Tel: 800-638-8972.)

In some larger cities, specialized map stores will also carry aeronautical charts in the ONC, TPC, and other series. Check local yellow pages under "maps." At the time of this writing, charts in the ONC series cost \$5.50 apiece, while charts in the TPC series cost \$6.00 apiece. The entire set of ONCs consists of about 240 maps. A variety of vendors also offer maps for sale on the Web. Just type "aeronautical charts" into your favorite search engine.

If you are the enterprising type, you may want to scavenge for obsolete editions of aeronautical charts. The military regularly discards obsolete charts, so if you have friends in the military, let them know you would be glad to save these charts from the shredder. Municipal and university libraries are often repositories for aeronautical charts, and they also discard obsolete editions. So be sure to maintain good relations with your local librarians, and let them know you are interested in any throwaways. You can put them to good use!

Acquisition of the Big Map can be a daunting undertaking. However, it is not necessary to obtain an entire set of aeronautical charts in order to begin using the Big Map in an instructional context. *Do not be intimidated!* It is easy to start small, getting a partial set to cover areas of interest such as the United States, Europe, East Asia, or other regions. The entire continental United States is covered by a mere eleven ONCs—an outlay of less than

\$60. Instructors focusing on a smaller area of the planet or not having access to sufficient floor space can choose to set out smaller segments of the map set. In the course of teaching world regional geography, this author has set out maps of continents or world regions to introduce students to the area under study before beginning lectures.

It is a wise idea to have each chart laminated in order to protect it from damage under heavy use. Laminating the charts also tends to accentuate and brighten their colors. The size of individual charts, however, precludes lamination in a normal (twenty-two-inch) laminating machine, and larger jobs are often prohibitively expensive. At Humboldt State University, we were able to solve this problem by folding the charts lengthwise (to fit the laminating machine) and laminating the printed side only, not the back. Although this does not provide complete protection, it does help the charts hold up under repeated classroom use. Using a university-owned laminating machine and student volunteers who folded and trimmed the charts, we were able to keep the per-chart lamination cost down to \$1.50.

The charts themselves are quite adaptable. You can use them for your own purposes and you do not have to commit to an immense project. A few maps will do the job. Maps in the ONC and TPC series are especially good for use as companions to history and regional geography courses. The maps also lend themselves to the study of resource and conservation issues. Water-sheds can be identified and marked and problems of water use and abuse, upstream-downstream conflicts, and resource sharing can be studied from the Colorado River to the Nile or the Mekong.

It is my hope that some of the exercises mentioned here will inspire you to experiment with the Big Map. Try creating your own lesson plans, bringing your own interests and expertise to the endeavor. Give yourself free rein. Your enthusiasm will be infectious and will inspire your students as they learn to explore the world in new and different ways.