Improving Geographic Understanding with a State Atlas

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Acknowledgments

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Introduction

Students should know "how to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective." This familiar rejoinder from *Geography for Life: The National Geography Standards* (1994, 61) appears as the first standard, demanding that educators and students recognize the central importance of maps to the discipline of geography. The study of maps, and the frequent practice thereof, is needed for students to not only think geographically, but to "construct arguments about the effects of spatial context" as well (Cunningham 2005, 119). In short, maps represent one of the best opportunities to present spatial information that would be difficult to communicate otherwise (Smith, 2004), and serve as useful aids for decision-making and problem-solving.

Maps are available for classroom use in a variety of forms: large wall maps of differing scales, globes, and pull-outs within textbooks. Atlases, a collection of political and thematic maps typically drawn at global or regional scales, are also often available. Frequently missing from this mix are accurate and up-to-date maps or atlases at the local scale to support K-12 instruction. For example, an atlas for the state of South Carolina was last published in 1895.

Accordingly, a number of state atlases have been developed, many under the direction of state geographic alliances. Each is unique in its visual orientation, use of color and symbolization, availability of supporting materials, and, of course, content. The *California Atlas*[1], for example, includes ten crop maps to highlight the importance of agricultural production in that state (CGA-N 1997). Other state atlases include those produced for Indiana, New Hampshire, Vermont, Virginia, and Kentucky, among others.

There is no question that using an atlas as part of classroom instruction increases student engagement in learning by encouraging them to ask stimulating questions and explore the content more thoroughly (Smith 2004). The need for such materials in South Carolina prompted the development of *South Carolina: An Atlas*. This article specifically discusses the creation of this state atlas for both classroom instruction and as a resource for the general public. We highlight the atlas development process and introduce the content of the atlas. We also suggest distribution and marketing strategies to use this or similar products as an opportunity to strengthen the finances of geographic alliances.

Supporting Student Learning with a State Atlas

The educational goals of many other disciplines can be enhanced through better spatial reasoning. As such, students must see maps as an integral tool used to learn about a location, its history, how the place impacts surrounding areas, who lives in that place and why. For example, students using this atlas will be able to learn where South Carolina is located relative to the rest of the United States, identify where specific features such as landform regions and rivers are located, and learn about the history of South Carolina from a geographic perspective. Over time students can be expected to be able to ask (and eventually answer) geographic questions such as 'Where is it located?', 'Why is it there?', 'What is significant about its location?', and 'How is its location related to that of other people, places, and environments?'.

The atlas is proving to be a powerful tool to deliver specific skill instruction outlined in the South Carolina Academic Standards and to improve student learning. Students with low reading comprehension levels often have difficulty reading within the content area and need alternative resources in lieu of a textbook to aid in content comprehension. The atlas provides an alternative that facilitates understanding by providing information in a format that allows students to make connections not only between the maps and atlas text, but also between the atlas and their textbook. Furthermore, as most

teachers assigned to teach geography have little or no formal preparation in geography (Bednarz *et al.*, 2004), the atlas provides an additional classroom support for instruction in the discipline.

Atlas Development

South Carolina: An Atlas was produced over a one-year time period. We strongly encourage others to undertake similar work, and highlight here some of the challenges we encountered.

The atlas development process consisted of planning, drafting, and production phases. Planning included content selection, the collection of necessary data, the selection of software, and the 'storyboarding' of the atlas. Content selection was teacher-driven. The expertise of a group of South Carolina third and eighth grade social studies teachers was drawn upon in determining exactly what content would be most beneficial. The teachers used pre-existing maps created for use in the text *South Carolina: The Making of a Landscape* (Kovacik and Winberry 1987), their current textbook and teaching materials, and the South Carolina Social Studies Academic Standards to determine what content absolutely had to be included, what content would ideally be included, and what content was not important for consideration in the atlas. Their opinions were sought regarding everything from portrait versus landscape formatting, paper quality for the final atlas, font type and size, readability of text for classroom use, and general layout of content on each page.

Data for the atlas necessarily came from a variety of sources given the disparate nature of the topics. Contemporary maps of both physical and human geographies relied on state and federal sources (e.g.: South Carolina State Climatology Office, United States Census Bureau). Historic maps were created from data in textbooks, state reports, and books, among others. Without question, atlases from other states will need to focus specifically on the important events and places in their own states to satisfy their state standards. The maps were developed with Macromedia *Freehand* (version 10) professional illustration software. A CD-ROM of lesson plans that accompanies atlas sets was also developed; each lesson plan is aligned with the current state standards and details the appropriate grade level, materials needed, and potential lesson extensions.

Why a Paper Atlas?

Digital atlases are becoming more common and popular. Whether through the Internet or through CD-ROM delivery, these atlases provide interactivity that cannot be found in print materials. The user may activate only the desired topic and not others. Similarly, symbolization can often be customized. Additional information such as a photograph can be linked with a mapped place, appearing in view with a pass of the cursor.

The attractiveness of digital atlases does not negate the utility of a paper atlas. For classroom use, a paper atlas is ready-to-go, off-the-shelf. A computer is not needed, nor is a reservation for a slot in the computer lab. The paper atlas fits on each child's desk, is quickly available for that 'teachable moment', and easily goes home with the student. Internet outages do not affect its use. A CD-ROM atlas would eliminate the last problem, but still requires hardware to operate. Others have even suggested that geographical learning may be hindered by a need to learn the technology delivery system first (Meyer *et al*. 1999) and that other benefits exist from working in a paper rather than a digital format (Cunningham 2005). In sum, the final atlas format was fashioned by a combination of learning strategies and technology limitations in the classroom.

Atlas Description

The 40-page, multi-color atlas is oriented in a landscape, calendar-type layout that unfolds easily on a student's desk. The atlas is comprised of seven sections: Location, Physical Landscape, Indigenous Landscape, Colonial Landscape, Antebellum Landscape, Postbellum Landscape, and Contemporary Landscape (Table 1). Each section contains a minimum of two maps and is introduced with text that describes the forthcoming section. Some individual maps also have explanatory text. A wide variety of symbols and map types (choropleth, flow-line) were used since this variation has been shown to improve the geographic analytic skills of students (Young 1994). Figures 1 and 2 illustrate two pages from Section Two, Physical Landscape.

(See figures and table on next page)

The Physical Landscape section is representative of others in the atlas. The first page in the section describes elevation and is followed by a map of water features. Landform regions are featured next, not only illustrating South Carolina but also where the state fits within the broad landform categories established for the United States. Climate is treated similarly with a national map, a map of weather extremes, and maps illustrating temperature and precipitation. The section is concluded with climographs of major South Carolina cities along with a description of how climographs are to be interpreted. Other sections are similarly laid out, with the Location section being the shortest (two pages) and the Contemporary Landscape section being the longest (12 pages).

Distribution and Marketing

An unexpected benefit of the atlas was an increased revenue stream to support other alliance activities. The majority of classroom materials developed by our alliance are provided free of charge to educators attending workshops. Workshop attendance in exchange for no-cost materials provides a guarantee that the materials are utilized as intended.

South Carolina: An Atlas represented an opportunity to try a new approach. Our hope was to place one atlas on each third and eighth grader's desk throughout the state. As such, the number of atlases needed, and thus

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Table 1

Topics Represented Within the Atlas

1. Location
Location of South Carolina
Counties and County Seats

2. Physical Landscape
Elevation
Rivers and Lakes
United States Landform Regions
South Carolina Landform Regions
United States Climate Regions
Weather Extremes
Temperature and Precipitation
Climographs

3. Indigenous Landscape
Native Americans at Contact
Land Bridge and Diffusion Routes

4. Colonial Landscape
Patterns of Colonial Agriculture
Townships
Colonial Roads
Revolutionary War Engagements

5. Antebellum Landscape
Population Change
White Outmigration
Commercial Agriculture
Slave Population
Canals and Railroads
Sherman's March

6. Postbellum Landscape
Population 1900
Population 1950
Farm Tenancy and Black Outmigration
Textile Mills and Railroads

7. Contemporary Landscape
Population Change
Population 2000
Non-White and Urban Population
Metropolitan Statistical Areas
Railroads and Interstate Highways
Manufacturing
Contemporary Agriculture
Cotton
Tourist Attractions
Barbecue Regions
Land Surface Cover
Geographic Regions

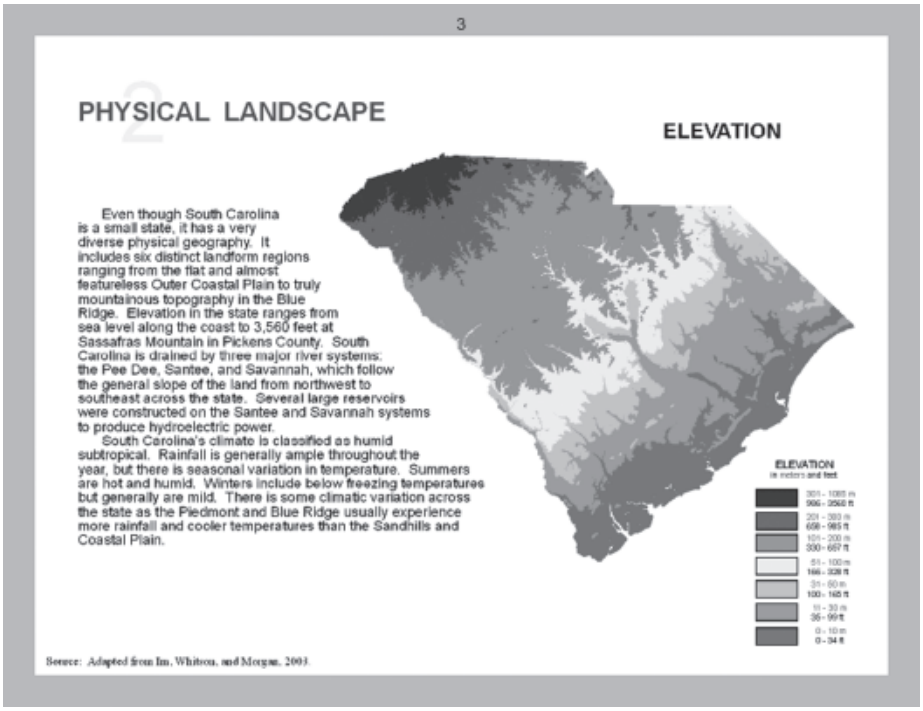

Figure 1. South Carolina Elevation Map and Introduction to Physical Landscapes

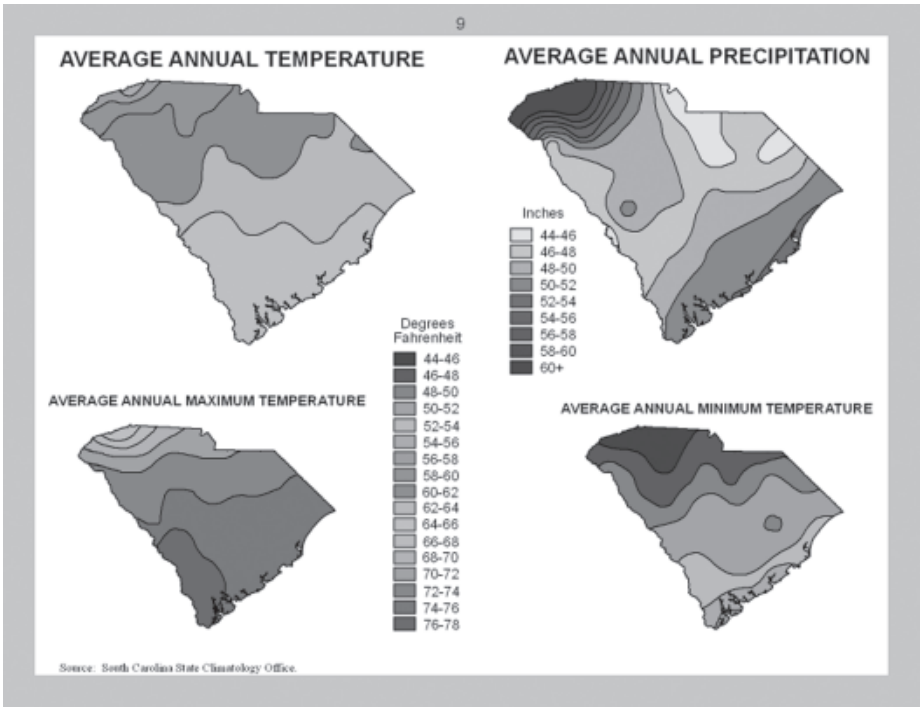

Figure 2. South Carolina Temperature and Precipitation Averages

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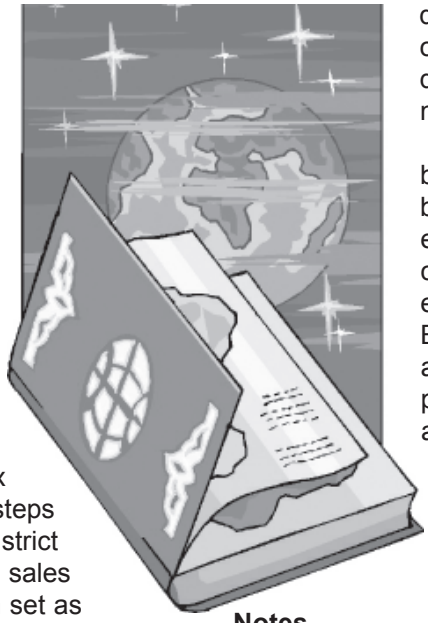
their production cost, was much larger than other classroom materials previously developed. Second, the wide variety of information held within the atlas suggested to us that a broader, popular appeal for this product might be found outside the classroom. A revenue stream was needed to ensure the continued production of the atlas and outside sales could supplement these monies.

We continue to offer the atlas free of charge to workshop participants; we also distributed two atlas copies at no cost to every school in the state. In contrast to past practice, we now also have individual atlases and atlas sets (30 count) available for purchase. Atlas sets include the interactive CD-ROM with forty-plus lesson plans and virtual field trips, further making the set acquisition attractive. We have further stimulated sales through letters to social studies coordinators and libraries, advertisements in the South Carolina Geographic Alliance newsletter, local radio and television spots (no cost news briefs), and articles in local newspapers and alumni magazines. We have also provided order forms on-line and created a relationship with five local bookstores and museums to carry copies of the atlas. This move has required the acquisition of a business license and a better understanding of tax codes, two inconvenient but necessary steps to ensure success. School and school district sales comprise approximately 95% of all sales given the usual purchase of a classroom set as opposed to an individual unit, but the public market continues to grow.



These and similar strategies may be employed by other alliances developing atlases to extend their product's reach and subsequently add additional monies into their operations. Fiscal soundness is an important, pressing problem faced by many alliances given structural and other funding changes being made by traditional alliance funding sources (Bednarz and Bednarz, 2004).

Using this approach has proven successful: we have distributed or sold over 15,000 copies of our initial 20,000 copy print run, making a second print run financially possible. These sales have enabled the purchase of a new laptop computer, seven GPS units, and the introduction of a Geography Teacher Grant program where sales revenues are funneled back into the classroom through a competitive grant application process.

Conclusion

South Carolina: An Atlas provides students and the public with a comprehensive look at the state of South Carolina. We hope this atlas will serve as a model for other state alliances. As geography is a dynamic discipline, the state atlas can, and should, reflect changes to the state as they occur. Updated versions in subsequent years not only offer the most current information, but also provide a fresh product for public or classroom purchase. A likely period for updates would be shortly after the release of census data, in this case shortly after 2010. State geographic alliances have a wealth of talent and local knowledge about their own geographies. From cartography and computer applications to business know-how, other alliances have the ability to duplicate our success. A crucial, key part of this process is identifying start-up funding sources to develop the atlas. Software purchases, data acquisition, and printing are all up-front costs that are typically out-of-reach for most alliances. Grant funding, therefore, is imperative. Once developed, and sales exceed the cost of future reprinting, revenues can be directed toward other projects or materials.

The purpose of this article has been to detail how a state atlas can be developed to further geography education. An important side benefit can be the infusion of new monies to enhance geographic alliance activities. By no means do we suggest that an atlas should be developed for that purpose alone. The driving force behind a state atlas project should be, first and foremost, how the product might further the teaching of geography by placing the student's home within a larger geographic context.

Notes

1. The California Geographic Alliance now has an online version of its atlas. The atlas is viewable at: http://www.humboldt.edu/~cga/calatlas/index.html

2. State geographic alliances contemplating the development of a state atlas are welcome to contact the authors for a complimentary review copy of the atlas. Inquiries regarding marketing strategies are also welcome.

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HOW WOULD YOU DO

against Caitlin Snaring, winner of the 2007 National Geographic Bee, and runner-up Suneil Iyer from Kansas?

final 5 questions

1. *What is the Arabic term for a valley in the hot desert areas of North Africa and the Middle East that carries a stream occasionally?*

2. *In late March 2007 Protestant and Catholic political leaders from Northern Ireland agreed to form a power-sharing government that took effect in early May of 2007. The leaders met in what city that lies at the mouth of the Lagan River?*

3. *The second largest oil producer in sub-Saharan Africa is also the largest Portuguese speaking country in Africa. Name this country.*

4. *Lampedusa, an island whose geographical location made it a target for illegal immigrants seeking to enter the European Union from Africa, is administered by what country?*

5. *A city that is divided by a river of the same name was the imperial capital of Vietnam for more than a century. Name this city which is still an important cultural center.*

Asked if she could explain the lack of girls among the bee finalists, Caitlin Snaring said she thought many were more attracted by spelling bees. "For all you girls out there who like spelling," the champion said, "you might want to try geography, too."

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Interested in getting your school involved? Hurry!! Yearly deadline for registering is October 15!

Go to www.nationalgeographic.com/geobee for full entry details!!

Principals of schools in the U.S. with any of the grades four through eight are eligible to register their schools to receive contest materials for a school-level Bee. Homeschool associations may register to receive contest materials as well. See website for full details or contact the Bee office at +1 202 828 6659. The person who is designated to receive contest materials must be the person who directs the Bee and administers the qualifying test to the winner after that winner is determined.