

Cartographic Textbook Writing in the Digital Age: Lessons Learned from *Map Use, Ninth Edition*

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Abstract:

Map Use: ninth edition, is a comprehensive, foundational textbook designed for the college curriculum to provide students with the knowledge and skills to read and understand maps, design and make maps, and recognize the limitations and inaccuracies of maps. *Map Use* describes foundational cartographic concepts along with the latest innovations in mapmaking and map use. It presents nascent mapmakers with a broad overview of mapping and professional cartographers with a thorough reference resource. The book combines authoritative text with hundreds of stunning visuals. Over 300 full-color maps, photographs, and graphs illustrate the concepts behind communicating with maps. The book renders basic cartographic principles accessible to all, from those without a formal education in geography, to students of cartography and map design, to seasoned mapping practitioners.

Map Use, ninth edition also exemplifies the latest approaches in textbook creation, including the use of collaborative authoring tools and the production of an interactive digital textbook, complete with accessibility features. In this paper, we consider the *making* of *Map Use*, focusing on innovation, sustainability, and inclusivity, which reflect cartographic textbook writing in the digital age.

Innovation:

The philosophy underlying the ninth edition *Map Use* remains the same as in earlier editions. We stress that a good map user must understand, at a basic level, what goes into the making of a map. From mapmakers, we ask for little less than a miracle. We expect the overwhelming detail, complexity, and size of our surroundings to be reduced to a simple representation that is convenient to access. We also want abstract maps to provide us with a meaningful basis for relating to the real environment. In return, we must make a corresponding effort to become educated map users. While this philosophy has remained the same for all nine editions of the text over the past 50 years, many aspects of mapmaking and map use have evolved, largely in response to technological advances.

When *Map Use* was first published in 1978, very little mapping was done in a computer environment. Today, not only is most mapping done with the aid of computers, but the map user is often the one who guides the mapping process. Especially with the aid of geographic information system (GIS) software and applications, the map user is increasingly the mapmaker. Even more significant, the map user can establish insightful dialogues with maps by manipulating the digital data in various ways. The ability to think and communicate visually through the medium of maps is more important than ever, and *Map Use* aims to enhance this ability in a broad range of users.

In the latest edition of *Map Use*, we cover the most recent innovations in map making and map use. In this paper, we also acknowledge the impact of innovation on the creation process to bring the ninth edition to life. *Electronic collaboration*, or *eCollaboration*, allowed us to use digital technologies and platforms to facilitate collaboration and communication among the textbook authors, editors, and Esri press partners working on this edition of the textbook. Online tools and resources enhanced our teamwork, coordination, and information sharing in a virtual environment. We conducted meetings, held discussions, and brainstormed through video conferencing and digital communication, such as email. eCollaboration also facilitated sharing and collaborating on documents and files in real-time using cloud storage services, specifically SharePoint to manage and share files, and collaborative editing tools, like Microsoft 365 Online to edit and share Word and Excel files on our own devices using a web browser.

Sustainability:

A variety of sustainability challenges arise when creating a textbook in today's world. The key issues can be identified when considering the entire lifecycle of a textbook, from production to disposal. This includes evaluating the environmental impact of materials used, production processes, distribution methods, and end-of-life disposal. For example, in terms of *paper usage*, traditional textbooks are often printed on paper, leading to deforestation and high carbon emissions from the paper production process. Using recycled paper or digital formats can help reduce the environmental impact. The production of paper involves the *use of chemicals* that can be harmful to the environment. Sustainable practices involve using eco-friendly inks and reducing chemical usage in the printing process. The distribution of physical textbooks requires *transportation*, which contributes to carbon emissions. Opting for digital textbooks can significantly reduce the need for transportation and associated emissions. Textbook production also generates *waste*, including paper scraps and unsold copies. Implementing recycling programs and print-on-demand services can help minimize waste generation.

Many of these issues can be addressed through the substitution of print textbooks with *electronic textbooks*, or *eTextbooks*. ETextbooks are a digital version of a traditional printed textbook that can be accessed and read on electronic devices such as computers, tablets, e-readers, or smartphones. Using eTextbooks reduces the need for paper production and transportation making them more cost-effective than printed textbooks. Yet, while eTextbooks offer sustainability benefits, they can also exacerbate the digital divide if not accessible to all students. Ensuring equitable access to digital resources is essential for addressing this issue.

Accessibility and Inclusion:

In today's digital age, nearly all types of information, including educational resources and maps, are accessed through websites, apps, and other digital platforms. Digital access to information requires several key components to ensure that individuals can effectively and efficiently access and utilize digital resources. The first requirement is access to a reliable internet connection. This includes both wired and wireless connections to enable browsing, downloading, and streaming content. The second is access to devices such as computers, laptops, tablets, or smartphones to connect to the internet and access digital information. The third is basic digital literacy skills essential for navigating online platforms. As textbook writers, we have no influence over peoples' access to these necessities. However, we can offer the benefits of other key components of digital access, including *accessibility features*, *content diversity*, *cost considerations*, and *mobile learning*.

Digital resources should be designed with *accessibility* in mind to accommodate users with disabilities. Accessibility involves removing barriers and providing accommodations to ensure equal access and opportunities for people with disabilities. Accessibility features include screen readers, alternative text for images, adjustable font sizes, and keyboard navigation options. Many of these features are inherent in eTextbooks. *Content diversity* addresses the issue of *inclusion* which considers diverse communities and perspectives by taking into account the needs and views of different groups of people, including those from different cultural backgrounds, ethnicities, and socioeconomic statuses. The inclusivity of eTextbooks is also influenced by *cost considerations* which impact who has access to the books. ETextbooks are often more cost-effective than printed textbooks because printing and transportation costs are reduced. Those savings are passed on to students, thus allowing more people, especially of lower incomes, to access the texts. ETextbook rentals offer students further cost savings through a discount off the list price. ETextbooks also support *mobile learning*. Printed textbooks are confined to physical copies, thus limiting accessibility, while eTextbooks are optimized for mobile devices, allowing students to access learning materials anytime, anywhere, thus increasing access, promoting flexibility, and offering convenience.

By addressing these accessibility and inclusion issues, educators, publishers, and policymakers can work towards creating a more equitable and inclusive learning environment for all students, regardless of their background or circumstances.

Conclusion:

Much like map use and mapmaking, textbook writing today differs significantly from the past due to various technological advancements, in addition to changing educational paradigms. In the past, textbooks were primarily printed on paper while today's eTextbooks offer myriad advantages in terms of sustainability, accessibility, and inclusion. In the past, authors worked independently, with limited real-time collaboration. Today, online platforms enable collaborative authoring, allowing multiple authors to work together simultaneously, streamlining the writing and editing process. By embracing these changes, cartographic textbook writing today is more dynamic, interactive, and inclusive, reflecting the evolving needs and preferences of authors, educators, and students in the digital age.

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