

Contents

Acknowledgments vii

Thinking with maps ix

Jennifer J. Lund and Diana Stuart Sinton

What is GIS? A very brief description for the newly curious xiii

Diana Stuart Sinton and Jennifer J. Lund

Part 1: Teaching students to think spatially using GIS

- 1 **Critical and creative visual thinking** 1
Jennifer J. Lund and Diana Stuart Sinton
- 2 **About that G in GIS** 19
Diana Stuart Sinton and Sarah Witham Bednarz
- 3 **Finding narratives of time and space** 35
David J. Staley
- 4 **Mapping and quantitative reasoning** 49
Jennifer J. Lund
- 5 **Campus–community collaborations: Integrating partnerships, service learning, mapping, and GIS** 63
Melissa Kesler Gilbert and John B. Krygier

Part 2: GIS case studies in the curriculum

Expanding the social sciences with mapping and GIS 77

Donald G. Janelle

- 6 **Sociology: Surprise and discovery exploring social diversity** 83
John Grady
- 7 **Economics: Exploring spatial patterns from the global to the local** 97
James Booker
- 8 **Anthropology: Mapping Guinea savanna ecology in Sierra Leone** 113
A. Endre Nyerges with Daniel M. Saman and Laura B. Whitaker
- 9 **Political science: Redistricting for justice and power** 129
Mark Rush and John Blackburn
- 10 **Urban studies: Assessing neighborhood change with GIS** 141
Christine Drennon
- 11 **Classical archaeology: Building a GIS of the ancient Mediterranean** 155
Pedar W. Foss and Rebecca K. Schindler

***Teaching the natural sciences with GIS* 167**

Diana Stuart Sinton

12 Biology: Spatial investigations of populations and landscapes 171

M. Siobhan Fennessy, E. Raymond Heithaus, and Robert A. Mauck

13 Environmental studies: Interdisciplinary research on Maine lakes 187

Phillip J. Nyhus, F. Russell Cole, David H. Firmage, Daniel Tierney, Susan W. Cole, Raymond B. Phillips, and Edward H. Yeterian

14 Chemistry and environmental science: Investigating soil erosion and deposition in the lab and field 201

Karl Korfmacher, Brigitte Ramos, and Shelie Miller

15 Geology: Long-term hydrologic impacts of land-use change 213

Suresh Muthukrishnan

***GIS and spatial thinking in the arts, humanities, and languages* 223**

Jennifer J. Lund

16 Foreign language and sociology: Exploring French society and culture 227

Joel Goldfield and Kurt Schlichting

17 Historical geography: Mapping our architectural heritage 237

Robert Summerby-Murray

18 Religious studies: Exploring pluralism and diversity 249

Patrice C. Brodeur and Beverly A. Chomiak

19 Musicology: Mapping music and musicians 259

Jennifer J. Lund

Index 269*Topical cross-reference* 284