

Geography Learning: Building a Research Agenda for Meeting Societal Needs

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Abstract

Education and training in geography can equip college graduates to contribute to a wide range of societal needs. Geography as part of a broad liberal arts education fulfills the societal need for citizens who can contextualize their lives, jobs, and actions within broader social and philosophical frameworks. Training in applied geography meets the societal needs of (1) ensuring that students obtain employment after graduation, and (2) staffing positions in both public and private sectors with capable geographers who bring important geographic understanding to corporate and public decision-making processes. This paper focuses on training in applied geography for meeting societal needs, and it suggests two research paths, the first related to marketing applied geography and the second to product development of an applied geography curriculum.

Key words: applied geography, education, training, liberal arts, competency model.

Introduction

Most geography instructors will tell their students that a wide variety of exciting career options exist for those with training in geography. However,

many college geography programs lack a strong connection between the education/training they provide their students and the actual knowledge, skills, and competencies their students will need in order to obtain and succeed in those careers. The objective of this paper is to suggest a research strategy that contributes to the designing of a college geography curriculum that will provide students with the “right stuff” that gives them a clear vision of where they will go to find a geography-based job as well as provide what they need to get through the door and onto the payroll. Such a college geography curriculum meets a critical societal need of ensuring that college students obtain employment upon graduation. Moreover, such a curriculum will help fill the additional societal need of staffing positions in both public and private sectors with capable geographers who will bring important geographic knowledge, skills, and perspectives into corporate and public decision-making processes.

Although this paper focuses on societal needs that can be addressed through training geography students for applied jobs, the role of college geography programs in meeting societal needs extends far beyond this focus. College geography programs also have a duty and responsibility to contribute to the provision of a broad liberal arts education that fulfills the societal need of ensuring that college graduates can contextualize their own lives, jobs, and actions within broader social and philosophical frameworks. As stated by Alec Murphy, past president of the Association of American Geographers:

A liberal education helps people appreciate who they are, where they have come from, and how humans comprehend and shape their world. Moreover, it offers students the conceptual, linguistic, mathematical, and technical skills to evaluate critically the ideas and practices that surround them. As such, a liberal education should unquestionably include geography. Who we are is shaped in part by where we are. Human interactions with each other and the environment are rooted in geographical understandings, as well as the opportunities and constraints of geographical circumstance. (2004, p. 3).

But in addition to providing this strong liberal arts education that students need to contextualize their lives, we assert that geography can be much more—it can be something that leads to a paycheck and a career. The goal of this paper is to map a research strategy that will put some authoritative findings behind this assertion.

By and large, a focus on providing geography students with productive jobs that meet a practical need in society can be termed “applied geography.” There is, of course, always room to debate the question “what is applied geography,” but this paper uses Wellar’s (1998) perspective that draws a distinction between client driven research and curiosity driven research. The former is the definition of applied geography adopted here, research that is driven by the needs of a paying client, be it public sector clients (local, state, and federal governments), as well as private sector clients. It might be argued that applied human geography peaked in the 1930s and 1940s and has been on a downward trajectory ever since. In the 1930s geographers played important roles in the planning and development of Tennessee Valley Authority (TVA) initiatives and in the 1940s they were involved in intelligence gathering and interpretation and in the location of facilities supporting the war effort. Since 1950, human geography has at various times been dominated by humanistic cultural geography, model oriented quantitative geography, and more recently by social theory proponents (Holt-Jensen, 2000; Livingstone, 1992). But nonetheless, applied geography remains important, and 83 college geography programs claim to maintain a specialty in applied geography (American Association of Geographers, 2005). Some would argue that it is silly to spend much time worrying about “applied geography,” but the distinction is actually important and has validity in a wide variety of fields. For example, applied natural scientists (e.g., engineers) have different concerns, constituencies and institutions than those primarily interested in building theory, and applied economists working in the world of finance have a different take on problems than “pure economists” doing basic research. In a similar vein, true applied geographers are usually more interested in solving problems of corporate and governmental concern through empirical research than are those who pursue basic research or work to advance theory or develop theoretical models.

To advance such applied geography, this paper offers two distinct parts that call for two pilot projects that are focused on two publications, *Careers/Jobs in Geography* (Boehm & Rockymore, 2004) and *Building the Geospatial Workforce* (Gaudet, Annulis, & Carr 2003). Specifically we propose to set-up two demonstration projects—projects that when completed will arm K-12, college, and university educators with a clear and documented picture of the sorts of things that geographers do and the institution settings within which they operate. Each of the two parts of the paper are dictated by a theme—marketing in part one and product development in part two.

The Marketing Component—A Post-graduate Skills Survey

“Big” and “strong” are two words that describe healthy academic disciplines. As important as the liberal arts are for geographic education, it is not enough for a truly healthy and essential discipline. The most successful academic disciplines have an applied face. Economics, English, Psychology and a host of other liberal arts disciplines have thrived, in part, because they are two things at the same time. English and literature majors know that they can work in the publishing industry, economics majors can imagine careers in finance, and psychology majors can see themselves using their skills in counseling, teaching or in clinical settings. These possible “school-to-work” transitions may be less obvious in geography, perhaps because geography per se is so often misunderstood. We think that this may be the case and as a result we suggest that discussions of post graduation careers for geography students be made explicit and detailed.

Toward this end, this paper proposes a Geography Post-Graduate Skills Survey. This proposal draws upon the Boehm & Rockey Moore (2004) publication, which was originally designed to (1) provide “proof” to students at Texas State that former graduates had indeed gone on to careers that used their training in geography, and (2) establish a Texas State network that can be tapped into by future graduates looking ahead to employment and department leaders organizing alumni functions and planned giving campaigns. This careers and jobs in geography publication is unique and fascinating. It features the business cards of some 275 former students in geography at Texas State (Figure 1). These business cards are organized around six major categories of employment in geography:

- Environmental geography;
- Planning (and area development);
- GIS, cartography, and other “technical” occupations;
- Education;
- Real estate, land management, and construction; and
- Travel and tourism.

This publication is a tremendous resource for the researcher inasmuch as it provides current and full contact information for these former students and it gives prospective job seekers the addresses of firms and agencies along with job titles by occupational area.

We propose that this publication now be put to another use—providing contact names and addresses for a post-graduate skills survey. The survey

Figure 1. An example of the business cards found in the Boehm and Rockymore (2004) publication titled *Careers/Jobs in Geography*.



would be sent to all people listed in the publication for the purposes of identifying (1) valuable skills and competencies that were developed during the student’s years at Texas State, and (2) skills and competencies that could be added to the curricula in geography programs so as to enhance the capacity of those programs to provide applied geography skills. Additionally, questions on how the student found the current job and the career ladder with this job could be included along with salary and other critical information. The primary output will be a questionnaire that has been field-test at Texas State and can be easily adapted by any college or university. Initially we suggest that separate questionnaires be developed for four employment areas:

- geographic information sciences;
- geographic education;
- real estate, land management, and construction;
- resource and environmental planning and management.

The Product Development Component—An Applied Geography Core Competencies Model

In order to expand the capacity of geography programs to add a high-quality applied geography component to their curriculum, we propose

research that would produce a template of skills and competencies needed for such applied geography training. This template could be called the “Applied Geography Core Competencies Model.” Gaudet, et al., (2003) discuss competency models, and synthesis of their discussion leads to the following definition of a competency model: a set of knowledge, skills, abilities, or characteristics required for effective job performance in an industry. This definition has undergone initial development by Solem and Schiller (personal communication, April/May 2005) for the Association of American Geographers in a project to develop a “Geographical Sciences Competency Model.” The fundamental aspects of this model are displayed in Figure 2.

Figure 2. Fundamental aspects of a competency model by Solem and Schiller (personal communication, April/May 2004).

Developing a competency model requires:

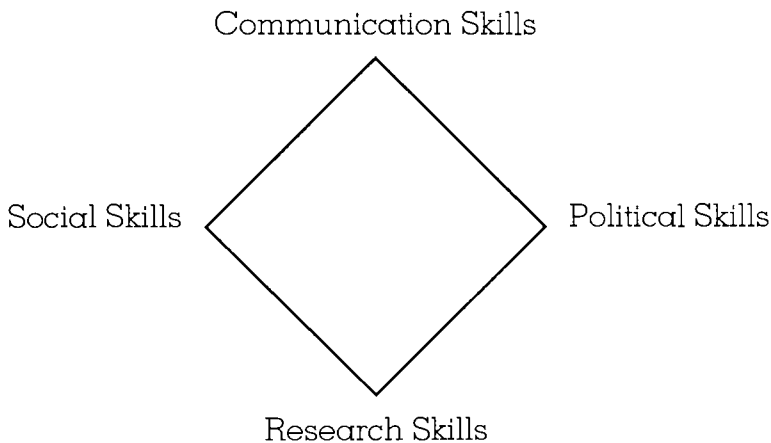
- > extensive research into the industry concerned with workforce development
- > engaging “role experts”—individuals with specific areas of expertise within an industry—in addition to management
- > a “role” is a combination of competencies needed to perform specific functions and meet specific expectations in a position

Competency models are useful because:

- > they are based on understanding of current and future needs of an industry
 - > they are not tied to a specific job type, and thus flexible and can grow with changes in industry
 - > they allow workforce development practitioners to identify competencies required for any employee in any position across an industry
 - > information from competency models can be used to enhance performance management, training curricula, and career advising
-

The need for a competency model is present because most geography programs typically do a good job of helping students improve research skills and understandings but they are much less effective when it comes to helping students actually deliver research as part of a client-driven value-added service. A simple diamond model can be used to conceptualize that client-driven research requires more than just scientific skills (Figure 3). Scientific research skills including mastery of geography methods and techniques are the foundation of what geographers do, but effective delivery in the public and private marketplaces for products requires that practitioners have solid written, spoken, and graphic communication skills, social skills to promote interpersonal interactions, and political skills to assure the effectiveness of the geographer within corporate and governmental organizations.

Figure 3. A simple diamond model used to conceptualize that client-driven research requires more than just scientific skills



The diamond model is useful for laying out concepts but something more is needed for implementation. The paper by Gaudet, et al., (2003) holds promise for providing geography programs with “something more.” This paper deals with geospatial technology but it seems to have many elements that apply equally to applied geography more broadly. It begins with what are labeled “core competencies,” and of the four core competency areas—technical competencies, business competencies, analytical competencies, and interpersonal competencies – the only one that would need substantial

modification for an “Applied Geography Core Competencies Model” is the one focusing on technical competencies. Specific wording and content in the other areas might change a bit but the generic competencies could probably stay largely as is—at least initially (Table 1).

To get some idea of how the Applied Geography Competency Model would be developed it is useful to study the Gaudet, et al., (2003) model in more detail (Table 2). The columns of the table display “roles;” these are not job descriptions, but rather “grouping of competencies targeted to meet specific expectations of a job or function” (Gaudet, et al., 2003, 24). Each of the four core competency areas were developed through the research to include

Table 1

Core competencies for the geospatial technology field (Gaudet, Annulis, & Carr, 2003)

Geospatial Technology Core Competencies (Note: Core competencies are shown in bold)	
Technical Competencies	Business Competencies
<p>Ability to Assess Relationships Among Geospatial Technologies</p> <ul style="list-style-type: none"> • Cartography • Computer Programming Skills • Environmental Applications <p>GIS Theory and Applications</p> <ul style="list-style-type: none"> • Geology Applications • Geospatial Data Processing Tools • Photogrammetry • Remote Sensing Theory and Applications • Spatial Information Processing <p>Technical Writing</p> <p>Technological Literacy</p> <ul style="list-style-type: none"> • Topology 	<p>Ability to See the “Big Picture”</p> <ul style="list-style-type: none"> • Business Understanding • Buy-in/Advocacy <p>Change Management</p> <p>Cost Benefit Analysis/ROI</p> <ul style="list-style-type: none"> • Ethics Modeling • Industry Understanding • Legal Understanding • Organization Understanding • Performance Analysis and Evaluation <p>Visioning</p>
Analytical Competencies	Interpersonal Competencies
<p>Creative Thinking</p> <ul style="list-style-type: none"> • Knowledge Management • Model Building Skills <p>Problem-Solving Skills</p> <ul style="list-style-type: none"> • Research Skill • Systems Thinking 	<p>Coaching</p> <p>Communication</p> <ul style="list-style-type: none"> • Conflict Management <p>Feedback Skills</p> <ul style="list-style-type: none"> • Group Process Understanding <p>Leadership Skills</p> <ul style="list-style-type: none"> • Questioning <p>Relationship Building Skills</p> <ul style="list-style-type: none"> • Self-Knowledge/Self-Management

Table 2

Geospatial Technology Competency Model developed by Gaudet, Annulis, & Carr (2003).

		Geospatial Technology Competency Model													
		ROLES													
		Application Development	Coordination	Data Acquisition	Data Analysis	Data Management	Management	Marketing	Project Management	Systems Analysis	Systems Management	Training	Visualization		
COMPETENCIES	Interpersonal	Ability to Assess Relationships Among Geospatial Technologies		•				•	•		•	•	•		
		Cartography			•	•								•	
		Computer Programming Skills	•		•		•				•			•	
		Environmental Applications	•			•								•	
		GIS Theory and Applications	•			•		•	•		•		•	•	
		Geology Applications				•								•	
		Geospatial Data Processing Tools				•					•	•		•	
		Photogrammetry	•		•	•									•
		Remote Sensing Theory and Applications	•		•	•						•			•
		Spatial Information Processing	•		•	•								•	•
		Technical Writing	•	•		•			•	•	•	•	•	•	•
	Technological Literacy	•		•	•		•	•		•	•	•	•	•	
	Topology				•									•	
	Business	Ability to see the "Big Picture"	•	•			•	•	•		•	•	•	•	
		Business Understanding		•				•		•				•	
		Buy-in/Advocacy		•				•	•		•			•	
		Change Management	•			•				•	•	•	•	•	
		Cost Benefit Analysis/ROI		•			•	•	•	•		•	•	•	
		Ethics Modeling				•		•	•	•		•	•	•	
		Industry Understanding	•	•				•	•				•	•	
		Legal Understanding		•											
		Organization Understanding		•				•				•			
		Performance Analysis and Evaluation			•			•		•	•	•	•	•	
	Visioning		•					•	•	•	•	•	•		
	Analytical	Creative Thinking	•	•	•	•	•	•	•	•	•	•	•	•	
		Knowledge Management		•		•		•		•		•	•	•	
		Model Building Skills	•				•					•	•	•	
		Problem-Solving Skills	•	•	•	•	•	•	•	•	•	•	•	•	
		Research Skill	•			•							•	•	
		Systems Thinking	•				•			•	•	•	•	•	
	Interpersonal	Coaching		•				•					•		
		Communication	•	•	•	•	•	•	•	•	•	•	•	•	
		Conflict Management		•				•		•		•	•	•	
		Feedback Skills	•	•	•	•	•	•	•	•	•	•	•	•	
		Group Process Understanding		•				•		•		•	•	•	
		Leadership Skills		•			•	•	•	•		•	•	•	
Questioning			•				•		•	•	•	•	•		
Relationship Building Skills			•				•	•	•	•	•	•	•		
Self-Knowledge/Self-Management		•				•	•		•	•	•	•			

more specifics that are listed in the rows of the table. The matrix shows the competencies required for each role. Such a model could be developed for applied geography.

To additionally expand the capacity of geography programs to add a high-quality applied geography component to their curriculum, we also propose research that would refine and validate the effectiveness of three relatively simple ways to help students make the connection between the academy and the workforce and to introduce firms and regional agencies to geography. These are:

- 1) Speaker programs are an obvious way to make the classroom-workforce link explicit. Students can put real names and faces together with jobs that draw upon geography skills to solve real problems. An additional benefit is that speakers become part of the student's network—they become people who can offer advice and perhaps even help find the new graduate a position in industry or government.
- 2) Internships allow students to “test drive” jobs in specific settings so that they can better evaluate both a type of work and a work environment. For example, students at the University of Arizona's large undergraduate program tend to favor assignments in:
 - commercial and industrial real estate;
 - public planning agencies;
 - economic development organizations;
 - firms and agencies specializing in geographic information sciences (L. J. Gibson, personal communication, November 2005).
- 3) Research involvement is another possibility for undergraduate students and especially graduate students. The links between course work and employment will usually be fairly explicit; assignments may focus on curiosity driven research or client driven research.

Conclusion

In some ways it seems that geographic education per se is the purest form of applied geography. Geography itself is the “product” and the schools (K-12 and colleges and universities) are the customers/clients. In this paper our primary audience may be geography instructors but we are concerned

with a different kind of geographic education. Typically geography instructors are concerned with geography for academic learning, the liberal arts, and effective citizenship. Our focus is on geography for employment—in industry and government. Whereas the liberal arts tradition of geography for citizenship is indeed a worthy goal, we think that geography’s potentials as a vital problem solving discipline are too often overlooked or at best undervalued. Simply put, geography for citizenship is not diminished if it is explicitly combined with “geography for profit.” We suggest that by stressing the ways that geography can be used to make a living we can broaden the appeal of geography among students (and among often skeptical parents) and reinforce the notion that geography is a vital and essential discipline that can lead to lucrative, satisfying, and socially useful careers.

References

- American Association of Geographers. (2005). *Guide to geography programs in North America, 2004-2005*. Washington, DC: American Association of Geographers.
- Boehm, R. G., & Rockey Moore, M. A. (2004). *Careers/jobs in geography*. San Marcos, TX: Department of Geography, Texas State University–San Marcos.
- Holt-Jensen, A. (2000). *Geography history & concepts* (3rd ed). Thousands Oaks, CA: Sage Publications, Inc.
- Gaudet, C. H., Annulis, H. M., & Carr, J. C. (2003). Building the geospatial workforce. *URISA Journal*, 15(1): 21-30.
- Livingstone, D. N. (1992). *The geographical tradition*. Oxford: Blackwell Publishers.
- Murphy, A. B. (2004). Geography and a liberal education. *AAG Newsletter*, 39(5): 3.
- Wellar, B. (1998). Combining client-driven and curiosity-driven research in graduate programs in geography: Some lessons learned and suggestions for making connections. In F.A. Schoolmaster (Ed.), *Papers and proceedings of the Applied Geography Conferences, volume 21* (pp. 213-220). Louisville, KY: University of Louisville.

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