

The Course Syllabus as a Guide to Map Interpretation Instruction

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Accepted on January 9, 2013

Abstract

Map interpretation skill development in geography is faced with declining opportunities; however, most introductory textbooks have the content to support developing these skills. This paper investigates the extent to which map interpretation is found in introductory geography courses by reviewing 77 syllabi from Internet sources and direct inquiry, and 20 responses, which resulted in an additional 30 syllabi, from a nationwide online survey sent to geography instructors who taught at 4-year universities. Map interpretation was most frequently found in physical geography syllabi followed by human geography, regional geography, and general geography. Our findings indicate that map interpretation skill development is not widely incorporated in introductory courses, however, the syllabi did not always adequately portray the course content and, thus, it would be more useful for assessing the general level of map interpretation skills in geography if syllabi were more informative to the broader community.

Key words: Map interpretation, map skills, course syllabus, introductory geography courses

Introduction

Maps are frequently spoken of as “the geographer’s tool” with the clear implication that students of geography should be grounded in the use of maps and skilled in their analyses. Moreover, it is not only “geographers” who are in need of the skills to properly interpret maps, but also those in the wider domain who will encounter maps in their daily lives.

In a recent map interpretation class composed of mixed majors, one of the authors asked the students to collect one map each from an advertising source as an assignment. Of the 28 maps brought to class, only two were duplicates. The sources included local and national newspapers, popular magazines, and advertising flyers. The collection ranged from simple location maps associated with finding an optometrist to a rather colorful proportional flow map depicting commodity movements. Clearly, an abundance of map material is available requiring some degree of map interpretive skills on the part of the map reader.

A problem, however, exists regarding the development of those skills. According to recent research, the number of American university students enrolled in map interpretation courses reached a peak of over 5,500 in the early 1980s and has been, generally, decreasing since. A corresponding decline in the number of institutions offering a map interpretation course has also been noted (Green, Burns, & Green, 2008, p. 223).

These circumstances have placed a greater burden on alternative sources for providing training and skills needed by introductory students that will enable them to use, in an appropriate manner, the maps to which they are exposed. In the absence of specific courses aimed at map interpretation, some of this instruction may be provided through the use of map interpretation materials incorporated into introductory course textbooks.

In a 2010 study, 17 introductory level textbooks in physical, human, world regional, and general geography were reviewed for map interpretation content. Sixteen of those had a portion of their content devoted to map interpretation materials. It is, perhaps, indicative of the perceived importance of map interpretation skills that the 16 books placed map interpretation in the first several chapters of their respective texts (Gillen, Skryzhevskaya, Henry, & Green, 2010, p. 183). This finding is important because it suggests that those texts might serve as a possible alternative source for training in map skills when a specific map interpretation course is not available. The 2010 study, however, concluded with a caveat to the effect that adding map interpretation skills training to an already crowded syllabus might be difficult.

Purpose

In order to determine if map interpretation skills are a part of introductory geography courses, the purpose of this study was to investigate syllabi content and identify both the frequency and extent to which map interpretation training and skill development is actually offered as part of the content of introductory courses in physical, human, world regional, and general geography. Map interpretation in this instance is considered to be the development of a set of skills that provide map readers with the ability to understand and explain the spatial patterns that maps portray.

Procedures

Several previous research documents provided a framework for reviewing the syllabi in the context of course design and implementation (Albers, 2003; Grunert, 1997; Rendina-Gobioff et al., 2003). This evaluative overview helped us to consider the context and the extent to which map interpretive elements were included in the structure of courses.

To begin our investigation, we collected data from three sources: an analysis of 1) web-based course syllabi, and 2) other course syllabi collected by direct inquiry and personal contacts which generated 77 course syllabi in total. In addition to these syllabi, and in an effort to obtain a broader understanding of inclusion of map interpretive topics in course content, 3) a nationwide online survey targeting 76 geography instructors who taught at 4-year universities was conducted. The online survey generated 20 responses (26.3% response rate), however, since many of the instructors taught multiple introductory courses, 30 syllabi in total were received.

Analysis

Course syllabi obtained from the web-based courses, mail inquiry, and personal contacts

Searching for content that related to map interpretation on a simple *yes/no* basis, 37 of the 77 syllabi (48.1%) contained entries indicating that maps or map content were a part of the instructional effort. The remaining 40 (51.9%) did not give a specific reference to time spent in the course during the term devoted to the development of map skills. Instructors, however, who

taught physical geography courses tended to include map interpretation more frequently as compared to the other sub-fields (Figure 1).

In order to determine the nature and extent of such training, as indicated by those in the *yes* category, each syllabus was reviewed for specific content. A compilation of all stated map terms was made which became a comprehensive data set (Table 1). These terms show a clear bias toward a general level of map interpretation information. Very few terms related to specific map types with the exception of topographic and weather maps. Also, specific skills development (areal measurement, slope calculation, etc.) were generally absent.

Each syllabus was then compared, in turn, with the full data set; the number of occurrences was identified with the appropriate sub-field (physical, human, world regional, and general geography). When the individual syllabi were compared to the pool, the somewhat general topic “maps” occurred most often with 17 entries. This was, perhaps, appropriate, as such a general entry provides the instructor with the greatest latitude as to the exact nature of the material to be covered. The other topics most frequently represented were *latitude/longitude*, *map scale*, and *map projections* with each having five entries and *topographic maps* with four entries. Because these are also basic constructs, they, too, lend themselves to a wide range of application and instructional flexibility.

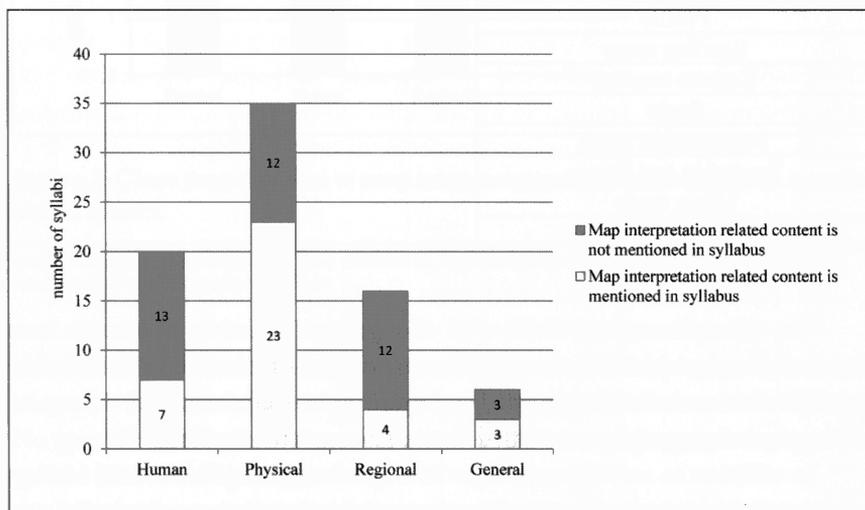


Figure 1. Occurrence of map interpretation related content in syllabi of introductory geography courses.

Table 1.

Map interpretation topics extracted from web-based syllabi.

<i>Map Interpretation Topic</i>
Cartographic Fundamentals
Cartography
Contour maps
Conic projection
Cylindrical projection
Earth grid
GIS
GPS
Globe
Isolines
Isopleths
Land survey systems
Latitude/longitude
Mapping
Map interpretation
Map making
Map projections
Measuring scale
Mercator projection
Planar projection
Polar projection
Place names
Profile
Reading maps
Remote sensing
Scale
Topographic maps
Township and Range
Using maps
Weather maps

The disciplinary sub-field with the greatest number of entries was physical geography; 29 of the possible entries were included. In descending order, human and world regional geography accounted for six of the topics while general geography accounted for three, respectively (Table 2).

In addition to serving as a topic in a syllabus, the time devoted to map interpretation was an indicator of the degree of instruction received; and was represented in some of the syllabi. For physical geography syllabi, the time devoted to such instruction was clearly indicated as *more than one class period* in four cases. The human geography syllabi (six instances) had five at *more*

Table 2.

Number of map interpretation related topics and class time devoted to teaching map interpretation related content in web-based syllabi.

Geography course	Number of map interpretation related topics included in syllabus	Class time devoted to map interpretation related topics		
		Less than one class	One class	More than one class
Physical	29	none	none	4
Human	6	none	1	5
Regional	6	none	2	1
General	3	none	none	none

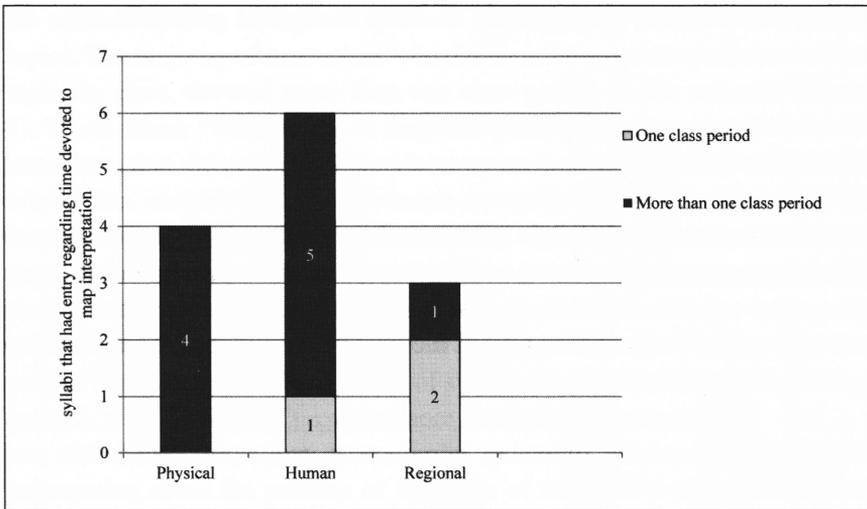


Figure 2. Class time devoted to map interpretation related instruction in web-based syllabi.

Note: No specific entry regarding time devoted to map interpretation related content in class was found in General Geography syllabi.

than one class period and one at one class period. World regional had three instances with two at one class period and one at more than one class period. No specific instructional time was noted in the case of the general geography syllabi (Table 2, Figure 2).

From these observations, it appears that the time invested in instruction parallels the pattern observed of the topical occurrences in the sub-fields, that is, physical geography courses devote the most time to map interpretive instruction with lesser amounts given in the other sub-fields.

In order to further investigate the question of map interpretation, we next looked at topical material, including skill development as a part of course instruction, and sought information from individuals whose syllabi did not explicitly contain map interpretative material. This objective sought to determine whether map interpretation skills development was contained in topical materials but not explicitly expressed. Discussions with instructors of these classes indicated that map interpretation topics, while not specifically designated on the syllabus, were included during the course of various topical considerations. For instance, the “township and range survey” concept was a part of the larger topic of land settlement and map projections, and scale and latitude/longitude was included under basic geographic tools. Next, to deepen our understanding of the degree to which the inclusion of map interpretation topics was included in geography courses, the syllabi generated from the online survey were analyzed.

Online survey

The survey included eight questions that, in our opinion, would help to reveal the pattern of inclusion of map interpretation topics in introductory geography courses, especially in instances when instructors did not include entries on map interpretation related material in the syllabus. The following questions were asked:

1. Which of the following introductory geography courses do you teach?
2. What textbook(s) do you use for your intro course(s)?
3. Do you have a specific entry on your syllabus for instructing map interpretation?
4. If you answered “No” to Question 3, do you carry out map interpretative study under some other category?
5. If you answered “Yes” to Question 4, under what category and what skills are studied?
6. If map interpretation is not covered in your courses, is it covered in another course? If so, what course?
7. If you do cover map interpretation in your course, how much class time do you devote to map interpretation topics?
8. Do you have anything else you would like to add about your teaching of map interpretation?

From the twenty instructors who responded, 30 syllabi were generated, eleven human geography, nine physical geography, seven regional, and three general geography courses.

Sixteen respondents (53.3%) did not have a specific entry on their syllabi devoted to map interpretation (Table 3, Figure 3). However, 11 out of 16 respondents indicated that regardless of their absence on the syllabus, map interpretation topics were discussed in the classroom. Only five respondents indicated that they neither had a specific entry on map interpretation in the syllabus nor discussed it in class. Fourteen syllabi (46.7%) indicated the presence of map interpretation topics. Five for human geography, four- physical, three- regional, and two- general geography courses (Figure 3).

As we continued our investigation, we were also interested in finding out the amount of time instructors spent on teaching map interpretation related topics. The majority of instructors who did mention map interpretation related topics in class, devoted more than one class period to this material (Figure 4). When asked, "What topics in map interpretation were covered in class?" instructors that did not have a specific entry on their syllabi mentioned: *scale, projections, mental maps, contour maps, topographic maps, isolines, thematic maps, elements of maps, data classification and generalization, choropleth maps and other techniques of data display, soil maps, weather maps, and map composition and reading*. This finding was consistent to a large extent with results from the first part of this research comparing web-based syllabi to a pool of topics extracted from the set of syllabi. The topics covered were rather general, which, possibly, provides more flexibility to instructors.

We found the online survey to be successful in providing additional information about the patterns of inclusion of map interpretation instruction

Table 3.

Occurrence of map interpretation topics in syllabi and class time devoted to teaching of map interpretation from the online survey.

Geography course	Number of respondents	Map interpretation related topics are mentioned in syllabus	Map interpretation related topics are not mentioned, but discussed	Map interpretation related topics are not mentioned, and not discussed	Class time devoted to map interpretation related topics		
					Less than one class	One class	More than one class
Physical	9	4	4	1	none	1	6
Human	11	5	3	3	1	1	5
Regional	7	3	3	1	1	none	4
General	3	2	1	none	none	none	2
Total	30	14	11	5	2	2	17

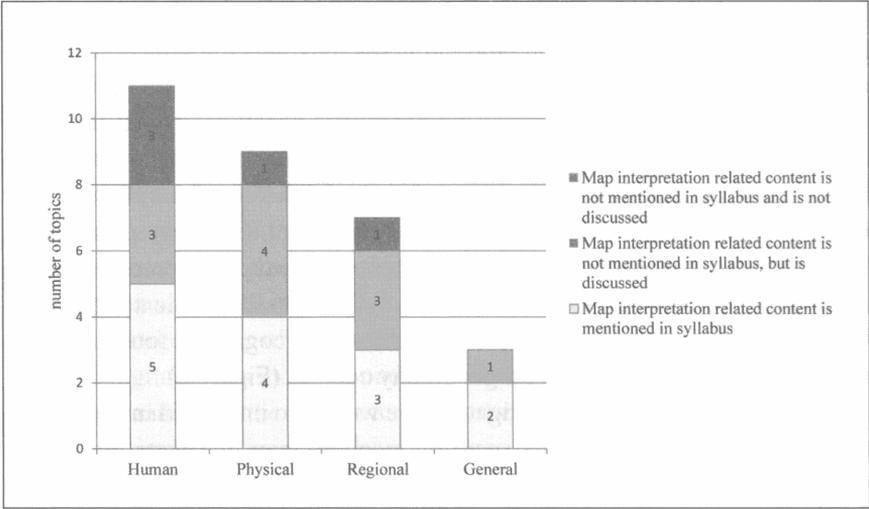


Figure 3. Inclusion of map interpretation related topics in introductory geography courses.

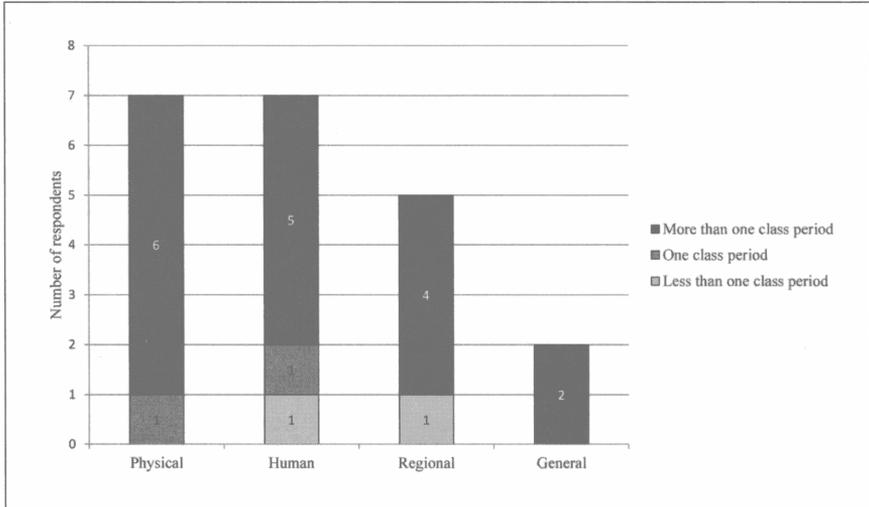


Figure 4. Class time devoted to map interpretation related instruction.

in the content of courses. The online survey results were next compared to the results from the web-based syllabi analysis (Table 4). The findings (Tables 3 and 4, Figure 3) indicated that the majority of instructors did not include a specific entry on map interpretive instruction in the syllabus. It was found, however, that 83.4% of respondents did discuss and devote class time to map interpretation topics. The concern was the 16.6% of instructors who neither included map interpretation in the syllabus nor discussed these topics in class, and by doing so, significantly limited student exposure to these important topics of geography education.

Discussion

From the preceding analysis, several findings emerged. In particular, we found that the course syllabi were inadequate as a portrayal of both course content and skills offerings. Such a view, however, might not be an accurate representation of classroom reality. As revealed from the results of the online survey, there likely is more coverage included than was evident from the syllabi. As we found in our interviews with those who had no stated

Table 4.

Comparison of the results of syllabi obtained from the web-based sites and the online survey.

Geography Course	Syllabi obtained from web-based sites and personal contacts (77 syllabi)		Online Survey results (30 syllabi)	
	Map interpretation related content is mentioned in syllabus, % of the total	Map interpretation related content is <u>not</u> mentioned in syllabus, % of the total	Map interpretation related content is mentioned in syllabus, or not mentioned, but discussed, % of the total	Map interpretation related content is <u>not</u> mentioned in syllabus, and <u>not</u> discussed, % of the total
Physical	29.9	15.6	26.7	3.3
Human	9.1	16.9	26.7	10.0
Regional	5.2	15.6	20.0	3.3
General	3.9	3.9	10.0	-
Total	48.1	51.9	83.4	16.6

map interpretative material in their syllabi, as well as, from the online survey responses, there was, in fact, some coverage given in the context of other topics. This possibility raised the question of syllabus construction and content, and was suggestive of the need for a more accurate portrayal of course content on the syllabus in addition to, indicating skills that a student might be exposed to. While it might be evidence of a faith in the instructional content, reliance in the probability of map interpretation skills being included is not justified.

The reason for this need for greater accuracy is that, as a public document, the syllabus serves a variety of purposes. First, it encapsulates the material the instructor sees as the essence of the subject to be taught. Second, it serves as an educational tool in conveying that essence to the broader audience who might be interested; the syllabus serves as a means of public education and also provides a horizontal link to the wider discipline of which it is part. Third, the syllabus serves as a framework around which both the instructor and students forge a mutually understood basis for learning. As pointed out by Hockensmith (1998) the syllabus serves as an important teaching tool and is an opportunity not to be missed. In addition to providing the basics of time, place, and content to the student, the syllabus serves as a “roadmap” to the larger learning environment (Nilson, 1998). Fourth, in some states (Ohio is an example) the syllabus serves as the basis for determining the inclusion and placement of a course in the transfer assurance guideline process in the event that a student changes universities. In order for this placement to be made accurately, the syllabus must be clear and comprehensive in nature, benefiting greatly, if both skills and content are identified. As students seek to maximize their transfer credit options, accurate representation of a course on the syllabus is essential.

We also found that there was a diminished set of concepts offered in map interpretation when placed in the context of introductory courses. The diminished nature of concept offerings was apparent when we compared the richness of content along descending levels of offerings from map interpretation texts through course syllabi. A review of the indices of four contemporary map interpretation texts produced a universe of nearly 100 items. These entries covered the basic nature of map interpretation, as well as, consideration of projections, specialized maps, and applications in geographic information systems. Gillen et al. (2010) reported a diminished universe of map interpretive concepts as derived from introductory texts while Table 1 portrayed the conceptual offerings displayed in the collected syllabi. In short, what the student is left with is a field of riches at the map interpretation course level that diminishes to one of relative poverty as reflected in the syllabi of introductory geography courses.

Conclusion

Several conclusions emerged from our findings. First, after analyzing the content of syllabi we found that map interpretation skills were not widely, or even necessarily, incorporated into the instructional mix of introductory courses; however, we did observe that map interpretation skills were sometimes subsumed under other geographic topics, not evident on the syllabi. Second, the course syllabus did not always adequately portray the content of the course. Third, a more concerted effort needs to be made to encourage instructors to clearly portray the nature and structure of the course in the syllabus, thereby rendering it a more informative document. For instance, map interpretation skills, which are an expectation of the course, need to be clearly identified for students. Instructors who neglect this aspect of syllabus preparation are shortchanging themselves by not demonstrating the full intellectual investment they have made in preparing their instructional agenda.

References

- Albers, C. (2003). Using the syllabus to document the scholarship of teaching. *Teaching Sociology*, 31 (1), 60-72.
- Gillen, J., Skryzhevskaya L., Henry, M., & Green, J. (2010). Map interpretation instruction in introductory textbooks: A preliminary investigation. *Journal of Geography*, 109 (5), 1181-189.
- Green, J., Burns, D., & Green, T. (2008). The enigmatic enrollment trend in US map-interpretation courses. *Cartographica*, 43 (3), 221-226.
- Grunert, J. (1997). *The course syllabus*. Bolton, MA: Anker Publishing Co., Inc.
- Hockensmith, S. (1988). The syllabus as a teaching tool. *The Educational Forum*, 52 (4), 339-351.
- Nilson, L. B. (1998). *Teaching at its best*. Bolton, MA: Anker Publishing Co., Inc.
- Rendina-Gobioff, G., Ducher, J., Hess, M. R., Hogarty, K. Y., Smith, G. F., Kromrey, J. D., Lang, T. R., & Helmick, I. J. (2003). Indicators of technology integration in teacher preparation: A content analysis of the common core syllabi. A paper presented at the Annual Meeting of the Florida Educational Research Association, Orlando, Florida, November 19-21.

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