Introduction:

As Nilson (2010) and Lowman (1995) show, active learning has, and continues, to attract greater interest from teachers and educational specialists. The large literature showing the benefits and advantages of such approaches indicate activities which engage the students and require them to ‘do’ rather than ‘observe’ provide a deeper and more complete understanding of not only basic knowledge, but the ability to progress to higher cognitive and affective levels of learning. While valuable, this literature prompts the question: “how do these findings and recommendations apply within the discipline of geography?” Geography, however, is an extremely broad discipline that includes a wide variety of perspectives, approaches, and specific topic areas which spans both the natural and social sciences. The purpose of this review, then, is to survey the literature and resources available to geography teachers to enable active learning in the classroom. But in order to develop effective strategies to actively involve students in their own learning, an understanding of the outcomes and objectives within a geography course is required.

Improving Geographic Literacy

In their survey of geographic education across the curricula of several countries, DaSilva and Kvasnak (2011, 17) cite a finding by Gilbert Grosvenor (1987) that, “the nation’s young people literally did not know where they were, what other cultures were like, or how things fit together.” Their research, while providing an overview of the status of geography within education in a number of countries, cites some startling statistics based on surveys in which American students – mostly teenagers and young adults – are among the most geographically illiterate students of western, industrialized countries. Even as late as 2006, according to a Roper Poll, 6 out of 10 young Americans could not find Iraq on a map.
Although these data are still alarming, DaSilva and Kvasnak’s (2011) survey suggests that progress is being made and efforts by the Joint Committee on Geographic Education, which published its Guidelines for Geographical Education in 1984, have helped raise awareness of the need for greater geographic education in the U.S. Much of this success, though, can be attributed to the National Council for Geographic Education (NCGE), which was originally chartered in 1915 and serves “to enhance the status and quality of geography teaching and learning” and provides a large number of resources and forums to assist teachers at all levels of education.

Towards this end, the NCGE publishes two journals devoted specifically to enhancing geography education. The *Journal of Geography* “provides a forum to present innovative approaches to geography research, teaching, and learning” while the goal of *The Geography Teacher* “is to reach the myriad of needs of the NCGE membership of teachers from kindergarten through early university” including both geography teachers as well as “those who teach geography through other disciplines, such as American history.” Additionally, Routledge publishes the *Journal of Geography in Higher Education* to “promote, enhance and share geography learning and teaching in all institutions of higher education throughout the world.” Furthermore, there are several comprehensive books devoted specifically to aid teachers further their skills and abilities to teach geography effectively (Solem and Foote 2009; Gersmehl 2008; Tilbury and Williams 1996).

These journals provide a forum for teachers to present the creative and innovative methods through which they improve their ability to reach students, teach the core concepts and theories within the discipline, and foster students’ interest in not only the course material but their desire to learn more about the world they live in. The articles within these journals address a wide array of topics, and a survey of recent articles illustrates that much of the research on learning and teaching within the education literature is being applied and analyzed within the discipline of geography. While some perspectives, such as Revell and Wainwright’s (2009) article on ‘what makes lectures unmissable?’ may not appear relevant to teaching at an institution in which students are required to go to class, their discussion on active learning, clear course structure, and passionate enthusiastic lecturers reflect many of the topics within the broader literature on learning and teaching (Nilson 2010; Lowman 1995)

In seeking to advance geographic education, the journals appeal to a wide audience, from elementary school education to college undergraduate and graduate levels. Focused on the needs
of teachers, most articles are provide short concise discussions of the topics in question, ranging from three to ten pages, and are written in clear, accessible language, thereby appealing to teachers at all levels. Many of the articles within these journals are initially researched and presented at the annual Association of American Geographers (AAG) national conference held every year to promote advances within the discipline. Within this organization, there are a large number of specialty groups, reflecting the breadth and diversity within geography. One of these, the Geography Education Specialty Group hosts paper and panel discussions, guest lecturers from within and outside the discipline, as well as workshops to help faculty at all levels improve their classroom instruction and teaching abilities.

Like the journals published by the NCGE and Routledge, these forums address a wide range of topics, including incorporating new technology into the classroom, innovative and creative methods for teaching course material and critical thinking, and demonstrate that academic geographers are keeping abreast of the latest developments and thoughts about teaching and learning. Although these journals and forums appear to constitute the majority of literature and research on teaching, specific sub-fields within the discipline are also accepting – and encouraging – work on relevant to these areas. Recently, Raento et al (2010) published a profound article on the status of teaching political geography within the US. While many outside higher education may consider tenured professors at major research universities to be focused almost exclusively on publications and research, this article by some of the most noted and accomplished political geographers in academia today demonstrate that teaching remains a central and important focus.

**Outcomes and Objectives:**

While there are an increasing number of resources available to students and teachers of geography, one of the biggest issues with geographic education remains the limited conception of geography held by so many people. Within the U.S., the history of the discipline in American colleges is detailed in Nellis (1994) and Johnson and Sidaway (2004), and for many people, geography is knowing the capitals, countries, and physical features on the earth’s surface (such as mountains, rivers, deserts, a phenomenon known in geographic circles as ‘capes and bays geography.’) As Bednarz (2002) and DaSilva and Kvasnak (2011) note, the relative lack of geographic knowledge among American students stems from several factors: geography is
subsumed in the focus on social studies, K–12 teachers have little or no training or knowledge of geography, the focus on human rather than physical geography in schools, geography is not a component in standardized testing, and the variety of curricula across states which may or may not include geography. It is within this context that geographic education at the elementary, middle and high school levels that students arrive at universities and colleges. This, of course, provides college geography faculty with a broad range of students with widely varying degrees of knowledge and understanding, not only about the world itself, but also the basic concepts and theories that underpin the discipline of geography.

Initiated by the National Geographic Society in the early 1990s to address such challenges, the Geography Education Standards Project published *Geography for Life: National Geography Standards* in 1994. These standards were an attempt to set goals for geographic education across the country and provided six essential elements and eighteen national standards by which geographic literacy could be gauged. These elements and standards helped to define what a geographically informed person should know and understand. While these standards are largely geared towards education in the grades of K though 12, they provide a useful starting point for establishing course and lesson outcomes and objectives for undergraduate level geography education.

Although these standards provide a good foundation for establishing learning outcomes and objectives, several questions emerge. At what level of learning are certain standards more applicable than others? And once determined, how do we assess or evaluate the level of learning that has occurred in relation to these standards? Dawson (2009a) provides a brief discussion of Bloom’s taxonomy and the relationship between questions and knowledge, and provides useful insights and examples of feedback questionnaires to solicit input from the students on how effectively the teacher is presenting the material (Dawson 2009b). This work, however, like most of the work examined in this review, provide very little guidance or insights into course development and establishing course outcomes and objectives. Although some works are more specific and focused than others in citing the *National Geography Standards* as the basis of course objectives, it appears that most authors clearly link (or imply) that the learning outcomes achieved by students in the course of their research are based on these standards.

Several works, though, were specific in advancing students’ abilities to ‘think spatially’ – that is the ability to see the similarities and differences between places and how human activities
and interactions in places are connected (and interconnected). Clearly this ability to ‘think spatially’ is evident in the national geography standards and as a principle component of the geographic perspective it is thus not surprising that this underpins course objectives, especially at the undergraduate level. In this respect, it would thus appear that the project that established the national standards to ensure common threads and themes within geographic education was relatively successful – at the college level. Yet, as Hooey and Bailey (2005) note, describing this ability is much easier than getting students to do it. Subsequently, there appears to be a much greater body of work on methods of instruction, rather than developing course objectives, within the geographic education literature.

**Active learning**

Hertzog and Lieble (1996) compared the traditional lecture / inquiry approach with cooperative learning groups based on their learning styles, hemisphericity, and gender in a world regional geography course. Although their study found no discernible, significant difference in outcomes between the two groups of forty students each, which used the same instructors during the mid-morning hours, the number of students remaining in the courses varied greatly at the end of the semester. Students taught using traditional lecture methods were far more likely to drop the course versus the collaborative learning groups. This suggests, then, that such methods were far more inclined to raise students’ interests and thus serve as a better vehicle for teaching students the course material. Similarly, Petzen (2010, 22) describes a small group exercise in which the students use the Arab Human Development Report to “examine not only the levels and measures of development in the Arab countries of the Middle East, but also to examine the act of measuring itself”. Exercises such as this increase not only student understanding of the region or topic in question, but also provides deeper learning about the processes of data collection, measurement, and analysis.

These findings, however, do not suggest abandoning traditional lectures by the instructor entirely. Instead, the research indicates that augmenting or complementing lectures with activities that get students involved provides a greater venue for learning than lecture alone. One method of engaging students is asking questions and soliciting student input and answers, but an essential element of this is asking the right questions to students in order to achieve the level of learning and cognition desired. Jo et al (2010) provide a useful review of types of questions that
distinguish between spatial thinking questions and other lower- and higher-order questions and introduce several tools to evaluate these questions from a spatial-thinking perspective. A key component in this process, of course, is in answering the questions, not only verbally, but in writing. Hooey and Bailey (2005) advocate journal writing to develop students’ ability to apply the concepts and theories they learn to better understanding their own activities and observations. Marcello (2009) suggests in-class debates addressing current issues and topics, thus allowing students to research and articulate how the geographic perspective informs their understanding of often complex issues. Likewise, Schoenfeldt (2011) notes the inherent advantages of discussing current issues, and provides a lesson plan / outline to use ‘geography’ to interpret the volcanic eruption in Iceland that left air travelers in Europe stranded for days, while Ives-Dewey (2008) described the use of experiential learning modules which apply geographic concepts to solve real-world problems, incorporating the expertise of professionals in community planning.

Russell (2009), however, proposes a novel classroom project in which students, divided into groups, are required to develop a detailed travel plan and itinerary, thus not focusing on a particular current event, but using the knowledge and skills they have acquired (or have yet to acquire) to plan a travel excursion through Europe. They must ‘plan’ all their travel and activities, including lodging, meals, and visits to specific locations, and provide an overview of their trip to the class. The tremendous growth of the world-wide-web and the desire of businesses to ‘advertise’ and be accessible to a wider range of potential customers through individual websites and links from other sites make such projects much easier, and a lot more fun, for students today. Though many of the articles in *The Geography Teacher* like Russell’s are focused at elementary and secondary level education, the novel methods through which these teachers have introduced geographic concepts provide interesting ideas on ways to get students actively involved – and interested – in the topics and material taught in the classroom.

As an integrative discipline, geography often draws upon and incorporates perspectives and approaches from other disciplines. Donaldson and Kuhlke (2009) analyzed a method in which they used a work of fiction to assess students’ knowledge and comprehension of the National Geography standards. The students read Jules Verne’s *Around the World in Eighty Days* in which they were required to cite examples of each of the standards within this literature classic. Although they do not specifically cite which levels of Bloom’s taxonomy they are trying to achieve with the students, Donaldson and Kuhlke (2009, 39) did find that most students
“reported that not only did their knowledge of the world increase after completing the course assignment but that their interest in the discipline increased as well.”

Of course, perhaps the most important tools to a geographer are maps, through which we represent the variety and diversity of the earth’s surface and a key component of ‘thinking spatially’ is the ability to interpret, understand, and comprehend data displayed on maps. Klein (2003, 148) explored the use of active learning strategies through inquiry and discovery based methods that target “geographic skills, concepts, and perspective objectives”. He cited five specific objectives towards this end, and the six essential elements of geography developed by the Geography Education Standards Project clearly inform these objectives. One of the primary methods Klein advocated in his discussion is the use of atlases to get students to answer some basic questions as a warm-up exercise at the beginning of class periods. These exercises force students to delve into the atlas, really look at the information contained within such references, and demonstrate they understand not only the information they cite, but what it means and what they can infer. In this way, students learn not only important facts about places in the world, but to think spatially, recognize patterns and understand the processes that drive these patterns.

Klein (2003) provides a number of example questions that can be used, and while basic and somewhat simplistic, they serve as prompts for instructors to think about other types of questions that can be used to meet more specific or individualized course objectives. But in addition to these questions, he also provided insights into developing and assessing concept and perspective related questions which require a much greater level of cognition on the part of the student. For any world or regional geography instructor, Klein’s article is a valuable resource. Gersmehl’s (2008) Teaching Geography is likewise a valuable, insightful reference for teachers as it outlines the essential elements and perspectives within the discipline and provides a variety of activities through which students may be actively engaged in their own learning – rather than through rational lecture formats.

Many of these discussions of active learning call for engaging students with maps and atlases, but as recent discussions of IBM’s Watson’s success on Jeopardy have illustrated, developments in computer technology is continuing to increase at an exponential rate, where processing speeds and technologies double about every two years. In the field of geography, these developments are having a dramatic impact on the evolution and advancement of computerized mapping and geographic information systems (GIS). These, together with
programs accessible for the general public – such as Google Earth – greatly improve our ability to not only visualize and display geographic data and information to students to enhance conceptual understandings, but also analyze these data using improved spatial analysis and geo-statistical software packages.

Geographic information systems (GIS) have had a profound effect on the discipline in the last two decades. While the use of this system can often be, by many, merely a simplified map-making program accessible to the average student or researcher, Sinton and Schultz (2009, 69) argue this can be “very effective in helping students develop critical thinking and problem solving skills.” Their discussion, focused towards early career faculty members at the undergraduate level, provides a number of insights on the means and utilities towards integrating GIS into the curriculum in order to enhance student learning of spatial concepts and relationships.

With advances in computer and satellite technology, our ability to collect data about the world is proceeding at an unprecedented rate. Satellite imagery is available and quickly used to discuss and illustrate current events on news programs and media, and Campbell’s (2007, 239) article introduces the use of GloVis, which is a “search tool to support users of the USGS Landsat archive” and provides a useful reference on how to use and incorporate this new technology into classroom instruction.

But perhaps one of the most significant aids to teaching geography in the last decade has been the tremendous development and subsequent use of Google Earth in the classroom. This tool provides a useful means to visualize and illustrate many of the concepts, ideas, and information about the world that teachers are trying to impart to their students. While a basic and rudimentary understanding of how to use Google Earth can make significant contributions to classroom instruction, there are a large, and growing, number of resources that can assist instructors in maximizing the use of this technology to augment course material. Each year at the annual national conference of the AAG, several paper and discussion panels showcase and illustrate the latest developments and additions to Google Earth and how these may be effectively used in the classroom to enhance teaching and student learning.

With the move to active learning within education at all levels, there are an increasing number of forums that not only instruct curious students on how to apply and use Google Earth and other technologies to enhance their own learning, but also research geared towards informing
faculty on how to incorporate and use these technologies to improve their classroom teaching (Patterson 2007). A simple search of the world-wide-web will reveal a great number of on-line resources, many of which are posted by other teachers and professors to assist not only their own students, but other teachers and the general public as well. These resources can be of particular use – but of course, these must be considered and used with caution.

Patterson (2007) highlights the utility of Google Earth in the classroom for middle school instruction, but increasingly this tool is being used at all levels of geographic education. As the program develops, newer tools and add-ons within Google Earth allow for much broader and deeper learning about places around the world. Embedded images from *National Geographic* as well as 360° photos views in particular places provide a tremendous range of opportunities to illustrate points in the classroom, and develop student exercises through which they can explore the world and gain a deeper appreciation and understanding of the spatial perspective. While some instructors may be comfortable with and knowledgeable on Google Earth and can effectively incorporate this to enable classroom learning, textbook publishers are filling the needs of teachers by developing workbooks with exercises and projects to complete through using Google Earth. Porter’s (2011) work provides a valuable compliment to course texts, as it is designed primarily as a workbook for students that instructs them not only on how to engage and use Google Earth but to reinforce understanding of basic concepts and theories in the discipline.

**Recommendations:**

- The National Geography Standards provide a valuable reference and starting point for developing learning outcomes and objectives.
- Outcomes from these standards should be tailored to the desired level of cognitive and affective learning.
- Traditional lectures still have a place within geography instruction, but should be supplemented with a variety of active learning strategies to engage students in their own learning.
- The world-wide-web provides a rich source of information and data which can be used effectively to augment classroom instruction as well as foster student exercises in which they actively engage the concepts and theories addressed in the course.
• Structuring student exercises in which they apply geographic theories and concepts to understand current events is an effective method for active learning in the classroom.
• Incorporate GIS and the expanding tools within Google Earth, in the classroom and in student exercises, to provide students a greater understanding of how geography informs their perspective on the world.

Conclusion:
Students in college level geography courses arrive with a diverse and wide ranging conception of what geography is and how geographic study is undertaken. Students will also have different learning styles and traditional lectures will therefore likely continue to have a place in teaching. However, education research demonstrates that these methods must be augmented with active learning strategies to engage students in their own learning and enable them to apply what they have learned to attain higher levels of cognitive and affective learning. Geography teachers have a number of resources and venues through which others have tried and assessed the merits of innovative and creative active learning methods. For any teacher who truly wants to inspire and foster these deeper levels of geographic learning, investigating these resources can help identify techniques and methods that are the right fit for both the teacher and their students.

References:


Journal of Geography in Higher Education. [http://www.tandf.co.uk/journals/titles/03098265.asp](http://www.tandf.co.uk/journals/titles/03098265.asp)


National Council for Geographic Education. [http://www.ncge.org](http://www.ncge.org)


**Annotated Bibliography:**


This work describes the spatial perspective and examines four key ideas within the discipline and provides a useful reference for teachers of geography at any level to better communicate and teach these perspectives to students. Drawing on research in cognitive psychology, Gersmehl
provides numerous of examples of activities which teachers may employ to help students achieve the course learning objectives.

*Journal of Geography in Higher Education.*  http://www.tandf.co.uk/journalstitles/03098265.asp

Published by Routledge, this journal provides a forum for educators at all levels to publish and share insights on advancing geographic education.


This council provides a wide range of services and resources, including conferences, professional development workshops, and publishes two specific journals (*Journal of Geography and The Geography Teacher*), for geography teachers at all levels and serves to promote and enhance geographic teaching and learning. The journals provide a valuable resource to investigate past, current, and future developments and research in the field of teaching geography.


This work outlines the six essential elements and eighteen national standards developed by the Geography Education Standards Project to provide a foundation or benchmark for geographic education in the U.S. These standards serve as a valuable source when developing course and lesson objectives and outcomes for geography courses at all education levels.


A workbook designed for students to use Google Earth to teach and reinforce geographic concepts and theories which lie at the core of the discipline.


This article traces the evolution of teaching political geography and offers perspectives from noted political geographers how to effectively teach the concepts and ideas which underpin this sub-filed within the discipline.


Russell provides an insightful example of how to engage students in learning the geography of Europe through developing a travel itinerary.


This brief article provides a valuable framework, using the volcanic eruption in Iceland, to teach geographic concepts and ideas through analyzing current events.


A valuable introductory text for graduate students and early career faculty. This edited volume provides a number of articles addressing many of the issues and challenges new teachers will face and offers sound insights on overcoming these initial challenges.


This edited volume provides an overview of geographic education from a variety of perspectives. The first section addresses the place of geography in education during different time periods and leads to the Part II, which focuses on curriculum development. Part II addresses learning in geography through the use of language, maps, and new technologies as well as chapters on teaching geography through examining the local community, European perspectives, and critical perspectives in the discipline. The fourth and final section provides chapters on both students and teacher assessment that are useful for enhancing student and teacher performance. Although the work largely focuses on geography in European curricula, the authors provide a number of insights and perspectives that are valuable for teachers in other regions of the world.