HAS GEOGRAPHY EDUCATION RESEARCH GROWN IN THE PAST DECADE?
A TYPOLOGY REVIEW OF RESEARCH IN THE JOURNAL OF GEOGRAPHY,
2000-2010

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ABSTRACT

As Sarah Bednarz argued more than two decades ago, geography education is an important subfield of the discipline at the intersection of two academic worlds – geography and education (2000). During the 1990s, several important articles were published that revealed the need for research in geography education that was empirical but would also be able to support decision-making. Given changes in the discipline in the current digital age, this study investigates the current status of research in geographic education and assesses whether or not the subfield has meets the needs of the subfield in the 21st century. My work builds on and expands previous work published in the *Journal of Geography*. In this prior publication, Bednarz evaluated and categorized articles that appeared in the journal between 1988-1997 according to four distinctive sub-groups – strategies and methods, learning and thinking, institutional research, and general interest geography. Using the same methodological approach and the four categories developed by Bednarz, this article evaluates more recent trends in geography education to determine whether or not the status of research in geography education has expanded or changed due to developments in educational policies, the growing importance of geographic research in general, and/or rapid changes created by advances in geospatial technology.
# TABLE OF CONTENTS

I. Introduction ................................................................. 1  
   Literature Review.......................................................... 3  
   The Status of Research in Geographic Education: 1988-1997 according to Bednarz ................................................................. 5  
   The Status of Research in Geography Education according to Rutherford .......... 6  
   Factors influencing geography education research today ......................... 7  
II. Research Methods and Results ........................................... 9  
III. Conclusion ................................................................. 12  
IV. References ..................................................................... 15
INTRODUCTION

Much changed in U.S. education during the first decade of the 21st century. The focus on the standardized assessments of federal policies such as No Child Left Behind (NCLB) and, more recently, Race to the Top, have affected literally every school district, teacher, and ultimately every student. During this same time period, new advances in technology in the classroom have changed teaching and the manner in which students learn. In the midst of all of this change, geography education all too often has been forgotten. What can we, as geography educators, do to ensure geography education’s place in the curricula and central role in the research realm of the discipline? Roger Downs, a leading researcher in this field, addressed this question in 1994. According to Downs, it appears that the development of a body of significant research is one key ingredient in assuring the success of geography education as a rightful field strong enough to influence the classroom and push legislation (Downs 1994). A significant research agenda in geography education will, he argues, “allow us to make recommendations with a degree of authority that far exceeds the current grounding in experience, anecdote, and enthusiasm” (Downs 1994, 59). In order to accomplish this, however, we need to clarify the type of geography education research needed. Since this field draws from two disciplines - geography and education - many different types of research apply. For example, geography research may use studies related to math and science especially in the realm of physical geography. This traditional kind of research is typically found in academia and is completed by faculty or graduate students. Research accomplished by classroom educators, may include action-research, which is an unorthodox method in which teachers use their own experiences in the classroom to develop research (Brooks 2010). This type of research is most often integral to graduate programs in education at the Master’s degree level.

Ultimately, the most important research need in the subfield of geographic education are projects that have the power to transform legislation to include more geographic curricula,
encourage decision makers in school districts to mandate that all students study geography, and influence teachers to provide their students with eye-opening experience in carefully tailored lessons. Geographic education scholars such as Bednarz and Downs urge geography educators to continue to conduct research, but to narrow the focus to incorporate more empirical data (Downs 1994). Downs provides a list of recommendations to accomplish this:

1) Address diversity of students by using a range of research methods,
2) Set a baseline to see growth and trends,
3) Set clear goals for geography education in the classroom, and
4) Create a support structure that would be a “central organization” with a concentration only in geography education (1994).

Bednarz and Bednarz (2004) take this one step further by arguing that the most important kind of research in the field is empirical work that that documents the process of acquiring geographic knowledge “By gaining an understanding of how people learn and using these basic fundamental concepts and relationships, we can begin to develop models leading to theory about the fundamental processes of geographic learning and spatial thinking” (Bednarz and Bednarz 2004, 25). In sum, there is a critical need for empirical research in geographic education that has both the power of persuasion and also establishes how students learn best.

The purpose of my study is to determine whether or not the focus of research in geography education has changed since the when these earlier studies were first published. Using categories developed by Bednarz (2000) to classify different types of research found in The Journal of Geography, I evaluated articles in the same journal that were published from 2001 to 2010. I also compared the specific content of the articles produced during each of these two different decades.
LITERATURE REVIEW

Two other related typology studies by Bednarz (2000) and Rutherford (2002), revealed that the quantity of data-driven research in geography education increased in the 1990s. Despite this increase, the rate at which this type of research increased was slow. Bednarz argues that despite the increase, more research is absolutely necessary in the future (2000).

In her 2000 study, Bednarz examined articles from the Journal of Geography from 1988 to 1997 to determine if empirically driven data related to student cognitive understanding of geographic concepts increased. Her study evaluated 347 articles and classified them into the following four categories:

*Geography Teaching Methods and Strategies*

Using the disciplines of geography and education, this is research that addresses issues in the classroom “to improve teaching, learning, and student performance.” An example may be a class activity at the middle school level on mental mapping and teaching students the importance of the spatial perspective. Although the activity is sound and insightful, this type of research usually does not include any kind of “measured effect” on the processes of acquiring knowledge. In addition, little detail is focused on the research methodology and collection of empirical data.

*Geography Learning and Thinking*

Going beyond methodology and strategy, learning and thinking research demonstrate the processes of acquiring geography knowledge through systematic and carefully analyzed data. An example of this may be a study that demonstrates the increased abilities of students to understand
changes to the environment and physical landscape by using geospatial technologies to enhance learning. There is a baseline understanding of student ability and tested and measured outcomes.

**Institutional Geography Education Research**

Focusing on geography as an overall institution, this type of research focuses on “policy development, programme description, and…role of geography within the education system”. An example of this research may be analyzing the role of textbooks within the Geography AP curriculum or looking at introductory geography courses at the 100 level in universities.

**General Interest Geography**

This research is strictly about studies in geography and excludes the domain of education. Topics may include anything in physical or human geography. Examples may include impact of climate change or changing identities in America. These articles include empirically-driven data.

The only category that Bednarz specified that included empirical data focusing on cognitive acquisition in geography education is Geography Learning and Thinking. The other categories do not include enough significant research that measure data. Although some articles in the Teaching Methods and Strategies grouping may provide research that directly improves the classroom, there was not enough data to allow geography educators to make powerful decisions and influence legislators and districts to make sweeping changes based on these kinds of studies (Bednarz 2000, 136). For example, the article by
Milson and Earle (2007) presents an innovative project that incorporates GIS into the ninth grade geography curriculum to encourage an inductive learning approach. This is an important educational strategy to give students ownership of their own learning. Even though this project is important and innovative, however, Bednarz argues that it falls into the Teaching Methods and Strategies category because it does not specifically analyze how students acquire geographic knowledge. There is no evidence to support real learning and discovery since there is no baseline evaluation or concluding measured effect. On the other hand, the 2003 study conducted by Patrick Wiegand provides data that demonstrates true learning. In this study, Wiegand analyzed student groups of different ages. Students were asked to create choropleth maps using a desktop GIS – ArcView. Through this study, Wiegand observes manners in which the students create maps and reveals that a “high percentage [talked] about cartographic strategy” (Wiegand 2003, 234). From these observations about students’ thinking and learning, Wiegand gathers enough evidence to make recommendations to teachers about some of the most effective methods useful in encouraging collaborative learning.

ACCORDING TO BEDNARZ

After categorizing the articles from the Journal of Geography between 1988-1997, Bednarz found an increase in the percentage of articles involving Learning and Thinking by 1994 (Bednarz 2000). Her findings also revealed that there was an increase in articles related to Institutional Studies. One example of this type of article is a study that looks at the creation of an on-line Geography course at Michigan State University (WinklerPrins, Weisenborn, Groop, and Arbogast, 2007). As a result, “the increase in those two categories…suggests a growing interest
in geography education research” (138). Regardless of this upward trend, Bednarz remains pessimistic. Looking at the time period as a whole, she states that Downs’ original worry over the lack of research is indeed accurate. After examining all of the articles published between 1988-1997, in fact, only 10% of the studies during the decade involve Learning and Thinking. The majority, 55% is dedicated to Teaching Methods and Strategies. In sum, Bednarz writes, “the record of addressing significant and fundamental research in the *Journal of Geography* has been poor…”(2000, 138).

THE STATUS OF RESEARCH IN GEOGRAPHY EDUCATION ACCORDING TO RUTHERFORD

Building on Bednarz earlier work, David Rutherford conducted a related pilot study that examined four major geography education journals including the *Journal of Geography, Journal of Geography and Higher Education, International Research in Geographical and Environmental Education*, and *Research in Geographic Education*. Rutherford’s findings indicated that research in the field increased after Downs’ initial critique in 1994. Rutherford chose a random sample of articles from the four journals published between 1996 and 2001 and he grouped these articles into the following three categories:

*Research Study*

This category is similar to Bednarz’s Geography Learning and Thinking. Again, the focus is on empirically driven data to prove acquisition of knowledge.

*Theoretical Synthesis*

This category focuses on the development of geography theory.
Non-Research

This is a category created for everything that does not fit into either research or theory. Rutherford’s evaluation reveals that “over half (53%) of the peer-reviewed articles…report studies that use empirically-based methods to develop theory. This result suggests progress toward fulfilling Roger Downs’ call” (284). Unlike Bednarz however, at the conclusion of his study, Rutherford remained optimistic about the trend of research in geography education.

However, the studies discussed above are uneven and need to be updated in order to better document and analyze the current status of research in the field. The Rutherford study uses four geography journals and randomly selected articles. Rutherford does not explain his methodology for selection nor does he explain or specify how the research qualifies as empirically-based research. It is difficult to determine if the articles that qualify under Rutherford are the type that Downs would deem powerful enough to change minds and policy. Furthermore, the years of analysis does not reach a full decade, as does Bednarz’s study. As a result, further analysis is necessary to see if true research is actually continuing into the 21st century.

FACTORS INFLUENCING GEOGRAPHIC EDUCATION RESEARCH TODAY

There is no doubt that an emphasis on geography education has increased in public K-12 education (Bednarz and Bednarz, 2004). The reason behind this is a change in federal policies and the publication of national and state geography standards. One of the earliest changes was the development and dissemination of Geography for Life: National Geography Standards in 1994. Prior to the publication of this first edition of : Geography for Life there was little focus on the importance of teaching conceptually-based geography at the K-12 level. However, the creation of the national standards changed this by clearly identifying key concepts that should be
addressed in any geography curriculum. As a scaffold, the standards help the individual teacher focus on creating lesson plans that deliver meaningful content and strategies.

The College Board implemented the other change that increased geography education in 2001 at the high school level. Undoubtedly, the addition of human geography to the Advanced Placement (AP) curriculum approved by the College Board created a need for quality geography education as well as improved teacher training (Bednarz and Bednarz, 2004). The implementation of the AP curriculum allowed “geography’s prestige [to increase] significantly in 2001” (Bednarz and Bednarz 2004, 22). Across the nation, many social studies departments offer a Human Geography AP course to freshmen or sophomores that provide students another option for possible college credit. With these ground-breaking policy changes during the past decade, a chain reaction formed: departmental agendas evolved, new textbooks needed to be created, qualified teachers with APHG experience were sought, and students were introduced to geography on a larger scale than before.

According to Bednarz and Bednarz however, these changes “might indicate increased geography education activity, but not necessarily progress” (2004, 23) due to other hindrances to the growth of geography. For example, some federal agendas may actual inhibit the advancement of geography education. Policies such as No Child Left Behind (NCLB) legislated during the Bush presidency and more recently, Race to the Top under President Obama, mandate that states prove the success of a public school through yearly state assessments. However, these assessments focus on mastery of student skills primarily in two fields - reading comprehension and math. As a result, subjects such as math, science and English, have a higher priority in schools than geography. Districts force teachers to change their curriculum to focus on declines that are included in high-stakes testing. The scores on such tests are used to compute a school’s yearly assessment - often the only measure of student growth and a school’s achievement. As
more and more teachers feel the pressure to “teach to the test”, other subjects such as geography, are left by the wayside.

The other major change that occurred in education during the past decade was the dawn of the digital age. The traditional classroom consisting of chalkboards and notebooks is now inundated with LCD projectors, Smart Boards, Elmo vision bundles, Google docs, and individual iPads. Both students and teachers are now connected to the Internet like never before. Since students and classrooms have changed dramatically in more recent years, instructional teaching has had to change as well. Teachers are encouraged to try out the latest device. In fact, many school districts mandate technology in the classroom. Educational research and trends focus on teaching digital skills to increase the quality of education and to prepare the student for the 21st century (Erstad 2012, 26). However, is the saturation of technological techniques just a trend? Students, teachers, and administrators have to evaluate and decide which technology is the best fit for the classroom. With the addition of so much technology, the focus on true geography learning may be overlooked due to a race to keep up with technology. Furthermore, the use of one type of technology may not actually increase student learning, but a teacher may continue to use the tool just because it fulfills a technology mandate. Technology has many important uses, but, we need research that shows that a certain program, tool, or website increases student knowledge especially when it comes to geography education.

RESEARCH METHODS AND RESULTS

My study of the status of research in geography education based on articles published in the Journal of Geography during the past ten years is based on the typology Bednarz developed for her earlier study. I also added one additional category to her classification system due to the advent of technology in recent years that has dramatically increased and changed the classroom.
The additional classification represents the significant focus on technology as a teaching tool in geography. Articles that only referenced technology were not included in this category. For example, articles that show the use of software programs, mapping and lessons using GIS, and other applications, such as Google Earth, are included.

In sum, the five classifications used for my study include:

- Geography Teaching Methods and Strategies
- Geography Learning and Thinking
- Institutional Studies
- General Interest Geography
- Technology in Geography

I counted a total of 282 articles published in the Journal of Geography that specifically address research in geography education between 2001-2010. By far, the most common research category is Teaching Methods and Strategies (47.9%). This is similar to Bednarz’s findings (55%) (Table 1). Despite this similarity, the largest increase between the two studies is within Institutional Studies. This category almost doubled from 16% in 2001 to 27.3% in 2010 (Table 2). This may be a result of the more recent educational policies and reform movements mentioned earlier. Nevertheless, the research category that is the most significant, Geography Learning and Thinking, disappointingly remains almost the same. Under Bednarz, this category accounts for 10% of the articles. From 2001-2010, this category accounts for 11.3% of the articles, which is only an increase of about 1%. Despite an earlier trend to address evidence-based research, not much has been developed since Bednarz’s article in 2001. In fact, there seems to be a decrease in the rate of these articles in the middle to second half of the decade. The first three years (2001-2003) accounts for half of all the Learning and Thinking articles produced in the decade. There seems to be an initial push for this type of research and then a decline in the
years that follow. In fact, there are some years (2004, 2008-2009), in which volumes of the magazine include relatively few or absolutely no Learning and Thinking studies.

Table 1. Differences in types of articles produced in the *Journal of Geography*.

<table>
<thead>
<tr>
<th>Categories</th>
<th><em>Journal of Geography, 1998-1997</em></th>
<th><em>Journal of Geography, 2000-2010</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching methods and strategies (%)</td>
<td>192 (55%)</td>
<td>135 (47.9%)</td>
</tr>
<tr>
<td>Geography learning and thinking (%)</td>
<td>36 (10%)</td>
<td>32 (11.3%)</td>
</tr>
<tr>
<td>Institutional studies (%)</td>
<td>55 (16%)</td>
<td>77 (27.3%)</td>
</tr>
<tr>
<td>General interest geography (%)</td>
<td>64 (18%)</td>
<td>35 (12.4%)</td>
</tr>
<tr>
<td>Technology (%)</td>
<td></td>
<td>57 (20.2%)</td>
</tr>
<tr>
<td><strong>TOTAL ARTICLES</strong></td>
<td><strong>347</strong></td>
<td><strong>282</strong></td>
</tr>
</tbody>
</table>

Table 2. Articles produced in the *Journal of Geography*, 2000-2010.

<table>
<thead>
<tr>
<th>Year</th>
<th><strong>Number of Articles</strong></th>
<th>Teaching methods and strategies (%)</th>
<th>Geography learning and thinking (%)</th>
<th>Institutional studies (%)</th>
<th>General interest geography (%)</th>
<th>Technology (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>27</td>
<td>10 (37)</td>
<td>4 (14.8)</td>
<td>7 (25.9)</td>
<td>6 (22.2)</td>
<td>5 (18.5)</td>
</tr>
<tr>
<td>2002</td>
<td>34</td>
<td>14 (41.1)</td>
<td>2 (5.8)</td>
<td>10 (29.4)</td>
<td>8 (23.5)</td>
<td>1 (2.9)</td>
</tr>
<tr>
<td>2003</td>
<td>38</td>
<td>11 (28.9)</td>
<td>10 (26.3)</td>
<td>9 (23.6)</td>
<td>1 (2.6)</td>
<td>9 (23.6)</td>
</tr>
<tr>
<td>2004</td>
<td>27</td>
<td>19 (70.3)</td>
<td>-</td>
<td>7 (25.9)</td>
<td>-</td>
<td>2 (7.4)</td>
</tr>
<tr>
<td>2005</td>
<td>27</td>
<td>12 (44.4)</td>
<td>2 (7.4)</td>
<td>8 (29.6)</td>
<td>6 (22.2)</td>
<td>5 (18.5)</td>
</tr>
<tr>
<td>2006</td>
<td>26</td>
<td>11 (42.3)</td>
<td>5 (19.2)</td>
<td>8 (30.7)</td>
<td>3 (11.5)</td>
<td>5 (19.2)</td>
</tr>
<tr>
<td>2007</td>
<td>28</td>
<td>19 (67.8)</td>
<td>4 (14.2)</td>
<td>4 (14.2)</td>
<td>3 (10.7)</td>
<td>14 (50)</td>
</tr>
<tr>
<td>2008</td>
<td>25</td>
<td>13 (52)</td>
<td>1 (4)</td>
<td>7 (28)</td>
<td>4 (16)</td>
<td>7 (28)</td>
</tr>
<tr>
<td>2009</td>
<td>24</td>
<td>11 (45.8)</td>
<td>2 (8.3)</td>
<td>11 (45.8)</td>
<td>2 (8.3)</td>
<td>3 (12.5)</td>
</tr>
<tr>
<td>2010</td>
<td>26</td>
<td>15 (57.6)</td>
<td>3 (11.5)</td>
<td>6 (23)</td>
<td>2 (7.6)</td>
<td>6 (23)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>282</strong></td>
<td><strong>135 (47.8)</strong></td>
<td><strong>32 (11.3)</strong></td>
<td><strong>77 (27.3)</strong></td>
<td><strong>35 (12.4)</strong></td>
<td><strong>57 (20.2)</strong></td>
</tr>
</tbody>
</table>
Overall, my research shows that there are very few studies that reflect Learning and Thinking. Even in 2003, in which a high number of research articles were published, Learning and Thinking is underrepresented. Instead of research using data and observation to prove student learning, most research only reflects student surveys that ask about the level of satisfaction in learning. Certainly, self-reflection and metacognition are important activities for students. At the same time, however, surveys do not necessarily show that a student commands the material at a level of synthesis and evaluation.

CONCLUSION

Surprisingly, only 11 percent of the research published in the Journal of Geography from 2000 to 2010 focuses on Thinking and Learning. This is roughly equal to the Thinking and Learning research published in the same journal during the previous decade. As stated by Downs and Bednarz, this type of research helps to promote geography education, ensure geography’s place in the education debate and provide empirical data for decision making. However, the vast majority of research continues to be centered on issues related to Teaching Methods and Strategies. We still need a great deal more data. Of particular note, my findings indicate that there is an urgent need to address the following three issues and questions:

Where is the call to action?

Downs sounded a relevant and timely call to action that reverberated through the geography education world in the mid-1980s. We need to take a step back and revisit this call to action. Where are we in geography education today? Although we make incredible steps to advance and streamline geography education in the classroom through such creations as the National Geography Standards, we need to encourage researchers and future geographers to explore their own questions with empirical data. Furthermore, at an institutional level, there
needs to be a bigger push to encourage more teachers to enter a program in geography education or attain fundamental training in teaching geography education at an undergraduate level. There should already be a demand for this with the creation of the Geography AP course. However, we do not see increases in geography education training. There is something amiss that we need to critically investigate.

*How can more research be accomplished that focuses on issues related to Learning and Thinking?*

Encouraging research to reflect Learning and Thinking begins in academia. Research is a personal journey that begins with one’s interests, but how are programs encouraging research in the classroom? Are we encouraging research that demonstrates Learning and Thinking or are we satisfied with a Strategies and Methods approach? Perhaps we need to analyze research that reflects Learning and Thinking and then model these techniques.

*Where do we need to begin?*

Despite the dearth of prior published research in geographic education, a good place to begin is to analyze the research occurring in other disciplines such as math, science, language arts, and history. How do scholars and educators in these disciplines studied Learning and Thinking in their respective academic fields? Instead of reinventing the wheel, building on the ideas that already exist from fellow educators and researchers in other fields would provide geographers with an excellent starting point for their work on geographic issues.

Within geography, a specific focus that may naturally transition to demonstrating Learning and Thinking is in the area of technology. Interestingly, the year (2003) with
the most number of Learning and Thinking research articles also had a relatively high number of technology articles. Research in technology and geography education is a rather open field. My research also shows that 20 percent of articles in the *Journal of Geography* (2000 – 2010) are related to the use of technology. There are many possibilities to incorporate the Learning and Thinking model with technology. Also, technology may more easily produce data since there are variables that are more easily controlled than in an open classroom. One example is the 2011 study by Demirici in which two different classrooms that used ESRI’s ArcView 9.2 GIS software were compared. One classroom used only a single computer modeled by the teacher and the other classroom allowed all students to use their own individual computers (Demirici 2011). Students were given a pre and post-test, overall assessment, and self-evaluation. This study produced valuable data in regards to student acquisition of knowledge and self-reflection. Demirici finds that the students taught with one computer in which the teacher modeled the program had a higher success rate than those students using individual computers (2011). However, students that used individual computers had more overall satisfaction with the lesson. From this information, districts could push for more teacher training in GIS applications, make the case for interactive whiteboards in the classroom, and encourage grants for personal computers or electronic devices that enhance geography lessons.

Finally, we need to review current research in geography education. We can analyze studies that truly reflect Learning and Thinking and then be inspired to devise ways to prove student learning. I believe this begins in academia, but this can also happen in teacher learning communities that are developing across the nation. It is a collaborative effort beginning with awareness and an understanding of the need.
REFERENCES


