

What Do Middle School Candidates Know about Geography?

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This article describes a pilot study carried out in a university in the southeastern United States that prepares candidates in middle level education. The participants in the study completed their content courses and were in a social studies methodology class where they were asked to identify, on a blank map of the world, countries required to be taught by the state curriculum. Results show that the candidates lacked the ability to identify, or locate, key countries. Conclusions include that some pre-service teachers are not knowledgeable of the state-mandated content.

Introduction

Educators who teach pre-service teachers, especially those majoring in middle-level education, have debated for years the balance between pedagogy and content. Teacher educators, while recognizing the need for content knowledge, also argue for the need to understand and teach at this level. Therefore, they argue for a sufficient amount of education courses (i.e., classroom management, assessment, characteristics of the middle school child). Indeed, *This We Believe*, (National Middle School Association, 2003) which is used by many middle school programs as a philosophy, stresses the knowledge of the adolescent.

In the social studies, and other teaching areas, there has been interest in pre-service teacher development, with the same argument in mind. How much content is necessary in a program, or how much content are students learning, and how do we balance that with the pedagogical knowledge, the specialized ways

teachers need to know how to teach content to the constituency, middle grades students?

In this study, we sought to establish a base line of information upon which we can build a longitudinal study. In this exploratory pilot, we merely asked a group of senior middle grades candidates what they knew about the location of key countries. Key countries were identified such as those in the state standards and ones often in the news or public discussion.

Content knowledge, interest in the discipline, and in-field teaching assignments have been described by others as the “critical mass” (Arzi & White, 2008) that facilitates teacher development and effectiveness. However, until the passage of the No Child Left Behind Act (NCLB) in 2001 (2002), content knowledge or knowledge of the facts, concepts, and structure of a discipline received less attention in the literature than pedagogical knowledge. Since NCLB, teacher effectiveness and content knowledge has received more attention, primarily due to the “Highly Qualified Teacher” stipulation in the act directly related to

content knowledge preparation. Many studies have been conducted to assess the development of highly qualified teachers (Mertens & Flowers, 2004) and have focused attention once again on content knowledge as a determining factor of teacher quality.

As professors of education, we believe that content knowledge is a necessary companion for pedagogical knowledge. Like others in the field of teacher preparation, we are primarily responsible for the development of pedagogical knowledge as faculty in a college of education. Through classroom observation and discussions with students, we have become interested in assessing the content knowledge of our pre-service teachers. Because we teach social studies pedagogy courses in the middle grades and our state standards in social studies include geography, along with other social sciences, we sought to investigate the geographic content knowledge of our pre-service teachers preparing to teach in the middle grades. We hoped that the investigation would provide information needed for the improvement of content knowledge, our own teaching of pedagogy courses, and perhaps foster institutional change in the preparation of teachers.

Review of Literature

Models of Teacher Preparation

What does research tell us about the characteristics of quality teacher preparation programs? First, a categorization of types of teacher preparation may be useful. Laitsch (2003), a consultant for the Association for Supervision and Curriculum Development, argued that policy debates on quality teacher preparation focus on two models: trade and professional. The trade model provides in-depth training in subject matter content prior to teaching (i.e., a four-year degree in the content area), with pedagogy as on-the-job training or minimal pedagogy training as an alternative certification. The second model, the profes-

sional model, emphasizes pre-service instruction both in pedagogy and subject area content and reflects the traditional path in most colleges of education and most state requirements for teacher certification. Our university utilizes the professional model with undergraduate students receiving a bachelor's degree in education and required content and pedagogy courses in their chosen field for middle grades education (language arts/social studies or math/science).

Content Knowledge and Pedagogical Knowledge

Laitsch (2003) conducted a meta-analysis of 57 studies related to teacher preparation and quality teaching. The studies included a variety of teacher preparation programs including four-year bachelors' programs, five-year masters' programs, fifth year certification programs, and alternate route internships. A positive correlation between subject matter preparation (in both content and pedagogical knowledge) and teacher performance indicates both are important predictors of effective teaching. In addition, pedagogical preparation and instruction in classroom management positively affects teaching practice and student learning; however, conclusions related to content related pedagogy courses (i.e. strategies of teaching social studies) are inconclusive because few studies differentiate between pedagogy and content related pedagogy.

Content and Pedagogy: First Year Teacher Concerns

In a study of first year teachers, Bell and Miraglia (2003) found that the novice teachers in this study felt overwhelmed, regardless of the quality of their teacher preparation program. However, those who were well prepared through an intense teacher education program focusing both on pedagogy and a major in their content field felt confident to take on other

issues such as classroom management and discipline. Unfortunately, many of the novices were not assigned to teach in their content area of expertise or received their certificate through alternative certification programs. One program consisted of six weeks of training that provided little modeling of effective teaching strategies. Students in this group had considerably higher levels of concern than the participants of the other programs.

Interestingly, the novice teachers in this study voiced concerns related to pedagogy (i.e., classroom management, lesson design, assessment, differentiation), but content preparation only when they were assigned to teach outside their field and only as it related to implementation of curriculum standards and standardized testing.

Any discussion of quality teacher preparation must address the caveat that even as colleges of education strive to prepare quality teachers with sound content and pedagogical knowledge and skills, the practice of hiring their graduates to teach “out of field” can have devastating effects on teacher effectiveness, invites public criticism of teacher quality and preparation, and leads many to leave the profession (Ingersoll, 2002).

Content Knowledge and Change: Pre-Service Teacher to Experienced Teacher

In their 17 year longitudinal study to assess the change in content knowledge of teachers as they progress from pre-service to veteran teachers, Arzi and White (2008) examined the nature of pre-service content knowledge and ongoing content knowledge. Several of their findings are useful to this study. Once teachers accept teaching jobs, the required curriculum they teach is the single most powerful determinant of retention and addition of content knowledge, while unused content knowledge fades from memory. As teachers progress in their careers, depth of understanding of content rather than breadth or

acquiring new knowledge is most common. Professional growth in content understanding and pedagogical understanding is most pronounced when there is a *critical mass* of teacher knowledge and interest in their discipline and also certification in their discipline. Finally, and not surprisingly, deficiencies or ineffective teaching exist when teachers are asked to teach outside their discipline content knowledge, certification, or personal interest.

Geographic Knowledge – Previous Research

For many years, research has indicated a lack of geographic knowledge among high school graduates in the United States (Roper, 2002). The most recent Roper-National Geographic survey of young adults (Roper, 2006) provides little evidence of significant improvement in geographic knowledge, despite the efforts of many states to improve geographic knowledge through K-12 curriculum reform.

The 2006 Roper Survey, commissioned by the National Geographic Society, surveyed 510 young adults (18-24) living in the continental United States to test their geographic knowledge and skills. Four types of questions were utilized: (a) questions on factual knowledge of important events and issues in the news (topics included questions related to population sizes and growth, trade, and natural disasters); (b) questions related to map reading skills utilizing a map of a hypothetical location; (c) questions related to identification of specific countries regularly in the news and significant natural landmarks utilizing a set of actual international and continental United States maps; and (d) questions related to what respondents think they know about geography and their views of the importance of geographic knowledge and skills.

The executive summary of the research results indicated these young adults have a limited knowledge of the world (physically or culturally) beyond the borders of the United

States, “Neither wars nor natural disasters appear to have compelled majorities of young adults to absorb knowledge about international places in the news” (Roper, 2006, p.6) and an ethnocentric view of the world that demonstrates a lack of understanding of cultural/economic geography (i.e., how the United States fits into the wider world). Findings include:

- 63% could not locate Iraq on a map, despite overwhelming news coverage since the beginning of military action in 2003.
- 75% could not locate Indonesia on a map, despite news coverage in the year prior to survey, due to the Tsunami disaster in December 2005.
- 75% could not identify Islam as the major religion in Indonesia (the largest Muslim country in the world) despite importance of Islam in current events.
- 28% identified the United States as the world’s largest exporter of goods and services, 50% incorrectly identified China in this question (the results of this question may be related to the vast coverage in the news during 2005 and 2006 regarding China as an emerging economic super power in the world).

Geographic knowledge (location) related to the United States and identifying states on a map suggests they can identify large states (physical size) well, but not others. Respondents were asked to identify 7 states: Texas, California, New York, Ohio, Louisiana, Nevada, and Mississippi (a regional cross-section with an addition of Northwest region needed):

- 92% correctly identified Texas and California.

- 67% correctly identified Louisiana after extensive news coverage in 2005-2006 due to Hurricane Katrina.
- 50% correctly identified New York.
- 43% correctly identified Ohio (lowest percentage correct).
- 20% correctly identified all.
- When respondents were wrong, they were looking in the right region, for example confusing Alabama for Mississippi.
- The average correct: 3.4 / 7.

The survey study indicated some positive results, in addition to some of the above:

- 68% correctly identified U.S. time zones
- based on a problem question about time in New York and Los Angeles (note – television schedules may influence this).
- 73% correctly identified the United States as largest consumer of oil in the world.
- 66% demonstrated a basic understanding of map features and used them to navigate (hypothetical questions).
- 76% correctly used geographic features in a hypothetical map to identify a city most likely to be a port.
- Majorities (58% - 79%) correctly identified continents associated with countries.
- 69% correctly identified China on a world map.

There were statistically significant differences between subgroups based on different education levels, genders, those who do versus do not use the internet for news, and those who do versus do not travel internationally.

Content Knowledge and Teaching Geography

What do teachers need to know about geography to teach it effectively? The geography discipline, like all others, focuses attention on several sub-categories as a way to explore the discipline. The following categories are common: Cultural Geography (exploration of how the people on the world's surface differ culturally); Political Geography (exploration of the man-made political boundaries on the world's surface and political interactions); Economic Geography (exploration of the natural resources and human resources involved in the production and distribution of goods and services among man-made political boundaries (nations, states, continents); and Physical Geography (landforms/natural geography).

In the field of teacher education, five themes of geography have been used for many years (Hardwick & Holtgrieve, 1990). Some themes naturally include more than one discipline. The first, and perhaps most recognizable theme is *Location* or the exploration of the absolute and relative location of places on the earth's surface; Example – locate North America; identify distance from Atlanta, GA to Paris, France. As part of the location theme, identification of political boundaries is common. Map lessons are fundamental to this theme. The second theme is *Place*, or the exploration of the unique cultural, political, and economic characteristics of a place on the earth's surfaces. An example might be a lesson designed to explore language patterns in Georgia. The third theme, *Human-Environment Interaction*, focuses attention on how humans adapt to and change their environment. These lessons often focus on natural geography and often integrate environmental science and issues related to economics. For example, students might explore man-made lakes in Georgia for issues related to recreation and water supply. The fourth theme, *Movement* includes explorations of how people, goods,

and ideas move among places on the Earth's surface. Lessons related to this theme often focus on the trade of goods and ideas, for example imports/exports in Georgia or how ideas of representative government in England were brought to the colonies. The fifth theme is *Region*, or an exploration of the similarities of large areas of land on the Earth's surface that lead to categorization as regions. A lesson might require students to explore the southeastern coastal region of the United States. These lessons often focus on identifying the cultural, economic, natural, and environmental similarities of places within a large area.

Methodology

Rationale for the Study

The principal rationale for this study was the belief that middle grades' majors were not gaining enough basic content knowledge in their social studies courses (i.e., geography, history, political science) to facilitate their preparation for the state licensure test in middle grades social studies, nor for teaching in the sixth and seventh grades in the state, where world geography and history are the focus. Few candidates even attempt the test, so valid data is unavailable. A pilot study might provide data that could lead to future collaboration with colleagues to improve the knowledge and skills our teacher candidates need to become effective teachers. We assumed that knowledge and skills related to the theme of location would be a valid initial assessment. If they could not locate a country, we believe they would likely be unable to effectively teach the other themes and the higher level thinking skills required within the state curriculum.

Purpose of the Study

The purpose of this study was to explore the geography content knowledge of undergraduate pre-service middle grades social studies

teachers at a southeastern U.S. university focusing on the state-mandated middle grades standards and the geography theme of location (i.e., identifying continents, nations, states).

Research Questions

1. Based on state curriculum standards, how well can pre-service teachers identify, on a blank map, the countries included in the state standards?
2. Is there a pattern of lack of knowledge when students are asked to identify the countries included in the state standards?

Sample

A purposive sampling technique was utilized to assess pre-service teachers' geographic knowledge after most of their content courses were taken and before they began their internship experience. The sample included 23 students enrolled in a social studies strategies class, their final pedagogy course related to teaching social studies before their internship experience. Students in this course had completed their social studies content courses. All of the students included in the study were undergraduate students participating in a four-year professional model teacher education program.

Instruments

In this pilot study, all of the countries used were listed as places middle grades students (i.e., sixth and seventh grades) should be able to locate on a map. Twenty-five countries mentioned in the sixth and seventh grade state standards were chosen to use in the study. While randomly chosen, certain factors were taken into consideration. Countries were selected because they had recently been frequently mentioned in the media or they

could be considered to be prominent in world events during the previous year. Other countries were included to reflect the syllabi of geography courses the teacher candidates completed as part of their program.

Numbers (1-25) were placed on a blank world map. Students were asked to number to 25 on a blank sheet of paper, given a map with 25 countries identified by number, and asked to identify the 25 countries by writing the names of the countries by the corresponding numbers. No deduction was made for misspelling. If we could identify the name, it was counted as correct. No time limit for completing the task was set.

Participation was voluntary and anonymous. Students were informed of the study and told in advance that they would be given a test related to their knowledge of the locations of countries mentioned in the sixth and seventh grade state standards.

Limitations

As an exploratory pilot study, this study focused on a very limited set of knowledge and skills needed to teach geography. It focused only on location and the knowledge of pre-service teachers to identify places on a world map related to the state standards they would be expected to teach. Certainly, other areas of content knowledge within the geography discipline are important, but not addressed in this pilot study. This pilot study also included only 23 students currently enrolled in an undergraduate social studies methods course. A greater number of students may produce somewhat different results.

While the authors hope that the results of this study may lead to future collaboration with instructors of geography courses, a geography instructor did not participate in conducting this study. Institutions of higher learning vary in the degree of cooperation for the common goal of providing needed content and pedagogical knowledge for teachers in training. The

university involved in this study is typical of many other institutions in that colleges operate separately and the state curriculum standards for teachers do not *drive* content instruction of pre-service teachers. Results of this study, therefore, cannot be applied to institutions with a great degree of collaboration among colleges to address the state mandated curriculum standards.

Results

Although most of the students had completed eight three-hour courses in social studies content before they participated in this study, only seven were able to identify 16-20 of the 25 countries correctly. All were able to identify Australia and Mexico correctly. One was not able to correctly identify Canada. A majority of students were not able to correctly identify nations we selected because of recent media coverage or prominence in world affairs, including those with conflict in their regions or United States military actions within them (see Table 1).

Table 1
Geographically Identifying Middle Eastern Countries

	Number Correct	Number Attempted
Israel	6	23
Iran	11	23
Iraq	9	23

In addition, the participants were asked to identify nations the authors selected due to their role as trade partners or major forces in global economics. Again, because of media coverage and national interest in these areas, we thought they would be readily identifiable by our sample (see Table 2).

Table 2
Geographically Identifying Trading Partners/Competitor Countries

	Number Correct	Number Attempted
Canada	21	23
China	16	23
England *	15	23
India	18	23
Japan	16	23
Mexico	21	23

*England, United Kingdom and Great Britain were accepted as correct.

When the data was analyzed according to region of the world, the participants were generally stronger in identifying Asian and Latin American nations, compared to European or African nations (see Tables 3-6).

Table 3
Geographically Identifying Asian Countries

	Number Correct	Number Attempted
India	18	23
China	16	23
Japan	16	23

Table 4
Geographically Identifying European Countries

	Number Correct	Number Attempted
England	15	23
Germany	12	23
Russia	17	23

Table 5
 Geographically Identifying Latin American Countries

	Number Correct	Number Attempted
Mexico	21	23
Brazil	19	23
Colombia	9	23

Table 6
 Geographically Identifying African Countries

	Number Correct	Number Attempted
Kenya	2	23
South Africa	19	23
Sudan	6	23

Discussion

As stated previously, generalizations about the geographic knowledge of undergraduate teacher candidates is difficult. Our analysis of these results might provide evidence to support other generalizations that might be useful to professionals in other institutions. The results seem to reflect the values of the department of geography instructors who design and teach courses. These values influence what is taught and what is omitted. The results also reinforce the need for collaboration among faculty members in different colleges who are responsible for the development of future teachers. The state curriculum that our students will be expected to teach does not reflect the content of their courses as well as it could. Additionally, those responsible for the geographic education of teacher candidates should not assume that

heavy media coverage reduces the need for geographic education.

Suggestions for Additional Research

The results of this study suggest a need for proactive attempts to collaborate and a continued study with future students and perhaps other state university colleagues. It might be useful to examine differences among geography majors and teacher education candidates in social studies. Involving universities who have programs similar to ours would provide a larger sample and possibly increase the validity of the results.



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