The Current Status of Geography Education Research in Korea

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Abstract: The purpose of this study is to introduce the current status of geography education research in South Korea. This article consists of mainly two parts: 1) source of knowledge and 2) content of knowledge in geography education research. The main academic journals are introduced as the sources of knowledge. The research trends in these journals are discussed as the content of knowledge. We classified geography education research into three types based on the framework suggested by Bednarz (2000): 1) nature of geographic knowledge, learning, and curriculum, 2) teacher education in geography, and 3) strategies in the geography classroom. Relevant research regarding each category is introduced. We hope this study serves as an access point where geography educators in South Korea and other countries facilitate interactions with each other.

Key Words: geography education, source of research, content of research, research trend

요약: 이 연구의 목적은 한국의 지리교육 연구 상황을 소개하는 것이다. 이 논문은 크게 두 부분으로 이루어져 있다. 첫째, 한국의 지리교육 관련 연구가 출판되는 주요 저널을 소개하였다. 둘째, 주요 저널에 출판된 연구를 바탕으로 한국 지리교육 연구의 최신 경향을 살펴보았다. 이 논문에서는 Bednarz(2000)가 제안한 프레임워크를 바탕으로 지리교육 연구의 주요 경향을 다음의 세 가지로 나누어 논의하였다. 1) 지리 지식, 학습, 교육과정의 본질, 2) 지리 교사 교육, 3) 지리 수업에서의 효과적인 학습전략. 본 연구에서는 이러한 세 가지 범주에 속하는 주요 지리교육 논문들을 소개하였다. 이 연구가 세계 여러 나라의 지리교육학자들에게 한국의 지리교육 상황을 알리고 상호 협력을 촉진하는 계기가 될 수 있기를 기대한다.

주요어: 지리교육, 연구의 출처, 연구의 내용, 연구경향

1. Introduction

Geography education research in South Korea includes a variety of topics ranging from philosophical discussions regarding paradigms in geography to empirical studies investigating the effectiveness of a specific educational strategy. The field has developed quantitatively and qualitatively in its research. It is timely, therefore, to introduce the current status of geography education research.

The purpose of this study is to present a big picture of geography education research in South Korea. The study is descriptive in nature. This article consists of

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mainly two parts: 1) source of knowledge and 2) content of knowledge in geography education research. The source of knowledge section investigates the main sources of geography education research, such as academic journals. The content of knowledge part discusses the recent research trends in geography education. Articles published after 2000 were included. We tried to introduce relevant studies as broadly as possible. Nevertheless, some studies may have not been considered because they did not fit the framework we employed or they were not published in the knowledge sources we referred to for this study.

Source of Knowledge in Geography Education

Journal articles constitute a critical part of knowledge source in all disciplines (Bednarz *et al.*, 2003). It is informative, therefore, to investigate what journals are the main outlets of geography education research. Academic journals provide fundamental sources of information in geography education. The following are the major journals in which geography education research in South Korea is published.

Journal of the Korean Association of Geographic and Environmental Education is the lead outlet of geography education research. This journal is specialized in geography education, thus it includes the most numbers and various topics of geography education studies. Hence, the review in the present study is mostly based on the articles in this journal.

Social Studies Education is the flagship publication of the Korean Social Studies Association. This journal includes a wide range of studies from geography education, history education, and civics education. Geography education is discussed in the context of social studies. The journal provides an opportunity

to compare research trends in the three social studies education fields.

Journal of the Korean Geographical Society and Journal of the Korean Association of Regional Geographers provide space where research from all the sub-fields of the discipline of geography is published. Geography education also occupies a significant part in these journals.

To summarize, geography education research in South Korea is mostly published in the journals described above. Topics in these journals have diversified, and the trends of research are discussed in the next section.

Content of Knowledge in Geography Education

This section investigates research trends in geography education. For this purpose, this study employs a framework suggested by Bednarz (2000). The researcher categorized geography education research into three types. First, Bednarz identified three sub-domains of education: 1) learning and teaching process, 2) teacher education, and 3) applied field. Then, she combined these three subdomains with the geographic perspectives because she conceptualized geography education as the synthesis of education and geography. This definition of geography education is applicable to wider contexts because it is the general view that understands the field of geography education. Therefore, we incorporated this framework. Figure 1 presents the framework which was modified from the conceptualization of Bednarz. The first category includes research regarding the nature of geographic knowledge, learning, and curriculum. The second category is related to teacher education. Finally, the third category includes studies concerning good practices in the classroom. To

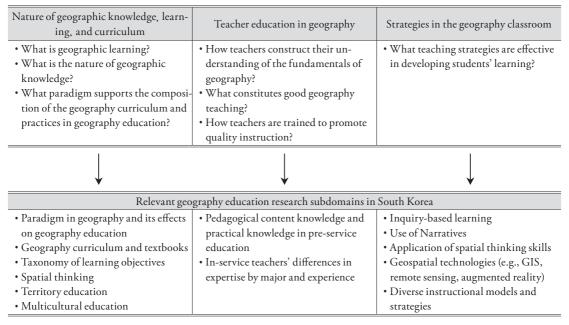


Figure 1. Three subdomains of geography education research

The upper part was modified from Bednarz (2000) and the lower panel lists relevant research in South Korea.

identify sub-themes under these three categories, we conducted thematic analysis. Thematic analysis is "a method for identifying, analyzing, and reporting patterns (themes) within data" (Braun and Clarke, 2006, 79). The discussion in this section is based on the major journals introduced above, however, a few other sources are incorporated if necessary. More specific descriptions concerning sub-themes of each category follow.

1) Nature of Geographic Knowledge, Learning, and Curriculum

Paradigm in Geography and its Effects on Geography Education

The nature of geographic knowledge is defined by the paradigm in geography. A different paradigm leads to a new curriculum and educational activities.

Ryu (2002b) noted the beneficial effects of human-

istic geography on K-12 education. The researcher argued that teachers should use data students are familiar with and focus on spatial behaviors students perform frequently in their everyday lives. For example, express bus schedules may be useful in explaining interactions between cities; students encounter this information frequently and could find more interactions between big cities easily. Lim (2011) argued that geography education can help students establish their identity by incorporating place-based education. In Lim's study, students were asked to find and present their own place and share its meanings with peers. This activity made students reflect on their everyday place and helped them enhance empathy towards others. Children's geography should be understood from the perspective of children because young children construct their own geography which is different from the one interpreted by adults (S.-K. Park, 2004). Later, S.-K. Park (2010) extended his discussion to cyber space.

Cho and Kwon (2005a, 2006) argued that structuralism and postmodernism could provide useful perspectives to geography education. These researchers noted the limitations of humanistic geography and maintained that geography teachers should develop students' critical awareness toward social phenomena. Geography education should play an important role in enhancing students' critical global citizenship (Han, 2011). Han discussed how border regions such as the Mediterranean Sea can be employed for critical citizenship education. The meaning of borders has changed over time, thus students should learn how to critically interpret the changing meaning of geography.

Finally, Cho and Kwon (2005b) sought to synthesize aforementioned various paradigms from the educational perspectives. Geography educators need to teach students to become a "geographical self" who is able to synthesize scientific understanding (positivism), individual response (humanism), and critical awareness (structuralism and postmodernism). Cho and Kwon emphasized that the geography curriculum should employ these perspectives in a balanced manner.

(2) Geography Curriculum and Textbooks

The geography curriculum provides a fundamental guideline for geography textbooks and teaching. The geography curriculum in South Korea has been revised several times, and when there is change, research discussing the scope and sequence of the curriculum was conducted (e.g., Cho, 2004; Choi, 2004; H.-Y. Nam, 2002; Ryu, 2002a; Seo, 2002; Song, 2002, 2004; S.-J. Nam, 2002; S. Park, 2004a, 2010b). These studies analyzed the content of the curriculum and suggested strategies to improve the effectiveness of the geography curriculum.

Of several significant research topics, the widening horizons model and the reverse of the model have been one of the widely-debated issues in the composition of the geography curriculum (S.-H. Shim, 2008). First argued by McMurry in 1899, the widening horizons model has been a major framework that guided the geography curriculum. These days, however, several geographers do not agree with the effectiveness of the model. Ryu and Kim (2009) articulated several problems the model has: 1) lack of evidence from educational or psychological research, 2) young children's higher interest in topics regarding world geography, and 3) underestimation of children's capability. J.-Y. Kim (2007, 2008) argued that the geography curriculum should not stick to the widening horizons model because elementary school students preferred topics relevant to world geography to those of local geography. These discussions have affected the scope and sequence of the geography curriculum (Choi, 2004).

Some researchers analyzed the content and/or change of the geography curriculum in other countries. Jang (2004) compared the geographical skills in the curriculums of South Korea, England, and the US. Lee (2010) examined the content and change of the geography curriculum in the state of California in the US. Analyses of the geography curriculum of China (C.-S. Kang, 2012) and England (Cho, 2012) were also conducted.

In relation to the geography curriculum, scholars have been interested in the content of the geography textbooks. Several authors reported how South Korea in the textbooks of foreign countries is described. For example, Sohn and Park (2002) examined the main topics regarding South Korea in the US geography textbooks. In addition, problems in the depiction of South Korea were also examined. Noh (2008) argued that the content explaining South Korea in the US textbooks is based on "dichotomy, negative attitude and exclusion, misconception and stereotyping, and simplification." Yi (2004) found errors in the US geography textbook. Some examples include the follow-

ing. The Korean language was introduced as a part of the Chinese language system. Incorrect statistics were used. Similar issues, however, are found in the Korean geography textbook. According to Yi (2012), geography textbooks in South Korea organized the content grounded in the perspective of Western and major countries, and furthermore, they excessively emphasized the Korean Wave. More balanced perspectives are required in the composition of geography textbooks. W. Kang (2012) extended the textbook analysis to the subject of Environment. The author analyzed the textbook from the perspective of sustainable development.

(3) Taxonomy of Learning Objectives

Researchers have supported the development and implementation of the geography curriculum by creating taxonomies to identify learning objectives. Shin and Cho (2008) introduced a revised Bloom's taxonomy suggested by Krathwohl (2002). This taxonomy is composed of the knowledge dimension and the cognitive process domain (Figure 2). Instructional objectives are identified by combining one knowledge dimension and one cognitive process.

K.-Y. Lee (2004) argued that the SOLO (Structure of Observed Learning Outcomes) taxonomy is useful in the design of geography lesson and test problems.

The hierarchical structure of the taxonomy (prestructural, uni-structural, multi-structural, relational, and extended abstract stage) provides an alternative to Bloom's taxonomy. Lee exemplified how the SOLO model can be employed in developing teaching strategies and geography tests.

(4) Spatial Thinking

Recently, spatial thinking has received attention in the geography education community. M. Kim (2007) introduced the definition of spatial thinking. As his study reveals, geography educators in South Korea note the National Research Council's (2006) conceptualization: concepts of space, tools of representation, and processes of reasoning. Spatial thinking taxonomies suggested by Golledge (2002) and Gersmehl and Gersmehl (2006) also play a significant role in the discussion regarding the nature of spatial thinking.

Cho (2005) argued that geography education is one of the most suitable subjects to develop spatial intelligence. The spatial perspective helps establish the identity of geography education and provides insight to accomplish the purpose of geography education (Cho, 2007). In particular, Cho (2008) noted the potential of visualization. He emphasized that the visualization strategy is not confined to the simple introduction of information in the form of graphics but it should in-

		cognitive process domain					
		remember	understand	apply	analyze	evaluate	create
dimension	factual						
	knowledge						
	conceptual						
	knowledge						
lge	procedural						
knowledge	knowledge						
	metacognitive						
	knowledge						

Figure 2. Revised Bloom's taxonomy Source: Krathwohl, 2002, 216

clude active reasoning processes such as the production of visual information. Similarly, Lee (2011a) contended that graphicacy in education should emphasize not only the interpretation of graphics but also the creation of spatial representation. Shin (2009) extended the spatial thinking discussion by considering the role of gender. The researcher introduced theories concerning the origin of gender difference in spatial thinking.

(5) Territory Education

Korea's unique situations, such as division of South and North Korea and geopolitical issues between South Korea and surrounding countries, led to the emphasis on territory education. Seo (2009) suggested an integrated territory education model that combines three perspectives of territory education, that is, education about, from, and for territory. Education about territory emphasizes the acquisition of knowledge of territory. Education from territory is related to body experience in territory. For example, one can visit a region and establish his/her feeling about and belongingness to the region. Finally, education for territory, the deepest level among the three perspectives, makes one becomes a part of a territory and a territory also becomes a part of the one; existential insideness is realized through education for territory. Nam (2011) added further insight by discussing territory education in the context of a globalized world. The researcher stressed that territory education should focus on enhancing students' critical literacy and transnational citizenship, not falling into the pitfall of narrow nationalism.

Marine education is a suitable sub-field of territory education (Yoon, 2006). Three sides of South Korea, except the North, are surrounded by the sea, and geopolitical issues in these seas are of interest to the public. These days, the ownership of Dokdo (a small island located in the most eastern part of South Korea) is a hot issue. Dokdo is currently inhabited by South

Korean, but the Japanese government insists that the island belongs to its territory. Because of this situation, the ownership of Dokdo has become a critical topic in territory education. Several empirical studies were conducted. For instance, Yi and Yuk (2012) found elementary students' lack of knowledge about Dokdo. J.-B. Shim (2008) analyzed content concerning Dokdo in Japanese textbooks and discovered biases in its description. Because students tend to respond to the Dokdo problem emotionally, however, territory education should promote students' capability to analyze problems critically and logically (S. Park, 2010a).

(6) Multicultural Education

As foreigners from wide ranging countries migrate to South Korea, multicultural literacy has become an important component of geographic knowledge. Considering that the discipline of geography deals with world regions and people there, geography education can play a critical role in multicultural education. In discussing the relationships between human society and space, Sim (2009) emphasized that multicultural education is one of the crucial sectors researchers should pay attention to. For effective multicultural education, geography teachers should be qualified to introduce relevant topics appropriately in their class (Park, 2011), and multicultural education should begin early from elementary school with sufficient visual information (Hong, 2011).

Research regarding multicultural education includes textbook analysis. For example, Kwon and Cho (2012) compared contents of multicultural education in the UK and Korean textbooks. Park (2008) suggested a lesson plan. She postulated that a variety of teaching strategies ranging from lecture to role play can be used in multicultural education. However, more concrete lesson plans need to be developed to facilitate effective multicultural education.

2) Teacher Education in Geography

Pedagogical Content Knowledge and Practical Knowledge in Pre-service Education

Lee (2000) emphasized pedagogical content knowledge as an indicator of expertise of teachers. Based on Shulman's (1986) conceptualization, Lee argued that pre-service teacher programs in the department of geography education should offer the curriculum that synthesizes geography and education explicitly, not simply expecting that teaching education and geography separately would combine automatically. Following this argument, South Korean geography educators have become aware of the importance of teacher education.

The notion of practical knowledge conceptualized by Elbaz (1981), similar to that of pedagogical content knowledge, also provided a framework to teacher education. Kim (2006a) introduced the concept of practical knowledge, and this led to further discussions regarding this topic. Kang (2007) explored preservice teachers' practical knowledge. She identified components of teachers' practical knowledge and further examined elements pre-service teachers lacked. According to this research, the participants needed more curriculum knowledge. This finding can help the development of effective pre-service programs. In another study, Kang (2010) examined the relationship between pre-service teachers' practical knowledge and their evaluation of teaching behaviors. As teachers' practical knowledge developed, they identified strength and weakness of teaching in a more professional fashion.

(2) In-service Teachers' Differences in Expertise by Major and Experience

In-service teachers' teaching behaviors were also examined. S. Park (2004b) compared geography lessons

delivered by geography teachers and non-geography teachers. Those who majored in geography education organized teaching content systematically and logically, while non-geography-major teachers simply introduced meanings of terms without explanations relevant to the content. Furthermore, non-geography-major instructors did not use spatial representations such as maps effectively as a teaching tool. In-service teachers demonstrated critical differences in teaching according to major.

Geography teachers further develop their expertise through the experiences they gain during their inservice. Kim (2006b) compared differences in practical knowledge between a novice and an experienced teacher. An experienced geography teacher showed clear principles and rules in delivering course content and managing his class, but a novice teacher was less effective in these aspects than the experience teacher. This finding suggests that teaching experience during in-service contribute to the development of practical knowledge.

3) Strategies in the Geography Classroom

(1) Inquiry-based Learning

In relation to constructivism, geographers in South Korea have noted the benefits of inquiry-based learning. Song (2010) demonstrated the effectiveness of geographic inquiry by describing the processes of why houses in Yangdong Village are located on the hill (Table 1). The researcher argued that students in the geography classroom should experience these thinking processes. Similarly, Song and Jeong (2012) found that elementary students developed critical thinking skills and disposition when inquiry-based learning using raw data was employed. Students learned how to support their reasoning with data, and furthermore, they evaluated their thinking critically. These findings suggest that inquiry-based learning is a recommend-

Table 1. Geographic inquiry processes

Step	Content			
Identifying a problem	Why houses in Yangdong Village are located on the hill?			
Formulating a hypothesis	Yangdong Village is located on the hill to reduce flood damage. 1) Geographic conditions, particularly the drainage networks, affect the decision-making for the location. 2) The village is located in the basin where rivers meet together. 3) When it rains, the village is prone to inundation because water from rivers will be concentrated at the confluence of rivers. 4) Therefore, houses are located on a higher elevation to avoid flood.			
Collecting data	Data are collected through a variety of sources such as maps, interviews, and newspaper articles.			
Supporting the hypothesis	Data support the hypothesis. 1) Map analysis indicates that Yangdong Village is located where rivers meet together, and furthermore the width of the river becomes narrow at the confluence point; this may cause severe flood damage. 2) Residents stated that Yangdong Village was flooded when it rained a lot. 3) Newspaper articles reported the inundation of the village when a typhoon hit the village. 4) Therefore, houses in Yandong Village are located on the hill to reduce flood damage.			

Source: Song (2010)

able strategy for geography education. Kang (2003) reported that the application of inquiry-based learning is effective in teaching topics regarding climate. In order to substantiate the power of inquiry-based learning, questioning strategies are important (C.-W. Park, 2004). Open-ended questions that make students think are beneficial to promote higher-order thinking skills.

(2) Use of Narratives

Geography educators have tried to incorporate narratives into geography teaching and textbooks. Cho (2011b) discussed the educational implications of narratives in geography. The researcher argued that the use of narrative develops students' geographic imagination because it emphasizes contexts which students should imagine. In addition, the incorporation of narrative facilitates the development of geographic understanding because it requires students to critically understand the contexts and the structure of the

narrative. Various types of narratives such as literature and poetry have been incorporated in the geography textbooks (Cho, 2011a). Relevant research analyzed what types of narratives were used and which type was effective in teaching geography. Empirical studies have demonstrated the effectiveness of narrative in education. For example, Park (2006) reported that the use of a narrative style text stimulated students' interest in geography content, and moreover it helped students score higher.

(3) Application of Spatial Thinking Skills

As previously discussed, spatial thinking has become an important component of geographic knowledge. Researchers have applied spatial thinking skills into the geography classroom. K.-W. Lee (2004) found that the use of spatial comparison enhanced students' geographic learning. When climates of two regions were compared, students scored higher. D.-W. Kim (2008) argued that geography education should not

make students memorize every detail of regions, but has to provide a framework to understand a region. For example, spatial analogy is a strategy to use locational information defined by longitude and latitude to infer relevant geographic characteristics such as climate. This spatial thinking skill, spatial analogy, can be extended to a wide range of topics in geography (Lee and Harm, 2011). Lee *et al.* (2007) applied the spatial thinking taxonomy suggested by Gersmehl and Gersmehl (2006) to develop a workbook-type fieldtrip guidebook. Spatial thinking skills provided a framework to organize the guidebook. To illustrate, a dramatic change in a mining town could be connected to the concept of spatial change.

Ma (2010, 2011) developed a spatial thinking test in the Korean contexts. Ma identified components of spatial thinking as spatial visualization, spatial orientation, spatial relation, and spatial inference. Then, the author created questions to test these components. Considering the lack of test instruments has been a long-running problem in geographic research, this study represents a good attempt to address this problem in the Korean context. Some researchers (e.g., Harm and Lee, 2009; Park, 2002) extended spatial thinking research by examining how types and components of spatial representation such as graphs affect students' learning.

(4) Geospatial Technologies in Education

Geography educators in South Korea have noted the pedagogical potential of geospatial technology such as GIS, GPS, and remote sensing imagery. Educationists have increased their recognition of the importance of these technologies.

Some researchers introduced the status of the use of geospatial technology. Kim (2002) reported the development of GIS curriculum in the UK, and Jung (2005) discussed GIS curricula from the USA perspective. Jung and Kim (2006) and Kim (2010) explored

the use of GIS in South Korea.

Other researchers have incorporated diverse types of geospatial technologies into the classroom. Lee (2011b) developed teaching modules using web-based GIS such as Google Earth and AEJEE. The modules included topics such as locations of renewable energy plant, analyses of earthquake data, and scavenger hunt with GPS. In-service teachers evaluated these modules positively. Choi et al. (2011) used Google Earth mashup contour maps to teach contents in geomorphology such as erosion basin and terrace. Students enjoyed the activities. To visualize a 2D image to a 3D figure, Kee and Park (2006) developed a strategy to use the Microsoft Excel program. Considering the obstacles of desktop GIS in K-12 settings (e.g., complexity and availability of software), these efforts may provide an alternative to desktop GIS. The use of geospatial technology led to the development of students' spatial thinking skills. Chun (2010) reported that students increased the use of spatial vocabulary when GIS activities were employed.

Lee *et al.* (2003) found that remote sensing imagery could be incorporated in high school geography class. These authors used Landsat images to investigate land cover changes in North Korea. Remote sensing images allowed students to examine regions in North Korea which are not possible to visit.

Oh (2012) discussed the possibility of augmented reality technology as a tool for geography education. An augmented reality system "supplements the real world with virtual (computer-generated) objects that appear to coexist in the same space as the real world" (Azuma *et al.*, 2001, 34). The researcher postulated that augmented reality provides students with real-world contexts, therefore, it enabled authentic instruction stimulating students' interest and developing higher-order thinking skills.

(5) Diverse Instructional Models and Strategies

This section introduces research that does not belong to the categories discussed above. These studies, however, provide insight into good practices in the geography classroom.

Jang (2007) noted the potential of system thinking as a strategy to synthesize human and physical geography. The discipline of geography has emphasized its bridging role that combines perspectives of various fields. Jang believed that system thinking can provide a framework to complete the role.

Lim (2009) applied the cognitive apprenticeship model to teach central place theory. Students were guided through the procedures of modeling, scaffolding, and fading. The model facilitated interactions between teachers and students. Students enjoyed this learning experience and developed their ability to interpret their everyday life from a geographical perspective.

Kim and Nam (2011) analyzed students' appreciation of the location concept based on the theory-based view of concepts. The researchers introduced the theory-based view and demonstrated that activities developed using this view helped students construct their own theory. Students understood their surroundings with their perspective.

Shim (2011) employed map puzzles to motivate students in learning place locations. The researcher argued that because students are discouraged easily in memorizing locations, educators need to use strategies to make students enjoy the activities. Map puzzles made the learning of location an interesting exercise.

To summarize, geography educators in South Korea have considered a variety strategies to facilitate students' geographic learning. Even though the space limit does not allow us to describe each research in detail, we believe the studies discussed above at least show that geographers in South Korea have diversified

their research topics.

4. Conclusion

This article investigated what geography educators in South Korea have studied. The main academic journals were introduced as the sources of knowledge. Also, the research trends in these journals were discussed as the content of knowledge. We classified geography education research into three types: 1) nature of geographic knowledge, learning, and curriculum, 2) teacher education in geography, and 3) strategies in the geography classroom. Relevant research of each category was described.

Scholars in South Korea have increased their attention to geography education as a crucial subfield in the geography academic community. The quantity and quality of geography education research have increased significantly. This study aimed to present a big picture of geography education research in South Korea. Although contextual differences exist, this research may be beneficial to researchers whose interest lies in geography education across the world. Furthermore, we believe that the geography education community can develop together by interacting with each other and sharing information. We hope this study serves as an access point where geography educators in South Korea and other countries facilitate interactions with each other.

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Recieved July 19, 2012 Revised August 12, 2012 Accepted August 14, 2012