

GEOGRAPHICAL EDUCATION: HOW HUMAN-ENVIRONMENT-SOCIETY PROCESSES WORK

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Summary

Geographical education is a scientific discipline grounded in the domains of geography and education. Geographical education selects and structures geographical content knowledge, skills and attitudes to enable learners to understand the human-environment-society processes in the world and to achieve geographic literacy. Geographic literacy influences people's understanding of place, the interconnectedness of places and the spatial actions caused by various actors. Geographical education also develops and evaluates curricula, teaching and learning objectives, methodologies concerning teaching and learning processes and is involved in initial teacher training and professional development of in-service geography teachers.

Today's conception of geographical education concerns the conception of geographical knowledge, the conception of learning and the epistemology of the discipline, and educational values embedded in the general aims of a school system. With respect to the global problems of the 21st century today's learners will in the future have to act as responsible citizens as regards complex key issues that are of great environmental,

social, cultural, economic and political significance. Current trends in geographical education therefore concern integrative geographical concepts that are used to structure educational processes and foster critical thinking, education for sustainable development, citizenship education, the role and teaching of information and communication technology (ICT), the trend to conceive standard- and skill-based curricula, and the increased emphasis on high quality research in geographical education.

In the future, geography will continue to play the role of an essential school subject to address controversially discussed issues concerning human-environment-society interactions. Future endeavours in geographical education require a theory-based development of learning environments that foster deep learning and understanding. The learning environments should reflect the state-of-the-research knowledge in psychology, cognitive theory and geographical education of how children at various grade levels acquire, process, reason with, and learn geography.

1. Introduction

Today, at the dawn of the 21st century, geographical education has to play a crucial role in the general educational systems of all countries around the world. In the forthcoming years and decades, today's learners need to act as responsible citizens with regard to complex key issues that are of great environmental, social, cultural, economic and political significance. Geographical education is one of the educational areas that teach learners the thinking skills required to understand and to act sustainably in the world. Without geography, young people are unprepared for an increasingly global future.

This chapter is a treatise on the subject of geographical education and gives an in-depth perspective on the nature, history, development and state-of-the-art of the field. In relation to its many reference sciences, such as earth science, biology, sociology or economics, the perspectives on geographical education are based on different epistemological approaches. Which approach is emphasized varies from country to country. The authors of this paper are experts in geographical education and are familiar with the epistemological approaches published in German, English and French. This paper allows for differences but it is impossible to give a faithful portrait of all epistemological traditions concerning geographical education employed around the world, especially of those countries whose languages we do not speak or whose scripts we cannot read.

1.1. What is Geographical Education?

Geographical education is a scientific discipline grounded in the domain of geography and education, which looks into the conditions, principles and methods of domain-specific teaching and learning. Geographical education selects and structures geographical content knowledge, skills and attitudes in such a way as to enable learners to master them. Additionally geographical education develops and evaluates curricula, teaching and learning objectives, as well as methodologies concerning teaching and learning processes in geography. Geographical education is also involved in initial and in-service training courses for geography teachers. The process of education requires an

informed interplay between theory and practice, as well as between scientific content and pedagogy. Therefore, geographical education is neither a simplified copy of the science of geography nor a form of subject-related pedagogy, but an independent discipline that is closely related to the scientific fields of geography, pedagogy and psychology.

Accordingly, geographical education is an interdisciplinary field of knowledge. While grounded in the context of geography, the domain of geographical education must take into account research from a wide area ranging from education to the cognitive science and technology development. It is an applied field in which theory and practice interact. Geographical education connects objectives, contents, teaching materials and tools as well as teaching methods with having in mind the function and forms of the geographical knowledge and skills for the learners' recent and future lives. This also includes the theoretical debate on the nature of science (NoS) of the discipline of geography. Epistemological thinking is necessary for a meaningful geographic education in schools, which has to be consistent with the general educational aims of the school system. (Note: In this text the terms "geographic education" and "geographical education" have a different meaning; see glossary). Geographic education on all school levels must reference academic geography explicitly. However, teaching geography is not a question of copying or simplifying the contents of the academic discipline for its use in schools. It concerns more the identification of the academic knowledge that is relevant and necessary to comprehend the geographical concept in question and its structuring according to approaches referred to as upward didactic transposition (Bronckart, 1989) or the model of educational reconstruction (Reinfried, 2007).

Geography as a school subject is often established at all stages of state school education. Due to educational reforms in the last 25 years, associated with rapidly changing curricula, geography is facing stiff competition from other subjects. This occurs whether geography is taught as a single, discrete subject or as a subject integrated in interdisciplinary subject areas or some other forms of "geographical studies" (rather than geography) in the curriculum. In many countries geography is seen as a vehicle for developing education about sustainable development, environmental concerns, citizenship and even political literacy rather than as a valuable subject in its own right (Butt, Hemmer, Hernando, & Houtsonen, 2006, p. 104f.).

Geographical education is concerned with the teaching and learning of geography in formal and informal contexts by people who are geographically trained. It is a process of equipping individuals with a foundation of geographic knowledge, spatial thinking skills, and intercultural perspectives for life and work in a highly interdependent and interconnected world. This is a lifelong process with respect to the individual learner and a continuous endeavour in the context of the field of geography. The goal of geographical education is to supply society with people, who are geographically literate (Geography Education Standards Project, 1994). Geographic literacy is about understanding how human and physical systems are interconnected and how people and places interact. To achieve these goals geographical education asks the following questions: What should be taught to whom? Why should it be taught? When should it be taught? How should it be taught? How can we measure teaching success?

Geographical education is engaged in the structuring of the subject matter and the content- and skill-related application of appropriate pedagogical approaches to induce deep learning and cognitive development. According to Bednarz, Down, & Vender (2003, p. 462) it involves the

- Development of new teaching materials;
- The incorporation of new technologies;
- The creation and implementation of new standards, frameworks, and curricula at local, state and national levels;
- The revision of teacher training programs;
- The expansion of graduate courses and degree-granting programs focused on geographical education;
- The evolution and growth of journals concerning research and practice in geographical education;
- The establishment of university research centres focusing on geographical education;
- The coordination of grass-root activities within geographical education;
- The building of links to national educational organisations; and
- The endeavours to increase public awareness of the importance of geographical literacy.

Geographical education not only aims at promoting pupils' knowledge of the world and developing basic geographical skills, but also feels committed to cultivating learners' personal development and encouraging attitudes conducive to full participation in adult life and society. This also includes the clarification and discussion of issues of ethics, values, justice, and morality (International Geographical Union Commission on Geographical Education, pp. 1-8). These issues are concerned with interest for the world and its different cultures; respect and appreciation for the world's physical beauties and diverse living conditions; the quality of the environment and natural and human habitats; intelligent evaluation of current problems, and dedication to contribute to solving these problems; sympathetic feelings towards people and their different ways of life and respect of human rights (Haubrich, 2006, p. 44).

Today's conception of geographical education is influenced by four main parameters which also serve as reference frames (Figure 1): 1) The values which are expressed by the general aims of a school system which find expression in the aims assigned to be taught in geography by the educational institutions; 2) the conception of geographical knowledge; 3) the conception of learning; 4) and the epistemology of the discipline (Hertig & Varcher, 2004). In accordance with these reference frames, the inclusion of geography in the curricula implies that the following three categories of general educational aims are also contained (Audigier, 1995): the aims of heritage and citizenship, aims concerning intellectual and critical discourse, and practical aims. Therefore geography in primary and secondary schools plays an essential role in providing the learners the ability to develop critical thinking skills in order to comprehend the world. Such thinking skills are concerned with learning how to investigate and to answer questions referring to the relationships of human societies with space and the relationships between different human societies across space (see Raffestin & Turco, 1984).

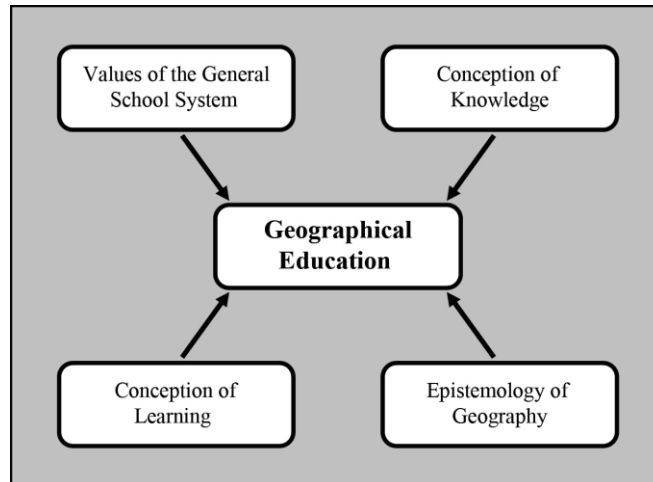


Figure 1. The reference frames determining the conceptions of geographical education (adapted from Hertig & Varcher, 2004).

1.2. What is Geography?

Geography has no obvious place in the traditional classification of the sciences by faculty. “Some parts of geography have their strongest affiliations with mathematics and natural sciences, others with history, philosophy and social sciences. Many sciences study distinctive types of phenomena: geologists study rocks, botanists plants, sociologists social groups, and so on. The work of geographers involves several types of phenomena, each already studied by another science” (Holt-Jensen, 2009, pp. 4-5). This makes it difficult to determine what geography is. Basically, the object of geography is the earth or earth surface. However, a glance on the nature of the science of geography (NoS) reveals that geography recognizes several epistemological approaches. Some geographers understand geography as a science aiming at comprehending the world; for others geography aims at describing and measuring the world; some geographers consider the world itself to be the object of the discipline (physical geography), whereas others think that geography concerns the relationships between humans and space (human geography). These different perspectives become visible in the following chapters.

Geography is the science, which seeks to explain the character of places, the distribution of people, features and events, and the way they occur and develop over the surface of the earth. Geography is concerned with human-environment interactions in the context of specific places and locations. Its special characteristics are its breadth of study, its span of methodology, its synthesis of work from other disciplines including the physical sciences and the humanities, and its interest in the future management of people-environment interrelationships. Geographers ask the following questions: Where is it? What is it like? Why is it there? How did it happen? What impacts does it have? How should it be managed for the mutual benefit of humanity and the natural environment? Pursuing the answers to these questions necessitates investigating locations, places, situations, regions, movements, interactions, people-environment relationships, and spatial distributions (International Geographical Union Commission on Geographical Education, 1992; Natoli, 1994, p. 14f).

The question of what subject matter belongs to scientific geography has been broadly discussed in the second half of the 20th century and even today geographers have not yet come to a general agreement. Nevertheless, a common sense illustration provides us with a general outline of what geography is. In their everyday life all individuals are permanently confronted with space and interact with others across space (Lussault, 2007; Hertig, 2011). The study of these interactions in space is geography (Raffestin & Turco, 1984). After a time of epistemological, methodological and conceptual crises during which geography went through several paradigmatic changes (Da Cunha, 2006), geographers have at the same time extended their research fields, specified their discourse and their thinking skills by anchoring their discipline in the social sciences (Hertig, 2011). Nowadays, the notion of territory, which is based on the concepts of environment, space and place, is at the heart of geography. From the “concept of territory” viewpoint, geography takes into account “the relationships between social sciences and natural sciences in their spatial manifestations. Geography’s concepts concern knowledge, the perceptions and practices of spatial actors, and the ways the actors produce, organise and alter a territory” (Da Cunha, 2006, p. 3).

From the development of geography as a science during the Greek classical period and until the early nineteenth century, geography consisted mainly of cartography, astronomy and the description of natural phenomena and local or regional features of the earth surface. For a long time geography was involved in the representations of known regions that were to be shared, allocated, and controlled, hence the development of geodesy and cartography. Additionally, geography was interested in the gathering of knowledge of others, e.g. people who lived more or less far away, with an inventory perspective in order to identify resources and commercial partners (Brunet, 1990). These two uses of geography were converging in a third common use of the discipline: the control of the territory of a community with reference to the knowledge of its area, its limits, its resources and its production forces (Brunet, 1990). It was only after the Age of Enlightenment and the rise of the sciences that geography was perceived as a natural science.

Today geography is a “human-environment-society science” (Weichhart, 2003) characterised by an integrative approach (Da Cunha, 2006) that makes use of modern spatial and statistical techniques as well as modern technologies. Such technologies are Geographic Information Systems (GIS), the Global Positioning System (GPS) and Remote Sensing (RS). They help us to understand the complexity of the earth’s system. Geographical education is infused with several key concepts of geography, for example the concept of scale, the impact of humans on the environment, the impact of the environment on humans and change over time and space. Much of geographic analysis is based on the spatial perspective which makes heavy use of maps and related products such as satellite imagery, land surveys, slope maps, and cartograms, to understand location, pattern and relationships of objects and phenomena.

Geography as a discipline integrates a wide variety of subject matter. Almost any area of human knowledge can be examined from a spatial perspective. In education and research geography is very often organised into two divisions: physical geography which includes the study of soils, eco-regions, climates, vegetation, natural hazards and the like, and human geography which includes the study of population, religions,

cultures, languages, human-built structures and the like. However, in practice, geography is a holistic discipline examining a multitude of perspectives and phenomena. Therefore, physical and human geography are often intertwined, and geographic analysis is more often interdisciplinary than not (National Council for Geographic Education, 2011). However, it is important to note that the division between physical and human geography, which is inherited from the 19th century, creates a lot of problems from an epistemological point of view. Because of that division, the discipline obviously suffers from a conceptual instability.

Physical geography (also known as physiography) is one of the divisions of geography, which deals with the study of processes and patterns in the natural environment as opposed to the cultural or built environment, the domain of human geography. Within the body of physical geography, the earth is often split into several interacting spheres or environments, the main spheres being the biosphere, lithosphere, hydrosphere, and atmosphere. These spheres are the basis of the disciplines studied in physical geography, which are biogeography, geomorphology, pedology, hydrology, meteorology and climatology, landscape ecology and urban ecology (Glaser & Radtke, 2007, p. 165ff.; Hagget, 2001, p. 37ff.). Research in physical geography is often interdisciplinary and uses the systems approach.

Human geography (also known as anthropogeography) is a division of geography studying spatial patterns of interactions between humans and their physical environment, as well as spatial patterns of interactions between human societies. Some of the dominant areas of study in human geography include: human society and culture (social and cultural geography); human population (population geography); urban systems (urban geography); economics (economic geography); health, disease and healthcare (health geography); travel and tourism (tourism geography); economic development (development geography); politics and geopolitics (political geography); geographies of the past (historical geography) (Hagget, 2001; Knox & Marston, 2001). Issues that concern human-environment-society interactions (see Figure 2) include among others ‘the human dimensions of global change’; ‘water resources’; ‘energy resources’; coastal and marine geography; ‘contemporary agriculture and rural land use’; ‘rural development’; and ‘sustainable cities’.

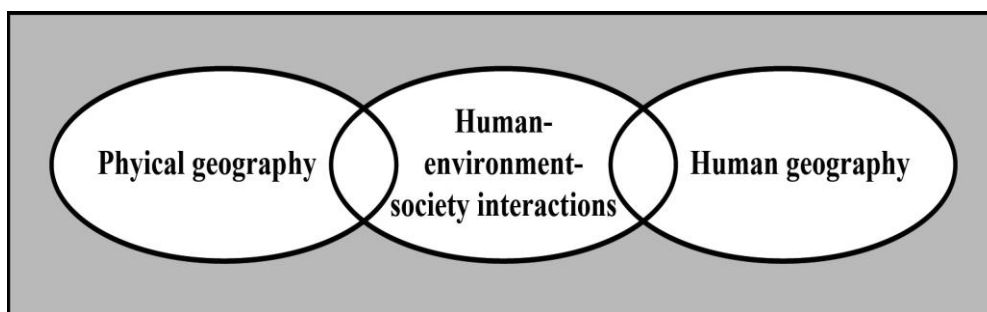


Figure 2. The three-pillar-model of geography (adapted from Weichhart, 2003, p. 25, modified).

Regional geography is the study of regions throughout the world aimed at understanding or defining the unique characteristics of a particular region, which

consists of its culture, economy, topography, climate, politics and environmental factors such as its different species of flora and fauna. Attention is also paid to regionalization, which covers the techniques of delineating space into regions.

Regional geography was pivotal to the geographical sciences during the second half of the 19th century and the first half of the 20th century. It was later criticised for its positivist approach, descriptiveness and the lack of any grounding theory (Gebhard, et al., 2007, p. 68f).

Today, regional geography is still part of the curricula of secondary and higher education as a study of the major regions of the world such as Northern and Latin America, Australia, Europe, Africa and Asia and their countries. Regional geography is either occupied with the comprehensive, idiographic analysis of regions or examines certain parts of the earth's surface typologically by classifying its characteristics according to their association with different categories.

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