www.rigeo.org ISSN: 2146-0353
RIGEO
Review of International Geographical Education Online
Review of International Geographical Education Online ©RIGEO Volume 3, Number 1, Spring 2013

Dealing with Growth: Demographic Dynamics and (Un) Sustainability in Geography Textbooks

Péter BAGOLY-SIMÓ[1]

Humboldt-Universität zu Berlin, Berlin, GERMANY

Abstract

Demographic dynamics is one of the core topics of (school) geography fostering both the development of geographical skills and cross-curricular purposes such as Education for Sustainable Development (ESD). The aim of this paper is to map the representation of demographic dynamics in lower secondary geography textbooks. A sample of twenty textbooks from the federal state of Bavaria (Germany), Romania, and Mexico were subject of text analysis. The results show that demographic dynamics serves primarily the purposes of geographical skill development while its contribution to ESD remains limited. The comparative analysis also showed that few of the textbooks display a consistent network of concepts that is able to support skill acquisition. Students might also get easily lost in scalar transitions. Thirdly, most textbooks display a strong normativity and contribute to constructing otherness.

Keywords: population dynamics, secondary education, textbook, ESD, implementation, content analysis

Introduction

The phenomenon of fluctuations of the number of inhabitants in a given space and within a certain period of time is a topic that has fascinated geographers for a long time. Both geographical thought and more recently the results of geographical research have infiltrated and progressively become a core topic of geography‘s curricular projection in school geography. During the last decades, however, and especially since the 1992 Earth Summit in Rio de Janeiro the topic of demographic dynamics has been complemented with a second and more general dimension of the curriculum, which originated out of the debate about sustainable development. While the notion of sustainability has been enjoying broad public attention far beyond the educational sector, the United Nation‘s Decade for Education for Sustainable Development, which

[1] Corresponding author: Prof. Dr.; Humboldt-Universität zu Berlin, Institute of Geography, Unter den Linden 6, Berlin, 10099, Germany, peter.bagoly-simo[at]geo.hu-berlin.de

was proclaimed for the years 2005-14, has specifically stressed the significance of all forms of education in teaching and learning for a more sustainable future. In terms of formal education, most school subjects were faced with the challenge of complementing subject-specific skill development with an additional cross-curricular dimension which dedicates itself to Education for Sustainable Development (ESD). Within the discipline of school geography, experts in geography education from around the globe agreed on the subject's contribution to ESD in Lucerne in 2007 when they ratified the Lucerne Declaration on Geographical Education for Sustainable Development (Haubrich, Reinfried, Schleicher, 2007). Still, the subsequent implementation of ESD into school geography took many different paths in different countries. Therefore, the aim of this paper is to explore the two aforementioned dimensions of demographic dynamics (subject-specific skill development and cross-curricular ESD implementation) in geography textbooks in selected countries two decades after the Earth Summit.

Subject-Specific and Cross-Curricular Aspects

Demographic dynamics—often referred to as population dynamics—expresses the quantitative changes of a given population by considering both natural population dynamics (birth and deaths) and migrational flows (immigration and emigration) (Siegel, Swanson, 2004). In contrast to the quantitative perspective of demography, population geography discusses aspects of population dynamics in broader terms based on both qualitative and quantitative methods. Population geographers contextualize dynamics within the framework of environmental change and sustainable development, thereby putting a focus on the interconnectedness between migration, development, and environment, while being sensitive to political economy and ecology. At the same time, research in population geography has been able to conserve an intimate connection between space, place, and society (c.f. Conway, 2004; Plane, 2004; Findlay, 2003; Graham, 2000, 1999; Greenhalgh, 1997).

In school geography the topic of population dynamics figures prominently as a key topic in geographical skill acquisition. Over the last decades, geography educators have worked on different aspects of demographic dynamics at various scales (Kroß, 1999). Overall, population geography is most frequently discussed as a means to foster numeral literacy. As a result, the study of demographic dynamics remains limited to quantitative methods of data acquisition, processing, visualization, and interpretation, which in fact reduces the genuine multiperspectivity of population geography to quantitative demographics. While most authors (c.f. Brameier, 2005) have preserved their focus on geographical skill development, some authors—influenced by the ratification of the Lucerne Declaration—have embraced the idea of fostering ESD at the example of population dynamics (Reinfried, Ruf, Müller, 2007).

The strong ties between geography and the concept of sustainable development are expressed by statements like "geography could claim ESD [as its own]" (McKeown, Hopkins, 2007, p. 18). School geography displays in fact not only a strong epistemological affinity; it also covers a range of key topics of ESD (c.f. Bagoly-Simó, 2012a). Furthermore, geographers have a history of vivid discussion of the "[...] discipline's contribution to educating for a more sustainable future" (McKeown,

Hopkins, 2007, p. 21). Research on ESD in geographical education is, however, highly heterogenous in different national settings. While German geography educators have documented the transition from Environmental Education to ESD (Hemmer & Fischer, 1997), work about Romanian geography education emphasizes the reminiscence of Marxist-materialistic philosophies of education even during post-socialist transformation, which is reflected by environmental geography (Bagoly-Simó, 2012b). Research in geography education in Mexico is still emerging, where indigenous knowledge seems to be of special interest for ESD (Ruiz-Mallén, Barraza, Bodenhorn, Reyes-García, 2009). Generally, the specific understanding of sustainable development in geography education rests on the very principles of the global Agenda 21 and the Johannesburg Summit, while at the same time being defined within the framework of the "Human-Earth ecosystem" (Haubrich, Reinfried, Schleicher, 2007, p. 243), which represents the unique and specific fingerprint of geography.

This subject-specific conceptualization is, however, only one of many definitions of sustainable development, of which Dobson (1996) has already counted over 300 as early as four years after the Earth Summit. An overview of these myriad conceptualizations is offered by meta-analytical work examining the theoretical constructs of sustainable development. Hence, the work of Tremmel (2003) constructed an analytical model that connects the three poles of sustainable development with aspects of intra- and intergenerational equity and justice.

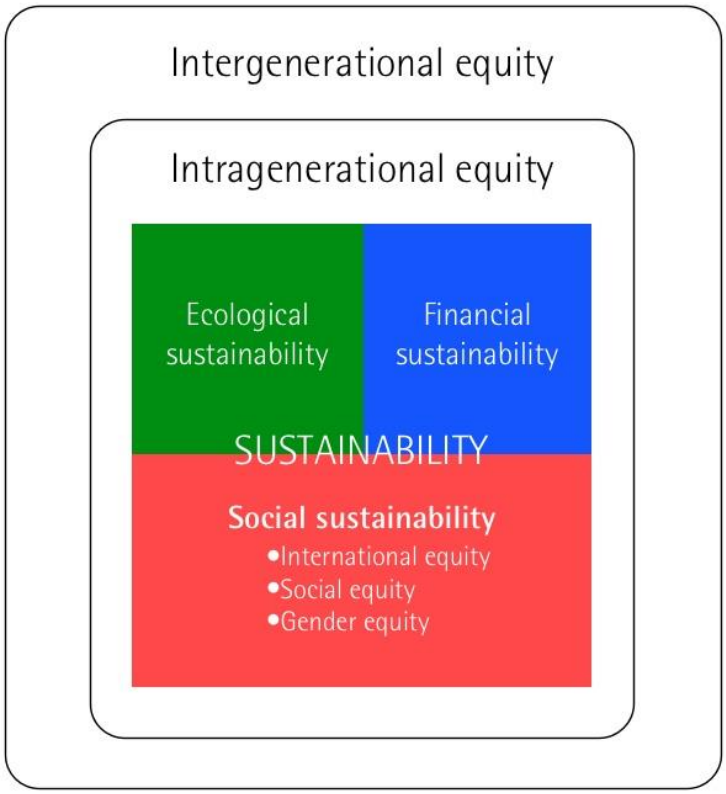

Figure 1.
Analytical Model of SD (Source: Tremmel, 2003, p. 130, modified)

Within this framework, fostering ESD means implementing *Gestaltungskompetenz* (de Haan, 2008), which can be defined as the actual ability to apply sustainable development-related knowledge in one's everyday life by recognizing challenges of unsustainable development. Within these lines *Gestaltungskompetenz* consists of a bundle of twelve individual skills ranging from one's active participation in decision-making through planning and acting autonomously to motivating oneself to become active. Based on this concept, Wals (2010) has coined the term *gestaltswitching*, which means working towards uncommon sense-making (wisdom) in sense of transformative (social) education (Morgan, 2006).

Achieving these objectives of ESD is closely bound to individual ESD-related topics, such as demographic dynamics. The necessity to connect demographic dynamics with ESD has its roots in Chapter 5 of the Agenda 21, which is dedicated to "Demographic Dynamics & Sustainability". According to this chapter, demographic dynamics is composed of three components: demographic trends and factors, use of resources, dissemination of appropriate technology.

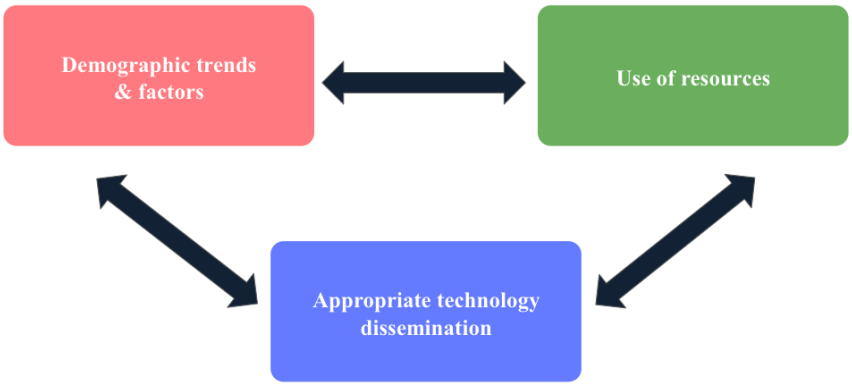

Figure 2.
Demographic Dynamics and Sustainable Development (Source: author's representation based on UN, 1992, p. 26)

For the purpose of this study, the concept of demographic dynamics was used in the sense of the conceptualization of Siegel & Swanson (2004). Thereby the focus was put on natural growth, while migration was ignored. All other additional elements introduced by the Agenda 21 were not considered.

The analysis of demographic dynamics in contemporary textbooks, thus, requires a careful consideration of two aspects. On the one hand, how is demographic dynamics represented and which geographical skills are developed? To answer this question, the analysis took a closer look at the definitions, mechanisms, causes, effects, and spatial disparities of demographic dynamics. On the other hand, demographic dynamics is an ESD-relevant topic, which is expected to contribute to ESD. Therefore, the aim of this paper is to explore the two aforementioned dimensions of demographic dynamics in geography textbooks in selected countries two decades after the Earth Summit.

Method & Sample

To map the representation of demographic dynamics in textbooks, content analysis was carried out (Pingel, 2010; Miller, Brewer, 2003). Textbooks were searched first for segments addressing demographic dynamics. Both continuous and non-continuous text elements were subject of in-vivo coding. The codes included twofold information regarding each segment: on the one hand, the elements of demographic dynamics they contained (e.g. mortality, total population, growth policies) and on the other hand whether they contributed to geographical skill development, to ESD, or to both. Tasks and exercises enjoyed special attention as their operators express the desired outcome of the learning process (e.g. take action or responsibility, comment, exemplify, argue).

The sample consisted of twenty lower secondary (grades 5-9, students aged 10-16) geography textbooks from Germany (Bavaria), Romania, and Mexico. A number of reasons supported this sampling. First, lower secondary education displays in many countries a traditional set of core subjects including geography. Second, textbooks are not only among the most frequently and broadly used educational media (Hemmer, Hemmer, 2010) but they also mirror curricular requirements very precisely. Thus textbooks function as key indicators of top-down implementation. Third, the actual implementation of ESD may follow myriad paths in different national settings. Consequently, it can be assumed that demographic dynamics are reflected differently in the three selected cultural contexts, that is, developed societies (Bavaria), post-socialist conditions (Romania), and the post-colonial milieu (Mexico).

With ten textbooks from Bavaria, eight from Romania and two from Mexico the twenty textbooks that were part of this analysis represent a sample that is not evenly balanced. This results from the fact that the actual duration of geography education in lower secondary education varies significantly in the three countries. Geography is a compulsory subject in grades 5-9 (students aged 11-16) of the Bavarian *Realschule* and is taught two hours per week. However, the *Realschule*, which has a more pronounced focus on vocational training, is only one of the three types of lower secondary schools in Germany. Furthermore, each federal unit *(Bundesland)* enjoys discretionary authority in educational matters, which results in at least sixteen different curricula for lower secondary geography in Germany. In Romanian lower secondary schools *(gimnaziu)* geography is taught two hours a week in grades 5-8 (students aged 12-15). All secondary schools follow one common national curriculum. In Mexico, there are three types of lower secondary schools, which adhere to a shared curriculum and use the same textbooks. Geography is only taught in the first of a total of three grades of lower secondary education *(educación secundaria)* in five weekly hours (students aged 13-16).

In this study, in order to cover as many perspectives on demographic dynamics as possible, two textbooks by two different publishers for each grade of each country were considered. Consequently, the Mexican sample consisted of two textbooks as geography is taught only in the first grade of secondary education, while the total of ten Bavarian books represents two alternatives for each of the five grades.

Findings

In the following the results of the textbook analysis for each country are outlined consecutively. Subsequently, the findings are compared.

Bavarian Perspectives

Textbooks for the Bavarian *Realschule* by the publishing house Westermann discuss demographic dynamics within several chapters through a number of case studies. Following the thematic structure of the curriculum, the fifth-grade (Last, Leditznig, Peterhoff, Petzold, Schaal, Stadler, Vossen, 2009) and sixth-grade textbooks (Kronfeldner, Last, Leditznig, Peterhoff, Petzold, Schaal, Stadler, Vossen, 2009) contain no specific segment dedicated to the topic, and it is not before the seventh-grade that the book introduces one aspect of population dynamics in a lesson on changing lifestyles that explains the effects of oil-induced income on the life of the Beduins in the UAE. Students are asked to track changes in lifestyle by interpreting three graphs displaying life expectancy, infant mortality, urban population that compare the UAE with Saudi Arabia and Germany (Kronfeldner, Last, Leditznig, Peterhoff, Petzold, Schaal, Stadler, Weißbach, 2010).

The eighth-grade textbook then discusses population dynamics in several chapters by means of four examples. The first example focuses on demographic dynamics in Latin America and aims at fostering geographical skill development with the help of a number of non-continuous text elements (tables with statistical data, pie charts, and population pyramids) that depict the development of the total population in selected countries between 1850-2050. Using these sources, students are required to first describe the population dynamics of Brazil, to then draw a line graph for three selected countries, and to finally consider reasons why Cuba‘s population is expected to decrease. At this stage, students are not yet familiar with the terms total population, growth rate, natality or mortality. The main focus is on developing numeral literacy by using the example of population growth. Similarly, there is no declared aim of this lesson to foster ESD.

The second example explores an answer to the question “Growth Without Limits?” (Kronfeldner, Leditznig, Peterhoff, Petzold, Schaal, Weißbach, 2011, p. 80) by examining the main features of India‘s population increase over the last century (1891-2010). Along with the continuous text, a number of non-continuous text elements (e.g. tables, graphs) illustrate the development of India‘s total population by depicting the corresponding natality and mortality rates. Additional information compares the country with its regional neighbors (e.g. China and Indonesia), other developing countries (Brazil), and with developed countries (e.g. USA, Germany). The authors also discuss issues of population control at the example of family planning introduced by the Indian Government mainly during the post-colonial era. Still, a number of circumstances—among others the lack of financial resources to purchase contraceptives, illiteracy preventing couples from correctly using contraceptives, high infant mortality, the explicit goal to establish a big family with eight children—challenge the goal of reducing population growth. Additional reasons are the difficulties to provide girls with dowry and the wish for at least one son to achieve a military career. Despite numerous obstacles, some Indian states have achieved considerable progress in reducing

population growth. A total of four tasks ask students to describe India‘s demographic growth, to compare it with other countries, to explain the influence of natality and mortality rate on population dynamics, and to list some of the reasons which have prevented an effective policy of population control so far. Overall, the students learn about population growth and measures to reduce it, however, the textbook does not directly connect this knowledge with aspects of sustainable development.

The third example of the eighth-grade textbook discusses the demographic development and the corresponding policies in China. The authors thereby identify the very roots of population growth in the Confucian philosophy that has been embraced also by the Communist Party. As a consequence, a gradually increasing population was on the agenda of the Chinese government until the 1960s, when risks of unlimited population growth were recognized, which resulted in the introduction of the one-child-policy. Some of the measures meant to reduce growth were a higher legal age for marriage, educational advertising, free contraceptives, free abortions, and positive discrimination of all families with one child. This information is complemented by non-continuous text elements depicting China‘s demographic growth since 1980 as well as a density map. Continuous text further explains that 80 per cent of all Chinese live on merely 15 per cent of the total area that China covers. Furthermore, a text box informs the students about the consequences of the Chinese one-child-policy (among others demographic aging and unbalanced sex ratio). Most of the five tasks assigned to this lesson focus on population growth and foster both geographical skills (e.g. drawing diagrams) and knowledge acquisition (i.e. measures to reduce growth, consequences of the one-child-policy). The example contains several dimensions of ESD, however, the authors do not connect it to demographic dynamics.

The fourth and last lesson puts a pronounced focus on the challenges of demographic growth and describes how the Green Revolution saved an overpopulating Indonesia from an impending hunger crisis. A table complements the information of the non-continuous text by juxtaposing rice production with total inhabitants in 1960 and 2009 for selected East- and South-East-Asian countries (Kronfeldner, Leditznig, Peterhoff, Petzold, Schaal, Weißbach, 2011, p. 104). However, none of the tasks further discusses the relationship between demographic growth and the need to secure nutrition. Consequently, students are not explicitly directed to think about growth and nutrition in terms of ESD.

Ninth-grade geography dedicates a separate chapter to issues of population when it discusses demographic growth in three lessons, two of which explicitly address population growth on the national (Germany) and global scale. Three pyramids that display Germany‘s population in 1910, 1950, and 2050 illustrate its demographic decline, complemented by a number of reasons, such as low natality, changing lifestyle patterns, and the very fact that—unlike in developing countries—children are no longer considered a provision for one‘s old age. The authors also list a number of consequences of the decreasing population, such as shortage of qualified workers and insecurities concerning future pension payments. Furthermore, the reader learns that “[m]any developed countries will be experiencing decreasing births, while developing

countries will display high rates of natality" (Kronfeldner, Leditznig, Petzold, Schaal, Weißbach, 2012, p. 59). Two of the four tasks included in the lesson emphasize changes of growth patterns. One task asks students to explain how a decreasing population can endanger social security. Another task requires students to list four problems that emerge from population growth in developing countries. The second lesson that addresses explicitly the topic of demographic growth has its focus on the global scale. The authors outline how progress in medicine, better hygiene, and modified crops has led to demographic growth and demographic explosion. Nevertheless regional differences need to be taken account of, among them shorter life expectancy, higher infant and mother mortality rates caused by armed conflicts as well as epidemics, which remain typical for developing countries. Two graphs depicting the development of the global population according to the different continents highlight these claims. An additional text describes the story of Konon Outtara, an African man with four wives and over 30 children. The text lists some of the specific processes which atre triggered by population growth in developing countries (e.g. land flight, international migration, urbanization). Only one of the tasks, however, directs its focus on growth. The ecological footprint then is the topic of the third lesson that links the footprint (ha/capita) with the population of different regions and countries. As a result, the connection between demographic dynamics and ESD is still implicit but becoming more evident.

An alternative set of textbooks by the publishing house Seydlitz displays a slightly different presentation of demographic dynamics. While the fifth-grade (Bacigalupo, Heindl, Krug, Schatz, Schreiegg, Thalmeier, 2008a) and sixth-grade books (Bacigalupo, Heindl, Krug, Schatz, Schreiegg, Thalmeier, 2008b) contain no information on population growth, the authors of the seventh-grade textbook mention that during the era of colonialism one quarter of Africa‘s population was enslaved (Bacigalupo, Eigner, Heindl, Krug, Pammer, Schatz, Schreiegg, Thalmeier, 2010, p. 56).

The eighth-grade textbook contains two main parts that discuss examples and aspects of population dynamics. The first bloc is dedicated to India‘s population dynamics. The authors argue that better health care has contributed to decreasing mortality, which further supported by the country‘s high natality rate has triggered the country‘s demographic explosion. A number of non-continuous text elements help to visualize this trend. Tasks featured in the lesson ask students to name causes of India‘s population growth during the last decades and to compare its situation to Europe (Bacigalupo, Eigner, Heindl, Krug, Pammer, Schatz, Schreiegg, Thalmeier, 2011, p. 70). Students also learn about measures taken to control population growth, such as family planning information centers, contraception, media promotion of the two-children-family model, etc. The moderate success of these policies is linked to the 'traditional behavior' of many Indians, which is materialized for example in considering sons to be retirement provision, but also in gender differences emerging from a higher illiteracy rate among women. An additional picture displays an advertisement for the two-family-model, while a cartoon depicts an interviewer addressing the following question to an Indian family with eight children: "If you are so poor, why do you have so many children?" (Bacigalupo, Eigner, Heindl, Krug, Pammer, Schatz, Schreiegg, Thalmeier, 2011, p.

71). One of the tasks asks students to fill in the speech bubble with the family‘s possible answers. Another task requires the students to list solutions provided by the government and by individual women against the demographic explosion. The authors discuss, thus, a number of different dimensions of ESD, such as economic, social, and cultural elements as well as aspects of generational justice and equity. However, there is no clear link between demographic dynamics and ESD.

The second thematic bloc is dedicated to China‘s population and stresses two main causes of the country‘s demographic growth: on the one hand the common belief that a large number of children is a sign of luck, and on the other hand the fact that sons are considered to be a type of retirement provision. Similar to India, an improving health care system contributed to decreasing infant mortality and increasing life expectancy. Additionally, deaths have been successfully reduced and the country counts with an improved overall nutrition securing. However, securing nutrition and employment remain to be major challenges of an overpopulated China. Another growth-related aspect is China‘s demographic policy. The authors discuss the one-child-policy and some of its consequences, such as changes in the sex ratio and female infant mortality. Furthermore, the textbook explains the necessity of exceptions to the one-child-rule and even lists some of them. A number of tasks emphasize population dynamics, policy, and challenges of growth. Again, the discussion of demographic dynamics highlights several dimensions of ESD, but does not explicitly link them.

A small number of segments further complement the two major blocs. In a lesson discussing agriculture, the reader is reminded that 22 per cent of the global population lives in China and that only a fractional amount of the country‘s surface is arable land. Some further growth-related indicators (e.g. life expectancy, family size, infant mortality) appear listed in a table that juxtaposes developed and developing countries. This context constitutes a good starting point from which the authors could contribute to ESD.

The ninth-grade textbook discusses population dynamics on two scales: national and global. On the one hand, Germany‘s demographic dynamics has led to population aging, which is expected to cause among others a shortage of qualified workforce, radical changes of infrastructure (declining number of kindergartens and schools while the number of senior residences is skyrocketing), and which will ultimately endanger the intergenerational contract. The authors also discuss possible solutions and by doing so they draw a parallel to the French demographic policy. On the other hand, the global population is experiencing continuous growth, mainly because of the high natality rates in the developing countries. The authors argue that an “[...] increasing global population will definitely cause problems” (Bacigalupo, Eigner, Heindl, Krug, Pammer, Schatz, Schreiegg, Thalmeier, 2012, p. 87). A number of non-continuous text elements display aspects of global demographic dynamics. Tasks require students to comment on how population growth is assumed to develop and what problems might occur. Other tasks require a comparative reading of growth disparities among the continents. While this first lesson of the ninth-grade textbook puts an implicit focus on the consequences of

growth, its central topics (intergenerational contract, effects of growth), however, are not explicitly connected to ESD.

Another lesson looks at the causes of growth and states that a "[l]ow degree of economic development seems to condition strong demographic growth" and lists three coordinates of growth: education, traditions, and poverty (Bacigalupo, Eigner, Heindl, Krug, Pammer, Schatz, Schreiegg, Thalmeier, 2012, p. 88). Similar to its counterpart by Westermann, this ninth-grade textbook also discusses India's population dynamics and mentions the scarcity of resources. Tasks require students to name the most important causes and effects of demographic growth. Thus, this lesson helps students to learn about the effects of growth but does not require them to relate it to ESD.

Demographic policy is the topic of yet another lesson which introduces the model of demographic transition as it informs about growth in the different countries around the globe by means of a cartogram. The authors discuss demographic growth within the context of their perception of Earth's life sustaining capacity. Three case studies (Africa, India, and Nepal) exemplify successful and less successful demographic policies. Tasks support students in identifying the countries with the strongest demographic growth, but also in listing key prerequisites of a successful demographic policy. These successes are not interpreted within the framework of Earth's life sustaining capacity, hence, the topic of demographic dynamics is not explicitly linked to ESD.

Romanian Perspectives

The fifth-grade textbook by Teora dedicates an entire chapter to Population Geography. One of the four lessons in the chapter focuses on population dynamics and not on demographic dynamics. The authors start by defining the concept as "[t]he increase or decrease of the number of inhabitants [...] [that] is influenced by two important factors: the natality rate and the mortality rate" (Cheval, Furtună, 2000, p. 134). Subsequently, they discuss core indicators of population dynamics, namely birth rate, mortality rate, infant mortality, population increase and decrease. Both continuous and non-continuous text elements distinguish between "developed [and] poorly developed" countries (Cheval, Furtună, 2000, p. 134). Furthermore, the textbook authors argue that "[n]atality and mortality are closely tied to the degree of economic development and the mentality of the population" (Cheval, Furtună, 2000, p. 135). Three additional cartograms that reflect population dynamics on the global scale display the natality rate, mortality rate, and population increase for every country in part. Further aspects of demographic policy appear in an optional text box dedicated to China's population growth. The authors argue that "[f]earing the country's excessive impoverishment due to too many inhabitants, Chinese authorities decided to severely control population growth. As a consequence, only one child lives in the majority of the Chinese families" (Cheval, Furtună, 2000, p. 139).

An alternative fifth-grade textbook published by Editura Didactică și Pedagogică introduces demographic dynamics in a similar structure. The first of four lessons discusses population growth and informs about anthropogeny, natality, mortality, and demographic growth. The authors describe the major steps of global population increase

and discuss the demographic explosion. Both continuous and non-continuous texts operate on different scales—ranging from the global through continental to the local—and discuss the case of "poorly developed [and] underdeveloped countries' (Ionașcu, Dumitru, 2011, p. 112) of Africa and Asia. The reader also learns, that "[t]he explosive increase of global population is caused by the strong demographic increase of developing countries" (Ionașcu, Dumitru, 2011, p. 112).

The focus of the sixth and seventh-grade textbooks is on the regional geography of the continents. All books contain a number of segments dealing with demographic dynamics, which are spread across all lessons. Still, there is a general description of each continent's population followed by a varying number of country profiles of which each contains demographic information at the national scale.

The chapter that introduces general aspects of population of the sixth-grade textbook by Editura Didactică și Pedagogică (Anastasiu, Marin, Dumitru, 2000) covers the main aspects of historic demographic development, key indicators (e.g. natality, mortality, demographic growth), population distribution and density. The authors state, that

> *"[p]opulation growth depends on the development of demographic indicators. Natality in European countries counts for, in general term, values between 16 ‰ (in Moldova) and 9.6 ‰ (in Italy), while mortality displays values between 8.8 ‰ (in the Netherlands) and 14.5 ‰ (in Hungary). As a result, natural increase is located between -2.1 ‰ (in Hungary) and 5 ‰ (in Moldova). [...] Socio-economic factors influence the evolution of natural increase situating it between 0 ‰ and 1‰" (Anastasiu, Marin, Dumitru, 2000, p. 30)*

Following this general introduction, a total of 38 segments discuss population-related aspects of European regions and countries. While each country profile contains information on population, its dynamics is not always discussed. Hence, readers learn about selected aspects of individual countries: Italy is the fourth most populated European country; demographic aging challenges some countries (Germany, Italy, Russia, France); some countries have been experiencing demographic growth (Slovakia, France, Iceland, United Kingdom) while others are shrinking (Italy, Bulgaria). While for 26 countries there is no further information regarding their population dynamics, detailed numbers are available for selected countries:

> *"[Slovakia's] natural increase of 4.2 ‰ is much higher as compared to the ones of the neighboring countries" (Anastasiu, Marin, Dumitru, 2000, p. 93)*

> *"A new family model with one or two children influenced the decreasing natality [in France]. The consequence of this phenomenon is demographic aging" (Anastasiu, Marin, Dumitru, 2000, p. 144)*

> *"[Iceland's] natural increase is very high, 25 % of the population is younger than 15" (Anastasiu, Marin, Dumitru, 2000, p. 164)*

One alternative sixth-grade textbook by Corint also starts by introducing Europe's population development. The authors argue that mortality remains moderate, however, low natality leads to little or even negative demographic growth. Consequences of this

process are "the ongoing decrease of the share of Europe's population in the global population; demographic aging; future shortage on manpower" (Mândruț, Neguț, 2008, p. 28). Regarding natality, all countries except for Albania show values below the global average. Mortality displays average values due to demographic aging. The authors also offer a regional overview of European demographic dynamics:

> *"Northern Europe shows positive values of demographic growth, Eastern Europe displays negative ones, while the remaining regions show a mixed picture composed of both positive (in countries like France, the United Kingdom, Switzerland) and negative values (Germany, Italy, Hungary etc.)" (Mândruț, Neguț, 2008, p. 28)*

Following this introductory lesson, a total of 45 segments describe the population of European regions and countries. Apart from a fewexceptions (e.g. Slovenia, France), most countries are supplemented with information on their demographic growth or decline:

> *"Switzerland is one of the few developed countries with positive demographic growth" (*Mândruț, Neguț, 2008, p. 70*)*
>
> *"Demographic growth has been very small (even negative in the last years) which leads to a relatively constant value of the total population" (*Mândruț, Neguț, 2008, p. 83*)*
>
> *"The population of Moldova has doubled during the last five decades due to the high demographic growth (one of the highest in Europe)" (*Mândruț, Neguț, 2008, p. 89*)*
>
> *"All three countries [Baltic Republics] have been experiencing population decrease due to negative demographic growth. This is reflected, among others, in the share of young persons in the total population" (*Mândruț, Neguț, 2008, p. 180*)*

Similar to its sixth-grade counterparts, the seventh-grade textbooks discuss aspects of demographic dynamics at different scales. On the one hand, for each continent (Asia, Africa, America, and Oceania) there is an overview regarding its population, which contains information on total population, demographic indicators, population structure, and migration. On the other hand, sub-continental units and country profiles offer more detailed information on population.

Regarding demographic dynamics, the authors of the seventh-grade textbook by Corint mention that "Asia has always been the most populated continent" (Mândruț, 2008, p. 18), '[i]n relation to [Africa's] surface, the number of inhabitants (700 million) can be considered quite small" (Mândruț, 2008, p. 76), America's "population is relatively small as contrasted with its surface" (Mândruț, 2008, p. 112), and Australia is "the least populated continents with the exception of Antarctica" (Mândruț, 2008, p. 152). Additional tables establish the relation between surface area and population numbers of individual countries without explicitly denominating it as population density. Profiles of individual countries offer detailed information on population, such

as its proportion in global comparison (e.g. China's population represents one-fifth of Earth's total population) or its increase:

> *"Natural increase [in Israel] is high (over 2 %) in order to secure a population growth of comparable rate with the neighboring countries" (Mândruț, 2008, p. 31)*

> *"Natural increase [in North Korea] has dropped severely during the last years" (Mândruț, 2008, p. 56)*

> *"Argentina's demographic growth has been much weaker as compared to other South American countries" (Mândruț, 2008, p. 139)*

Additionally, at the end of each chapter dedicated to a specific continent, the authors include a list of the continent's "fundamental geographical challenges" (Mândruț, 2008, p. 66, 84, 144). In case of Asia, three of the six challenges are connected to population: the relationship between demographic growth and securing alimentation; urbanization and growth of the cities; tendencies of overpopulation in some regions. The former is also one of Africa's four challenges. Both Americas face demographic growth in the South and decline in the North, and thus are subject to unbalanced population dynamics and distribution. The authors conclude the textbook by listing nine fundamental global challenges. Two of these—establishing the right connection between demographic growth and securing food and urban growth—are population-related.

Humanitas Educational depicts the topic of demographic dynamics in the seventh-grade textbook in a very similar way. In contrast to the previous book, however, the authors include a broader timeline of population dynamics by considering also the pre-colonial and colonial stages of development. Additionally, a number of new country profiles complement the ones already discussed in the other book.

> *"During the second half of the 20th century, Indonesia experienced a spectacular population growth from 75 million inhabitants in 1950 to over 200 million by the end of the century. Even if natural increase has decreased in the meantime, growth is still considerable" (Neguț, Apostol, 2008, p. 74)*

> *"Tanzania's population experiences one of the highest natural increase of the globe as it doubled in only 25 years (1970-1995)" (Neguț, Apostol, 2008, p. 102).*

When summarizing a chapter dedicated to a specific continent, the authors list its "fundamental geographical challenges" (Neguț, Apostol, 2008, p. 66, 84, 144) which are quite similar to the ones presented in the sixth-grade textbook.

Similar to their fifth-grade counterparts, the textbooks for the eighth grade dedicate an entire chapter to population. The textbook by Corint thereby sets a clear focus on population dynamics in Romania in the second of a total of four lessons. A number of non-continuous text elements summarize 72 years of demographic history starting with 1930. The reader not only learns about demographic factors and population density, but

also about demographic policies and potential. The former explains population dynamics during Communism and is defined as "[j]uridical, administrative, economic, sanitary, cultural, and educational measure introduced by a country to influence, in a desired manner, population development", while the latter englobes "[c]hances a country enjoys as a result of its total number of population" (Mândruț, 2007, p. 56).

The alternative eighth-grade textbook by Humanitas Educational displays a similar structure. After discussing the ethnogenesis of the Romanian nation, the authors present aspects of population dynamics in the period between 1859-1999. Demographic shrinking aligns Romania with the European trend, however, in Romania "[...] the number of persons leaving the country for good is higher as compared to the number of those who settle down here" (Neguț, Apostol, Ielenicz, 2006, p. 71). Consequently, the textbook introduces aspects of population distribution and density.

Tasks are generally limited to the mere reproduction of information and show no direct contribution to geographical or cross-curricular skills.

Mexican Perspectives

The topic of demographic dynamics appears in the textbook by Fernández Editores in a lesson that connects the global scale with the national scale. Before discussing the topic, the authors ask the students to name what they consider to be the most and the least populated countries. Subsequently, students offer reasons as to why some parts of the world have an excess of population while others are only sparsely populated. The authors also point out the central role of indicators and remind the readers that the census is the main database in measuring a country's present population. In the lesson dedicated to demographic dynamics, the textbook lists both natural (natality and mortality rate) and migrational components of growth. The authors argue, that

> *"On a daily basis you are confronted with messages that are directed to couples and address the issues of how many children they can have and also cover their needs; this announcement has been made public because of the socio-economic conditions of Mexico make it difficult for bigger families" (Morales, 2007, p. 148)*

Life expectancy and population pyramids are taught in close proximity to population growth. The reader is encouraged to compare the pyramids of three developing countries (Kenya, the Philippines, and Mexico) with the ones of two developed countries (France and Switzerland). After explaining the representation of natality in the pyramids, the authors discuss demographic policies in both contexts: developing countries set a focus on natality decrease, while developed countries aim at increasing the number of births. The authors offer some explanatory comments, too:

> *"Policies of natality control are necessary because in the countries with an insufficient degree of development the demand for services grows faster than the possibility to offer these services, in other words, a quality of life does not exist" (Morales, 2007, p.150)*

Various types of non-continuous text elements complement the continuous text. One of them compares the changes in the total population of each continent between the years 1800-2050. Within this framework the authors discuss the main changes experienced by Mexico‘s population during the 20th century: after two phases of explosive growth in the 1930s and 1960s, the natality rate decreased from 46 ‰ in 1960 to 21 ‰ in 2000, and is predicted to reach about 11 ‰ by 2050. This means that "[...] younger generations born between 1970 and 1990 will contribute to growth with few children" (Morales, 2007, p. 154).

A number of tasks support (geographical) skill development. The first group of tasks requires the students to provide the country with educational services (different types of schools) by taking into account its total population and expected demographic dynamics. The second group of tasks is similar to the first one, but differs in that these assignments encourage active participation of the students by planning hospitals.

One alternative textbook by the publishing house Santillana introduces demographic dynamics in a similarly condensed manner, but with a slightly different organizational outline. The authors introduce the chapter dedicated to population and vulnerability by first asking several key questions that also highlight why learning about population is vital for everyday life and for the future.

The authors discuss global demographic aspects and provide an overview of population development during the last four million years. Important factors that led to an increase of the total population were agriculture, economic resources exploited during the Industrial Revolution, and the breakthrough of modern medicine. Along with non-continuous text elements that visualize the dynamics of global population, detailed information is offered on the distribution of the global population. The authors conclude the discussion of each continent‘s population dynamics by stating that

> *"During almost the entire 20th century, Asian, African, and Latin American countries have not managed to implement anti-growth demographic policies to slow down the growth of their population because of their low degree of economic development. This is the reason why these three regions are the most populated"(Álvarez, Mejía, Téllez, Macedo, 2006, p. 135)*

Demographic policy is the subject of a separate thematic bloc of the chapter. The authors start by arguing, that

> *"The excessive growth of the world population raised the question whether the planet‘s resources are sufficient to cover the needs of a growing population, that day by day is asking for more and more. This has become a serious problem of the world"(Álvarez, Mejía, Téllez, Macedo, 2006, p. 136)*

In contrast to its counterpart, the textbook by Santillana discusses population growth in Mexico in a separate bloc. Readers learn that in spite of anti-growth policies the country‘s population has grown over decades, which has led to a number of challenges: ‘[d]emand of living space, nutrition, and services’ (Álvarez, Mejía, Téllez, Macedo, 2006, p. 138). Furthermore, the authors address the issue of overpopulation in the

Valley of Mexico, specifically in the Federal District and the State of Mexico, and offer some possible solutions.

Tasks accompany the reader throughout the lesson and ask him/her to analyze graphs and diagrams, to summarize certain processes by means of a written statement, to look up data in an atlas, and to measure and calculate selected demographic indicators.

Discussion and Conclusion

Since the 1992 Earth Summit in Rio de Janeiro, several subjects among them school geography in particular have dedicated growing attention to ESD. In order to contribute to this cross-curricular educational objective, subject-specific content needed to be complemented by an additional perspective, which resulted in its dual function. Hence, this paper aimed to map by means of three different countries the dual representation of demographic dynamics on the one hand as a core topic of school geography and on the other hand as ESD-relevant topic.

The results show on the one hand that all three countries discuss demographic dynamics using a common set of concepts (e.g. total population, growth, demographic policies), on the other hand, each country complements the core concepts with conceptual variations (i.e. natality, mortality, population density). Additionally, none of the three examples delivers an explicit contribution to ESD through the topic of demographic dynamics. Thus, demographic dynamics presents itself in the three countries as a unique mosaic of concepts and skills serving quite different educational objectives. Details are illustrated through seven essential questions summarizing the representation of demographic dynamics and the educational objective connected to it.

First, what is demographic dynamics? While the Romanian and Mexican textbooks provide the reader with a definition and explain the major factors that result in the specific dynamics, the Bavarian textbooks merely offer pieces of information. Furthermore, natural growth and migration appear clearly separated with the exception of the Bavarian textbooks. In terms of ESD some Romanian textbooks consider demographic growth to be a core challenge both on continental and global scale. This, however, is merely an indirect link to ESD.

Second, how does a demographic dynamic work? Most textbooks offer a differentiated answer to this question. Growth and decline resurface all across the sample. Differences emerge from opposing paradigms of school geography in the three countries. While both the Romanian and Mexican textbooks discuss dynamics on global, regional, and national scales (the former even offers myriad examples from countries around the globe), Bavarian textbooks exemplify the process of demographic dynamics by using a few randomly chosen case studies. In fact, there is no link to enable the readers to position the case studies in their regional and global setting. While most textbooks introduce elements of population control policies, the Romanian textbooks contain the fewest, while the Bavarian ones have the most differentiated information. Regarding the mechanisms of demographic dynamics, there is no link to any aspect of ESD.

Third, what are the causes of demographic dynamics? Scarce economic resources seem to be the main cause of population growth. However, a fairly differentiated picture emerges from the sample. Mexican textbooks reduce growth to economic causes which reflects a specifically post-colonial perspective. Romanian textbooks illustrate a wide range of reasons for growth and its control. While China controls its demographic growth to avoid poverty, an increasing population is widely considered to provide for a strong demographic potential in the sense of socio-economic power. Not only European (developed) countries require population growth, Israel also needs to assure a growth rate similar to its neighbors (Mândruț, 2008, p. 31). Bavarian textbooks offer an even wider range of causes reaching from poverty through education to specific (cultural) traditions and are the only ones that stress ideological positions such as Confucianism or Communism. Density and population distribution are discussed in all textbooks. Still, the reader is puzzled to experience an anti-growth discourse in the global South and a pro-natalist one in the developing countries. The reasons for demographic dynamics appear strongly tied to financial, social, and intergenerational aspects, thus including some coordinates of sustainable development. Additionally, environmental considerations also apply, however, isolated from the above-mentioned coordinates of sustainable development. Hence, textbook authors seem to have realized the importance of demographic dynamics for ESD, but are still searching for a proper manner to establish the link between the topic and a given model of sustainable development.

Fourth, where does a demographic dynamic happen? All textbooks locate the geography of growth in the developing countries and, thus, place the responsibility for global demographic growth exclusively on these countries. However, the Romanian textbooks discuss a wide range of European countries as examples of developed societies that display a positive natural growth. Additionally, Mexican and Bavarian textbooks stress the interdependency of economic development and population growth. Strangely, the same Bavarian textbooks argue indirectly for at least a stable population in the developed countries of Europe and mainly in Germany. These emerging maps of regions with demographic growth and decline demarcate the lines of intragenerational equity and justice. Though not explicitly stated by the textbook authors, readers might remain with the impression that injustice emerges from the global South, while the shrinking North has to endure the consequences. Again, there is no direct link to sustainable development.

Fifth, what are the consequences of demographic dynamics? Growth on the one hand can lead to overpopulation, emigration, and environmental impacts. Decline on the other hand disturbs the sex ratio, leads to female mortality, causes difficulties on the labour market and endangers pension payments. Most textbooks give a balanced description of these consequences. However, Bavarian textbooks extensively discuss the risks and consequences of pro- and anti-natalist policies. The authors cover most dimensions included in the analytical ESD model of Tremmel (2003). However, these elements are localized in different chapters and lessons without a general framework establishing the connection between demographic growth and (E)SD.

Sixth, what is the contribution of the topic of demographic dynamics to geographical skill development? With the exception of the Romanian textbooks, all educational media analyzed use the topic of demographic dynamics to foster geographical skills. Working with numeric and graphic data is the main focus of the Bavarian textbooks, while their Mexican counterparts require students to use population projections to plan schools and hospitals for future generations. The latter carries some aspects of *Gestaltungskompetenz* (de Haan, 2008). Overall, the results show a traditional representation of population geography. With the exception of the Romanian sample, all textbooks reduce population geography to largely quantitative aspects and, thus, equate it with demography. Nevertheless, some textbooks discuss difference, equity and connect growth with environmental, political, and cultural aspects. Thus, recent development in population geography seems to be only gradually finding its way into textbooks, but is only implicitly expressed as yet.

Seventh, what is the contribution of the topic demographic dynamics to ESD-related skills? All textbooks contribute to a certain degree to awareness rising. However, none of the textbooks connect the three dimensions of sustainability in the context of intra- or intergenerational equity and justice. Teachers are offered a considerable number of starting points to use demographic dynamics for ESD, however, a consistent and explicit contribution to ESD, could not be identified. Across the sample there are several implicit content elements, such as the generational contract, the relationship between population growth and securing nutrition, the ecological footprint or the one-child-policy that carry certain elements of sustainable development or could be used as a good starting point to foster ESD. In their current form, however, they do not yet contribute to *Gestaltungskompetenz* (de Haan, 2008) or *gestaltswitching* (Wals, 2010).

Summing up the comparative results, four central recommendations can be formulated. A first recommendation refers to conceptual accuracy. Few of the analyzed textbooks (with the exception of the Romanian subsample) display a consistent network of concepts that is able to support skill acquisition. Thus, textbook editors and authors might need to re-align information on demographic dynamics in different grades in order to design overall concept architecture to support easier skill acquisition. Also, demographic growth needs to be contextualized within the theoretical framework of population geography, which transcends the limits of a purely quantitative demography. Geography educators need to highlight the particularities and uniqueness of population geography by setting it apart from other disciplines with a focus on population. Secondly, students might easily become lost in scalar transitions. While Romanian and Mexican textbooks with their rather deductive approach are consistent regarding scale, their Bavarian counterparts are reminiscent of an aleatoric collection of case studies without a coherent general context. It is unlikely that students will be able to inductively integrate the diverse regional examples into a global framework after five years of school geography in ninth grade. Thirdly, most textbooks display a strong normativity. Bavarian textbooks even prescribe rates of 2.1 ‰ to secure stagnating total populations. This normativity appears through the post-socialist filter of the Romanian textbooks as an objective measuring tool of classification and, thus, a justified instrument of constructing otherness. On the other hand, in Mexican textbooks norms appear

integrated in a post-colonial discourse. In all cases, the Northern normativity of globally illegitimate growth in the South but legitimate growth in the North, which is featured in all textbooks, requires a more critical reflection. A last recommendation regards the strong othering practiced by the textbook authors. The construction of otherness happens in this case by dislocating responsibility from the North and relocating it into the South by preserving in the meantime the right to growth in the North. Othering also happens through the fading out of a number of (historical) key factors that have led to current growth in certain parts of the world. Culture, tradition, and religion are just a few of them. In their current form, all textbooks require the inclusion of multiple perspectives and a stronger discussion of cause-effect relations to better foster geographical skill development and ESD.

Discussing population in lower secondary education goes beyond aspects of demographic growth. Thus, further work needs to focus on representations of population structure, distribution, and the relationship between population and environment on different scales. Future work must be carried out within the framework of current theoretical debates of a population geography that goes beyond merely quantitative dimensions of population.

References

Bagoly-Simó, P. (2012a). Divided world vs. one world: A comparative analysis of non-continuous text elements in school geography textbooks of international selection. *IARTEM e-Journal*, 15, 33-44.

Bagoly-Simó, P. (2012b). Környezetföldrajz és környezeti nevelés a román iskolákban. In P. Bagoly-Simó (Ed.), *Környezet és fenntarthatóság a földrajzoktatásban [Environment and sustainability in geography teaching]* (pp. 127–152). Cluj-Napoca: Presa Universitară Clujeană.

Conway, D. (2004). On Being Part of Population Geography's Future: Population–Environment Relationships and Inter-science Initiatives. *Population, Space and Place*, 10, 295-302.

de Haan, G. (2008). Gestaltungskompetenz als Kompetenzkonzept für Bildung für nachhaltige Entwicklung. In I. Bormann & G. de Haan (Eds.), *Kompetenzen der Bildung für nachhaltige Entwicklung. Operationalisierung, Messung, Rahmenbedingungen, Befunde [ESD Skills. Operationalization, Measurement, Frameworks, Results]* (pp. 23–43). Wiesbaden: VS-Verlag.

Dobson, A. (1996). Environment sustainabilities: An analysis and a typology. *Environmental Politics*, 5, 401-428.

Findlay, A. (2003). Population Geographies for the 21st Century. *Scottish Geographical Journal*, 119, 177-190.

Graham, E. (1999). Breaking out: The Opportunities and Challenges of Multi-Method Research In Population Geography. *The Professional Geographer*, 51, 76-89.

Graham, E. (2000). What Kind of Theory for What Kind of Population Growth? *International Journal of Population Geography*, 6, 257-272.

Greenhalgh, S. (1997). Methods and Meanings: Reflections on Disciplinary Difference. *Population and Development Review*, 23, 819-824.

Haubrich, H., Reinfried, S., & Schleicher, Y. (2007). Lucerne Declaration on Geographical Education for Sustainable Development. Lucerne: IGU. In S. Reinfried, Y. Schleicher, & A. Rempfler (Ed.), *Geographical Views on Education for Sustainable Development. Proceedings of the Lucerne-Symposium, Switzerland, July 29-31, 2007* (pp. 243–250). Geographiedidaktische Forschungen, vol. 42.

Hemmer, I., & Fischer, C. (1998). Umweltbildung hat Zukunft. In J. Bauch, A. Bezold, C. Fischer, H.D. Haas, I. Hemmer, M. Hemmer, & P. Widmann (Eds.), *Exkursionen im Naturpark Altmühltal [Field-trips in the Nature Reserve Altmühltal]* (pp. 17–28). Eichstätt: District Eichstätt.

Hemmer, I., & Hemmer, M. (Eds). (2010). *Schülerinteressen an Themen, Regionen und Arbeitsweisen des Geographieunterrichts [Student Interest on Topics, Regions, and Methods of School Geography]*. Geographiedidaktische Forschungen 46, Weingarten: HGD.

McKeown, R., & Hopkins, C. (2007). Moving beyond the EE and ESD disciplinary debate in formal education. *Journal of Education for Sustainable Development*, 1, 17-26.

Miller, R., & Brewer, J. (Eds.) (1998). *The A-Z of Social Research*. London: Sage.

Morgan, A. (2006). Developing geographical wisdom: Postformal thinking about, and relating to, the world. *International Research in Geographical and Environmental Education*, 15, 336-352.

Pingel, F. (2010). *UNESCO Guidebook on Textbook Research and Textbook Revision*. Braunschweig & Paris: UNESCO & Georg-Eckert-Institute.

Plane, D. (2004). The Post-Trewartha Boom: The Rise of Demographics and Applied Population Geography. *Population, Space and Place*, 10, 285-288.

Reinfried, S., Ruf, W. & Müller, M. (2007). Die erneuerbare Wassermenge wächst nicht mit! Eine Lernaufgabe zum Thema Wasserangebot und Bevölkerungswachstum. *Praxis Geographie*, 37 (5): 28-33.

Ruiz-Mallén, I., Barraza, L., Bodenhorn, B., & Reyes-García, V. (2009). School and local environmental knowledge, what are the links? A case study among indigenous adolescents in Oaxaca, Mexico. *International Research in Geographical and Environmental Education*, 18, 82-96.

Siegel, J. & Swanson D. (Ed.) (2004). *The Methods and Materials of Demography*. London: Elsevier.

Tremmel, J. (2003). *Nachhaltigkeit als politische und analytische Kategorie*. Munich: ökom.

United Nations (1992). *Agenda 21*. Retrieved from http://www.unep.org/documents.multilingual/default.asp?documentid=52

Wals, A.E.J. (2010). Mirroring, gestaltswitching and transformative social learning: Stepping stones for developing sustainability competence. *International Journal of Sustainability in Higher Education*, 11, 380-390.

Textbooks

Álvarez, B., Mejía, L., Téllez, C., Macedo, L. (2006). Geografía de México y del Mundo. Mexico City: Santillana.

Anastasiu, V., Marin, I., & Dumitru, D. (2000). Geografia Europei 6. Bucharest: Editura Didactică și Pedagogică.

Bacigalupo, S., Eigner, A., Heindl, C., Krug, S., Pammer, K., Schatz, A., Schreiegg, J., & Thalmeier, J. (2010). Seydlitz Erdkunde 7 Realschule Bayern. Braunschweig: Seydlitz.

Bacigalupo, S., Eigner, A., Heindl, C., Krug, S., Pammer, K., Schatz, A., Schreiegg, J., & Thalmeier, J. (2011). Seydlitz Erdkunde 8 Realschule Bayern. Braunschweig: Seydlitz.

Bacigalupo, S., Eigner, A., Heindl, C., Krug, S., Pammer, K., Schatz, A., Schreiegg, J., & Thalmeier, J. (2012). Seydlitz Erdkunde 9 Realschule Bayern. Braunschweig: Seydlitz.

Bacigalupo, S., Heindl, C., Krug, S., Schatz, A., Schreiegg, J., & Thalmeier, J. (2008a). Seydlitz Erdkunde 5 Realschule Bayern. Braunschweig: Seydlitz.

Bacigalupo, S., Heindl, C., Krug, S., Schatz, A., Schreiegg, J., & Thalmeier, J. (2008b). Seydlitz Erdkunde 6 Realschule Bayern. Braunschweig: Seydlitz.

Brameier, U. (2005). Die Bevölkerungspyramide – ein Blick in Vergangenheit, Gegenwart und Zukunft. Praxis Geographie, 35 (10), 41.

Cheval, D., & Furtună, C. (2000). Allgemeine Geografie 5. Bucharest: Teora.

Ionașcu, J., & Dumitru, D. (2011). Geografie 5. Bucharest: Editura Didactică și Pedagogică.

Kronfeldner, H., Last, S., Leditznig, K., Peterhoff, F., Petzold, W., Schaal, C., Stadler, K., & Vossen, J. (2009). Diercke Erdkunde Realschule Bayern 6. Braunschweig: Westermann.

Kronfeldner, H., Last, S., Leditznig, K., Peterhoff, F., Petzold, W., Schaal, C., Stadler, K., & Weißbach, R. (2010). Diercke Erdkunde Realschule Bayern 7. Braunschweig: Westermann.

Kronfeldner, H., Leditznig, K., Peterhoff, F., Petzold, W., Schaal, C., & Weißbach, R. (2011). Diercke Erdkunde Realschule Bayern 8. Braunschweig: Westermann.

Kronfeldner, H., Leditznig, K., Petzold, W., Schaal, C., & Weißbach, R. (2012). Diercke Erdkunde Realschule Bayern 9. Braunschweig: Westermann.

Kroß, E. (1999). Kommt die Katastrophe? Die Weltbevölkerungsprojektionen der Vereinten Nationen. Geographie heute, 175, 12-15.

Last, S., Leditznig, K., Peterhoff, F., Petzold, W., Schaal, C., Stadler, K., & Vossen, J. (2009). Diercke Erdkunde Realschule Bayern 5. Braunschweig: Westermann.

Mândruț, O. (2007). Geografia României 8. Bucharest: Corint.

Mândruț, O. (2008). Geografia continentelor extraeuropene 7. Bucharest: Corint.

Mândruț, O., & Neguț, S. (2008). Geografia continentelor. Europa 6. Bucharest: Corint.

Morales, L. D. (2007). Geografía de México y del mundo. Mexico City: Fernández Editores.

Neguț, S., & Apostol, G. (2008). Geografie 7. Bucharest: Humanitas Educational.

Neguț, S., Apostol, G., & Ielenicz, M. (2006). Geografie 8. Bucharest: Humanitas Educational.

Biographical statements

Prof. Dr. Péter BAGOLY-SIMÓ is full Professor and Chair of Geography Education at the Institute of Geography, Humboldt-Universität zu Berlin, Berlin, Germany. His research focuses primarily on Education for Sustainable Development and educational media.