EDUCATION FOR SUSTAINABLE DEVELOPMENT AND SCHOOL GEOGRAPHY. THEORETICAL CONSIDERATIONS

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(Received: November 2012; in revised form: January 2013)

ABSTRACT
Over the last three decades, the concept of sustainable development has enjoyed growing attention. Transporting sustainable development into all forms of education is connected to Education for Sustainable Development (ESD). Due to its role in society, formal education plays a special part in the process of ESD implementation. This paper takes a closer look at the interconnectedness between sustainable development, ESD, and formal education by focusing on school geography, a subject with special affinity to both concepts and topics of ESD.

Keywords: sustainable development, education for sustainable development, formal education, school geography, curricula, textbook

INTRODUCTION

Never before in the history of humanity has the future been more intensively studied than today. Also, never before has modern technology "[...] given us the potential to irreversibly jeopardize the fate of mankind and nature for centuries to come" (Tremmel, 2008, p. 220). As a consequence, ever since the year 1992, the concept of sustainable development (SD) has reached global recognition and importance when we think about our future and try to find solutions to challenges that consider environment and development at the same time.
The first crucial international document to be cited within this context is the Agenda 21, which was ratified by ambassadors of 178 governments (BMUNR, 1992). While the four sections and 40 chapters of the document discuss contemporary and future challenges humankind sees itself confronted with, Chapter 36 dedicates special attention to the role of education. To strengthen further the contribution of all forms of education to a (more) sustainable future, the United Nations (UN) subsequently proclaimed the Decade of Education for Sustainable Development (DESD) for the period 2005-2014. According to its Action Plan, all “[...] DESD programmes and activities should reflect a balanced focus on education for the economic, social and environmental pillars of sustainable development, with culture as an underlying theme” (UNESCO, 2007, p. 15). Additionally, two of the nine long-term thematic programs explicitly aim at “[i]ntegrating ESD into Basic Education” and “[r]eorienting General Secondary Education for ESD” (UNESCO, 2007, p. 15).

Despite these ambitious expectations, the actual progress of structural implementation of ESD into formal education gives reasons for concern (cf. de Haan, 2012; Mulâ, Tilbury, 2009; McKeown, 2007; Paden, Chhokar, 2007). Therefore, this paper takes a closer look at concepts of SD, ESD, and at subject education. In doing so, it sets a special emphasis on school geography given this subject’s strong affinity to concepts of both SD and ESD.

CONCEPTS OF SUSTAINABLE DEVELOPMENT

Since its definition in the Brundtland Report, SD has been (re)conceptualized in myriad ways and on various scales, ranging from the global through the national and regional to the local. Only four years after the Earth Summit, Dobson (1996) counted over 300 definitions of SD. Despite the great conceptual diversity of the very term, most definitions tend to either stress aspects of generational equity and justice or to emphasize the three dimensions of SD, namely ecological, economic, and socio-cultural aspects as commonly shared defining criteria.

Related to the idea of generational equity, the initial definition by the World Commission on Environment and Development (WCED) states that SD "[...] implies meeting the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987). The definition, thus, emphasizes aspects of both intragenerational (global) and intergenerational equity and justice and therefore implies the discussion of various theories and concepts of justice.

Over the last decades, generational equity and justice have enjoyed growing attention. According to Unnerstall (1999), the philosophical discourses of the 1980s display an increasing reluctance towards the discussion of the responsibilities we have for future generations. On the one hand, the non-identity problem coined in the late 1970s by Schwartz (1978)
and further discussed by Adams (1979), Kavka (1982) (most prominently as the future individual paradox), and Parfit (1987) aimed to clarify ethical dimensions of contemporary generations assuming responsibilities for future generations. On the other hand, Mulgan (2002) detached the generationality debate from Western Philosophies by arguing with alternative solutions rooted in non-Western Philosophies. Other scholars discuss aspects of intra- and intergenerational equity not only in general terms (Ekardt, 2010), but also related to climate change (Ekardt, 2011). In an analytical work, Tremmel (2008) thereby discussed key arguments objecting theories of generational justice, such as the non-identity paradox, the argument of your neighbour’s children, or the butterfly-effect argument and contextualized them not only in terms of capital or wellbeing as axiological goals, but also regarding their quantitative limitations that resolve around the question of how much needs to be sustained. Overall, Tremmel (2008) stresses the ambiguity of the concept of generation as he juxtaposes the concepts of justice and right with respect to the emergence and historical development of the two concepts. Still, normative theories “[...] may be able to make a difference regarding our willingness to take on responsibility for the wellbeing of future generations” by pointing out the possibility of “intergenerational justice as enabling advancement” (Tremmel, 2008, pp. 222-223). Thus, sustainable management of all sorts of resources may indeed make it possible for future generations to satisfy their own needs within a given context of technological development to an even higher extent as present generations do.

The second commonly shared traditional conceptualization of SD distinguishes between three dimensions of SD, namely the ecological, economic, and socio-cultural sphere (cf. among others Grober, 2013). In contrast to the discussions on generationality, attempts to incorporate ecology with economy and socio-cultural aspects can look back on a longer tradition. Discussing the concept of SD from the perspective of cultural history, Grober (2012) traces the idea back to the early European Enlightenment and then sketches its evolvement until present days. Recently, however, the “trinity” of SD has been met repeatedly with criticism. In the following, special attention will be dedicated to three points of critique.

One point of critique targets the “[...] definitional haziness that continues to surround and shroud the notion of sustainable development” (Selby, Kagawa, 2010, p. 38). Drawing upon Lloyd (2009, p. 516, p. 518), Selby and Kagawa (2010) argue that economic growth and SD in terms of the Brundtland report cannot be reconciled within a paradigm that pictures a future which is “[...] axiomatically both sustainable and able to grow”, but at the same time “[...] supported indefinitely by a finite Earth”. Moreover, sustaining ecology and economy in terms of consumerism simultaneously “[...] reveals inconsistencies and incompatibilities of values, yet many people, conditioned to think that sustainable development is inherently good, will promote both at the same time’ (Jickling, Wals, 2008, p. 14 in Selby, Kagawa, 2010, p. 39).
A second point of critique refers to the traditional approach of distinguishing between three dimensions, or respectively areas, poles, or pillars of SD. Drawing upon early work by Bateson (1972), Meadows (1982), and Wilber (1997), Sterling (2010, p. 215) argues that the “[…] three dimensions [of SD], the ‘economic’, the ‘social’ and the ‘environmental’ actually are “[…] mental constructs. A glance out of the window at the real world will not indicate where any of these categories stops and another starts: the boundaries are in our heads”. Differentiation and dissociation, thus, result in a distorted view of systemic interconnectedness instead of focusing on the actual dynamics within the three categories.

A third critical perspective takes a closer look at cultural aspects. Building his case on Bowers (2002), Jickling argues that the three dimension of SD ignore “[…] how the person is nested in a culture that is, in turn, nested in (and dependent upon) natural systems” (Bowers, 2002, p. 76 in Jickling, 2010, p. 28), thus they make the concept of SD “context free” (Jickling, 2010, p. 28). Pigozzi (2007) further stresses the importance of culture by arguing that the three elements of SD assume an ongoing and
long-term process of change based on a traditional understanding of human society constantly in move. “Thus, culture is an essential underlying dimension. Sustainable development is about the direction and implications of change” (Pigozzi, 2007, pp. 28-29). Consequently, SD needs to balance concurring interests constantly, while trying for instance to end deprivation and powerlessness as ending deprivation and powerlessness by simultaneously protecting the environment.

The ongoing proliferation of conceptualizations of SD has led to a wide range of meta-analytical works examining its theoretical constructs. Along with Dobson’s (1996) early work, one recent example is the analytical model by Tremmel (2003) that connects the three poles of SD with aspects of intra- and intergenerational equity and justice (Figure 1). Tremmel’s analytical model thereby formed the basis of further analytical steps carried out in this work regarding concepts of SD. Choosing this specific model rests on two reasons: on the one hand, it is a meta-analytical work that analyzed a number of very heterogeneous conceptualizations, on the other hand it considered both SD models with a focus on the “trinity” of sustainability and on aspects of generational equity and justice.

CONCEPTS OF EDUCATION FOR SUSTAINABLE DEVELOPMENT

Over the last decades, ESD has been subject to myriad conceptualizations. Some definitions theorize ESD by identifying its extension and intension, while others juxtapose ESD and other forms of adjectival education. In the following, conceptualizations of both approaches will be briefly discussed.

According to the definition of UNDESD (2008) “[...] ESD enables all individuals to fully develop the knowledge, perspectives, values and skills necessary to take part in decisions to improve the quality of life both locally and globally on terms which are most relevant to their daily lives”. Both its architecture and its normativity within and through the DESD qualify this definition as “expert knowledge-driven” (Vare, Scott, 2007, p. 193).

Drawing upon the typology of approaches regarding SD by Scott and Gough (2003), the SD concept of Foster (2002), and the learning models of Argyris and Schön (1978, 1996), Vare and Scott (2007) have broken down ESD into ESD 1 and ESD 2. The former corresponds to UNESCO’s expert knowledge and implies that “[...] the role of the non-expert is to do as guided with as much grace as can be mustered” (Vare, Scott, 2007, p. 193). Thereby, ESD1 is nurtured by Scott and Gough’s (2003) Type 1 and Type 2 approaches which assume that the problems humanity faces are either of environmental or of social and/or political nature. In either of the cases, science, respectively social science provides answers that need to be communicated broadly. Thus, ESD 1 builds upon two approaches that expect their learners to “[...] learn to value what others tell them is important” (Vare, Scott, 2007, p. 192). In contrast, Type 3 approaches
assume that no end-states can be specified, hence, learning has to remain open-ended. Consequently, essential for ESD 2 is to what extent “[...] people have been informed and motivated, and been enabled to think critically and feel empowered to take responsibility” (Vare, Scott, 2007, p. 194). Thus, ESD becomes (part of) lifelong learning.

In Pigozzi’s (2007, pp. 28-29) reading “[...] the three pillars of sustainable development [society (including political aspects), environment, and economy], give shape and content to learning for sustainable development. [...] Education, broadly understood, is therefore inextricably linked to well-balanced development, which takes into consideration the social, environmental and economic dimensions of an improved quality of life for present and future generations”. In addition, ESD “[...] must be a dynamic concept” that fosters “[...] knowledge, skills, perspectives and values” (Pigozzi, 2007, p. 29). According to Pigozzi (2007, p. 29), “ESD promotes the same learning outcomes as quality education, such as the skills to continue learning throughout life, to think critically, to work cooperatively, and to seek out and apply knowledge”. Thus, ESD is translated into observable, but not explicit actions of the individual.

Most conceptualizations fail to nail down explicitly what exactly ESD is. According to Wals and Blewitt (2010), the concept of Gestaltungskompetenz coined by de Haan (2008) is a solitary exception that makes ESD more tangible. In the reading of de Haan (2008), fostering ESD primarily aims at teaching Gestaltungskompetenz, which translates as the ability to apply SD-related knowledge to both recognize challenges of non-SD and to apply theoretical concepts of sustainability in order to solve problems by finding sustainable alternatives. Gestaltungskompetenz thereby encompasses twelve key skills: to construct knowledge in a cosmopolitan matter and based on new perspectives; to analyze and appraise processes in a foresightful manner; to gather insight and act in an interdisciplinary way; to recognize and weigh risks, dangers, and uncertainties; to plan and act together with fellow men; to participate in decision-making; to motivate oneself and others to get involved; to reflect on the general principle of oneself and of others; to base decision-making and action on conceptions of justice and equity; to plan and act autonomously; to show empathy (de Haan, 2008). Along these lines, knowing about the theoretical designs of sustainability actually represents a core pre-requisite for the implementation of any further competencies, responsibilities and methodologies (cf. Tremmel, 2003).

Wals (2011) reframes de Haan’s (2008) approach into his concept of gestaltswitching. Wals (2011) thus reminds us of the fact that education is not a proper instrument to influence human behaviour. In fact, ESD should foster capacity building and critical thinking rather than aim at (ideology-driven) behavioural change (Mayer, Tschapka, 2008; Jickling, Wals, 2008). “In other words, what may appear to be sustainable behaviour today may turn out to be unsustainable later in time” (Wals, 2011, p. 179). As a consequence, Wals (2011, p. 181) advocates ESD in terms of gestaltswitching which he defines as “[...] switching back and forth between different mindsets”. Crucial for the mindsets are four types of Gestalt: “[...]
the temporal Gestalt (past, present, future and intergenerational), the
disciplinary Gestalt (a range of social science and natural science), the
spatial gestalt [original orthography!] (local, regional, global and beyond
global) and the cultural Gestalt (multiple cultural mindsets whereby culture
is broadly understood). Sustainability competence then refers to one’s
ability to respond to a sustainability challenge with all these Gestalts” (Wals,
2011, p. 181). Thus, gestaltswitching conceptualizes ESD in a less
normative manner, but also in much more general terms.

With special emphasis on its history, Sterling (2010, p. 217) argues
that “[s]ustainable education implies four descriptors: educational thinking
and practice which is sustaining, tenable, healthy and durable”. By doing so,
Sterling (2010) not only substantiates ESD, but also proceeds to stress
relational and systemic aspects necessary to comprehend our contemporary
world. As a result, a “[... ] sufficient and whole-learning response to
sustainability is required at three levels — personal, organisational and
social — and in the three interrelated areas of human knowing and
experience”, namely “[...] (1) perception (or the affective dimension), (2)
conception (or the cognitive dimension) and (3) practice (or the intentional
stresses the importance of “[...] systems thinking and holistic learning” for

Coming from a background in Philosophy, Gadotti (2009) argues for
education for sustainable life. The concept of sustainable life has its origins
mainly in the ecological movement of the last century and has been coined
into a philosophical paradigm by Morin and Brigitte (1993), Santos (1995),
contextualizes sustainable life within the framework of Holloway’s (2002)
discourse of education to dissolve power and pleads for “[...] educating for
another possible world”. This form of education leads to something “[...]what does not yet exist, to utopia” (Gadotti, 2009, p. 26) that can be linked
to Freire’s statement that all is possible that has not been sighted yet.
Would dominant cultures disappear, not only traditional (e.g. indigenous)
knowledge became visible, but also feminist, ecological, Zapatist, landless
and other movements too unfolded and contributed to an education for
another world by being (former) pedagogies of absence.

Theorizing ESD also requires the juxtaposition of the concept with
other concurring terms, which originated out of a series of adjetival
educations. In the following, attention will be dedicated to Environmental
Education (EE) and Development Education (DE), as the two most vividly
discussed adjetival educations.

EE represents the first adjetival education towards which ESD has
been constantly re-positioning itself during the last two decades. According
to UNESCO EE “[...] is a well-established discipline, which focuses on
humankind’s relationship with the natural environment and on ways to
conserve and preserve it and properly steward its resources” (UNESCO,
2007, p. 18). However, ESD “[...] should not be equated with
environmental education” as it “[...] encompasses environmental education,
setting it in the broader context of socio-cultural factors and the socio-political issues of equity, poverty, democracy and quality of life” (UNESCO, 2007, p. 18). Despite UNESCO’s pronounced position, there seems to be an ongoing debate regarding the actual conceptual delimitation of ESD as compared to EE (cf. Caride Gómez, 2005; McKeown, Hopkins, 2003). In fact, much of the critique at the address of ESD argues that over the last three decades EE “[...] has been progressively straitjacketed” (Selby, Kagawa, 2010, p. 38). As a consequence, “[...] ESD discourse has contributed quite successfully to diluting and blurring all the work of sensitisation, consciousness-raising and denunciation that has been constructed quietly by the pro-environment social movements in recent decades and more recently by environmental education” (Gutiérrez Pérez, Pozo Llorente, 2005, p. 297). McKeown and Hopkins (2007, p. 20) also stress that the transition from EE to ESD might lead to “[...] the worldview that humans are part of nature as EE becomes human-centred ESD”. Moreover, ESD “[...] has given barely any space to the poetic and the numinous in its reliance on scientific rationality” (Selby, Kagawa, 2010, p. 44) while the same rationality has triggered environmental exploitation (cf. Bonnett, 1999). On the other hand, Porritt (2005, p. 51) qualifies the environmental movement as “[...] too narrow, too technical, too anti-business, too depressing, and often too dowdy”. Given its strong focus on aspects of ecology and environment, EE fails to foster whole-systems thinking (Sterling, 2004).

The second adjectival education in need of consideration is DE, respectively Education for Global Citizenship, whereby the latter has progressively evolved from the former. On the one hand, though “[...] widely seen as sister movements”, in developing countries “[...] the Western distinction between ‘environmental education’ and ‘development education’ was greeted with incomprehension because, there, environment and development issues were widely viewed as two sides of the same coin, and therefore environmental education was inevitably also development education” (Sterling, 2010, p. 216). This is equally true for ESD. Nonetheless, individual countries continued the tradition of separating ESD from DE. On the other hand, the development concept that has been propagated by ESD increasingly became subject of critique. Selby and Kagawa (2010, p. 39) argue that development in terms of ESD seems to be based “[...] upon a market-driven growth model” leading to “[...] a cosy association with the globalisation agenda in education”.

Along these lines, Jucker (2011, p. 45) argues that “[i]t is not fertile to discuss whether ESD should be ESC (education for sustainable consumption) or ECC (education for climate change) or if we should stick with EE (environmental education) or EGC (education for global citizenship). All of these are sectoral, subject-specific and reductionist approaches which miss the whole point of ESD”.

The concept of *Gestaltungskompetenz* coined by de Haan (2008) formed the basis of further analytical steps carried out in this work because it is a solitary exception that makes ESD more tangible. Implementing
theoretical constructs, such as SD, requires an explicit linkage between ESD topics and theory in order to actually foster skill development.

SUSTAINABLE DEVELOPMENT AND EDUCATION FOR SUSTAINABLE DEVELOPMENT IN FORMAL EDUCATION

The previous sections offered on the one hand an overview of several SD and ESD conceptualizations coming from quite different backgrounds ranging from Philosophy to environmental activism, while, on the other hand, major strategies of implementation were outlined. This section now explores the intimate relationship between ESD and formal education by setting a focus on secondary education in three selected spatial contexts, namely in Bavaria (Germany), Romania, and Mexico. The three spatial examples stand for the Western-developed, post-socialist, and post-colonial condition.

While global political consensus demands the holistic implementation of SD into all areas of our lives, the DESD puts a pronounced focus on the significance of all forms of education in the process of implementing SD. By reaching most individuals, formal education enjoys high priority in achieving ESD implementation. According to Mulà and Tilbury (2009, p. 90), the “[...] DESD recognises the importance of teaching ESD and seeks to influence governments [...] to revise the curricula in all learning spheres”. Therefore, one of the main research objectives of the DESD is to analyze curricula: “Given that so many nations, provinces, states and school districts have mandated curriculum, it is important to analyze existing curriculum to see how it includes or neglects knowledge, principles, issues, skills, values, etc. related to sustainable development. Such an analysis could form a basis for curriculum revisions” (McKeown, 2007, p. 94). Similarly, Paden and Chhokar (2007) also stress the emphasis UNESCO has put on curriculum research to facilitate a successful implementation of ESD. Furthermore, Wals (2009, pp. 198-199) reports in his Mid-DESD evaluation that “ESD is mainly integrated in national educational policies and curricula, especially in primary and secondary education” whereby “[...] ESD may be interpreted in many different ways, reflecting a country’s particular tradition in governance or by other challenges faced by a country or region. For example, a country might adopt a more pedagogical orientation towards ESD, emphasising (social) learning, participation and capacity building or a more instrumental one emphasising changing people’s behaviour”. Furthermore, Wals (2009, p. 200) stresses the fact that “[...] ESD-related research that does take place is mostly focused on formal education and on the policy and regulatory measures related to ESD implementation”.

As the DESD progressed, players involved in the process of implementation formulated different strategies and visions for ESD at schools. According to Jucker (2011, p. 43) “[...] successful learning only takes place in everyday practice (i.e., through living in the territory or real world)” whereby “[...] real people [are] engaging together and supporting
each other in change processes”. Similarly, McKeown and Hopkins (2007, p. 22) recognize the limits of ESD “[...] envisioned solely as a discipline or a sum of several disciplines” and argue that a “[...] whole-school approach” is required to secure that “[...] sustainability is lived as well as taught. The buildings and the policies model sustainability, which is a powerful reinforcement of concepts taught in the classroom”. However, more and more researchers have pointed out the necessity to carry out systematic and comprehensive studies regarding ESD implementation in all forms and types of education, especially formal education (Cruz López, 2011; Jucker, 2011; Wals, 2009; McKeown, 2007; Tilbury, 2007; Hak, Moldan, Dahl, 2007; Paden, Chhokar, 2007; Reid, Nikel, Scott, 2006; Sollart, 2005). Nonetheless, Selby and Kagawa (2010, pp. 39-40) argue — after taking a closer look at Stibbe (2009); Jickling and Wals (2008); Tilbury, Janousek (2007); Tilbury, Janousek, Elias, Bacha (2007); Rode (2006); and Roorda (2004) — that “[...] most proponents of ESD seem to have found a space where they feel they can more or less shrug off the need for deep critical reflection. In this untroubled state, there has been a preoccupation with the instrumental and pragmatic task of embedding ESD in institutions and systems through developing and establishing benchmarks, indicators and checklists; devising skills taxonomies; refining auditing and monitoring tools; drawing up performance league tables; and other potential mechanisms for targeting, standardisation, measurement and control”.

Despite marginal critique, developing indicators has become one of the central issues to measure the overall implementation of ESD and thus represented the main outcome of the DESD. Over the last decade, various indicators were created to measure the effectiveness of implementation at both national and global scales (cf. UNESCO, 2009b; Hak et al., 2007; Reid et al., 2006; OECD, 2003). In 2005, the UNECE Expert Group reminded us of the ability of indicators not only to diagnose how well a system is working, but also to offer insight into hardly visible or even invisible structures and processes of a system (cf. UNECE, 2005a, 2005b). According to Podger, Piggot, Zahradnik, Janousková, Velasco, Hak, Dahl, Jimenez and Harder (2010, p. 299), the construction of indicators has aimed for the measurement of “[...] the goals of humanity’s efforts for sustainability, which include wellbeing, quality of life and happiness” (cf. OECD, 2009; Stiglitz, Sen, Fitoussi, 2009; European Union, 2007; Meadows, 1998) than on focusing on isolated dimensions (e.g. ecological, economic, or social elements). In addition, Cruz López (2011, p. 168) reports on regional differences regarding the finality of indicators’ construction. While “[...] European representatives considered the importance of defining indicators (qualitative and quantitative) to assess integration of ESD”, the “[...] Latin American and Caribbean participants discussed introduction of sustainability issues in the transversal curricula, institutional diversity and a diagnostic to contextualise the change of paradigm about ESD in the region from reductionism to holism”.

In more specific terms, indicator development has so far focused on selected subjects of national curricula (Adomßent, Bormann, Burandt, Fischbach, Michelsen, 2012; Michelsen, Adomßent, Bormann, Burandt,
Fischbach, 2011; UNECE, 2008) and rarely on comparing (Rieckmann, 2010) the entire set of school subjects of selected countries (Bagoly-Simó, 2012a). In contrast to earlier work (cf. Scott, Gough, 2003; Scott, 2002; Sterling, 2001), central topics of ESD (Jucker, 2011), such as health, human rights, pollution, poverty, consumption, biodiversity loss, water, energy (cf. Bagoly-Simó, 2012a) have increasingly moved into the centre of indicator development.

SUSTAINABLE DEVELOPMENT, EDUCATION FOR SUSTAINABLE DEVELOPMENT AND GEOGRAPHICAL EDUCATION

Following the brief discussion of SD and ESD in formal education above, this section sets its focus on the relationship between both concepts and school geography. As (school) geography investigates nature and society on different scales it thus displays — in comparison to other subjects — the highest degree of affinity to both topics and skills of ESD. Consequently it does not come as a surprise that the implementation of ESD into school geography has been on the agenda of the Commission on Geographical Education of the International Geographical Union since 1992 and resulted in the publication of charters (Haubrich, 1994) and declarations (Reinfried, Schleicher, Rempfler, 2007b) of international importance.

In 2007, geography educators from all around the world agreed on a commonly shared understanding of SD and ESD, which then amounted to a common framework of implementation for ESD with the ratification of the Lucerne Declaration on Geographical Education for Sustainable Development. Regarding its definition of SD, the document points out that “[t]he Commission’s vision of education for sustainable development is based on the concept of the ‘Human-Earth’ ecosystem” (Haubrich, Reinfried, Schleicher, 2007, p. 244). Thus, the interrelation between the system Earth (geosphere) and the human system (anthroposphere) inherent to school geography carries the very ideas of SD. While the Declaration lists a number of “geographical competencies to enhance SD” (Haubrich et al., 2007, p. 245), such as geographical knowledge, methodological skills, values and attitudes, it does not contain a clear definition of ESD itself.

Geographical interpretations of SD, however, are not only limited to international charters and declarations, they look back on many years of scholarly work and exchange. The strong ties between geography and the concept of SD 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 (cf. Bagoly-Simó, 2012a). Furthermore, geographers have an impressive list of discussions of the “[...] discipline’s contribution to educating for a more sustainable future” (McKeown, Hopkins, 2007, p. 21). A review of papers dedicated to SD, ESD, and school geography not only gives evidence to this, but also highlights the breadth of
research in Geographical Education (cf. Jonsson, Sarri, Alerby, 2012; Reinfried, 2009; Setha, Mund, 2008; Corney, 2006; van der Schee, 2003; Houtsonen, 2002; Haubrich, 2000). Along these lines, the concepts of SD and ESD have been discussed in relation to different players of the teaching-learning process (Yasar, Seremet, 2009; McKeown, Hopkings, 2007) from primary to university education (Jonsson et al., 2012; Bowers, 2002), as well as in different forms of education (Ramos Trejo, Sánchez Crispín, 2009; Ruiz-Mallén, Barraza, Bodenhorn, Reyes-García, 2009). Along these lines, Corney (2006) has identified two main trends of conceptualizing SD when he observes, on the one hand, an increasing acceptance and consensus for the trinity model (Gough, 2002; Luke, 2001; Morgan, 2000; Huckle, Sterling, 1996) and, on the other hand, the urge to find opposing conceptual approaches to SD (Sauve, 2002; Scott, 1999).

Geography Education considers, however, aspects of SD and ESD not only on a theoretical-conceptual scale, but also strongly tied to core ESD topics such as climate change or demographic dynamics. Research on climate change, as a core topic in geography education, has encompassed both curricular frameworks, educational media (e.g. textbooks), and different players of the teaching-learning process. While the former has kept a focus on implementation into curricula (Dalelo, 2011; Westaway, 2009) and textbooks (Bagoly-Simó, 2012a; Böhn, Hamann, 2011; Böhn, 2006; Hopkin, 2001), the latter has dedicated attention to pupils’ conceptual understanding of climate change and ways of conceptual change (cf. Reinfried, Aeschbacher, Rottermann, 2012), university students’ opinion on actions helping to prevent climate change (Ambusaidi, Boyes, Stanisstreet, Taylor, 2012) and their knowledge of global climate change (Spellman, Field, Sinclair, 2003), and also to (non-)Western perspectives on environmental change (Jonsson et al., 2012). Similarly, demographic dynamics figures prominently among the core topics of skill acquisition, where it is most frequently discussed as a means to foster numeral literacy. As a result, the study of demographic dynamics remains largely limited to quantitative methods of data acquisition, processing, visualization, and interpretation. While most authors 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, 2007a).

When discussing research on ESD in Geographical Education, special attention needs to be dedicated to its heterogeneity in different national settings. What Bowers (2002, p. 76) discusses as cultural metaphors in the sense of “[...] how the person is nested in a culture that is, in turn, nested in (and dependent upon) natural systems”, becomes evident primarily on a national scale.

While geography educators in the United Kingdom have discussed the relationship between geography and (E)SD within the context of the ongoing curricular reform (Scoffham, 2011; Major, 2011), German school geography has experienced a shift in paradigm from EE to ESD (Hemmer, 1998), which requires students to familiarize themselves with ESD topics and to develop Gestaltungskompetenz (de Haan, 2008). In addition,
German school geography distinguishes sharply between ESD and DE. Despite intensive scholarly work (cf. Böhn, Otto, 2009) and a common framework (Appelt, Siege, 2007), geography educators tend to consider DE as part of a more general ESD (Schockemöhle, Schrüfer, 2012). Additionally, the implementation of ESD into school geography was also subject to research carried out by scholars outside of Geography Education (cf. Michelsen et al., 2011). The results of this study, however, are superficial and of exemplary value.

Unlike in Germany, in former communist countries such as Romania, little attention was paid to ESD during the post-socialist transformation from a command economy to a free market economy. That explains why school geography has so far maintained a rather traditional view on the environment and its protection that is still rooted in the Marxist-materialistic philosophy of socialist education. Furthermore, EE emerges here from environmental geography and is ultimately tied to system theory (namely the interconnectedness of the individual natural sub-systems of the geosystem) and is taught during upper secondary education (Bagoly-Simó, 2012b).

Research on ESD in Mexican school geography is still in its early stages of development (Ramos Trejo, Sánchez Crispín, 2009). Nevertheless, work presented at national conventions on Geographical Education reflects a growing interest of Mexican teachers and academics in the fields of EE and ESD. Furthermore, the post-colonial perspective may help to incorporate indigenous knowledge (Ruiz-Mallén et al., 2009) into geography education.

Summing up, (E)SD-related research in Geographical Education and about school geography is, with only few exceptions (Bagoly-Simó, 2012a; Böhn, Hamann, 2011; Böhn, Petersen, 2007), limited to the analysis of specific ESD topics and the way ESD is implemented in different national or regional curricula (Michelsen et al., 2011), while there is little insight into the subject-specific understanding that school geography has of SD and ESD. Likewise, there are no results explaining the cultural contexts and their influence on the relationship of ESD and Geographical Education.

CONCLUSIONS

This paper aimed to take a closer look at the interconnectedness of concepts of SD, ESD, and subject education with a focus on school geography. The individual sections of this paper highlighted several challenges in need of consideration when working on ESD implementation into subject education. First, conceptualizations of SD are not only numerous, they also emerge from very different contexts both from inside and outside of academia. Second, understandings of ESD vary according to a number of variables such as political interests, structural feature of educational systems or the strength of adjectival educations. Third, formal education displays a unique mixture of SD and ESD conceptualizations in individual national settings. Fourth, geographical education works with its own set of concepts that emerges from the subject’s conceptual and
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thematic affinity to SD and ESD. Fifth, there is hardly any empirical work on the implementation of SD and ESD in school geography. Most authors remained within the limits of conceptual discussions. Further work needs to address these aspects.

References


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