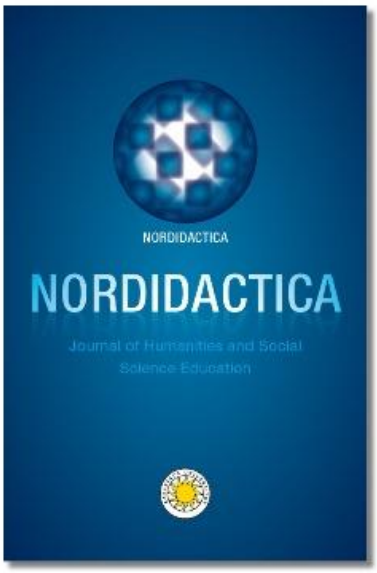
Why Physical Geography? An Analysis of Justifications in Teacher Magazines in Germany

Péter Bagoly-Simó & Anke Uhlenwinkel



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Why Physical Geography? An Analysis of Justifications in Teacher Magazines in Germany

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Abstract: School geography is often quite different from academic geography and there are good reasons for that, as school is preparing young people to be able to lead the life they value instead of just training them to learn specific subject contents. In some countries school geography is understood as being mainly a social science. Nonetheless physical geography often plays an important part in textbooks and in everyday teaching in these countries. This presentation will examine how physical geography topics are justified in specialist teacher magazines in Germany. Are they justified by simply pointing at the value of the academic knowledge itself? Are they justified by claiming students' special interest in these topics? Or are they justified by showing the value of physical geography in promoting social aims such as sustainable development, freedom or equality?

KEYWORDS: PHYSICAL GEOGRAPHY, TEACHER MAGAZINES, ACADEMIC KNOWLEDGE, SOCIAL AIMS, STUDENT INTEREST

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In autumn 2013 a German Administrative Court ruled that geography in upper secondary school was a social science (VG Trier). The plaintiff was a student who had failed his natural science courses and wanted to make his school accept his better grades in geography instead. This idea might have been fostered by endeavours of the earth sciences to use geography lessons as a means to promote their subject (Alfred-Wegener-Stiftung & DGfG, 1996).

Aims

The aim of this paper is to trace the changes that have taken place in the justifications of physical geography as a part of school geography during the last few decades in Germany. To better understand the impact that the specific view of the role of physical geography has on the development of students' capabilities, we will offer a short comparison of these justifications with arguments suggested for teaching physical geography in Britain. The main research question is whether there has been a shift in justifications offered by authors of teaching material in Germany and if the British debate may offer still other approaches that have not been considered yet.

Introduction

The justifications of physical geography as part of the school subject are dependent on the academic debates in the respective countries or language communities and on the position geography education has in the different contexts. For both, Britain and Germany, the educational contexts have to be defined on a regional rather than on a national level. Thus, in Germany, the framework for geography at schools is determined by the federal states (Uhlenwinkel, 2013). In Britain, the so-called 'national curriculum' is valid for England only (Department for Education, 2014). Nonetheless, one difference between the German federal states and England can be seen in the school years in which geography is taught: In England there is a strong primary geography, while in Germany geography is usually taught as part of an integrated subject in primary school. This subject may encompass a number of different subjects (history, civics, geography, biology, physics, chemistry) depending on the federal state. At the other end of the school years, geography in England is absent from the national curriculum at K 4 (14-16 year olds) while in Germany at least in the schools leading to the entitlement to study at university it is usually taught at K 3 and 4 and is optional, but also relevant at the post-16 level. It is at the post-16-level, that geography in Germany is definitely classified as a social science.

This classification is due to the coincidence of a far-reaching educational reform in the early 1970s and a change of paradigm in German academic geography that has repeatedly been described as a 'scientific revolution' because it became explicit during the annual meeting of geographers at Kiel in 1969 (Fachschaften, 1969). The core of this revolution was the switch from a specific form of regional geography (Länderkunde) to thematic geography. Similar changes can be observed in other

countries and are usually described as a development from a conceptual focus on place to a conceptual focus on space. In Germany this change was accompanied by an ongoing debate on the role of physical geography in the new framework of spatial sciences. Thus, already one year before the revolution Hoffmann (1968) published an article in which he promotes the teaching of physical geography with the explicit aim of saving the traditional approach of regional geography. One of the main characteristics of this approach is to define the subject by the objects it studies, namely the landscape. To secure this perspective Hoffmann was ready to introduce some methods adopted from the natural sciences. He was also ready to give up a strict environmental determinism and to replace it by an environmental moralism.

In the years following the 1969 revolution the debate on the role of physical geography in the classroom had largely subsided, but it was revived in the early 1980s when two competing views emerged. Härle (1980), a geography educationist, proclaimed a 'geo-ecological deficit' in school geography which he mainly understood as a lack of moral education promoting 'green' values. His position was anti-rational, but also anti-political. His obvious opponent was Jannsen (1982), a physical geographer, who claimed that physical geography in the classroom could only be saved by civic education. He argued for a rational, scientific physical geography that answered to politically relevant questions and fostered critical thinking. Although this perfectly fitted the societal development, it was vehemently fought by mainstream geography (Uhlenwinkel, 2006).

Hence, not surprisingly Härle's position prevailed and in the person of Hartwig Haubrich led to a merger of the call for more earth sciences in geography with Gaia meditation (Haubrich, 1994). In the late 1990s and early 2000s this approach was criticized from two perspectives: an epistemological discussion of the understanding of the term nature and its links to traditional geography (Schultz, 1996; 1997; 1999) and a scientific challenge of the shortcomings of methodologies and explanations from the natural sciences in physical geography (Lethmate, 2000a; 2000b; 2001). While the epistemological critique went almost unnoticed, a lively debate ensued around the question of how scientific physical geography really was. Although Lethmate did not explicitly share Jannsen's position, but did share the classical understanding of geography being defined through the objects it studies, his emphasis on rational thinking and non-moralistic teaching made him a target for the defendants of the classical approach (Kross, 2000; Haubrich, 2001). At this stage it became obvious that the fight was not so much about physical geography and civic education, but about the rational reasoning that was part of both, political education and the natural sciences (Uhlenwinkel, 2005).

Until this time German school geography was strongly based in a Future 1 framework (Young & Muller, 2010), emphasizing factual knowledge. This only changed with the introduction of competence oriented curricula after the so-called PISA-shock, when something closer to a Future 2 'learning to learn' framework made it into mainstream geography education. In this context physical geography was no longer defined through the objects studied, but through the pedagogy it offered, namely the chance to use experiments, which were mainly viewed in the light of

student activity (Wilhelmi, 2014). This approach thus is rational, but neither abstract nor theoretical.

In Britain, the debate about physical geography has enfolded along different lines. As in many other countries (e.g. France and Portugal) there is a difference between physical geography content being embedded in a social issues context, which would be similar to the German civic education approach (Rawding, 2013), and a 'deep' earth science that is linked to a natural science subject (Hawley, 2013). This difference is mirrored in the English-speaking academic debate. In 2012 Stephen Johnston, a geologist, made a proposal similar in intention to the efforts in Germany to try and include geosciences in school geography. Johnston claimed that "earth scientists need to be strong contributors to debates and discussions concerning the magnitude and consequences of climate change' (Johnston, 2012, s. 6). To achieve this he proposed to 'get rid of geography departments' because he wants 'physical geographers to be important members of comprehensive earth science departments' (Johnston, 2012, s. 7). Contrary to the same claim in the German community Johnstons ideas have been contested by physical geographers. Lave et al. (2013) argued for a need for critical physical geography which they wanted to collaborate with critical human geography. Only slightly later, Tadaki et al. (2014), of whom one was also a co-author of this proposal, elaborated their point of view, maintaining that an integrated approach was too monolithic and there was a need for critical reflective thinking in all fields of physical geography. This would open up enough space for free decision-making that was significant for democratic societies (see also Möllers, 2009).

Even before this debate ensued one could observe numerous attempts to bring physical geography back into the main debates of geography. One such example is the book 'Key Concepts in Geography' (Clifford et al., 2009), in which geographical concepts are discussed in human and physical geography contexts separately. Especially the chapters on physical geography show that there has been alienation between its endeavours and conceptual geography as researchers tried to connect to the methodologies of natural sciences. Hence the reader is told, that the concept of space has been 'neglected' (Kent, 2009, s. 97) and that the concept of place was treated merely 'implicitly' (Gregory, 2009, s. 173). Only recently it seems, a tendency to re-unite with the former mother-subject can be discerned. A quite different approach was chosen in a publication on 'A World After Climate Change and Culture-Shift'. Here the main idea is not, that the two spheres can easily be integrated into one view, but that there are 'two trends moving in opposite philosophical directions" (Norwine, 2014, s. 2) with 'climate change constricting the limits of possible behaviours and postmodern culture expanding them to infinity' (Norwine, 2014, s. 2).

There is thus a considerable debate in the English-speaking world that revolves around the role of physical geography and that also reveals a development away from more positivist approaches that focus on everything measurable to more constructivist approaches that focus on human understanding and critical thinking (Hawley, 2013).

Considering the theoretical debate outlined here, it would be reasonable to assume that the justifications offered for teaching materials should mainly spring from values education in Germany and these should differ from justifications offered in Britain. To

test this assumption we conducted a survey of justifications offered for teaching materials on weather and on volcanos.

Method and sample

Content analysis (Mayring, 2010) served to map the justification patterns used by authors when writing about topics of physical geography. All papers dedicated to the topics of volcanoes and weather were selected, and subsequently subjected to analysis. In-vivo coding served to develop categories. Thereby, intercoder reliability was secured.

The sample consisted of three journals with an emphasis on teaching materials for school geography. Geographie heute and Praxis Geography are published in German and look back at a tradition of several decades. While market data is unavailable for both journals, they are frequently used as support for lesson planning. To map mid-term patterns, all issues published between 1979 and 2013 were included in the sample. The British journal Teaching Geography displays similar formal features. Due to reasons of accessibility, only issues published between 2001 and 2014 could be considered as part of this research project.

Three indicators served to analyse the types of justification. While the first indicator (number of papers/year) offers general information, the second (justification of topic choice) and third indicator (educational objectives) reveals patterns of justification.

Results

Between 1979 and 2013 a total of 133 journal articles discussed the topics volcanoes and weather in the three journals. The two journals geographie heute and Praxis Geographie published the majority of these articles. Together they dedicated 121 papers to the topics of volcanoes and weather. Volcanoes enjoyed a somewhat bigger attention as compared to the topic of weather.

Volcanoes

The 67 papers dedicated to different aspects related to the topic of volcanoes display an uneven distribution. While the journal geographie heute contains 25 papers published between 1986 and 2012, Praxis Geographie deals with volcanoes in a total of 42 papers distributed over the time period between 1979 and 2013.

Both journals published in average 2.1 papers per year however the indicator shows a generally decreasing trend (Fig. 1). Hence, the topic of volcanoes seems to become increasingly marginalized after a boom around the mid-1980s and during the first half of the 1990s. This boom is partly a reflection of special thematic issues. Especially, geographie heute treated volcanoes as a rather negligible topic for longer than a decade. Only in the early 2010s, a slight change of trend can be observed, as the number of papers per year started to increase again. In contrast, the journal Praxis

Geographie dedicated rather episodic attention to the topic of volcanoes. Not only did the number of thematic issues decrease over the decades, but also the paper count. There are two main arguments that may explain the declining interest in volcanoes. First, it might be connected to the generally shrinking share of physical geography in the curricula of most federal states. This might lead to a decreasing demand and consequently, to new thematic profiles of the journals. Second, a stronger integration of the traditional topics of physical geography into the discourse of human-environmental relationships can be observed. This would be in accordance with the prominent view in German geography education, which sees human-environmental relationships as the core of geographical knowledge.

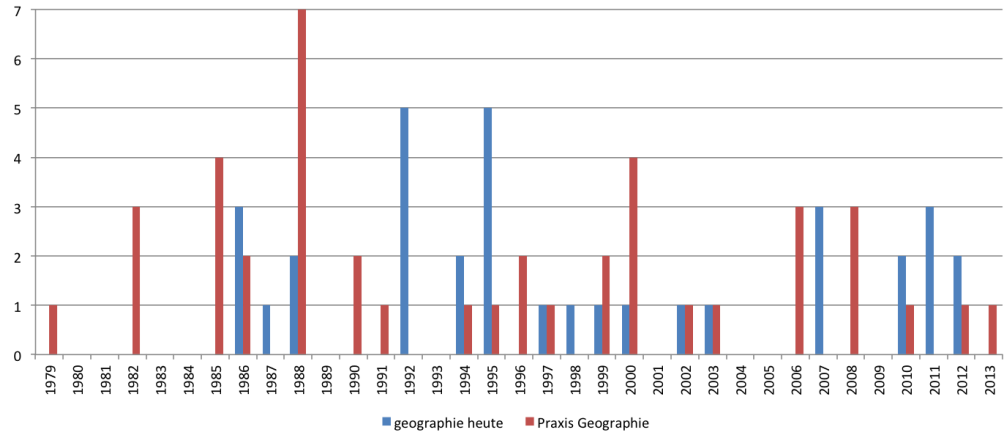

FIGURE 1.

Number of papers/year dedicated to the topic volcanoes (n=67)

The second indicator highlights the authors' justification when writing about volcanoes. Overall, papers tend to highlight the importance of content however, starting around the mid-2000s, society-related justifications become more frequent. It is also from the mid-2000s that the historical trend of homogenous justification seems to have changed into a multi-reason pattern. The main justification of most papers published in geographie heute is content (Fig. 2). While pedagogy played an important role during the 1990s, the relation to society experienced an increasing importance since 2000. Only one paper justifies the topic based on the needs of the students. Similarly, Praxis Geographie emphasizes content as the main justification for discussing volcanoes (Fig. 3). However, starting from the 2000s, this justification seems to be progressively replaced by other justifications, such as the needs of the students, the relevance for society, and the pedagogy. In contrast to geographie heute, papers published in Praxis Geographie between 1997 and 2000 often justify the topic of volcanoes by referring to the curriculum. This development might be connected to the efforts of a subject-related lobby within the curricular reform of the late 1990s that led to the development of a common framework for all federal states called Curriculum 2000+. Nonetheless, the overall disjuncture from content together with a growing emphasis on society, pedagogy, and the students also visualizes the

promotion of generic skills at the expense of geographical disciplinary knowledge in the framework of the implementation of educational standards.

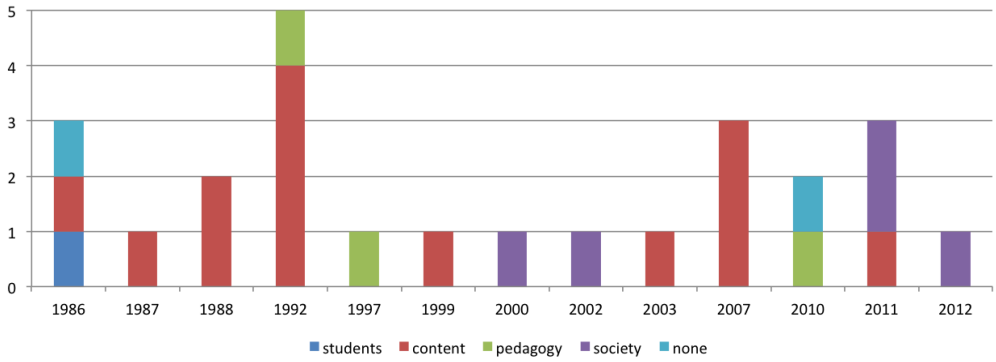

FIGURE 2.

Justifications of topic choice: volcanoes in geographie heute (n=25)

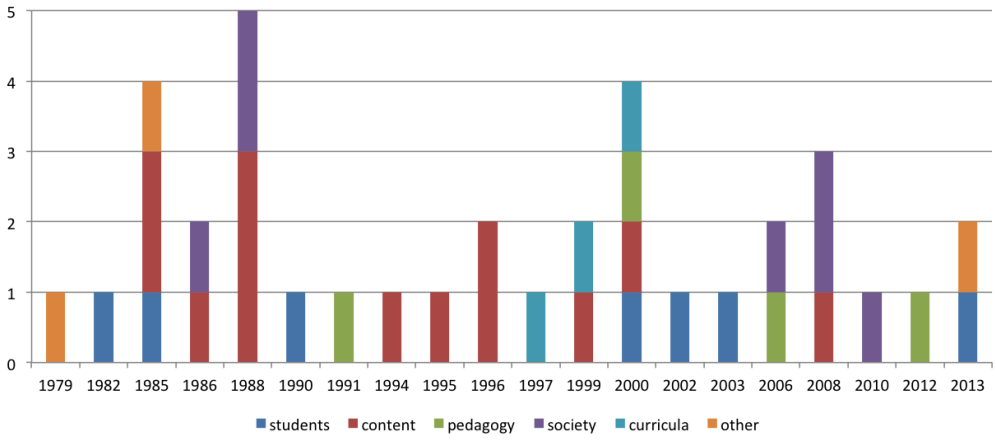

FIGURE 3.

Justifications of topic choice: volcanoes in Praxis Geographie (n=42)

The third indicator sets a focus on the educational objectives named by authors when justifying their choice of topic. Overall, the main objective is to achieve an understanding of volcanoes. The two journals show little variance. The journal geographie heute keeps an emphasis on understanding, while facilitation is a common justification during the late 1980s and early 1990s (Fig. 4). Understanding is also the prevailing justification in the papers published in Praxis Geographie, however, sensitization plays a significant role in the late 1980s (Fig. 5). Facilitation enjoys increasing importance since 2006. The moderate, yet detectable shift from achieving understanding to facilitating understanding most likely is a consequence of the implementation of the educational standards resulting in an increasing importance of pedagogy and lesson practice as compared to content.

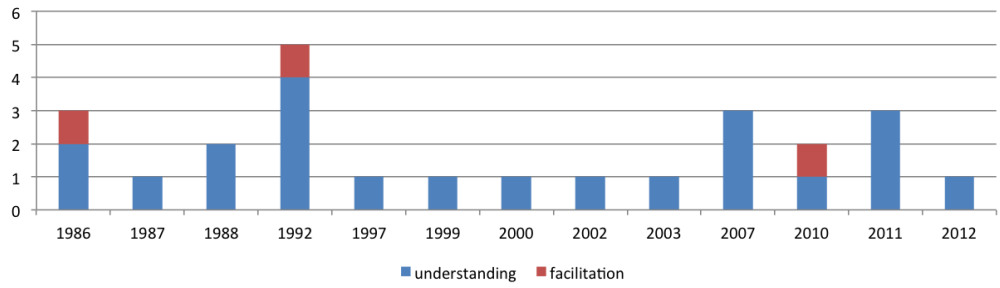

FIGURE 4.

Justification of educational objectives: volcanoes in geographie heute (n=25)

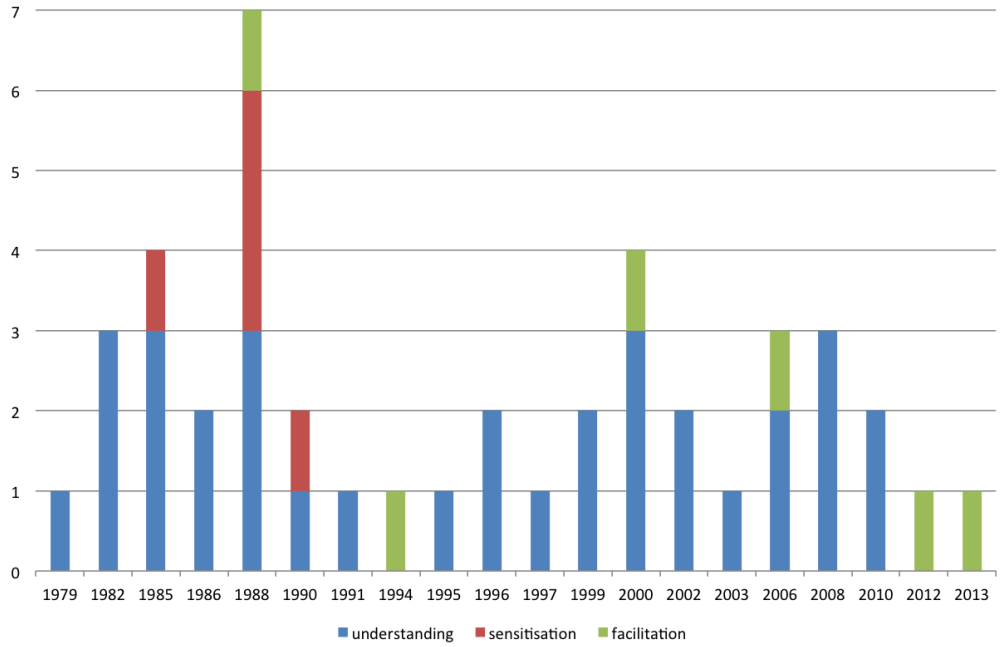

FIGURE 5.

Justification of educational objectives: volcanoes in Praxis Geographie (n=42)

Weather

Between 1979 and 2013 a total of 54 published papers published have an emphasis on the topic of weather. The journal Praxis Geographie contains the majority of these papers (n=42).

As with the topic of volcanoes, the journals dedicate an average of 2.1 papers per year to the topic of weather. Here as well, the overall trend over the decades shows a decrease in publication per year (Fig. 6). The majority of the twelve papers counted in geographie heute are part of two special thematic issues (printed in 1984 and 2009). The remaining four papers are distributed unevenly over the 1980s and the 2000s. Similarly, the journal Praxis Geographie dedicates merely marginal attention to the topic of weather. However, the distribution of the 42 papers is much more balanced. In contrast to geographie heute, Praxis Geographie seems to maintain a continuous focus

on the topic of weather, however here as well it becomes increasingly marginalized, with the number of papers per year displaying a decreasing tendency after 2000. This decrease may be related to the stronger focus on climate instead of weather that can be observed in the aftermath of the 1992 Earth Summit in Rio de Janeiro.

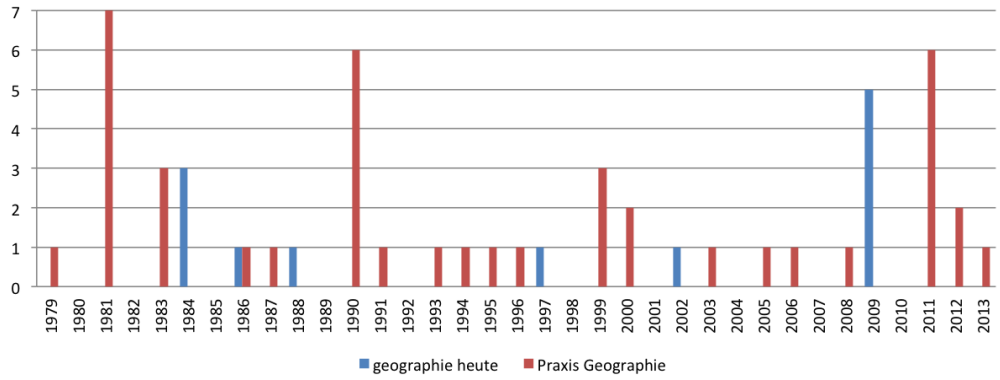

FIGURE 6.

Number of papers/year dedicated to the topic weather (n=42)

The authors' justification when writing about weather is the second indicator. The two journals display diverging patterns of this indicator. The main justifications of most papers published in geographie heute are content and relation to everyday life (Fig. 7). Other justifications, such as curricula, pedagogy, and the needs of the students play a marginal role. Additionally, the latter two justifications appear only in 2009. Overall, the justifications in geographie heute remain constant over time, but might experience some diversification induced by the skills-based teaching implemented along with the national standards. In contrast, the most frequent justification counted in the papers published in Praxis Geographie is the needs of the students (Fig. 8). Curricula and content are also frequently mentioned, while lesson planning and pedagogy remain rather marginal. Examining the justification dynamics over time reveals that the main justification over time (despite an overall quantitative decrease) remains the needs of the students. In contrast, content and lesson practice gradually become marginal, while the curriculum progressively gains importance. Possible explanations for this development are the replacement of weather by climate along with a (renewed) emphasis on student-centred geography education in times of skills-oriented teaching.

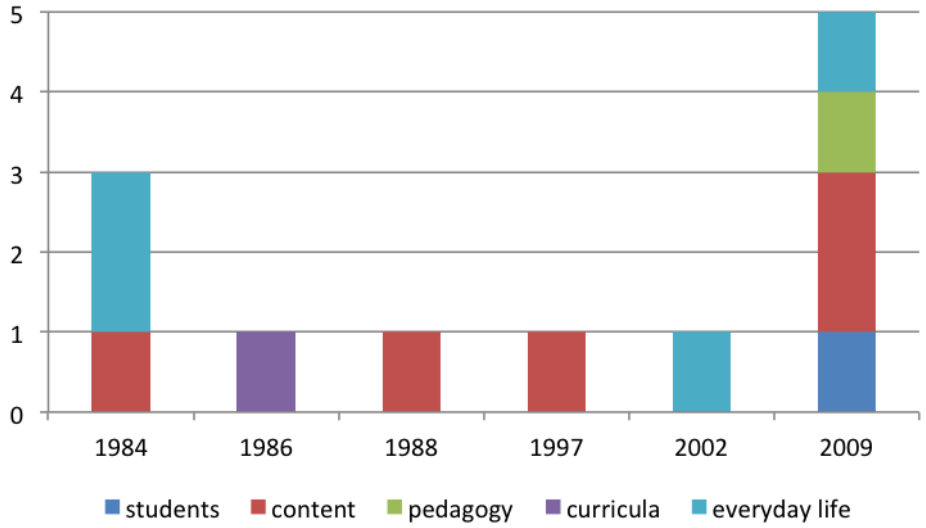

FIGURE 7.

Justifications of topic choice: weather in geographie heute (n=12)

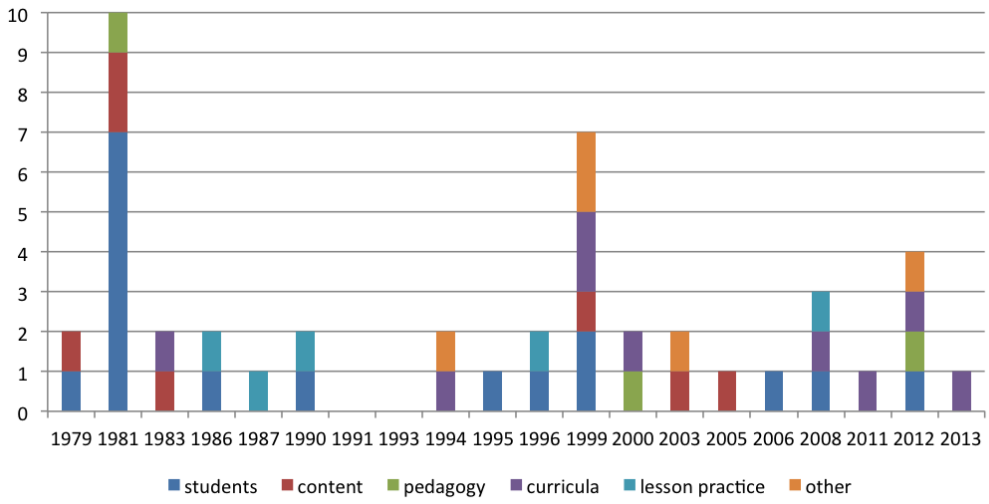

FIGURE 8.

Justifications of topic choice: weather in Praxis Geographie (n=30)

The third indicator offers information on the educational objectives named by the authors when justifying their choice of topic. The two journals display strikingly different patterns. Understanding is the sole justification of the twelve papers published in geographie heute (Fig. 9). In contrast, papers with a content emphasis on weather published in the journal Praxis Geographie contain a total of seven types of justifications. Similarly to geographie heute, understanding is the most frequent justification (Fig. 10). Skills and sensitisation are two additional justifications that display higher counts. The remaining justifications (behaviour, environmental awareness, unity of man and nature) were counted in rather few papers. Additionally, the overall trend consists of a decrease of importance of understanding with a

simultaneous increase of justifications based on sensitisation and skills. The overall fading of cognition and the simultaneous justification based on skills might be connected to the turn in German geography education induced by the national standards. Their emphasis on geography as an interdisciplinary discipline may lead to an overburdening demand on teachers' content knowledge, which turn leads them to emphasis a manageable amount of generic skills. While not intended, a skills-based geography education in connection with an unclear subject definition may lead to a neglect of subject-specific content in favour of generic skills.

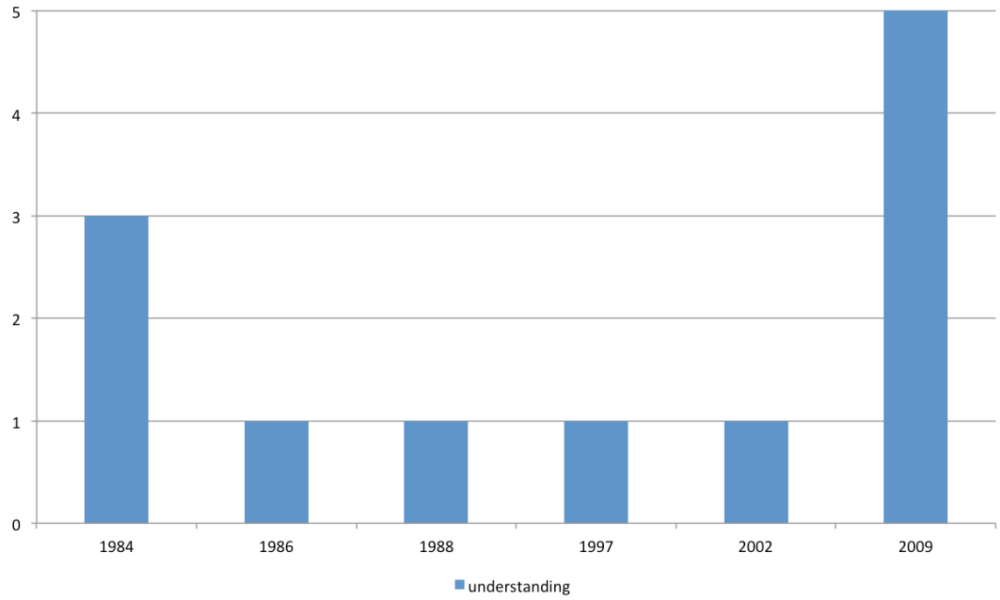

FIGURE 9.

Justification of educational objectives: weather in geographie heute (n=12)

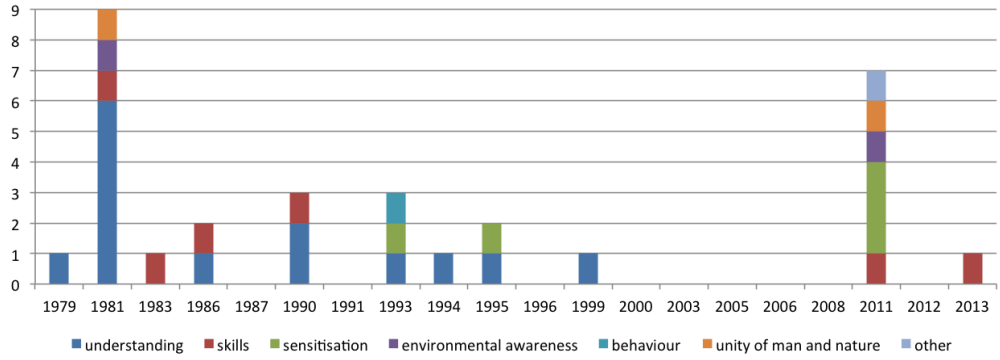

FIGURE 10.

Justification of educational objectives: weather in Praxis Geographie (n=30)

Comparison with Britain

Over a time period of thirteen years (2001-2013), Teaching Geography dedicated a total of 12 papers to the topics volcanoes (6) and weather (6). Compared to the

German journals the papers display a different tradition of justification. Overall, resources and technologies are a common starting point when justifying the importance of the topics of volcanoes and weather. While papers published in 2001 display a strong social issues context, focusing on places and patterns seems to be of central importance when developing justifications. Thus, geographical concepts and geographical thinking seem to be more important than they are in the German publications. In addition, most papers have a strong focus on student activities. In contrast to the German journals, papers published in Teaching Geography tend to develop both topic justifications and educational objectives by narrative and argument, which could be interpreted as a greater emphasis on reflective thinking than can be observed in the German examples. Yet, all that glitters is not gold: Some arguments, e.g. when the topic of weather is justified by the climate change discourse, are rather poor.

Discussion

In a short reflection on the project called "critical physical geography", Dufour (2015) comes to the conclusion that it represents a rather pragmatic approach that takes the institutional proximity of the natural and the social or human sciences in geography departments as an opportunity to claim a deepening of understanding if the two are linked. What, in his view is lacking and will have to be developed to make this effort sustainable, is an epistemic framework that allows researchers to clearly define the role that physical geography plays in the conjunction.

Considering the results from the analysis of the justifications of physical geography topics in school geography a similar problem can be discerned. This problem is partly due to the shift towards generic skills and the unsolved question of the role that subject knowledge generally plays in this context, leading to Michael Young's question of "What are schools for?" (Young, 2011). What, if not for introducing young people to knowledge that they would most probably not encounter in their everyday life?

The other, less often discussed part of the problem reflects the academic debate: Does the fact, that school geography covers both, the natural and the social sciences, lead to a better understanding? Or does it lead, as seems to be the case in Germany, to an epistemology that supports explaining society through nature? If such a roll-back was to be avoided, a debate on the epistemic framework of physical geography in school geography is necessary.

We would propose here to remember Lefebvre's warning that it is not possible "to found our knowledge of social practice, and the general science of so-called human reality, on a model borrowed from physics" as "this kind of approach has always failed in the past" (Lefebvre, 1991, s. 13). We would also propose to consider the view Nussbaum put forward in relation to developments in the medical sciences, that "as biology changes medical possibilities, we must be constantly alert to the fact that some possibility that used to belong to the realm of chance or nature now might

belong to the social realm, the realm shaped by justice" (Nussbaum 2007, s. 181-182). In our understanding, the insights of physical geography, and not nature itself, can provide a sustainable background for debates and decisions in the social realm, but this realm is not and cannot be dominated by natural laws as that would deny human agency (Möllers 2009). Especially in the school context, it is the obligation of geography to develop the democratic understanding of the students. In our view, the way physical geography has been integrated into German school geography during the last two decades does not support this obligation and we hope that the findings presented here will trigger an honest discussion not just of the role of physical geography at school, but also of what we expect of natural sciences in education in general.

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