

Research Article

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How do the German and Dutch Curriculum Contexts influence (the Use of) Geography Textbooks?

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Abstract

Bernstein describes a curriculum context as a system context that is regulated by strong and weak framing, which refers to the “degree of control teachers and pupils possess over the selection, organisation, pacing and timing of the knowledge transmitted and received in the pedagogical relationship” (1975, p. 89). In this article, we describe research on how differences in framing influence the design of geography textbooks and lessons in higher secondary schools (ages 16-18).

In a comparative case study, we analysed geography textbooks, observed lessons, and interviewed

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editors and teachers in a country with weak framing (Germany) and a country with strong framing (the Netherlands). The results show that weaker framing goes hand in hand with textbooks focussing on knowledge and offering higher-order tasks. In the country with weaker framing, teachers use more question and answer teaching strategies, students deliver more presentations, and more assignments are used that are aimed at practising higher-order cognitive skills. Interviews carried out with teachers in both countries underline the fact that stronger framing of the curriculum can cause stress and has a strong impact on the teaching practice. This explains the different teaching patterns in both countries, despite similar teaching orientations.

Keywords

Curriculum, Framing, Textbooks, Geography Education, International Comparison, Netherlands, Germany

In educational research, it is undisputed that “Teachers do make a difference” (Hemmer, & Hemmer, 2017, p. 10) and that the quality of teaching is crucial for student learning (Hattie, 2009). As a consequence, teachers are praised when the results of their students go beyond the expected standards, or blamed if the students’ results don’t meet these standards (Thijs & Van den Akker, 2009). Shulman (1987, p. 6) identified teachers’ pedagogical content knowledge (PCK), which he described as a “special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding”, as that which distinguishes a teacher from a content expert. Codified knowledge, experience and deliberate practice play a major role in the development of PCK (Ericsson, 2006). It’s a teacher’s PCK that is a key factor for the quality of the teaching (Hemmer & Hemmer, 2017). However, the context in which a teacher teaches limits both the development and the use of PCK. An example is a situation in which students have to take high-stakes tests, which will result in teaching aimed at preparing for such tests (Bijsterbosch, Van Der Schee, Kuiper, & Béneker, 2016).

Theoretical Background

Already in the early 1970s, Bernstein (1975, p.85) stated that the teaching practice “reflects both the distribution of power and the principles of social control”. This means that what a teacher knows and how he acts depends on the context the teacher is functioning in. This resembles the concept of PCK but to which Bernstein (1999) refers to as the teacher’s “repertoire”. In order to describe and analyse this context, Bernstein developed a framework.

According to Bernstein (1975, p.79) a curriculum is “a principle by which certain periods of time and their content are brought into a special relation with each other” as a result of social and political choices, and which is inseparable from pedagogy and evaluation. Bernstein distinguishes two main types of curricula: a collection type with a strong separation of content or school subjects (strong classification), and an integrated type, where the lines between the content or school-subjects are blurred (weak classification). A collection type curriculum can be characterised as more hierarchical, differentiating and rigid (clear division of subjects), whereas the integrated type curriculum focusses more on a general concept or idea, which affects the pedagogy and leads to “education in breadth”, in other words, a more general education (Bernstein, 1975, p. 83).

Both curriculum types are influenced by a certain degree of “framing”. Bernstein defines framing as: “the degree of control the teacher and pupil possess over the selection, organisation, pacing and timing of the knowledge transmitted and received in the pedagogical relationship” (Bernstein, 1975, p. 89). The stronger the framing is, the fewer options there are. The framing rules define the educational context and can also have a tacit character (Bernstein, 1990).

Bernstein (1999) makes a distinction in what he calls the “pedagogical discourse” between a vertical and horizontal discourse. The vertical discourse is the primary context and can be seen as the intellectual field where the production of the discourse takes place, whereas the horizontal discourse is the secondary context where reproduction of the educational discourse occurs, e.g. secondary or primary schools. He also introduces the “recontextualising context”, which regulates and transforms the communication between vertical and horizontal discourse by, for example, specialised agencies like inspectors or specialised publishing houses. According to Bernstein (1999, p. 159) schools are the place of the horizontal discourse, which “entails a set of strategies which are local, segmentally organised, context specific and dependent”. This total set of strategies forms the ‘reservoir’ of a community as a whole. The “set of strategies any one individual possesses and their analogical potential for contextual transfer” is the ‘repertoire’ of the teacher. Consequently, the repertoire of the teacher depends on the ‘reservoir’ of his working environment (school), and on the access to the vertical discourse. As stated by Bernstein (1999) all discourses and thus reservoir and repertoire are regulated by the degree of framing (see fig. 1). Framing becomes specifically visible in the horizontal discourse, or more specific, the schools.

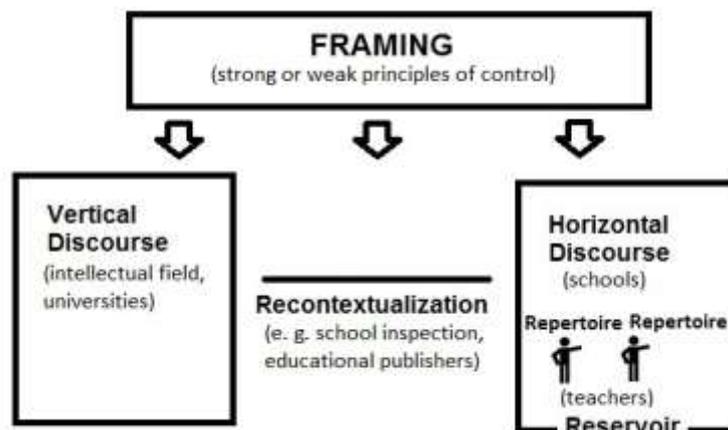


Figure 1. Framing of the vertical & horizontal discourse and the recontextualising context

In the research that we report about in this article, we use Bernstein's framework to explore how the curriculum and the curriculum context affect both teaching materials and teaching practices in geography education in higher secondary education. For Germany and the Netherlands, the curriculum and the curriculum context differ, but the type of schools, level of education provided, and class composition and size are similar, which makes higher secondary education in both countries appropriate for a comparison

(Zemanek & Nerbig, 2012; Mahamud, 2014). When comparing these contexts, we focus on the textbook and the use of textbooks in lessons due to textbooks being “the crucial pedagogical medium” in education (Bernstein, 1999, p. 46). Textbooks can be seen as materialised curricula (Hamann, 2004). Stein (2003) distinguishes three main functions of the textbook, which can all be linked to the curriculum: an informational (Informatorium), a political (Politicum) and a pedagogical function (Paedagogicum). However, not only does the curriculum have an influence on the design of textbooks, the examination and teaching habits affect the textbook (Pingel, 2010), as well as the views of textbook authors (Lee & Catling, 2017).

The research question to be answered in this article is: To what extent does the framing of the curriculum and its context influence the approach of textbook producers, the pedagogical design and the use of geography textbooks in higher secondary education.

Contextual Background

The research has been designed as a multiple, comparative case study (Yin, 2002; Newby, 2010). The two countries are regarded as cases: Germany as an example of a weak framing and the Netherlands as one of strong framing. Although the German situation differs for each state (Kulick, 2010), there are several features which all German states and the Netherlands have in common. In all German states as well as in the Netherlands the school system is organised vertically: after primary education at the age of 10 or 12, the students are allocated to different types of schools for secondary education according to their intellectual capacity. The German *Gymnasium* and the Dutch *VWO* represent the highest level of secondary education. Both *Gymnasium* and *VWO* have a final phase, encompassing three years, which can be described as “higher secondary education”. A diploma from a *Gymnasium* or *VWO* gives the right to enter university. In both countries, geography is taught as a subject, separated from other subjects such as history or biology. It is an elective subject in higher secondary education in both countries.

Bernstein (1975) already categorised the continental European curricula as “collection type”, which refers to a strict division between subjects. This hasn’t changed in the last forty years for higher secondary education in both countries. A closer look reveals differences in framing between German and Dutch higher secondary education. For the German situation, we will focus on only four federal states where the lesson observations took place. They represent three of five distinguishable curriculum approaches in Germany, which are applied in thirteen of the sixteen states (Uhlenwinkel, 2013). These three approaches are regional, chorological or a mix of both. In the following section, we describe how the different framing is visible in the curriculum and the curriculum context of each country.

The Curriculum Context of Germany

Since the early 2000s, the German educational context has been dominated by the debate about PISA results. Although the German results on the PISA test were “average” compared with other countries, they were perceived as “poor” (Uhl, 2006). This debate is still going on (Koch & Laske, 2014) and has led to a demand for competence-based education, educational standards and output-oriented curricula (Schöps, 2017). This is why the German Geographical Society published educational standards for lower secondary education in 2006, which have also been translated into English (2012). The geography curricula valid during the lesson observations and which have been examined were those for Hessen (2008), Berlin, Brandenburg & Mecklenburg-Vorpommern (2006) and Rheinland-Pfalz (1998). They have barely been influenced by the debate about educational standards.

The curriculum aims and specifications focus on propaedeutic knowledge, that is knowledge which is necessary to understand science and should prepare for university. They offer much leeway for textbook authors as well as teachers (see figure 2).

Chances and risks of globalisation processes in respect of one or two selected realms

- Global trade and financial flows: theories about foreign trade
- International tourism
- Environmental problems and policies

Figure 2. Curriculum specification for the topic globalisation as a part of the curriculum domain “Selected Economic Regions” (Source: Senatsverwaltung für Bildung, Jugend und Sport Berlin; Ministerium für Bildung, Jugend und Sport des Landes Brandenburg; Ministerium für Bildung, Wissenschaft und Kultur Mecklenburg-Vorpommern 2006. Translated by U. Krause.)

It depends on the federal state and the type of course the student chooses as to whether there is a central, written examination at the end. A typical final exam consists of a small number of tasks (see figure 3), which cover three performance levels: (1) reproduction, (2) analysis and transfer and (3) reflection and problem solving. These performance levels were defined for all federal states to guarantee comparable entry levels for the university (KMK, 2005). However, the expected results that are designed to help teachers mark the tests for all three performance levels feature tick-off-lists of facts found in the material provided (Senatsverwaltung, 2006). Thus, when asked to discuss the development of the city since the loss of the status as capital, students are expected to state e. g. that six ministerial departments remained in Bonn (according to material 2), that disused embassies were turned into flats (according to material 11) and that Bonn remained an international city through the establishment of offices of the UN and other international organisations (according to material 10). What looks like a high-order-task hence turns out to be mainly reproduction as well. However, the final mark of the student does not only consist of the results of the final exam, but also of written tests (which are mostly structured in a similar way as the final exams), marks for oral contributions during the lessons or group work and for presentations. These oral marks are often also based on high-order-tasks. Contrary to the final and written examinations, the expectation here is that students voice their opinion. In some cases, the oral marks

given by the teacher will be the only ones for the subject as a whole (see f. ex. Senatsverwaltung, 2006, p. 7-8).

1. Characterise the development periods of the city of Bonn until the mid 20th Century.
2. Explain the spatial, demographic and economic structural change of Bonn, which has been triggered by the function as being a capital.
3. Discuss the development of the city since the loss of its capital status.

Figure 3. Central Exam Geography, state of Brandenburg 2009 (Source: Ministerium für Bildung, Jugend und Sport des Landes Brandenburg, 2009. Translated by U. Krause.)

The Curriculum Context of The Netherlands

The Dutch educational context of the late 1990s and early years of 2000 has been influenced by a big educational reform which aimed to realise inquiry based learning on a large scale. The most important outcome is the dominant principle of self-study: students must be able to work at their own speed and on their own. The curriculum is prescriptive and worked out in a detailed way (figure 4); for the central exam as for the school-exams.

- 3a. Combining the concepts, globalisation and time-space-compression, analysing from a geographical perspective; ...
 3. a.1. The economic, political and cultural dimensions of globalisation

In this context he [the student] can	Concepts	Generalisations / Rules / Focus	Relevant operation methods
Differentiate between the economic, political and cultural dimensions of globalisation. Describe relations between these dimensions and indicate to what extent these dimensions are influencing each other.	Globalisation, Localisation, Homogenisation, Fragmentation, Global Village, Network Society, Internationalisation, Capital Flows, International Division of Labour, Multinational Corporations, Production Chain, Americanisation, Cultural Region, Lingua Franca, Identity, Changing Role of the State, Block-forming, Region, Regionalism, Active Citizenship	Globalisation leads to homogenisation as well as to fragmentation.	Describing and analysing the phenomenon from different perspectives Relate specific spatial phenomena to general globalisation processes.

Figure 4. Example of a detailed description of one of the curriculum aims for the theme globalization (Source: CEVO 2009, p. 14-15. Translated by U. Krause.)

In this way, for the human geographic domain of the exam called “World” 195 concepts, 31 generalisations and 27 operation methods are explicated. The other domains are structured in the same detailed way. The central exam is compulsory for all students taking the subject and consists of 32-34 questions on knowledge, comprehension and application (figure 5). Research shows that application is the

highest level in Dutch final exams (Van De Westerlo, 2011). Half of the final mark for the subject is based on the school exam (containing written evidence like tests or essays), the other half on the final exam. The results are strictly monitored by the school inspection. The difference between both marks should not be higher than 0.4 (on a scale of 1.0 and 10.0). All marks are published (Inspectie van het Onderwijs, 2014) and if a school does not minimise the gap between school and central exams, it can be closed down (Ministerie van Onderwijs, Cultuur en Wetenschap, 2009).

8. Use source 2.
Welfare in the Caribbean region is not distributed in an equal way. In the source, you see the data of the countries A, B, C and the Netherlands. Write down the letters A, B and C on your answer paper and write the name of the country in question next to every letter. Choose from:
- Cuba; - Dominican Republic; - Haiti.

9. In the 20th century a change of the hegemonic states took place which offered the Caribbean region new possibilities. Explain this. Your explanation must include a cause-consequence-relation.

Figure 5. Two questions from the Dutch Central Exam 2011 (Source: College voor Toetsen en Examens, 2011. Translated by U. Krause.)

Germany and the Netherlands Compared

We can define four elements in which the different framing between the two countries occurs: the curriculum, the examination, the marking system and the out-put control (Figure 6).

	<u>Germany</u>	<u>The Netherlands</u>
Curriculum	general, giving leeway, focus on propaedeutic knowledge	detailed, prescriptive, focus on factual knowledge
Examinations	partly central, cases, partly higher-order	central, specific, concept level, lower-order
Marking School Exam	oral (and written)	written
Output Control	by teachers themselves	strong supervision by school inspection on marks

Figure 6. Aspects of Framing in Germany and the Netherlands

A weak framing in Germany is visible in a curriculum which points out some general aspects of knowledge and gives textbook producers, as well as teachers, freedom for interpretation. The exam consists of several tasks, mainly aimed at higher-order thinking skills (analysis, creation, evaluation), with the aim of preparing students for university (propaedeutic skills and knowledge). These tasks are more complex than closed questions on knowledge, comprehension or application level, and open for interpretation in the marking process. When there is no central exam, the tasks are constructed by the teachers themselves. The marks of the school exam consist, for a substantive part (sometimes totally), of oral contributions by students such as

presentations or how well they participate in lessons. The marks are given by the teacher. Thus, in the German case we see what Young (2015), referring to the German Abitur, calls ‘public trust’: “school teachers [,] are trusted by the public to guarantee standards and quality” (p. 44).

The strong framing in the Netherlands occurs in a curriculum that prescribes, on a very detailed level, what students have to know and therefore textbook producers should take into account. This becomes more important for the equally detailed central examination, consisting of lower-order tasks (knowledge, comprehension and application), which aims to test the knowledge of the prescribed concepts, rules and skills in an unambiguous way. The significance of the central examination increases by the strict output control of the school inspection, which monitors the gap between school exam (consisting only of written evidence) and central exam marks. According to Young (2015), we can state that trust is “driven by external instruments like examinations” (p. 43) in the Dutch situation.

Methodology

In this section we will outline, how the data for the two cases were collected and analysed. For reason of comparability (Zemanek & Nerbig, 2012; Mahamud, 2014) the case study focusses on textbooks and lessons for the last three years of Gymnasium and VWO (age group 16-18). For every country two textbooks, for every textbook five teachers, and for every teacher five lessons are analysed. However, since the German teachers ended up working with a different textbook than foreseen, the German case consists of three textbooks. All textbooks were published between 2006 and 2008 and were in use during the observation period 2009 until 2011. The German textbooks Diercke and Mensch und Raum/Geos were designed to be used in all federal states, then later Seydlitz was added in the states Mecklenburg-Vorpommern, Berlin and Brandenburg. The Dutch books Wereldwijs and Buitenland were developed for the adapted curriculum in 2007 and could be used countrywide. Contrary to the German books, the Dutch books consist of two volumes, a textbook and a workbook. In both countries teachers were selected by a snowball principle as described by Ruane (2005): stakeholders as (university) teachers or publishers were asked if they know teachers who were working with a specific textbook, who might want to participate in the research. These teachers were asked for additional or alternative names and so on (Ruane, 2005). The 20 schools were comparable (i.e. no types of special education, smaller as well as bigger cities) and in Germany, they were located in the states Berlin, Brandenburg, Rheinland-Pfalz and Hessen and in the Netherlands, they were located in the South and the West of the country.

Influence of Framing on Publishing House Decisions

According to Bernstein (1990), publishing houses for schoolbooks are important factors in the recontextualising context. A stronger or weaker framing might lead to different approaches of publishing houses and result in different textbooks.

In order to examine the extent to which the framing of the curriculum and its context influences their approaches, 2 Dutch publishers and 2 Dutch editors (NL1 – NL4), 2

German editors, 2 German publishers and 1 German publisher/editor (DE1 – DE5) have been interviewed. To get as much information as possible and to ask questions for deeper understanding the interviews were held in a semi-structured way and face-to-face as described by Cohen et al. (2011). However, the publishers barely gave answers about the pedagogical design of the textbooks. To analyse the approaches used by the pedagogical design of textbooks therefore only the interviews of the editors have been transcribed and were personally controlled by them for validation. The questions covered the broad range of topics shown in Table 1 because framing could be clearly visible as well as tacit.

Table 1
Interview Topics Editors & Publishers

Themes	Topics
Reason for Publishing and Factors of Influence	Motive for Publication, Role of Curriculum & Examination, other Factors of Influence
Design	Targets, Resources, Structure, Lay-Out, Pedagogical Concept, Role of Educational Debate, Texts, Assignments & Tasks, Differentiation, Special Features
Practice	Expectations & Possibilities in Respect to Textbook Use

These interviews were analysed by using the approaches of textbook authors, as defined by Lee and Catling (2014). They define three categories: a knowledge, an activity and a resource-centred approach.

- A knowledge-centred approach has an emphasis on structured, accurate and defined knowledge (i.e. concepts and principles). The following quotation from an interview refers to this: “When it comes to the textbook, the first aim was to produce a body of knowledge with a clear structure” [NL1].
- An activity-centred approach stresses on useful, engaging and enquiry based learning activities. The following passage refers to that: “The beginning of each chapter has a motivating start, the end aims to connect the knowledge to their own living environment” [DE1].
- A resource-centred approach has a focus on a variation of up to date useful resources and case-studies. A quote that refers to this: “There is always a lot of materials to prevent a text overload, for example, maps, graphs or tables” [DE3].

After the first round of coding, a new category occurred, which contained items similar to what Lee and Catling called ‘practicability’ (2017, p. 349). This approach is named a lesson-centred approach. An example for this category is:

“The number of chapters is linked to the available amount of lessons. Per sub-chapter you will need two lessons. Also, the tasks and assignments are adapted to it. Tasks are deliberately closed because writing consumes time. The thinking

process behind the tasks is more important. On average, students would need 30 minutes for the tasks in a sub-chapter” [NL3].

In the analysis, the core approaches as defined here above were identified and categorized (Cohen et al., 2007, p. 482). This categorization together with the results of the textbook analyses and lesson observations were presented to and deliberated with the publishers and editors. The reason for that was to validate the results on the one hand, which Maxwell (2004) describes as member check, and to discuss the influence of the framing of the curriculum and its context on the textbook on the other hand.

Influence of Framing on the Pedagogical Design of Textbooks

The analysis of the textbooks focusses on the following two aspects:

- The readability of continuous texts plays a key role in understanding the information and successful learning (Iluk, 2014). Therefore, we expect that in a setting where the framing focusses on self-study, more attention will be given to readability where the framing emphasises preparation for a scientific study at university.
- Tasks are an essential component of a textbook, because they initiate and regulate learning processes and engage students with the content (Kleinknecht, 2010; Jo & Bednarz, 2009). As tasks in textbooks also provide assessment preparation (Flath, 2011), we think that different types of examination caused by different framing will lead to different types of tasks in textbooks.

The pedagogical design of the textbooks was analysed by a document analysis (Newby, 2010). For the tasks the themes: globalisation, development and American cities were examined (see table 2). These topics were present in all five books that were analysed. Furthermore, these themes cover the Dutch curriculum domain called ‘World’, which was linked to special expectations in regard to the tasks such as critical thinking, evaluating and problem-solving (KNAG, 2003).

Table 2

Number of Examined Pages (for the Dutch books textbook [first number] and exercise book [second number])

Textbook	Diercke	Mensch und Raum/Geos	Seydlitz	Wereldwijs	Buitenland
Examined Number of Pages	122	100	94	308 (174 + 134)	187 (97 + 90)
Total Number of Pages per Textbook(s)	544	362	368	1100 (640 + 460)	826 (428 + 398)
Percentage of the Examined Pages	22.4	27.6	25.5	28.0 (27.2 / 29.1)	22.6 (22.7 / 22.6)

Readability. A text in a textbook is written with communicative intention, which means the text should be understood by the students. Readability therefore is one of the main requirements for (geography) textbooks, and is prescribed, for example in the USA (Hamann, 2004). In order to analyse the readability of every textbook, six texts with the same item (three on human geography and three on physical geography) were selected. The German texts were translated into Dutch while respecting the style of the textbook (see Bryman, 2004). The translated texts were proofread and corrected by a lecturer of the Dutch language. The readability score could be calculated by using the computer programme Tansy, which stands for tekstanalyse system (<http://users.skynet.be/taalonderwijs/>). This score is based on the Flesch Reading Ease, but adapted for the Dutch language:

$$\text{Readability Score } A = 195 - \left(\frac{2}{3} \text{ average length of words} \times 100 \right) - (2 \times \text{average length of sentence})$$

The result is a number between 0 – 100 which indicate the difficulty of the text: the lower the number is, the more difficult the text is to read. A table was developed by Lamers (1983) and Mersie (2009) to interpret the reading scores for the Dutch context: a score between 30 – 50 is appropriate for higher secondary school. The results of the readability scores are represented on a country scale with the standard deviation in regard to the textbooks.

Tasks. An important characteristic of the pedagogy and quality of textbooks are tasks (or assignments) (Stogiannidis & Koutsoupias, 2014; Flath, 2011). For this research tasks were defined as a request to engage with the content (Kleinknecht, 2010). For the analysis of the textbook tasks, every sub-task (e.g. 1a, 1b, 1c) was examined separately. In total, 2213 tasks were categorised (see table 3).

Table 3
Examined Tasks in German and Dutch Textbooks

Textbook	Diercke	Mensch und Raum/Geos	Seydlitz	Wereldwijs	Buitenland	Total
Examined Tasks	150	233	119	608	1103	2213

There are numerous categorisations or taxonomies for tasks (Bijsterbosch, 2015; Jo & Bednarz, 2009), covering different aspects of tasks. In the research described in this article, we will focus on so called tasks aiming at the development of lower and higher-order skills (Jo & Bednarz, 2009; Ankoné, 2006; Sitte, 2001). To compare these tasks in Dutch and German geography textbooks, the revised taxonomy of Bloom (Krathwohl, 2002) was used, which, when comparing nine categorisations, has turned out to be the most suitable one (Näsström & Henriksson, 2008). From every textbook, 30 tasks were categorised with the help of the head of the Dutch Central Commission for Geography Examination, first with the aim of calibration and for applying the categories

consistently (see Rempfler & Uphues, 2011). After categorisation by the first author, all tasks were categorised again by a second expert. The Cohen's Kappa of 0.78 shows that the inter-rater reliability was sufficient. The categories were characterised and tasks categorised as follows:

- Lower-order tasks aim to reproduce, comprehend and apply knowledge in well-defined, limited contexts:
 - “Read the section and look at the sources. Give short answers. Describe what we understand by urbanisation, urbanisation grade, and speed of urbanisation.” (Buitenland, vwo, p. 40, 1a).
 - “Summarise the strategies of foreign economics and industrialisation” (Mensch und Raum/Geos, p. 105, 1).
 - “Most multinational corporations developed at the end of the 19th century. In the Netherlands, we can already characterise the East-India Company (EIC) as a multinational corporation at a much earlier stage. Figure 7 [a map with import and export routes of the EIC in Asia, Author] shows in which countries the EIC operated. Figure 7 shows clearly that, at that time, we could already mention international division of labour. Which indications that underpin this do you see in the figure?” (Wereldwijs, wereld, p. 10, 17a).
- Higher-order tasks intend for knowledge to be applied in bigger, not always clear defined contexts with the purpose of a more differentiated understanding, an attempt for problem-solving or evaluation.
 - “Explain the problem of the ‘hunger of cultures’ using the example of the potential for conflicts in the Middle East. Depict how political and religious conflicts frustrate economic development. Use topical materials from the media.” (Seydlitz, p. 231, 8).
 - “Develop two proposals yourself for meaningful development projects based on the strategies you know.” Diercke, p. 385, 2b
 - “Is the overall effect of the presence of multinational corporations positive or negative for developing countries?” (Wereldwijs, wereld, vwo, p. 34, 75).

The frequency of the data is represented on a country scale with standard deviation regarding the textbooks.

Influence of Framing in the Use of Textbooks & Teaching

To explore whether a different framing of the curriculum context leads to different ways of using the textbook during lessons (e.g. the teacher's repertoire), one hundred geography lessons taught in higher secondary education, were observed. As video-observation was not possible because of privacy reasons, an observation-scheme was used to observe the lessons (Van der Donk & Van Lanen, 2010). After a test-phase (Cohen et al., 2011) and some adaptations, the form was applied by only one observant, the first author himself. In every lesson, each minute that was recorded, was scored depending on:

- if and how the textbook or other materials (selected by the teacher from other sources or developed by himself) were used,

- if the lesson focus was on tasks,
- if the students worked individually, in pairs, in groups or as a whole class,
- if there were discussions or presentations by students,
- if the teacher used the question and answer strategy or lectured (teacher's talk: the difference between both strategies was marked by time: if the teacher didn't ask a question after a minute, his action was characterised as teacher's talk).

The categories above were counted according to country, textbook, teacher and characteristics of teachers (age, experience or categories that derived from interviews with the teachers, such as experiencing stress, for example). The results were presented in percentages of the lesson time per country. The standard deviation was calculated per teacher in order to indicate big or small differences between the teachers of each country.

In order to explain the results of the observations as well as to relate them to the different framing of the curriculum context, all teachers observed were involved in semi-structured interviews (Cohen et al., 2011) about their teaching orientations (Friedrichsen, van Driel & Abell, 2011). This was part of an important aspect of the teacher's pedagogical content knowledge and thus repertoire, geography textbook (content, design, reasons for choosing it), the use of the textbook and external influences (curriculum, school culture, examinations, marking, stress). Furthermore, between one and four students per teacher were also interviewed about the (use of the) geography textbooks, and were asked if the observed lessons were representative (Harinck, 2007). All interviews were transcribed, categorised and used in the analysis of the textbook and lesson observations.

All students, teachers, editors and publishers participating in interviews or observations were informed that the data would be used for research purposes and that participation was voluntary.

Findings

Case Study 1 Germany

Influence of framing on the decisions of german publishing houses. The textbook publishers and editors generally recognised the four defined approaches and agreed with the categorisation shown here below. Table 4 illustrates that there is a clear focus of German textbook editors as well as differences between them.

Table 4

Parameter value of the approaches of German textbook editors based on interviews

Approaches	Knowledge-Centred	Activity-Centred	Resource-Centred	Lesson-Centred
DE – Diercke	very strong	weak	moderate	weak
DE – Mensch und Raum/Geos	very strong	moderate	strong	moderate
DE – Seydlitz	weak (very strong *)	average	moderate	weak

* After discussion with the editor of Seydlitz. Scale: weak – moderate – average – strong – very strong.

According to the German editors, the curriculum offers much leeway (“They mention basic themes, but they are not explicated in detail.” DE5). But there are differences between the states. Although considering the themes of (most of) the curricula “chapters are structured from a disciplinary point of view” (DE1). When discussing the results, all German editors and publishers confirm that there is an emphasis on a knowledge-centred approach. “The whole stresses too much knowledge. It’s about a systematic transfer of knowledge and the pedagogic concept is more or less deductive” (DE3). Their aim is to lead the students to scientific understanding and skills in a phase which they explicitly name ‘propaedeutic’. Their book should be, for example, a “blue bible” (DE1) for teachers and students and demonstrate “the state of the art” (ibid.) every five years. For the editor of Mensch und Raum/Geos a resource-centred approach is also important because a variety of materials “should give students the chance to acquire basic information on their own or at least get it illustrated” (DE3). The final examination does not have much influence: “The final exams didn’t play a role, because the content was covered by the curriculum.”(DE3).

Influence of framing on the pedagogical design of textbooks.

Readability. The readability of 18 (six per book) continuous texts was examined (table 5). Although the standard deviation shows a large difference between the texts, only two German texts have shown an appropriate level (30-50). Generally texts concerning physical geography were easier than texts with human geographic topics. The low standard deviation for the detailed features show a consistent image of German texts: they entail long sentences, long words and a high percentage of unfamiliar words.

Table 5
Readability scores of German continuous texts

	Average of 18 texts	SD
Readability Score (FRE)	16.0	11.6
Average Length of Sentences (in Words)	19.6	2.1
Average Length of Words (in Syllabi)	2.1	0.1
Percentage of Long Words (> 3 Syllabi)	16.3	1.0
Percentage of Unknown Words (According to TANSY-list)	37.5	3.0

Tasks. In total 501 tasks in German textbooks were categorised according to higher and lower-order tasks (see table 6). The results for the various categories are quite homogenous, as the relatively low standard deviations show. More than half of the tasks can be considered comprehension tasks.

Table 6
Tasks in German textbooks – categorisation according to lower and higher order tasks

	German textbooks	SD
Average Number of Examined Tasks	167	59
Lower Order %	65.8	2.7

Higher Order %	34.2	2.7
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More than one third of the German tasks can be labelled as higher-order tasks. However, for the German editors, tasks were not a priority: “We have already thought about leaving the tasks out. The concept was to transfer knowledge, for those who absolutely wanted tasks, we added them” (D1). “The tasks have in fact been elaborated the least. They were just like, now I finished the text, then we also have to formulate some tasks at the end. [...] We didn’t pay attention to the degree of difficulty of the questions per se” (DE3).

Influence of framing in the use of textbooks and teaching. In total, 50 lessons (45 - 90 minutes) were observed (5 lessons per teacher – see table 7). These lessons were considered as representative for the lesson style of the teacher by the students interviewed who participated in the observed lessons.

Table 7

Observed Lesson Time in Minutes, Amount, Gender and Age of Observed German Teachers (M = Male, F = Female)

Teachers	Gender		Age				Observed Lesson Time in Minutes
	M	F	< 30	30-39	40-49	50>	
10	4	6	1	1	4	4	3,505

In Germany, the textbook was used for nearly one third of the lesson time (see table 8). ‘Textbook’ is understood to mean the textbook, the exercise book and possible additional materials offered by the publisher as, for example, worksheets or presentation materials.

Table 8

Use of the textbook and tasks in the observed German lessons (in % of the available lesson time)

	Average	SD per teacher	With Textbook	SD per teacher
Use of textbooks	32.8	15.9	32.8	15.9
Working on tasks	20.4	7.1	4.6	3.7
Debriefing tasks	25.1	7.1	7.9	6.6
Higher Order tasks	15.0	12.6	3.0	3.7
Lower Order tasks	30.5	12.6	9.4	8.2

The results show that in German lessons the textbook is used for about one third of the lesson time. More time was used for debriefing activities than for working on tasks during the lessons. However, only a small part of the tasks derived from textbooks. One third of the time spent on tasks in German lessons went towards higher-order thinking skills, but the standard deviation is considerable high. Also here it could be noted that very few tasks came from the textbook.

Table 9

Lesson time spent on teacher talk, question & answer, discussion, student presentations, use of power point presentations and cooperative learning in German lessons (in % of the available lesson time)

	Average	SD per teacher	With textbook	SD per teacher
Teacher Talk	7.8	10.0	0.6	1.3
Question & Answer	50.4	11.0	14.2	8.9
PowerPoint Presentation	0.2	0.7	0	0
Discussion	1.1	0.2	0	0
Student Presentation	8.0	10.2	1.1	3.0
Self-Study	10.5	8.6	1.9	1.2
Pairs	7.6	6.4	0.6	1.1
Group	9.9	14.0	2.1	3.7

In the German teaching practice (see table 9) half of the lesson time is spent on question & answer. Student presentations were a substantial part of the lessons, but discussions barely took place. Self-Study and Group Work occurred both one tenth of the time in German lessons. However, as the standard deviation shows, group work varied more often by teacher, and was frequently linked to student presentations.

All teachers were interviewed about their goals regarding their subject and their teaching, which are considered to be important aspects of the teaching orientation and thus repertoire (Friedrichsen et al., 2011). The transfer of knowledge and activating students was mentioned by 8 teachers, followed by critical thinking & knowledge (7 times), geographical thinking and stimulating enthusiasm (6 times each), amazement and preparation for the final exam (4 times each) and finally the development of social competences (3 times).

When asked what role the textbook plays in achieving these aims and delivering their “good” geography lessons, all German teachers stated, that the textbook is a tool, one of the media they can use during their lessons, and that they chose additional texts to the textbook. Four German teachers mentioned that they feel some kind of tension because of the exam. This was not only caused by a central examination because three of them did not face this type of exam, but rather because of the pressure which was attributed to a lack of time for preparing or constructing the final exam.

Table 10

Differences in use of textbook between German teachers who feel examination stress [N=4] or not [N=6] (in % of the available lesson time)

	Stress	SD per teacher	No stress	SD per teacher
Textbook	51.7	19.4	26.4	21.3
Tasks	49.0	7.4	42.5	15.5
Tasks from textbook	16.6	5.7	8.9	9.2
Higher-order tasks	8.7	12.1	20.4	12.5
Higher-order tasks from textbook	2.1	2.5	3.8	4.6

As table 10 shows, feeling stress caused by the examination leads to a higher reliance on the textbook, more use of textbook tasks and much less higher-order tasks.

Case study 2 The Netherlands

Influence of Framing on the Decisions of Dutch Publishing Houses. All Dutch textbook publishers and editors generally recognised the four defined approaches (“It’s a good way to categorise.” [NL3]) and agreed with the categorisation shown here below. The Dutch editors complained about the complexity of the curriculum and its detailed elaboration in the syllabus in numerous concepts, rules and skills, which according to them, are not always logical or topical. Furthermore, the editors acknowledge that the concept of self-study and the emphasis on exam-results somehow forced them into a lesson-centred approach (see table 11) . Chapters are organised according to the exam topics; all chapters preparing for the central examination consist of summaries and exam-like tasks, and there are application contexts (resources, tasks) for all concepts, rules and skills that were specified in the curriculum. Even enquiry tasks, so-called case quests, only appeared because they aimed to make up part of a new examination system.

Table 11

Parameter value of the approaches of Dutch textbook editors based on interviews

Approaches	Knowledge-Centred	Activity-Centred	Resource-Centred	Lesson-Centred
NL – Wereldwijs	very strong	average	strong	average
NL – Buitenland	moderate	average	average	very strong

Scale: weak – moderate – average – strong – very strong.

However, different approaches between the Dutch editors led to different textbooks. *Buitenland* embraced a lesson-centred approach and all other perspectives (knowledge,

activities, and resources) were subordinated to it. Because of the perceived overload of the curriculum, all content that was not obligatory for the central examination, was presented in a very compact way.

“We think very much from the perspective of the teacher, that the teacher can work well with the materials, that you calculate everything, how many lessons there are, how often lessons are cancelled [...] what makes sense for the students, what contributes to successful learning and what not [...] how often you have to repeat something – we very much start from the lesson practice” (NL3).

Thus, in *Buitenland* the content has been structured consequently from a pedagogical perspective and differs per grade (and not per topic or in a compendium). There is a different perspective for every grade (patterns in grade 10, processes in grade 11 and synthesis in grade 12), four topics per year to guarantee variety, three types of exemplary regions per topic (introduction, application, synthesis), and an emphasis on knowledge and comprehension tasks in grade 10 and above. The focus is on application tasks in grade 11 and 12. For the other Dutch textbook, *Wereldwijs*, the main focus was on knowledge (“The first aim was to produce a body of knowledge with a clear structure” [NL1]) and resources (“reflection of the reality”, [NL1]). Textbooks and chapters have been strongly linked to the curriculum domains and sub-domains and the content structured according to political, economic and social dimensions. Tasks should create various application contexts and be designed according to the central examination.

Influence of framing on the pedagogical design of textbooks.

Readability. Twelve (six per book) continuous texts were examined in respect of their readability (table 12). All Dutch texts were adequate except for one text that was too difficult. The texts by *Buitenland* were easier to read than the texts by *Wereldwijs*. Also in the Dutch cases, texts concerning physical geography were easier than texts with human geography topics.

Table 12

Readability scores of Dutch continuous texts

	Average of 12 texts	SD
Readability Score (FRE)	39.3	8.3
Average Length of Sentences (in Words)	15.5	0.5
Average Length of Words (in Syllabi)	1.9	0.1
Percentage of Long Words (> 3 Syllabi)	11.0	2.3
Percentage of Unknown Words (According to TANSY-list)	29.5	1.4

Tasks. In the two Dutch textbooks 1,711 tasks were categorised according to higher and lower-order tasks (see table 13). The results are quite homogenous, as the relatively

low standard deviations show. Also in the Dutch textbooks, more than half of the tasks can be considered comprehension tasks.

Table 13

Tasks in Dutch textbooks – categorisation according to lower and higher order tasks

	Dutch textbooks	SD
Average Number of Examined Tasks	856	350
Lower Order %	94.0	0.5
Higher Order %	6.0	0.5

There are only a few higher-order tasks in Dutch textbooks (6,0%). However, the amount of application tasks in Dutch books (31.4%) is considerably high. The Dutch textbook editors acknowledge the findings and stress the importance of the central examination: “The exams also don’t go further than knowledge, comprehension and application” (NL2). Furthermore, the Dutch textbooks are aimed more at tasks at knowledge level, which can be explained by the concept of self-study. “First the students are forced by the tasks to read the text” (NL3). Both textbooks use this type of tasks in the beginning of a sub-chapter in the sense of scaffolding: “The tasks that follow are more complex and are on an application level, for which you need more understanding. Explicitly we aim at the level of the expected exam” (NL1).

Influence of Framing in the Use of Textbooks and Teaching. Also in the Netherlands 50 lessons (45 - 90 minutes) were observed (5 lessons per teacher – see table 14), and also these lessons were considered as representative for the lesson style of the teacher by the students interviewed who participated in the observed lessons.

Table 14

Observed Dutch Lesson Time in Minutes, Amount, Gender and Age of Observed Teachers per Country (NL = Netherlands, M = Male, F = Female)

Teacher	Gender		Age				Observed Lesson Time in Minutes
	M	F	< 30	30-39	40-49	50>	
10	8	2	1	2	2	5	2,590

In the Netherlands, the textbook was used for nearly half of the lesson time (see table 15). Also here ‘textbook’ is understood to mean the textbook, the exercise book and possible additional materials offered by the publisher as, for example, worksheets or presentation materials.

Table 15

Use of the textbook and tasks in the observed Dutch lessons (in % of the available lesson time)

	Average	SD per teacher	With textbook	SD per teacher
Use of textbooks	47.9	27.2	47.9	27.2
Working on tasks	23.8	10.9	5.7	6.5
Debriefing tasks	14.2	10.4	5.3	6.4
Higher Order tasks	1.2	4.5	0	0
Lower Order tasks	36.8	15.0	11.0	11.1

As the standard deviations show, there are big differences between the teachers. These differences can partly be explained by the textbook: Buitenland was used in 59.0% of the lesson time and Wereldwijs in 36.7 % of the lesson time. Much more time was spent working on tasks than for debriefing activities. In the last case, one third of the tasks derived from textbooks. Higher order tasks were almost absent in Dutch lessons.

Table 16

Lesson time spent on teacher talk, question & answer, discussion, student presentations, use of power point presentations and cooperative learning in Dutch lessons (in % of the available lesson time)

	Average	SD per teacher	With textbook	SD per teacher
Teacher Talk	28.1	15.8	10.2	12.7
Question & Answer	29.2	21.4	13.3	15.6
PowerPoint Presentation	21.3	20.9	17.2	15.9
Discussion	0	0	0	0
Student Presentation	1.6	3.3	0	0
Self-Study	15.5	10.6	6.1	9.1
Pairs	9.7	9.8	1.7	3.3
Group	5.6	8.9	0	0

In the Dutch teaching practice (see table 16) teachers' talk plays a substantial role and equalizes nearly the amount of time spent for question and answer strategies. The textbook is more important in the Dutch lessons. This is partly due to Buitenland's textbook, which offered ready to use PowerPoint presentations with resources from the textbook (e.g. graphs, photos). These presentations could be used to support the teacher's questions or his monologue. Teachers using Buitenland's textbook obviously used the PowerPoint slides, contrary to the presentation tool from the other Dutch textbook, which offered a special digital programme. Student presentations hardly took place in the Netherlands and discussions never took place in the observed lessons.

Furthermore we see a considerable emphasis on self-study in the Dutch lessons, and it is only here that the textbook plays a substantial role.

The Dutch teachers were interviewed about their goals regarding their subject and their teaching, which are considered to be important aspects of the teaching orientation and thus repertoire (Friedrichsen et al., 2011). The teachers mentioned the transfer of knowledge and activating students 8 times, critical thinking & knowledge 7 times, geographical thinking and stimulating enthusiasm 6 times and amazement and preparation for the final exam 4 times.

When asked what role the textbook plays in achieving these aims and delivering their “good” geography lessons, all ten Dutch geography teachers answered that it provides them with a route (in Dutch *rode draad*) through the curriculum. Only three teachers stated that they chose additional texts to the textbook. Furthermore three Dutch teachers admitted that a choice of tasks is difficult for them. All ten Dutch teachers stated that the examination has a big influence on their lessons. The difference between the school marks and the central exam marks especially plays a dominant role and causes stress.

Discussion

The aim of this study was to explore how the framing of the curriculum and its context in the Netherlands and Germany influenced textbook editors, the pedagogical design of textbooks and the use of textbooks in secondary higher education in lessons.

The editors of the textbooks in both countries show a mix of approaches which guides them in the production of the textbook and leads to their choices. This explains the differences within a country. However, there are clear differences between the countries, which can be related to the different framing of the curriculum context. A stronger framing in the Netherlands leads to a more lesson-centred approach, taking into account the concept of self-study, the detailed, prescriptive curriculum, the detailed examination on a lower-order level and the strong focus on exam results. The German editors perceive much more leeway and feel primarily committed to guarantee propaedeutic knowledge – which is a crucial feature in the educational discourse and is also reflected in the curriculum.

Consequently, the influence of different framing also becomes visible in the pedagogical design of textbooks. It leads to an adequate readability in Dutch textbooks, but more difficult texts in the German textbooks that are caused by longer sentences, longer words, a higher percentage of long words and more words that are unknown to the students. The outcomes confirm the results of earlier research; that German textbooks are written in a style that is too difficult for their target group (Bamberger & Vanacek, 1984; Dauer & Zecha, 2011). One German publisher was not surprised by the German results: “There is the misunderstanding that a scientific approach manifests itself in a difficult diction. But that’s rubbish. Authors write highly scientific, but they forget the student” (DE4). On the contrary, the editor of *Buitenland* emphasised that he very carefully paid attention to possible difficulties when he corrected the texts since

students should be able to understand the texts on their own. The difference in readability between the German and Dutch textbooks can be linked to the different framing of the curriculum context. As pointed out before, one of the important remains of the Dutch education reform is the idea of self-study. As part of a lesson-centred approach, the readability of the texts is a focus point, as the Dutch editor confirms. On the other hand, propaedeutic knowledge is an important feature of the German curricula, resulting in the German editors having a knowledge-centred approach and thus challenging texts, which are intended to help prepare for university, but which are too difficult for the target group to read when it comes to technical readability.

The results regarding textbook tasks can also be related to the different framing of the curriculum context in the two countries. The high number of tasks in Dutch textbooks mostly only appeals to lower-order thinking skills, which confirms earlier research about Dutch textbook tasks (Van De Westerlo, 2011; Pauw & Béneker, 2012). This is triggered by the detailed elaboration of the curriculum and the just as detailed central exam, which only consists of tasks on knowledge, comprehensive and application level. For the Dutch final exam, the highest level in the central examination is application (Van De Westerlo, 2011). On the other hand, the German textbooks contain fewer tasks, but a relatively high amount of them are aimed at higher-order thinking. This can be linked to the focus on propaedeutic knowledge in the curriculum as well as the German final exam that verbally puts a stress on analysis and transfer and on reflection and problem solving.

Although the teaching orientations, e.g. ideas about good geography teaching of Dutch and German teachers are very similar, their teaching practice differs. The results for the German textbooks as for Wereldwijs match Sikorova's findings (2011), that the textbook is used in 31.4% of the lesson time. In the Dutch case, this partly supports the critique that teachers rely too much on textbooks (van den Akker & Bergen, 2000). Frontal teaching prevails in both countries, but in the Netherlands teacher talk plays a bigger part and the textbook is used more often, partly due to pre-made presentations by the publisher. Tasks derive more often from the textbook, but also additional tasks can be categorised as lower-order tasks. Higher-order tasks are almost absent in the Dutch textbooks, but apparently Dutch teachers did not feel the need to fill that gap. This implies that Dutch students are not often confronted with assignments that challenge them to analyse, to evaluate or to think about a solution. Self-study is more dominant than in Germany, and it is here where the textbook plays a significant role. German teachers mostly apply question-and-answer techniques and use higher-order tasks more often, which seldom derive from the textbook. Group work and especially student presentations occur more frequently than in Dutch lessons.

All Dutch teachers indicated that they experience pressure due to the strong framing of the curriculum context, which leads to great reliance on the textbook, more self-study and a focus on lower-order tasks. This has characteristics of so-called teaching to the test. A stronger influence of the textbook and less emphasis on higher-order tasks can also be noted by German teachers who indicated stress caused by examinations. Both teaching practices are deeply linked to the specific framing of the curriculum context. In

the German case, more student participation can be related to the marking system, which puts more emphasis on students' (oral) contribution to the lesson. Teachers therefore have to create opportunities to be able to give marks in this area. A greater emphasis on higher-order tasks can again be explained by the structure of the exam.

This study used Bernstein's theoretical framework to explore the influence of curriculum contexts on geography textbooks and their use in lessons. It shows that the concept of framing (Bernstein, 1975, 1990) helps to understand the pedagogical design of textbooks as well as teaching practices. Furthermore the concept of repertoire (Bernstein, 1999) appears to be helpful to relate the visible teachers' actions and choices to the contexts the teacher is functioning in. In other words, what a teacher shows, is perhaps not only depending on his knowledge or capabilities (Hemmer & Hemmer, 2017), but on different contexts. Thus, the research showed for the Dutch case, that indeed a strong framing leads to textbook as materialized curricula ("*rode draad*"), as Hamann (2004) stated. Surprisingly, the different framing seemed not to lead to differences in the teaching orientations of teachers in both countries. Considering the influence of framing on a teacher's repertoire will help to better understand issues like teaching to the test (e. g. Bijsterbosch et al., 2016).

Conclusion

The concept of framing is of high relevance when it comes to comparative educational research to better understand the researched phenomena in their contexts. This study shows that the framing of the curriculum and its context have a significant impact on the approaches taken by textbook producers. It becomes visible in the pedagogical design of textbooks and finally in the way in which teachers organise their lessons and use the textbook. Especially when the framing is strong and/or causes pressure there seems to be a gap between the teachers' ideals of good geography teaching and their teaching practice. This implies that research on teaching as well as textbooks should consider the framing of the curriculum and its context much more than it does at present, and when it comes to comparative studies, it should focus on the differences in framing.

However, although the cases were constructed very carefully and a considerable amount of data has been collected and analysed, it is inherent to case studies that they rely on a limited base. Therefore, the results cannot be read as "all" German or Dutch teachers act in the described way. The standard deviations sometimes show a homogenous, sometimes a very heterogeneous picture. Furthermore, we have to take into account the different federal states in the German case. Therefore, further research is needed that delivers representative data for two countries or states with different framing of the curriculum context.

The focus of this study was broad because its aim was to explore the influence of framing of the curriculum at different levels. A crucial finding of this study is that the similar idea about good geography teaching that teachers have in both countries has actually led to differences in teaching. The gap between ideals and practice becomes most visible in the use of higher-order tasks. These types of tasks aim at a more

differentiated understanding and problem-solving or evaluation, which is much in line with the teachers' ideas about critical, geographical thinking. Although teachers highlight the importance of the framing of the curriculum and its context themselves, more research is required with a focus on the use of higher-order tasks. What do they understand by higher-order thinking, what are good assignments that will help them achieve their goals?

Finally, this study did not take into account the importance of the school context (horizontal discourse) and the access to the scientific community of geography education (vertical discourse). Interviews with teachers indicated, for example, that some schools tried to influence the use of self-study, the amount of frontal teaching or student presentations in lessons. Referring to the aspect of higher-order and critical geographical thinking we might expect a higher emphasis on higher-order tasks by teachers who work, for example, at schools with a focus on enquiry-based learning or who, in one way or the other, cooperate with the scientific field of geography education in professional communities or networks. Also this is a point for further research.

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