

Identifying powerful geographical knowledge in integrated curricula in Dutch schools

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Abstract

This article explores the usefulness of Maude's translation of Young's idea of powerful knowledge into geography education. Maude's classification of five types of powerful knowledge in geography education was used to analyse the written curriculum of the 'human and society' interdisciplinary domain in four schools in the Netherlands. The characterization appears to be useful in terms of painting a picture of what an integrated curriculum looks like from the perspective of powerful knowledge. The emphasis in the curricula is on learning geographical concepts that students might use to analyse phenomena (Type 2 knowledge). Remarkably little attention is paid to learning about places (Type 5), as a result of which the integrated curricula hardly contribute to a central aim of school geography, namely to build an extensive geographical world view.

Keywords: powerful knowledge; curriculum integration; geography education; lower secondary education; the Netherlands

Introduction

Curriculum integration is a quite recent phenomenon in the Netherlands. Since 2006 secondary schools in the Netherlands have had more freedom of choice regarding the organization of the first three years of secondary education (12–15 years of age). Before that schools had to offer 15 obligatory subjects. Now, however, they have the option of organizing their education in, for example, so-called domains (van der Pot and Wilschut, 2014). From 2015 a new curriculum reform project has been in place, once again accompanied by a plea for more cooperation and integration in order to achieve coherence in the curriculum (Schnabel *et al.*, 2016). For geography education, our field of expertise, this implies crossover in two domains: one in science with biology and physics for the physical geographical content and the other in social science and humanities with history and economics for the human geographical aspect.

Although most schools still offer separate subjects, an increasing number of schools have integrated their curriculum in the first two or three years of secondary education. However, no research has been conducted into the consequences of this for the type of knowledge, or disciplinary content, that has been selected for students. Our research is aimed at starting to fill that gap by an investigation into the geography content in integrated curricula. For this we analysed the intended curriculum at four secondary schools. We used Young's idea of powerful knowledge and the curriculum as a starting point (2008, 2013, 2014). This article will reflect on our attempt to analyse the intended curriculum, with all the teaching materials, from a powerful knowledge perspective. We will consider whether this is possible and useful, and ask: to what kind of questions and conclusions does such an analysis contribute? The specific

and detailed outcomes of the analyses, in the context of curriculum integration in the Netherlands, are reported and discussed elsewhere (Bouwmans, 2017, 2018; Bouwmans and Béneker, 2018).

Curriculum integration and powerful knowledge

Bernstein's (1975) characterization of the curriculum is useful for an understanding of the extent of integration. Bernstein distinguishes between a curriculum collection code and an integrated code. The collection code has clear boundaries between the subjects whereas in the integrated code there is little insulation of subjects. Bernstein uses the term 'classification' to describe the strength of the boundary between the two. The collection code is characterized by strong classification, the integrated code by weak classification. In addition, the collection code values deep knowledge, as the teacher is able to apply their own subject expertise. In the integrated code, the content is more negotiable, as teachers in different subjects need to work together and adapt their subject content to fit into the integrated curriculum. Teachers are allowed not only to teach their own subject, but also content from other subjects, and team teaching becomes a possibility.

Curriculum integration can exist in different forms. Fogarty (1991) describes ten types of curriculum integration, which can be used to place the degree of integration on a scale that extends from little integration to full integration. Of these ten types, five types concern the integration of two or more disciplines, while the others describe integration within single disciplines and integration within and across learners. The five types which are useful for our evaluation are visualized in Figure 1.

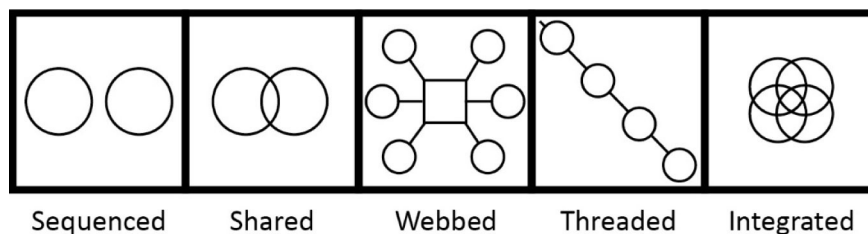


Figure 1: Five types of curriculum integration across several disciplines (Fogarty, 1991)

The *sequenced model* is characterized by a stronger classification and, as a consequence, only the smallest degree of integration takes place. Often a broader theme is addressed by two different disciplines, without a clear relationship being drawn between knowledge or skills from these disciplines. Teachers can still apply their subject expertise and design their teaching materials in a relatively autonomous way. It may not be difficult to recognize disciplinary or school subject knowledge and approaches. In the *shared model*, knowledge of two or more subjects is clearly linked and organized together. It is still clear, however, what content belongs to which of the different disciplines. In the *webbed model*, a theme or issue is addressed across the whole curriculum. In order to do this, an issue is chosen that can be studied from multiple perspectives. In this type of integration, subject teachers need to cooperate more closely and take joint decisions on the content and the relevant and distinct perspectives. For this they have to use their subject expertise explicitly. The *threaded model* focuses on 'big ideas', which supersede all subject matter content. Examples of

these 'big ideas' are thinking skills, social skills and study skills. The *integrated model* blends the disciplines by identifying overlapping skills, concepts and attitudes in order to make a coherent curriculum. It is characterized by weak classification. In the threaded and integrated model teachers really need to adapt their subject content to fit the aims and organization of the curriculum. Disciplines or traditional school subjects are not easy to recognize.

Young and Muller (2010) examine curricula and the approach to knowledge. Young asserts that knowledge, and what young people need to know, is neglected and marginalized in many current policy debates (Young, 2014). One of the problems Young raises about the non-subject-based curriculum, which itself is based on themes, lines of inquiries or topics, is that, in the end, these curricula will lack coherence and will limit pupils in their progress. 'The basis for choosing topics or themes would be largely arbitrary or based on the individual experience of teachers and not on their specialist subject knowledge' (Young, 2014: 103). Young and Muller (2010) make a progressive case for a knowledge-led and subject-based curriculum. Powerful knowledge is introduced as a curriculum principle. Drawing from Bernstein's (1975) ideas, they distinguish two kinds of boundaries: those between different fields of knowledge as reflected by different school subjects and those between specialized school subject knowledge and everyday knowledge. Powerful knowledge should furnish students with new ways to think about the world and with knowledge that they can use to participate in political, moral and other kinds of debates (Young, 2008: 14). Lambert brings these ideas into the geography education community, using the following characteristics of powerful knowledge: 'evidence based; abstract and theoretical (conceptual); part of a system of thought; dynamic, evolving, changing – but reliable; testable and open to challenge; sometimes counter-intuitive; exists outside the direct experience of the teacher and the learner; discipline based (in domains that are not arbitrary or transient)' (2015: 7).

Although the definitions of powerful knowledge by Young (2008, 2013, 2014) and Lambert (2015) provide some explanations, they are rather abstract. Slater and Graves (2016) argue that the concept of powerful knowledge is not specified anywhere, making it difficult for teachers to use it when creating their curriculum. In a response to this Lambert (2016) clarifies why he thinks the concept of powerful knowledge should not be spelled out in detail. Making lists of all the content that needs to be covered would limit geography to a fixed set of 'given stuff' to be covered or an 'official recontextualization' of the subject; instead powerful knowledge should be seen as a way of developing a curriculum that takes students beyond their own experiences, drawing on the nature of geographical thought (Lambert, 2016: 193).

Maude (2015, 2018) uses Young's descriptions in an attempt to identify types of powerful knowledge in geography education which are both sufficiently general to avoid powerful knowledge being reduced to a list of content to be taught, and will help teachers to understand and apply the concept more effectively. He distinguished five types of powerful knowledge which he used to analyse the geography curriculum of Australia (Maude, 2015):

1. *Knowledge that provides students with 'new ways of thinking about the world'.* This type of knowledge gives young people new insights, which influence their perceptions, values and understanding, the questions they ask and the explanations they explore. This type of knowledge is powerful because it changes the way students observe the world and the way they think about the world and their own place in it.
2. *Knowledge that provides students with powerful ways of analysing, explaining and understanding.* This knowledge enables young people to analyse, explain and

generalize. Students analyse by describing and explaining spatial distributions and by testing relations. They explain causal relations between factors and how processes work. They generalize by synthesizing facts to identify relations between concepts and by transferring knowledge to other contexts. This type of knowledge is powerful because it enables students to gain a better understanding of the world and to explain it.

3. *Knowledge that gives students some power over their own knowledge.* Knowledge is not only powerful when students can use it, but also when they know where they can find this knowledge, understand it and evaluate knowledge claims. This knowledge is powerful because it enables students to gather knowledge independently of the dominant sources of information.
4. *Knowledge that enables young people to follow and participate in debates on significant local, national and global issues.* Young people are powerless if they cannot use their knowledge to follow public debates and participate in them. This type of knowledge is powerful because it enables students to participate actively in society.
5. *Knowledge of the world.* The last type of powerful knowledge concerns the diversity of environments, peoples, cultures and economies; it is powerful because it takes young people beyond their own experiences.

Maude (2015) used this characterization to describe the Australian national geography curriculum in terms of powerful knowledge. He recognized all five types of powerful knowledge to some extent and could also point out its stronger and also weaker points. It is fairly easy to recognize the Type 1 and Type 2 knowledge in the Australian geography curriculum. However, Type 3 knowledge is an underdeveloped area in geography education which could be the result of time pressure, given the limited hours devoted to teaching geography. The Australian curriculum overemphasizes technical skills and neglects critical thinking skills. Moreover, Maude speculates that Type 3 knowledge seems to be a prerequisite for the proper study of Type 4 knowledge. Teaching about the world in a Type 5 way is probably restricted because no regional geography is included in the curriculum. However, the use of country case studies could even lead to stereotyping.

Béneker and Palings (2017) use Maude's characterization to analyse what geography student teachers think is the kind of geography that their pupils should learn. They found that student teachers value powerful knowledge Types 2 and 5 most. Béneker and Palings also think that these types of knowledge are the main focus of the textbooks and teaching materials used in most secondary schools in the Netherlands. They observe some difficulties in using these types to identify powerful knowledge. On the one hand, there are the difficulties in the distinctions between the types while, on the other hand, they believe that powerful knowledge is realized only when all five types of knowledge are present and integrated in some way. Such a curriculum can be seen as an ideal and as having the maximum educational potential.

Tani *et al.* (2018) follow up these studies by using Maude's characterization to analyse a questionnaire distributed among Finnish teachers to discover their ideas about curriculum reform and the new compulsory geography course on global risks in upper secondary education. They identify a strong focus on Type 4 knowledge combined with critical thinking skills (Type 3), but notice many problems related to the limited time available and fragmentation.

This study is an attempt to find out whether Maude's characterization is useful in analysing smaller units of texts and associated tasks, so-called teaching materials. Additionally, based on these teaching materials, an attempt is made to draw a picture

of a school's curriculum from the perspective of powerful knowledge and geography education.

Research methods

The results presented in this article were achieved through case study research conducted at four secondary schools in the Netherlands: School A, School B, School C and School D (originally in Bouwmans, 2017). Because the 'interdisciplinary education' phenomenon cannot be isolated from its natural school environment and the number of research units was small in relation to the number of researchable variables, case study research was the most adequate research method for this study (de Bruïne *et al.*, 2011).

To limit the scope of this research, only schools were approached that taught the 'human and society' domain in lower secondary education (12–15 years of age) at pre-university level secondary education rather than the vocational level. As no document existed that listed all schools offering the 'human and society' domain, online search engines and personal contacts were used to identify these schools. In total, eight schools were found in the Netherlands that provided an integrated curriculum in the first three years of pre-university level secondary education, of which four were willing to cooperate. At each school one teacher was interviewed twice. Although the preference was for this to be a geography teacher, in two cases this was impossible. At one school there was no geography teacher available to participate in this study and at another school the department consisted only of history teachers. Therefore, the interviews were conducted with teachers who were responsible for the 'human and society' curriculum, even if they were not geography teachers.

Within the limits of this study it was impossible to analyse all aspects of the 'human and society' curricula. Building on the works of Goodlad *et al.* (1979), van den Akker (2003) identifies six representations of the curriculum (see Table 1). In this study only the intended curriculum (both ideal and written) was analysed. The analysis of the written curriculum consisted of an examination of the teaching materials (texts, sources and tasks) used in school years 1 and 2 (12–14 years of age). The ideal curriculum was analysed by conducting two interviews with the teachers who were responsible for the 'human and society' curriculum at each of the four schools. The first interview focused mainly on the vision behind the curriculum and the practical organization of the curriculum that was being taught at the school. In the second interview the results of the analysis of the teaching materials were presented to, and discussed with, the teachers.

Table 1: Typology of curriculum representations (van den Akker, 2003: 3)

Intended	Ideal	Vision (rationale or basic philosophy underlying a curriculum)
	Formal/written	Intentions as specified in curriculum documents and/or materials
Implemented	Perceived	Curriculum as interpreted by its users (especially teachers)
	Operational	Actual process of teaching and learning (also: curriculum-in-action)
Attained	Experiential	Learning experiences as perceived by learners
	Learned	Resulting learning outcomes of learner

In each case, all the (geography-related) teaching materials, consisting of texts, associated tasks, assignments and week-to-week planners, were analysed. Every school uses texts a few pages long, organized around a sub-theme, such as plate tectonics or human development indicators (which we call *sections*), along with associated tasks. To analyse these texts, we divided them into paragraphs. Tasks are small questions which require an answer of between one word and a few sentences. Assignments are bigger tasks which are based on more than one lesson and involve short enquiries by students who are, for example, investigating the quality of life in a neighbourhood. The week-to-week planners show how many lessons students spend on the teaching materials.

Table 2: Adaptation of the characterization of powerful knowledge by Maude (2015)

Type of powerful knowledge	Characteristics
1. Knowledge that provides students with 'new ways of thinking about the world'	<ul style="list-style-type: none"> - Analysing regions and phenomena in a time-space context - Analysing regions and phenomena from multiple dimensions (economical, political, sociological, ecological) - Analysing regions and phenomena from different spatial scales, and linking the local and the global - Relational thinking (relating phenomena or regions to another) - Placing phenomena and regions/places in their geographical context
2. Knowledge that provides students with powerful ways of analysing, explaining and understanding	Knowledge of geographical concepts (and theories) to: <ul style="list-style-type: none"> - Analyse and compare spatial distributions - Identify effects on places (at different scales) - Explain the interconnection or causality between factors - Explain different kinds of processes - Show relationships between different concepts - Transfer knowledge to other situations
3. Knowledge that gives students some power over their own knowledge	<ul style="list-style-type: none"> - Knowing where to find reliable information using independent sources - Knowing how geographical knowledge is constructed, tested and evaluated - Evaluating knowledge claims
4. Knowledge that enables young people to follow and participate in debates on significant local, national and global issues	<ul style="list-style-type: none"> - Applying a geographical perspective on topical issues
5. Knowledge of the world	Regional knowledge: <ul style="list-style-type: none"> - Learning about the diversity of environments, peoples, cultures and economies - Learning about the interconnectedness between the student and other peoples and places on earth (apart from topical issues) - Empathy for other peoples and places on earth (apart from topical issues) - Acquiring knowledge about regions and places

For our analysis we first defined all the tasks, paragraphs of text and assignments as research *units*. Each unit could be characterized by one or more types of powerful knowledge. To this end the operationalization in Table 2 was used, based on the types

of powerful knowledge identified by Maude (2015). The description of Type 1 powerful knowledge appeared to be unsuitable for the analysis of the research units. The 'big ideas such as place, space, environment and interconnection' were translated into five perspectives from which students can look at the world, based on the definition of geographic thinking by van der Schee (2009: 19) and as used in Dutch secondary education syllabuses. These perspectives allow students to learn beyond their own experience and can therefore be seen as powerful knowledge and an adequate way of operationalizing Type 1 powerful knowledge. Maude (2015) describes Type 2 powerful knowledge as the knowledge that students can use to analyse, explain and generalize. In this study this means that the more specific geographical concepts and theories are regarded as Type 2 powerful knowledge. Type 5 powerful knowledge is characterized by learning about the world. It also comprises a regional geographical approach that helps us distinguish between Types 2 and 5. When places and regions are used as examples to illustrate a concept (types of vegetation) or theory (push–pull in migration), we classified this as Type 2 knowledge; and when students actually learn about regions, using a regional geographical approach, we identified this as Type 5 knowledge. The descriptions of Type 3 and 4 knowledge turned out to be suitable for the analysis.

The identification of powerful knowledge in all research units led to a list showing the research units, the type(s) of powerful knowledge that we had identified and a short explanation of our interpretation. From this level we aggregated the information in a description per section (including texts and tasks). For each section we described how one or more types of powerful knowledge were identified and emphasized. The advantage of the sections level is that students spend roughly the same amount of time on each section. On the unit level, there is difference in length – from an assignment covering several lessons to a small task which takes students one minute to answer. We combined the results from the sections level to paint an overall picture of each curriculum.

We used the two interviews to gain an insight into the motivation behind curriculum integration as well as the way it is realized in practice. We asked the teachers what their main motive was for integrating the curriculum, how it was integrated (which subjects, how they relate to each other), how many teachers from each subject area were involved in the domain team and what kind of teaching materials they used.

To evaluate the degree of integration, we interpreted the information from the interviews and teaching materials from the perspective of Bernstein (1975) and Fogarty (1991). We looked especially at the integration basis, for example overarching themes or one subject forming the core of integration with connections to other subjects. We also looked at the share of each subject's content within the integrated curriculum. Because almost every section was written from the perspective of just one subject, we were able to calculate the share of geography sections as part of the whole curriculum. At two schools the number of minutes per section was defined, which we then used to obtain an even more accurate estimate.

Results

Level of the curriculum outline

The four schools show some similarities in the way they organize the integrated curricula. At all schools the integrated curriculum has been implemented in the first two years of pre-university level secondary education. In the third year the subjects are organized separately. In the domains, geographical content is always combined

with historical content, and at one school with the subject areas of religious education, Dutch, economics and civics.

The curricula also differ in many ways, most notably in the order in which the themes are discussed, the share of geographical content within the domain and the way in which the curricula are integrated. To illustrate the way in which we analysed the curricula, we took one school as an example, which we call School A. We analysed the teaching materials of the other schools in the same way. The weekly planners provided by the school showed how many lessons were given in a year and within each theme. The planning is visually represented in Figure 2. As each lesson is designed from the perspective of one school subject, the size of each box represents the number of lessons dedicated to the subjects.

Year 1		Year 2	
Theme 1: Tourism	Tourism; spatial scales	Theme 1: Brazil	Region: Brazil; globalization
Theme 2: Living along the Nile	History		Economics
	Weather and climate; water scarcity	History	
Theme 3: Greeks and Romans	History	Theme 2: Freedom	History
	Volcanism		
Theme 4: The Mediterranean	History	Theme 3: The city	Laki volcanic eruption
	Region: The Mediterranean		History
Theme 5: Wealth and poverty	Wealth and well-being; demography; wealth and education; urbanization; development indicators	Theme 4: Politics	Cities; megacities; sustainable cities
Theme 6: Renaissance	History		History
Theme 7: Living on clay	History		
	Landscapes of the Netherlands		

Figure 2: The 'human and society' curriculum at School A

Note: The size of the geographical content components are adjusted according to the proportion of the component within the total 'human and society' curriculum per year.

In the first two years, the curriculum roughly follows the ten historical eras which form the guidelines for history education in the Netherlands, from the era of hunters and farmers until the era of cities and states in year 1, and from the era of discoverers and reformers until the era of citizens and steam engines in year 2. Teachers have selected geographical content that can be connected to these eras. Themes 1 and 5 are not connected to the historical eras.

The discussions focused on physical geography, volcanism, climate, human geography, wealth and well-being, cities and globalization. Although some themes are entirely dedicated to one school subject, such as themes 5 and 6 in year 1, most themes are a combination of geographical and historical content. Theme 2 of year 2 is the best example of such a combination. In this theme, called 'Freedom', students learn about the French Revolution. The theme focuses on the eruption of the Laki volcano in 1783, which had meteorological impact in Europe for years. The resulting crop failures led to famine, which consequently became one of the (indirect) causes of the French Revolution. In this theme students not only learn about volcanism, but also about the interconnectedness of geographical (natural) and historical events.

The calculation showed that School A students spend 66 minutes every week on geographical content within the integrated curriculum, excluding homework; this was 76, 66 and 44 minutes, respectively, at the other three schools. As students at typical schools in the Netherlands have two classes of 50 minutes per week, the integration of subjects at the four schools has led to a decrease in time spent on geographical content.

At all four schools the integrated curriculum is being taught by a team of teachers. Each teacher teaches the whole content of the integrated curriculum, although they all have a background in one of the subjects. Table 3 shows the composition of the teaching teams. At all four schools geography teachers are under-represented when we look at the share of geographical content within the curriculum. At School D the team consists of only history teachers.

Table 3: Composition of the 'human and society' teaching teams at Schools A, B, C and D

School	Number of geography teachers	Number of teachers with other backgrounds
A	3	4 (history)
B	1	7 (Dutch language, history, religious education, civics, economics)
C	1	4 (history)
D	0	4 (history)

Figure 2 can be viewed from the perspective of powerful knowledge. In theme 1 year 1, students are likely to learn to think from different spatial scales (Type 1), one of the core characteristics of geographical thinking. Theme 4 year 1 'The Mediterranean' and theme 1 year 2 'Brazil' seem to have a clear regional approach and reference Type 5 knowledge. Theme 5 year 1 reminds us of Type 2 knowledge because of the processes and indicators in the description. Water scarcity (theme 2 year 1) and sustainable cities (theme 3 year 2) could refer to Type 4 knowledge (that is, major topical issues). A further analysis of the teaching materials will show us whether this is the case.

When looking at the degree of integration we tried to visualize the curricula by referring to Fogarty's (1991) typology. To determine the degree of integration we looked at the visualizations of the curricula, such as Figure 2 for School A, along with

the weekly planners and cross references between sections. These reconstructions of the curricula resulted in the visualizations in Figure 3. For example, School A uses the historical eras as a starting point and connects it with bits of geographical content. There is still strong classification. The share of historical content (black) is larger than that of geographical content (white).

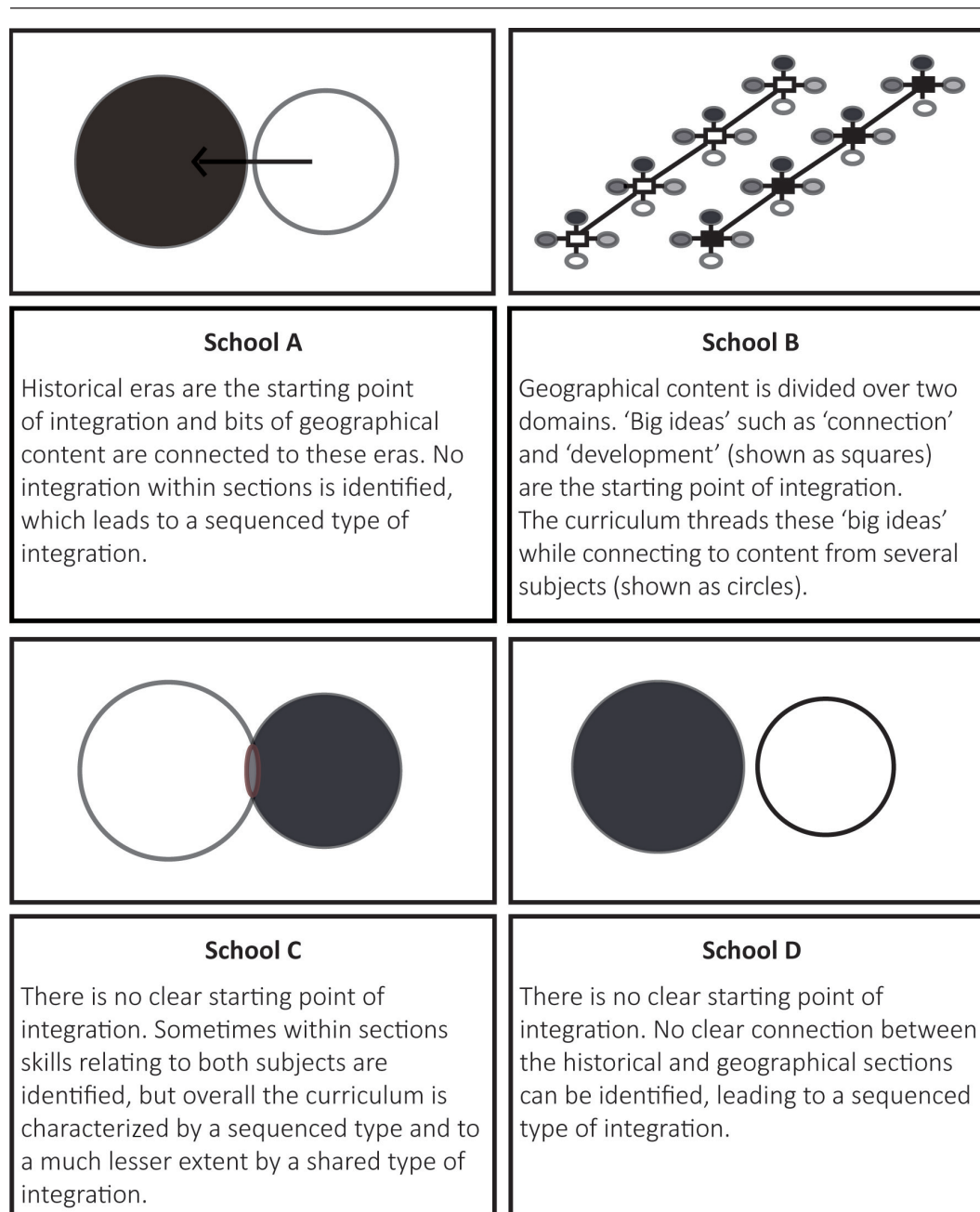


Figure 3: Visualization of the 'human and society' curricula at Schools A, B, C and D, based on Fogarty (1991)

Note: The figures show the way in which geographical (white circles) and historical (black circles) content are integrated. In the case of Schools A, C and D, the size of the circles roughly represents the share of geographical and historical content within the curriculum.

When looking at the other three schools, Schools C and D show quite a similar degree of integration. These three curricula rarely seem to be more than an alternation of subjects. At School D classification is even stronger than at School A. No clear

connection between the geographical and historical themes can be identified. School C is characterized by some weaker classification, although the subjects are still mostly separated. At School C we see some overlap, which means that content or skills relating to both subjects are integrated within a lesson. This is, for example, the case when students were asked to analyse a historical phenomenon using explicitly different spatial scales.

School B teaches the human geographical content in the 'human and society' domain and the physical geographical content in the 'human and nature' domain. School B has the least classification, as 'big ideas' like 'connection' and 'development' are the starting point of curriculum integration, not subjects. Bits of knowledge from several subjects are connected to these 'big ideas'. For example, when discussing 'connection', students look at the ways in which they feel connected to persons or institutions on different spatial scales.

Only at School D are the two subjects communicated to the students by labelling the content as either geographical or historical. At the other schools, this is not the case, although at Schools A and C students are probably able to distinguish between the subjects when asked to do so.

Level of the teaching materials

At all four schools the themes shown in the curriculum layout are divided into sections, with reading texts and tasks for students. Table 4 shows an example of sub-themes at School A.

Table 4: Overview of theme 1 year 2 within the 'human and society' curriculum of School A

1.1 – Vibrant Brazil	Geography
1.2 – Production	Economics
1.3 – Your wish is our command	Economics
1.4 – Join the Dutch East India Company	History
1.5 – Colonization and slavery	History
1.6 – Globalization	Geography
1.7 – Downsides of globalization	Geography

At all four schools teachers have the opportunity to give classroom instruction, but students spend a large part of their day working on assignments, on their own or in groups. Teachers guide their students during the learning process, instead of doing whole-class teaching. The collection of teaching materials therefore gives a good insight into the content students are expected to learn.

Looking at all the teaching materials from the four schools, Type 2 knowledge seems overwhelming. Many short texts and assignments deal with learning geographical concepts, like plate tectonics, erosion and sedimentation, human development indicators and urbanization. Students at all schools learn why climate zones exist where they do, how volcanism works and about indicators of development, which they can use to compare countries. At School D, and to some extent School B, we identified a focus on the reproductive learning of concepts itself. School C, and to some extent School A, let students use and apply concepts and stimulate geographical thinking a bit more. Type 2 knowledge in the schools is at the level of basic concepts in human and physical geography. Models and theories are not used in the teaching materials.

Type 5 knowledge is recognizable at School A where students learn about Brazil and the Mediterranean. In the case of the Mediterranean, students search for characteristics that the countries in this region share (climate, vegetation, agriculture). When studying Brazil, students learn about the population diversity, climate, economy and differences between poor and rich population groups. At the other schools, students do not learn explicitly and in a coherent or integrated way about regions and places. When regions and places are part of the teaching materials, they are used as an example or as context to explain geographical concepts.

Type 4 powerful knowledge rarely features in the curricula. The curricula are organized around themes, not around big issues. However, two issues are mentioned at all schools, namely the world refugee crisis and global climate change. In the case of the world refugee crisis, students at Schools B, C and D learn about the reasons why refugees flee their countries of origin. At School B students also evaluate the way in which the Netherlands receives and treats refugees. At school C students have a bigger assignment where they look at the routes refugees follow on their way to Europe, they analyse the history of a minority group in the Netherlands and they investigate their own migration history. Regarding global climate change, students at Schools A, B and C learn about the causes and the role of human activities. At School A students also learn about associated problems and solutions with the megacity, at School B various options of renewable energy are discussed and at School C students examine their own contribution to climate change and the stakeholders involved.

Type 3 powerful knowledge is almost absent from all curricula. Knowing how to use an atlas could be seen as Type 3 powerful knowledge, but no other skills concerning finding and evaluating information are indicated. In terms of map skills, students learn how to find the right map, but no attention is paid on how to read and understand a map.

Type 1 powerful knowledge is harder to identify at the level of assignments and smaller tasks. The level of a theme or sub-theme appears to be more suitable. Dutch geography education does not have a traditional approach based on using core concepts. However, in an implicit way we can see that students are challenged to look at a phenomenon from different perspectives or spatial scales. At School C, students search for solutions to climate change at multiple spatial scales, at School B students describe the way in which they feel connected to people and institutions on different spatial scales and at School A students design a new neighbourhood, which they think about from multiple perspectives (economical, ecological, social).

In conclusion we would say that, based on the teaching materials, the geographical part of the integrated curriculum at the four schools is mainly confined to learning concepts which are applied in small-scale tasks. In particular, the relative absence of a regional geographical approach (albeit to a lesser extent at School A) is striking. Assuming that learning about the world and its places and peoples is part of the core of geography education, the curricula show a limited approach to geography that can hardly lead to an extensive (geographical) world view.

Teachers

At the start of the second interview we showed the teachers the results for their school. We asked them which type of powerful knowledge they thought best characterized their curriculum and which type they wanted to pay most attention to. Three teachers thought that their focus was now on Type 2 knowledge and they wanted to spend more time on Type 5 knowledge because, according to them, this should be the most important aim of geography. One teacher, originally a geography teacher, thought

exactly the opposite, although she also thought that all types of knowledge were important in geography education.

Most teachers were relieved that the results show that in year 1 and 2 they cover 'a lot' with their Type 2 content in a short time. This made them feel that they were managing to teach the basics and link it to the themes of the integrated curriculum. The geography teachers use year 3 (not included in this analysis) to teach 'real geography' and to fill the gaps left from year 1 and 2. This shows that these teachers still identify themselves strongly with their subject.

Conclusions and discussion

In this study we used the characterization of powerful knowledge by Maude (2015) to analyse the integrated curricula in the first two years of pre-university level secondary education in the Netherlands. It was possible to identify the five types of powerful knowledge in the teaching materials, although not always at the same level. Type 2 and (to a lesser degree) Type 5 appeared to be evident in paragraphs of text or small-scale tasks, whereas for the other types the level of a whole section, with associated tasks, appeared more suitable. The qualitative characterization in combination with the detailed weekly planning information was useful in order to paint a picture of what an integrated curriculum looks like from the perspective of powerful geographical knowledge. It would also be useful to perform more or less identical analyses for powerful knowledge in the history part of the curriculum and to answer the question of whether the same type of selective knowledge is being taught.

The overall picture of the integrated curriculum in the first two years of pre-university level secondary education in the Netherlands reveals some remarkable choices. First, geography teachers appear to be under-represented in the team of teachers, whereas history teachers are over-represented. Second, the amount of time that students spend on learning geographical content and skills is less than at a typical secondary school in the Netherlands, at one school even less than half the time that is usual. The time dedicated to geography is fragmented and divided into many sub-themes, all covered by very small-scale tasks. Third, from the perspective of powerful knowledge, there appears to be a focus on learning concepts. These concepts are seen as the very basis of geographical knowledge. The same concepts (and even more) are present in geography textbook series, used at the same level at schools where geography as a subject is included in the timetable. However, in these books the concepts are linked more effectively to larger phenomena and placed in contexts of (natural) processes and regional developments. The power of the knowledge, which can also be seen in the combination of Maude's types, seems lost due to the choices, limitations and fragmentation. This does not appear to be compensated for by a strong vision of how knowledge from different disciplines should be integrated. However, we, of course, only looked at the geography part, and the complete curriculum does need to be studied.

Perhaps our most important conclusion is that the steps Maude (2015) took to create an instrument to outline what powerful knowledge in geography education can be, helped us to analyse and discuss geography curricula and even teaching materials. It consequently gives us more specific 'language' with which to debate the 'what' and content selection in geography education. However, focusing solely on different 'types of knowledge' could lead to an underestimation of the importance of the relationships between the types of knowledge. It is therefore important to think as well about the

meaning and consequences of the dominance of one type of knowledge, the absence of some of the types and a lack of connection between types of knowledge.

Notes on the contributors

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