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The knowledge curve: combining types of knowledges leads to powerful thinking

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ABSTRACT



Michael Young has written extensively about “powerful knowledge” as the type of knowledge that should be central in education: knowledge that is – among many other things – reliable and potentially testable, that helps us understand the natural and social world, and offers us a language to engage meaningfully in moral and political debates. As a contribution to the powerful knowledge debate, the authors introduce a so-called knowledge curve, depicting types of knowledge along the axes of level of abstraction and degree of explanatory power. They argue that combining elements of knowledge that are situated on different positions on this curve is what makes the use of knowledge and the thinking process powerful. The implications for school geography are illustrated with the example of global south to north migration.

KEYWORDS

Geography; knowledge curve; migration; powerful knowledge

Introduction

Since the introduction of the notion of powerful knowledge by the British educational sociologist Michael Young (2008), many geographical education scholars have written about this concept and its potential relevance for school geography (see, for example: Béneker, 2018; Catling & Martin, 2011; Lambert, Solem, & Tani, 2015; Maude, 2016; Roberts, 2014; Morgan, 2017b; Young, Lambert, Roberts, & Roberts, 2014). Powerful knowledge is not only reliable because it is produced according to academic conventions, but it is also supposed to be empowering for the user: it is key to understanding the world around us and offers us tools for participating in social and political debates (Young, 2008, p. 14; 2013, p. 196). What Young has in mind as powerful knowledge, is the knowledge embodied at the heart of any academic discipline: its key concepts, core ideas, generalizations, models, and theories. It is quite obvious that this type of knowledge has an important role to play in (secondary school) curricula.

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However, whilst the idea of powerful knowledge works well in some subjects such as physics or chemistry for example, in others it is arguably less straightforward, and geography is possibly one of those subjects. What may count as powerful knowledge in human geography, is actually constrained in time and space: such knowledge is not accurate or ‘true’ forever, nor for every place in the world. But this does not make such knowledge less powerful and indeed one of the markers of powerful knowledge is grasping the dynamic and contingent nature of all that is known. The conceptual knowledge of (human) geography and of other academic disciplines remains an essential set of lenses through which to explore the world around us.

After a brief introduction to the debate about powerful knowledge in relation to geography education, we will introduce a model – the knowledge curve – that highlights variation of knowledge types, based on level of abstraction of knowledge and on explanatory power of knowledge. We will elaborate one example of the use of this model, in order to illustrate that *combining* and *relating* different types of knowledge helps to make geographical reasoning powerful. The example is the topic international migration, with a focus on migration to Europe. International migration is part and parcel of academic geography, an omnipresent element of school geography, and obviously a core issue in societal debates, not least in Europe and in the United States. We will discuss the issue of migration from Africa to Europe from a powerful knowledge perspective. Developing a grounded opinion about such issues requires conceptual knowledge such as that we identify in this paper, but also an active mind that will ask questions, check facts, and look at the issue from various perspectives – all essential characteristics of ‘thinking geographically’ (Morgan, 2017a).

Powerful knowledge of geography

In their contribution to the debate about powerful knowledge and geography education, Francis Slater and Norman Graves (2016) criticize the fact that powerful knowledge is hardly ever elaborated or specified in relation to geography education. If it is not specific, then how can it support teachers in their curriculum and lesson planning? Slater and Graves refer to David Lambert’s earlier example about (the school geography topic of) cities, in which he sees questions about cities – such as “in what circumstances do cities grow (or decline)?” – as examples of powerful knowledge (see interview with Lambert by Stoltman, Lidstone, & Kidman, 2015). Slater and Graves argue that such questions may be answered with the help of powerful geographical knowledge but are not in themselves powerful knowledge. In response to their article, Lambert (2016) maintains that the concept of powerful knowledge should not be spelled out in detail because it should be seen as a way of developing a curriculum that brings students beyond their own experiences, regardless of the specific content.

As far as we know, only Alaric Maude (2015, 2016, 2018) used Young’s concept of powerful knowledge in an attempt to elaborate such powerful knowledge in the context of geography education, at a level sufficiently general to avoid reduction to a content catalogue and sufficiently specific to help teachers to better understand and apply the concept. His typology has been useful in identifying, analyzing and discussing the (overall) powerful knowledge in geography curricula, from written standards

to teacher's ideas (Béneker & Palings, 2017; Maude, 2018; Tani, Cantell, & Hilander, 2018; Virranmäki, Valta-Hulkkonen, & Rusanen, 2019). Maude (2018) argues that the typology is also helpful for teachers to think about or evaluate a teaching unit as he explains for the Australian Year 8 unit Changing Nations.

Maude's interpretation of Young's conceptualization of powerful knowledge leads to an alternative definition. Maude (2018, pp. 180–181) believes that knowledge is powerful if:

“it enables young people to discover new ways of thinking, better explain and understand the natural and social worlds, think about alternative futures and what they could do to influence them, have some power over their own knowledge, be able to engage in current debates of significance and go beyond the limits of their personal experience.”

Based on this Maude (2018) distinguishes five types of powerful knowledge in geography:

- Type 1: Knowledge that provides students with ‘new ways of thinking about the world’. This refers to the major concepts of geographical thinking: place, space and environment.
- Type 2: Knowledge that provides students with powerful ways of analyzing, explaining and understanding. This includes concepts with analytical and explanatory power (e.g. spatial distribution, relative location) and geographical generalizations. Maude not only refers to these concepts and generalizations but also to the skills of using and applying such concepts (analytical methods).
- Type 3: Knowledge that gives students some power over their own knowledge. This type refers to some knowledge about geographical knowledge production and how to evaluate claims about knowledge.
- Type 4: Knowledge that enables young people to follow and participate in debates on significant local, national and global issues. This refers to geographical thinking, for example by the integration of knowledge from the human and natural sciences, that helps to understand societal issues.
- Type 5: Knowledge of the world, concerning the diversity of environments, people, cultures and economies. This ‘regional’ knowledge includes “geographical ways of thinking, factual information, generalisations, methods of analysis and techniques for evaluating information” (Maude, 2018, p. 183).

Maude's typology is based on what powerful knowledge allows students to do: think in new ways, analyze and explain, have control over their own knowledge, engage in debates, gain insight in the world. The categories of knowledge that allow us to do these five things are largely overlapping (see Béneker, 2018; Béneker & Palings, 2017; Bouwmans & Béneker, 2018, for questions of overlap and combinations). Participation in a debate (type 4), for example, will be more effective when we know about the world (type 5), question the ‘certainties’ expressed by an opponent (type 3), raise questions that open new perspectives (type 1 or type 2).

In our discussions about powerful knowledge we should be aware of the different perspectives on and different (sometimes implicit) definitions of powerful knowledge

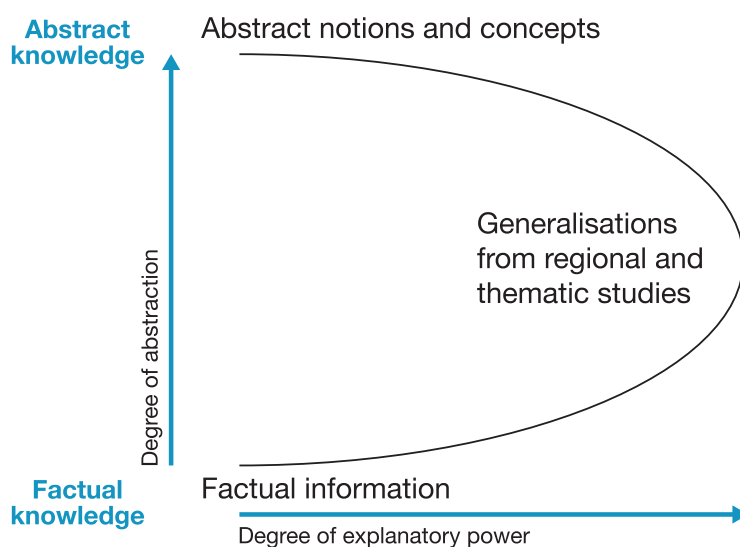


Figure 1. Types of disciplinary knowledge at the knowledge curve.

used in the debate. Young (2008) approaches the concept from the perspective of the sociology of knowledge, in the tradition of Basil Bernstein, with a focus on the fundamental insights of academic disciplines. Lambert (2016) uses the notion in the context of the Future 3 curriculum, which should be knowledge-based, and co-constructed by teachers, taking their students' perspectives into account. Maude starts from a typology of the uses and functions of geographical knowledge. Margaret Roberts (2017), as a final example here, sees the student's own perspectives and experiences as well as the quality of teaching and classroom dialogue as essential conditions for powerful knowledge to emerge.

Our claim here is that, in thinking about powerful knowledge, it is helpful to realize that the knowledge that we have at our disposal – in our case in the geographical sciences – is diverse in level of abstraction as well as in explanatory power. And that combining and relating various types of knowledge results in – maybe defines – powerful thinking. We believe that school teachers should practice the art of moving between and combining types of knowledge continuously in their dialogue with students, in dealing with the questions that come up in classroom conversation. Active and critical engagement with factual information, conceptual knowledge, and basic geographical questions, meaningfully combined, helps students to develop their own powerful knowledge.

The knowledge curve

We will explore our position with the help of a model that one of the authors used in an earlier publication (Vaart, 1991, see Figure 1). The figure shows the types of disciplinary knowledge that we have at our disposal organized along two axes. The vertical axis is the level of abstraction of the knowledge, from very concrete (low) to highly abstract (high). At the very concrete end we find a fact such as “New Zealand has approximately 4.8 million inhabitants” or the definition of the concept of

population density. At the very abstract end of the vertical scale we may find notions such as space, diffusion or interaction. Abstract notions inform the type of questions we ask. Such questions are the familiar guiding questions that all geographers share and that have been formulated by many geographers over the years (see, for example, Pattison, 1964, or Harvey, 2005).

Both very concrete and very abstract knowledge as such gives us little or no insight in structures, development, or interconnections in the world. That is why we find both extremes (very concrete and very abstract knowledge) at the left-side end of the horizontal axis, which stands for explanatory power. Systematic knowledge that is neither very concrete, nor very abstract, such as the knowledge contained in thematic generalizations and models, has the highest explanatory power. Central urban areas have high land prices; African countries have a relatively young population; weathering of rocks and soils may occur because of contact with the atmosphere, with water, or with biological organisms: these are just a few straightforward examples of models and generalizations, some of them rather simple observations, others based on geographical research.

These observations are visualized in [Figure 1](#): types of knowledge are located on a parabolic curve. The three positions that we discussed here, very abstract terms, very concrete facts, thematic generalizations, are of course positions on a continuum. An idea such as “place matters”, is quite abstract, and very powerful, but in itself tells us very little about the world; but it is a very powerful tool in combination with data and conceptual knowledge about a specific theme or issue, such as “development”.

Powerful knowledge as Young (2008) would define it, covers the complete upper part of the knowledge curve: from the very abstract concepts such as space and place, through core methodological concepts, to more concrete geographical concepts, models, and generalizations as we might find them in any handbook of political, economic, or urban geography. Maude’s five knowledge types include knowledge components of all levels of abstraction and explanatory power, although these dimensions are not an organizing principle in his typology.

The core of our argument is that effective or powerful geographical reasoning involves the making of combinations of various types of knowledge on the curve. It is what people with some expertise in geographical thinking would do all the time. The more abstract knowledge components of geography enable us to ask certain types of questions, and to approach an issue from various perspectives. Some of the questions can be answered by looking at the outcomes of geographical research: the models, theories, or generalizations available in our discipline. Other questions can only be answered by collecting and processing data: field work data, or data from existing sources, processed in maps or otherwise. This is also the point raised by Slater et al. (2016) in relation to Lambert’s example of powerful knowledge about cities. Asking questions about cities, basic questions such as “What makes a city a sustainable city?”, is in itself not an example of powerful knowledge in their opinion. On the one hand, such a question is inspired by powerful geographical knowledge: the abstract notion of people-environment interaction. But the question will only become productive – and lead to powerful learning outcomes – in combination with the knowledge needed for answering it: the conceptual and systematic knowledge from geographical research

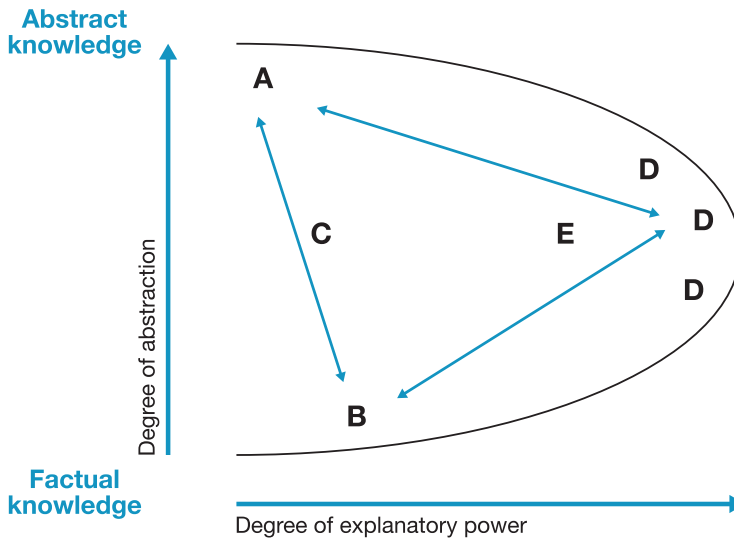


Figure 2. The example of migration to the EU in the model.

about urban resilience, healthy cities, et cetera, or the factual information that may be gathered (in school context) through interviews with local stakeholders and local fieldwork. Powerful reasoning in geography is relating and combining abstract knowledge (that inspires questions asked and perspectives chosen), conceptual and systematic knowledge (mainstream geographical body of knowledge), and knowledge of very concrete cases, gained through observation or other forms of data gathering. We will now explore this in more detail with the example of south to north migration.

Example: learning about mass migration to Europe

The purpose of this example is to demonstrate the potential of a judicious use of the knowledge curve in classroom activities. It is certainly not our intention to offer a watertight template of “how to teach” migration. Migration, and in particular global south to north migration, is an issue about which many myths and stereotyped images appear in the media. Such images and myths may easily affect students’ ideas of what is happening in the world. Geography is one of the subjects in schools that contributes to helping students develop their understanding and formulate informed opinions about this issue. We will now explore how elements of geographical abstract, conceptual, systematic and factual knowledge – all combined and related – may help students to explore the issue. We will visualize our argumentation in [Figure 2](#).

Let us assume that the students are in an EU country and that they study immigration in the European Union. How can students make sense of this issue of large-scale immigration in developed nations? One entry point is asking a number of geographical questions. These questions are informed by the abstract notions of geographical concepts and the way geographers study the world. A number of questions arise from spatial thinking [indicated as A in [Figure 2](#)]. Students will not necessarily use this term but may actually have the habit of asking such questions thanks to

mapping exercises and the use of atlases. Trying to ‘map’ immigration is a geographical way of thinking and makes the issue much more real.

- Where are the people coming from, who tries to come to Europe and where do they go (spatial patterns)?
- Is the pattern of where they come from and where they go changing over time (spatial dynamics)?
- What are the differences between ‘my country’ and other European countries as a destination for migrants (regional differences)?

Other possible questions relate to the concept of scale:

- At the European scale, the number of immigrants may be modest as a percentage of the total population, but how is this at national or local scales, for example in the hotspots that are often in the news?

Trying to answer such questions will mean to retrieve or collect factual information. It may not be easy for students in a school setting to find answers to these and similar questions that are inspired by the application of abstract geographical notions such as scale, regional variation, or spatial patterns. Websites of the UN organizations, the EU, national governments, NGOs and newspapers give plenty of relevant information [B in [Figure 2](#)], but often for different years, different categories of migrants, or in support of different arguments. It will require a critical look at the available data and corroboration through comparison of sources to find some answers. But it is valuable to combine the powerful knowledge of geographical questions with applying them and finding and analyzing concrete factual data [C in [Figure 2](#)].

Exploration of the issue will be more focused, though, when we make use of knowledge at the level of outcomes of geographical research (models, concepts, generalizations). Geographers working in the field of migration studies have a rich and diverse research output; for the sake of our argument we constrain ourselves to two examples. The first example is this generalization: Long distance emigration is highest from countries with relatively higher levels of development, such as the Maghreb and coastal West Africa. The poorest countries of Africa, particularly land locked Sub Saharan countries, have the lowest levels of overall emigration and are dominated by short-distance migration (Flahaux & de Haas, 2016). A second example is the following set of generalizations. Personal security and economic security are important drivers of migration regardless of whether a person is entitled to asylum status or not. The evidence suggests that having the capacity (financial or otherwise) as well as intentions to migrate are both critical factors determining whether a person migrates or not (Cummings, Pacitto, Lauro, & Foresti, 2015; Dietz & de Haas, 2018).

Such elements of conceptual and systematic geographical knowledge about the African and European contexts and about south to north migration more generally help us raise specific and relevant questions about the geography of migration from Africa to Europe. We give a few examples:

- How important is the EU as a destination for African migrants? Changing perspectives to emigration, will lead to questions of relative importance, changing (post-colonial) relationships and new destinations.
- Immigration to the EU: Is it regular or irregular migration? Who are the migrants entering the EU, refugees applying for asylum or economic migrants? It helps to be aware of issues of definition: how are migrants defined, what are the various categories of people? The distinction between refugees who apply for asylum and economic migrants is relevant here, as well as knowledge of the difficulties, in practice, to set the two groups apart.
- Migration to the EU: What is the role of poverty in migration? Systematic knowledge helps students to put matters in perspective: empirical reality shows that countries of origin are not the poorest countries and the migrants are not the poorest people. Conceptual knowledge as the push-pull model, still used a lot in school geography tends to simplify migration as people migrating between the poorest and richest countries.

These are just a few examples of how knowledge [D in [Figure 2](#): definition of concepts, new models, topical systematic knowledge] may foster the types of questions asked and may influence how to collect and analyse facts and data [E in [Figure 2](#)]. Our claim is that looking at data, asking geographical questions, and mobilizing (systematic) knowledge mutually influence each other, which will lead to a richer understanding of issues in society. Having access to this knowledge will help students form an opinion on related policy issues, for example using poverty reduction or closing the borders as a (non) solution to ‘stemming the flow of migrants’.

Discussion

According to Young himself and Maude’s interpretation of Young’s writings, powerful knowledge is supposed to help people to find their position with regard to societal issues and debates, as citizens in their areas, country, and the world. This is often said to be one of the goals of education (Lambert, 2018). In that sense it is the opposite of taking a stance in a fact-free way, just selecting some facts that support gut feelings. Geographical knowledge has great potential in helping people to develop their opinions in a well-substantiated way, particularly when abstract ideas, concrete facts, and knowledge based on geographical research (generalizations, models) are used in combination.

With respect to the debate on powerful knowledge in geography education, the knowledge curve model offers an approach to disciplinary knowledge that stresses the diversity of knowledge in terms of levels of abstraction and explanatory power, as well as the importance of combining knowledge elements that are situated on different parts of the curve. The idea of moving between or relating different types of knowledge (in terms of abstraction) is also reflected in the work of Esther Vernon (2020) and Christopher Winch (2013). Vernon speaks of “ascending and descending the ladder of knowledge”, not only in terms of moving between levels of disciplinary knowledge (of different levels of abstraction), but also between levels of the student’s

Self (between the concrete life experiences of the empirical Self and the reflective level of the epistemic Self). Winch's (2013) work on curriculum design stresses the importance of relating and combining various types of knowledge: 'knowledge by acquaintance', 'propositional knowledge', and 'how-to knowledge'.

There are, of course, levels of sophistication in the combined use of types of powerful knowledge. Our example is straightforward but assumes that students already have some experience in geographical thinking and in finding and critically assessing data. At the various levels of schooling or professional training, the levels of student's theoretical knowledge and understanding and therefore their ability to ask questions, access to and ability to analyze data, and empirical disciplinary knowledge will be very diverse. But at all levels, combining these knowledge types and information sources can be trained: ask questions, based on available knowledge, and use data and factual information critically.

Geographical educators will argue that 'learning' such powerful knowledge is not in itself a guarantee that students will be able to apply such knowledge in making sense of the world around them or in making up their minds with regard to social and political debates in their country. And it goes without saying that using disciplinary knowledge will always be embedded in and related to personal knowledge, values, and beliefs of the students, and peer communication. Students must learn to use knowledge: by actively asking questions, applying knowledge to real-life cases, weighing arguments, discussing issues in class, using knowledge productively in assignments, et cetera. This is a truism in geography education internationally – and at the heart of many educational innovations of recent decades, such as problem-based learning, project learning, inquiry-based learning, et cetera (Bednarz, 2004; Favier & van der Schee, 2009; Roberts, 2013; Robertson & Gerber, 2001). The selection of successful teaching strategies (how to teach) should complete the selection of the powerful knowledge (what to teach).

Disclosure statement

No potential conflict of interest was reported by the author(s).

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