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What to Teach? Conceptualising a Geography Curriculum^{*}

教什麼？概念化中學地理課程

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摘要

本文從課程必須關乎知識的前提出發，指出近幾十年來北美的中學學校課程中，學科知識被邊緣化的狀況，以及當代建構主義、工具主義和新保守主義對待「知識」在某些部份的不足之處。相對的，本文認為社會實在論的理論更有助於理解學科知識對學校教育的重要性，並有助於學校課程「再脈絡化」的問題。社會實在論同時採取社會學的取徑與知識論的取徑，超越了實證主義/建構主義的鴻溝。本文從地理學包含系統地理(命題的知識)、以區域或地方為本的地理(脈絡的知識)和方法(程序的知識)、以及三者的關係，來檢視地理學的認識論。文章主張引領學生進入地理學，取決於對這三種知識的根本了解。因此，一個健全的學校地理課程必須同時構築在這三種知識類型上，這樣學生才能進入地理的概念架構與思考方式。本文最後也討論了三種知識類型在英國學校課程與評估文件上的應用。

關鍵詞：課程、學科知識、認識論、社會實在論

Abstract

Starting from the premise that a curriculum must be about knowledge, this article notes the marginalisation of disciplinary knowledge in the Anglo-American school curriculum in recent decades and how contemporary approaches to knowledge (constructivism, instrumentalism and neo-conservatism) are deficient some respect. Instead, the theory of social realism is proposed as a better way to understand the significance of disciplinary knowledge to the education of children and how it can be re-contextualised in the school curriculum. Social realism takes a sociological and epistemological approach to knowledge, moving beyond the positivist/constructivist divide. Geography's epistemology is examined as comprising systematic geography (propositional knowledge),

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附註：本文乃 Dr. Alex Standish 受邀在本系辦理之第 21 屆國際臺灣地理學術研討會發表的專題演講內容，中文摘要由沈淑敏老師協助翻譯，並承蒙蘇淑娟主任校閱，特此一併致謝。

regional/place-based geography (contextual knowledge) and methods (procedural knowledge), and the relations between each explored. Inducting students into geography depends upon a foundational understanding of all three types of knowledge. Therefore, a robust school curriculum must be constructed with all three knowledge types such that students can enter into its conceptual framework and ways of thinking. Finally, the use of knowledge types in geography curriculum and assessment documents in the UK is discussed.

Keywords: curriculum, disciplinary knowledge, epistemology, social realism

Introduction

In this paper I will principally be looking at the question of how, in 2017, we can approach the question of what to include in a secondary school geography curriculum. Given that I am presenting this paper many miles from home, I will in no sense be trying to tell my audience what should be in *their* geography curriculum. Rather I aim to examine and to communicate some principles and guidelines by which one can set about constructing a geography curriculum. While primary schools also introduce pupils to disciplinary knowledge this paper builds upon research that is focused at the secondary level (Standish and Sehgal Cuthbert, 2017). There is more work to be done to explore the implications at primary level.

Making decisions about what to include in a curriculum involves stepping back from schools and asking questions about the values held in society that inform the question of what to teach. I will also examine the dominant philosophical traditions that have informed the construction of curriculum to date and why each of these fails to adequately account for the place and value of knowledge in schools. This helps us to understand why since the 1980s knowledge in the curriculum has been ‘dethroned and displaced’ (Whelahan, 2010: 88), leading to an educational deficit in what children know, understand and can do (Hirsch, 1987; Whelan, *et al.* 2007; Young, 2008). In order to construct a more progressive and robust case for the place of knowledge in the curriculum I will draw on the theory of *social realism*. Social realists emphasise the objectivity and epistemic relations of knowledge, both of which are tied to its sociability. From here I will examine the relationship between geography the discipline and geography the school subject. I want to suggest that a robust school subject is dependent upon an understanding and reflection of the discipline’s epistemology. I will show that introducing children to geography means not just teaching them subject knowledge, but inducting them into geography’s ways of thinking and methods of enquiry. A progressive case for disciplinary knowledge in the curriculum is built upon an understanding of epistemic relations and it is this vantage point that provides some guidance for deciding what to include in a geography curriculum and how this might be structured.

Values and the Curriculum

As we enter into a discussion about the school curriculum, it is useful to begin with R.S. Peters' observation that education does not have its own values (Peters, 1964). Questions about what schools should teach are 'philosophical and political questions about who we are and what we value' (Young, 2008: xvi). Similarly, the philosopher John Searle notes that allocating a function to any phenomena necessitates the identification of a prior set of values. This suggests that any theory of education and the curriculum must be related to a theory of society and some notion of the individual we want to shape (Young and Muller, 2016). In no sense am I suggesting that education should be restricted to one culture, but rather that questions about what to teach – *the curriculum* – are informed by one's cultural standpoint and values. Where I am from, the United Kingdom, this means that the individual being shaped through the curriculum should at the very least reflect and maintain the foundations of liberal democracy, constructed upon the notion of *autonomous individuals* who are equal before the law and allowed *freedom of thought and speech*. And, the content of the curriculum must derive from our national culture and its institutions. Indeed, the very maintenance and sustenance of a democracy is dependent upon a curriculum that provides the knowledge young people need to join in society's conversations, therefore assuming the responsibilities of citizenship (Rata, 2012).

Here, I have already introduced the category of knowledge and identified that it has an important role to play in the maintenance and progress of society. In other words, it has value and is therefore something we want to pass on to children. However, we must distinguish between different types of knowledge in order to understand the special role that schools play in society. A useful starting point is to distinguish between every day and theoretical knowledge (a distinction which can be traced back to Durkheim). What distinguishes disciplinary knowledge from every day, social and cultural knowledge is that the former is concerned with the pursuit of *truth*. We must recognise that there are different sources of truth in society – religious and secular (being a product of history and culture), and that both *belief* and *reason* have their place in education. In his essay *Truth and Truthfulness*, Bernard Williams speaks to the place of truth in education: 'you do the best you can to acquire true beliefs, and what you say reveals what you believe' (Williams, 2002). Williams asserts that truth is the basis for the authority of scholarship, at all levels of education. Yet, at the same time, scholars must also live with an understanding of the fallibility of our accounts of truth. However, this does not absolve teachers of their responsibility for the pursuit of truth and to communicate its meaning to pupils in their particular knowledge domain.

Here, we can see that disciplinary knowledge has intrinsic value, as well as being important for individuals to function well in society. As Michael Young explains, 'The primary purpose of education is for students to gain access to different specialist fields of knowledge' with a view to their 'intellectual development' (Young, 2014: 149), including the faculties of reason, enquiry and imagination. This helps to account for the prominence of a subject-based curriculum in the modern age of schooling.

Nevertheless, all is not well with education in schools in Britain (Furedi, 2009; Whelan *et al.*, 2007) and other countries, such as United States (Hirsch, 1987), Holland (Massachelein and Simons, 2012) and New Zealand (Wheelahan, 2010). As I alluded to above, the place of knowledge in the curriculum has become marginalised and teaching increasingly tied to aims extrinsic to education (marketable skills, well-being, recognising diversity or sustainable futures). Two of the dominant contemporary approaches to education, child-centred constructivism and instrumentalism, place little value on curriculum knowledge itself, while neo-conservatism takes a static and backwards-looking view of knowledge. With constructivism the emphasis is on the child's role in constructing their own *meaning*, but this doesn't mean that they are creating knowledge. Children of course gain meaning through the acquisition and utilisation of new concepts and ideas, constructivism down-plays the role of the teacher in selecting and sequencing curriculum content. Here, the *how* of learning (pedagogy) gets confused with or prioritised over the *what* (curriculum) (Biesta, 2005).

The place of knowledge in curriculum has also been undermined by increasing instrumentalism with respect to education (*Ibid.*). In recent decades we have seen a narrowing of the space in which political ideas are discussed, and a hollowing out of substantive content about how societies can move forwards. Zaki Laïdi (1998) describes the era of globalisation as 'world without meaning', due to a lessening of attachment to foundational beliefs and the lack of a *telos* or vision in societies. As politics has declined as an arena in which people invest their hopes and aspirations, so other areas of society have been looked to in order to fill the void, education being a prime candidate. In recent years, UK schools have been charged with saving the environment (especially climate change), addressing the skills gap (saving the economy), preventing childhood obesity, ensuring the emotional and mental well-being of children, safeguarding, preventing radicalisation, to name just a few. There comes a point where extrinsic aims for the curriculum lead to genuine confusion about what subjects are for (Whelan *et al.*, 2007).

The declining importance attached to knowledge is further illustrated by the rise of accountability measures and a technocratic approach to teaching. Drawing on the language of neoliberalism and managerialism, schools have been driven to establish accountability measures for demonstrating pupil 'progress' (Ward, 2012). This 'business model' of education seeks to make teaching measurable and to hold teachers to account for pupil progress. Yet, there has been insufficient scrutiny of the appropriateness of applying a business model to education and the damage that is done when schools function outside of a framework of educational aims tied to the acquisition of worthwhile knowledge. Some exceptions include Biesta (2005/2007) and Pring (2013).

In seeking to place knowledge at the heart of education one often gets labelled as either a positivist or a conservative. Of late, neo-conservatism has sought to return knowledge to the curriculum. In England for instance, the Conservative government of 2010 initiated the largest educational reform since the introduction of the national curriculum in 1990. Led by Michael Gove, the reform aimed to re-focus the curriculum on subject knowledge (Department for Education, 2010). While the new

curriculum does include significant and valuable academic knowledge it has been widely criticised by schools and educationalists, if not dismissed, as only reflecting the perspective of the Coalition government (Conservative Party and Liberal Democrat Party) who led the reform. With many in academia promoting perspectivism and localism over disciplinary knowledge and universalism (Furedi, 2017) it has made it easier for educationalists and schools to dismiss the national curriculum as simply one perspective. And, with the Department for Education announcing that the new curriculum does not apply to free schools and academies, it is no longer a *national curriculum*. What was missing from the reform was a clear rationale for why disciplinary knowledge has universal qualities and is therefore important for all children to study.

But it is possible to make the case for knowledge without resorting to a fixed and static view of knowledge or one that is tied to a defence of traditional culture. If we are to reclaim the centrality of theoretical, disciplinary knowledge to the purpose of schooling we need a better way of accounting for its objective truth claims and one that move past the positivist – constructivist divide.

Social Realism – a new approach to knowledge and the curriculum

While the dominance of social constructivism in educational institutions has led to a focus on the social context and the people who construct knowledge, social realism aims to better understand *knowledge itself* – including different forms of knowledge and their epistemological frameworks – how knowledge is structured and is advanced, as well as its reliability and truth claims.

What is special about disciplinary knowledge, in contrast to general and cultural knowledge, is its claim to objectivity and to advance truth. Yet, we must also recognise that such truth claims are a product of a given social and cultural context, as well as the work of individuals with particular perspectives. Steven Ward (1997) suggests that a way forwards is to recognise that the objectivity of scientific knowledge is a product of ‘associational codes’ that are created by a disciplinary community. Ward suggests that disciplinary knowledge is differentiated from other types of knowledge because the ‘associational codes of science...constitute a very specific way of accomplishing a particular type of knowledge’ (1997, 787). This means being sociological about truth and objectivity.

Contemporary social realists (Maton, 2010; Moore, 2007; Muller, 2000; Rata, 2012; Young, 2008), propose that the objectivity of truth claims depends upon (1) their external validity – they explain objects of study in a convincing way, (2) their internal consistency – that they are coherent and follow logic, and (3) their ability to invoke support from a specialist community of experts and with a wider legitimacy.

Starting with their external validity, the concepts that we have created aim to capture an essence or an aspect of the particular object of study, in geography’s case - *the surface of the earth*. Social realists call this the *aboutness* of knowledge – the relationship between knowledge and the object being accounted for (Wheeler, 2010). In geography, we use concepts that are about both the natural world

(rivers, atmosphere, rocks, landscape) and concepts about the human world (settlements, economies, political territories, development). There is a difference between concepts that are about physical objects (rocks, houses) and concepts that are about other concepts (democracy, development). However, with both the aim is 'achieving the maximum absorption of the object by the concept' (Young and Muller, 2016: 30). It is also important to recognise that no concept can capture the complete essence of an object and that disciplines often have unique concepts because they are asking particular questions about their object of study (Hartshorne, 1939). That said, geographers 'borrow' many concepts from other disciplines like meteorology, biology, geology, economics, demography and political science. However, we use them in a unique way because we are interested in location, spatial arrangements and human – environment interactions (Holt- Jensen, 2009; Standish, 2014).

Of course concepts do not exist in isolation. Each concept relates to and is inferred from another concept – otherwise known as inferentialism (Brandon, 2000). Understanding the inferential relations of concept formation has significant pedagogical implications for the classroom and also for curriculum planning. Already, we can see that the distinctive approach of a discipline will result in the construction of a framework or system of concepts unique to its way of interpreting its object of study. Learning a discipline means entering into the system and comprehending its particular framework of concepts. The epistemological identity of different forms of disciplinary knowledge has significant implications for those responsible for re-contextualising disciplinary knowledge into school subjects (Bernstein, 2000).

Finally, each discipline has historically tested and established *procedural knowledge* – methods of enquiry for conducting and scrutinising research, as well as for critique and the verification of findings. This includes the review and communication of research findings through publication. This involves scholars reading and commenting on the *reliability* of the work produced, and its acceptability for distribution within the disciplinary community. Drawing on Karl Popper's notion of falsification in the sciences, it is the openness to challenge and the processes of *verification* within specialist communities that make knowledge a social product, and gives rise to its reliability (Moore, 2009). Again, there are important curricular implications if we are aiming to teach pupils to make judgements between better and weaker knowledge claims.

What we can take away from social realism in terms of curriculum is an understanding of knowledge as a social product, with claims to truth and as maintained by a community with a commitment to epistemic ascent (Winch, 2013). Each discipline has its own *purpose, object of study, organising concepts, modes of thought, conceptual framework of knowledge and methods for validating and acquiring new knowledge* (Young and Muller, 2016). In other words, it has its own 'associational codes'. These are by no means fixed and within the same discipline there often co-exist different approaches, methods and organising concepts or frameworks. However, in order to induct young people into disciplinary ways of thinking a robust understanding of the discipline's epistemic relations is key. Pupils don't just need knowledge. They need to learn how the discipline works.

Geography as Discipline

As Edward Ackerman (1963) surmises, geography is the study of the variation of and interaction between physical and human phenomena across the surface of the world. This ‘surface’ includes the earth’s crust (lithosphere) and its landscape, flora and fauna, the atmosphere, people and culture, the built environment and political territories. Of course, geographers are not the only scholars to study rocks, soil, flora and fauna, rivers, trade, political territories and culture, and hence we share these objects and their related concepts with other disciplines. What distinguishes the geographer’s perspective is that we are interested in the relationships between different phenomena that give rise to spatial patterns and areal differentiation. Richard Hartshorne, explains it thus:

The heterogeneous phenomena which these other sciences study by classes are not merely mixed together in terms of physical juxtaposition in the earth surface, but are causally interrelated in complex areal combinations. Geography must integrate the materials that other subjects study separately. (Hartshorne, 1939: 464)

Building on earlier studies of the nature of geography (Hartshorne, 1939; Holt-Jensen, 2009; Cresswell, 2013), I propose the following epistemological framework of knowledge: systematic or thematic geography (development of *propositional knowledge*), regional geography (exploring *contextual knowledge* and applying *propositional knowledge*) and methods of enquiry (*procedural knowledge*). Systematic geography appears as a series of sub-disciplines, such as geomorphology, biogeography, climatology, economic geography, cultural geography, while regional geography is organised by synthesising the geographical features in one place or region. While individual geographers may specialise in one tradition, sub-discipline or region, what matters for the student of geography is that both approaches are present. Next, I will examine why.

Systematic geography is a nomothetic pursuit in that it aims to develop generalisations: concepts, models, theories and principles about how things are spatially related. Geographers do this by examining one geographical phenomenon (e.g. glaciation or population) at a time – how it varies in space and how it is influenced by other phenomena. Systematic geographical knowledge has evolved as a series of sub-disciplines each of which is related to its own branch of science (geology, meteorology, planning/urban studies, political science). Geographers draw from these individual sciences using the concepts constructed for the study of its specific object (lithosphere, atmosphere, settlements, political ideas/institutions). However, the geographer utilises these concepts for a different purpose: to comprehend spatial relationships and patterns. Because geographers are interested in how objects are associated with other objects they may modify generic concepts or invent new ones (e.g. sphere of influence).

The concepts that form geography’s sub-disciplines are arranged hierarchically – starting from the simple, distinctions are added with increasing abstraction. For instance, rocks can be subdivided into igneous, metamorphic and sedimentary, and then further subdivided according to their properties. We

can envisage this hierarchical knowledge structure as an inverted triangle – starting from one concept and building out to many (Figure 1). The curricular implications are that propositional knowledge depends upon *conceptual coherence* and concepts will usually be taught in an order or pattern.

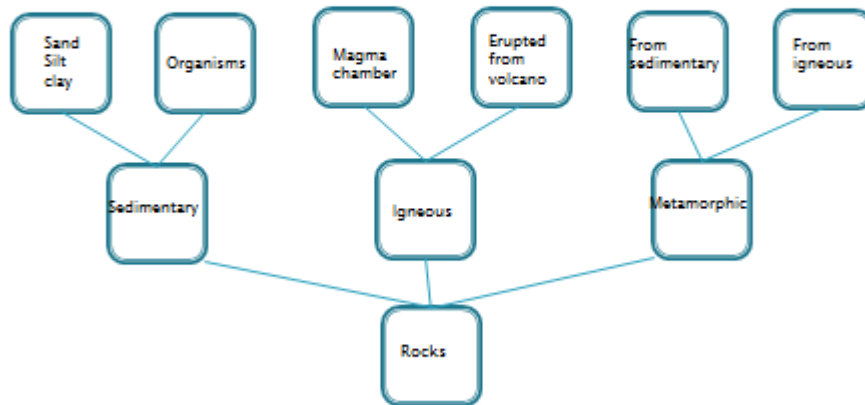


Figure 1: Systematic Geography (Propositional Knowledge)

The value of nomothetic science is that by abstracting from the real world we can begin to see patterns of behaviour and relationships that are not apparent at a more concrete level. With the systematic approach geographers are seeking explanations of the behaviour and patterns of phenomena. Its knowledge structure is frequently hierarchical or vertical – aiming for greater precision, certainty and truth (Bernstein, 1999). Some examples of geographical theories and models include the Bradshaw Model, the Demographic Transition Model, the Gravity Model, the Burgess Land Value Model, the Core/Periphery Model, Weber’s Industrial Location Theory, the Heartland Theory and Butler’s Model of Tourist Resort Development.

When constructing propositional knowledge the danger is that the theory becomes too removed from the real world and unable to explain the behaviour of the phenomena in question. Therefore, disciplines need *contextual (empirical) knowledge* – the facts, data and observations of human and physical features of the earth’s surface. By its very nature contextual knowledge cannot be abstract and therefore does not give rise to generic concepts or theories (Young and Muller, 2016). In contrast to propositional knowledge, it is mainly horizontal in structure; so that studying new places and regions adds to existing knowledge – but sideways rather than hierarchically.

However, it would be a mistake to view regional geography as simply the compilation of facts about a locale. Rather, the significant question for regional geographers is: ‘What are the inter-relationships among phenomena that produce this particular set of features?’ (Slater, 1982: 3). This task requires *synthesising knowledge* from geography’s sub-disciplines. This process of selecting from systematic geography (inverted triangles) and using its concepts and theories to make sense of bounded places and regions (presented here as circles) is illustrated in Figure 2.

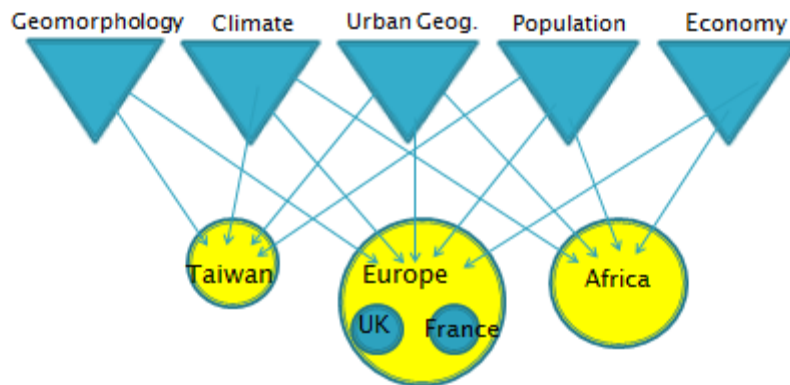


Figure 2: The Relationship between Systematic and Regional Geography

Because places and regions are a product of a complex web of interactions this method presents a problem of selecting the geographical criteria and also the starting point, both important for constructing a curriculum. Hartshorne suggests that no geographical phenomena should be discounted if one is aiming to depict something whole (a region). However, not all geographical phenomena are equally significant in shaping the character of a region. The character of regions can be strongly influenced by mountains (Himalayas), islands (Caribbean), hot deserts (North Africa), abundance of hydrocarbons (Gulf States), rainforest (Amazon) or religious traditions (South Asia).

Both teachers and student of geography must make a determination about which geographical factors and features they see as important for their particular geographical description (Lambert, 2014). The selection of these is subjective, but purposeful: exploring the relationships that account for spatial differences. The student or teacher must account for their selection and how their regions are constructed. In doing so, they should be aiming for the principle of *contextual coherence*. Clavel (1998) notes how the regional method depends upon substantial knowledge of the region in question, including the history of the area in question. The regional method does not demand a complete history of the region, but rather the student or teacher should select those aspects from the past that are most *significant* for its contemporary geography. For example, to account for the contemporary geography of the Middle East it is necessary to understand the significance of Jerusalem to the three Abrahamic religions, as well as the modern-day founding of the state of Israel.

Let us consider now in a little more depth how these two branches of geography work together. We have already noted that propositional knowledge develops by abstracting from context. However, if its generalisations, models and principles are of value they must necessarily explain aspects of the real world. This can be done by testing or applying them in different contexts. This does not mean that models will perfectly predict patterns and behaviour on the surface of the earth. However, in order to say something meaningful about spatial arrangements we should be able to find evidence of their principles at work. In the course of applying generic models and principles the geographer may well discover imperfections and errors, forcing them to go away and refine their ideas and models. The process of hypothesising, testing, analysis and verification of knowledge is known as *procedural*

knowledge; procedural knowledge being the third element of disciplinary knowledge (alongside proposition knowledge and contextual knowledge).

Two more recent accounts of geography's traditions and knowledge have been provided by Holt-Jensen (2009) and Cresswell (2013). Both trace post-World War II developments in the subject, including the expansion of systematic geography in the 1950s and 60s and radical and Marxist geography in the 1970s and 1980s, and more recently feminist geography. Social theories of post-modernism and post-structuralism have had a significant influence on modern geographers taking them in novel directions, and giving insight into the relation between power and knowledge, differentiated cultural context and multiple geographies. Teachers will draw on these and other ideas where they help them to account for particular geographies. However, their potential for guiding the construction of a curriculum is more limited because they do not account for distinctiveness of disciplinary knowledge. Teachers must decide when the students are ready to be introduced to ideas that add a further layer of complexity and multiple perspectives on the world.

Geography as School Subject

If geography aims to explore the connections between the different layers of the earth's surface that give rise to distinct places, regions and spatial patterns, then geography teachers need to teach pupils about those different layers through its various sub-disciplines (systematic geography). In most of these sub-disciplines the knowledge is organised vertically, progressing from simple to more complex and abstract concepts. When planning units of work the teacher must aim for *conceptual coherence*, such that pupils develop a grasp of the concepts in order to think about the particular layer of geography. Most geography teachers will be able to identify the key concepts students need for each sub-discipline or they can be found in textbooks or exam specifications.

While knowledge within each sub-discipline is often vertical, the sub-disciplines themselves are arranged serially (de Blij and Muller, 2012). The connections between them are horizontally arranged – meaning that pupils must learn to make links from one sub-discipline to the others in order to account for spatial patterns and arrangements. However, because of the horizontal knowledge structure there is more than one possible starting point. Hirst and Peters (1974) likened the curriculum to a jigsaw puzzle. There are many different places one can start, different ways to precede and places to finish, even though every piece has a correct place. However, we can also say that some layers are more significant than others in terms of shaping a distinctive geography. Rock, landforms and climate all play a dominant role in determining physical characteristics. Population, economies, political boundaries and culture are highly influential human layers. What matters in geography is that over the course of the child's education they study most sub-disciplines and are taught to look for connections between them.

To a large extent, the same is true with regions and places. Pupils should be introduced to all regions of the world over the course of their schooling. This does not necessarily mean that teachers

should aim to ‘cover’ every continent or country. Some regions and places will be studied in more depth than others and an important aspect of the regional approach is to understand the interplay between different *scales* – how places and smaller regions are connected with and contribute to larger regions and countries. There is also a compelling rationale for pupils in the early stages of school starting with where one lives (the familiar and concrete) and moving to the more distant and unfamiliar parts of the world. However, this is not an argument for only studying one’s own country or continent at primary level as it will need to be explored in more depth as the pupils’ knowledge grows.

When planning for and studying places and regions teachers are aiming for *contextual coherence* – what are the important features and processes that give rise to the distinctive geography of this place or region? Here, the knowledge is horizontally arranged so again, the aim is to explore the inter-connections – meaning that different starting points are possible.

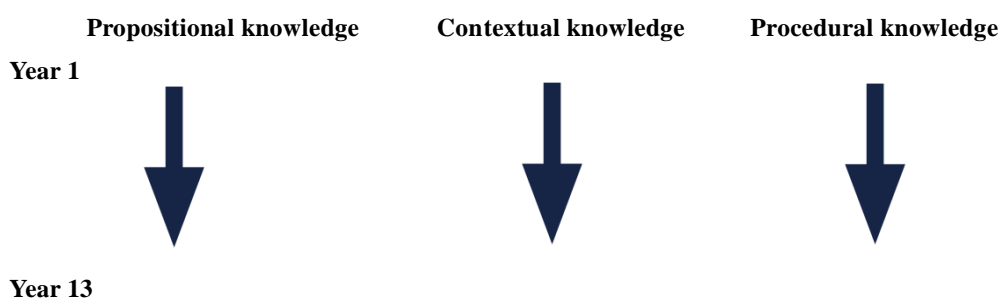
While it is possible to plan a curriculum either through systematic geography or regional geography what is important is that the geography student learns to move between the two approaches. As Phil Gersmehl suggests, ‘The interplay between topical (systematic) and regional perspectives is what stimulates thought’ (2008: 23). Thus, pupils are learning to see the connections between the theoretical and the empirical or the general and the particular. Units of work can be planned through sub-disciplines with case studies (regional geography) embedded within them. Or, the curriculum can be planned through regions with systematic geography embedded within the region. This is where the skill and creativity of the teacher comes into play as it is they who have to teach the subject.

Pupils also need to learn the skills and methods used by geographers (*procedural knowledge*) such that they learn how to ask and to answer geographical questions of their own, and to make judgements about the validity and reliability of knowledge claims (Wheelahen, 2010). Skills that are specific to geography include how to construct, use and interpret maps, as well as Geographical Information Systems (GIS) - geographically referenced data programmes used to produce digital maps. In the early years of schooling, pupils must learn what a plan view is and how the real world can be represented through symbols on plans and maps. Children must learn the meaning of directions and how they can be used for describing location and for orientation. Of course, learning to use maps involves learning many concepts including direction, distance, scale, grid reference, map symbols and contours. Pupils demonstrate skills when they learn to apply these concepts in the construction and interpretation of maps, such as identifying landforms from contour patterns or drawing the watershed (boundary) of a drainage basin.

Pupils also need to learn how to ask and to answer geographical questions through data collection, presentation, analysis and interpretation. This means practising methods of fieldwork that are specific to both social science and natural science, such as using questionnaires, measuring the features of a river channel or analysing a soil profile. Here, pupils are learning how to conduct research in a simplified form and that this involves applying a methodology systematically to collect data in an unbiased way (Lambert and Reiss, 2014). This procedural knowledge also teaches pupils about the process through

which knowledge is constructed and verified. Fieldwork teaches pupils that the knowledge they learn in textbooks and the classroom has been created through a process and that the real world is complex and messy.

In constructing the geography curriculum, propositional knowledge (systematic geography), contextual knowledge (regional geography) and procedural knowledge (methods and skills) must be planned from the first year of schooling onwards. While procedural knowledge is more sequential, with propositional and contextual knowledge the building of links from one unit of work to the next is more important than the order in which they are taught.



Only in recent years has the UK geography community begun to utilise these headings to discuss curriculum, but sometimes different terms are employed. For instance, for the Geographical Association's (2011) national curriculum proposal the headings Core Knowledge, Content Knowledge and Procedural Knowledge were included. It appears that there is a degree of correspondence with the first two headings to contextual knowledge and propositional knowledge, although not completely. Similarly, in subsequent Geographical Association publications, such as the Assessment and Progression Framework (2014) and Assessing Progress in Your Key Stage 3 Curriculum (Gardner, Weeden and Butt, 2015), we find the headings Contextual World Knowledge, Understanding (propositional knowledge?) and Enquiry and Skills (procedural knowledge?). Again, there is marked similarity to the three knowledge types I am proposing here. Similar wording also appears in the government's GCSE Assessment Objectives for geography, although there is a fourth objective about application of knowledge:

AO1: Demonstrate knowledge of locations, places, processes, environments and different scales;

AO2: Demonstrate geographical understanding of concepts and how they are used in relation to places, environments and processes, and the inter-relationships between places, environments and processes;

AO3: Apply knowledge and understanding to interpret, analyse and evaluate geographical information and issues and to make judgements;

AO4: Select, adapt and use a variety of skills and techniques to investigate questions and issues and communicate findings. (Department for Education, 2014)

On the other hand, we shouldn't necessarily expect assessment documents to have the same structure as the curriculum, although we would anticipate correspondence. Overall, the community has yet to establish clarity on knowledge types as well as consistency of terminology, but signs of convergence are positive.

At a school level, one academy chain in particular, which currently runs 44 schools in and around London, has embraced this knowledge framework. Harris Federation (2016) has produced a new Key Stage 3 curriculum that identifies 'contextual world knowledge (core knowledge), understanding (conceptual content knowledge) and enquiry and skills (procedural knowledge)' as a framework for planning and assessment. This is no accident as the main author Richard Maurice, and lead-geography teacher, has been studying for a Masters in Geography Education at the Institute of Education, where he has been introduced to the latest geography education research. We have yet to see how this curriculum works out in practice, but so far he reports that the curriculum has been warmly received by teachers.

Conclusion

I began by asserting that the curriculum is about knowledge and identifying that what knowledge we include in a curriculum is linked to societal values (specialist knowledge being one of these). I identified that knowledge involves the pursuit of truth and understanding about a particular object of study. The remainder of the article shows that each discipline has its own unique knowledge structure as well as modes and methods of enquiry. I suggest that the school curriculum must reflect and to some extent replicate the disciplinary structure and methods if its aim is to induct pupils into disciplinary ways of thinking and seeing. Having a clear picture of knowledge types and how they relate is critical for curriculum design and implementation at all levels. This still leaves plenty of rooms for schools and teachers to create the own curriculum that best fits their particular setting and pupils. Given that I also alluded to the suggestion that knowledge has been 'dethroned and displaced' (Whelahan, 2010) is curriculum, let me finish by reflecting on the importance of disciplinary knowledge for children and young people.

Leesa Wheelahan observes that while competency-based education provides students with access to content it does not necessarily offer access to 'systems of meaning in disciplinary knowledge' (2010: 106). She suggests that where students are denied access to disciplinary knowledge class divisions are likely to be reinforced because 'unless students have access to the generative principles of disciplinary knowledge, they are not able to transcend the particular context' (*Ibid.*: 107). In geography, David Lambert provides a helpful summary of the intellectual capabilities arising from its study:

The acquisition of deep descriptive and explanatory world knowledge; the development of the relational thinking that underpins geographical thought; and, a propensity to apply the analysis of alternative social, economic and environmental futures to particular places contexts. (Lambert, 2017)

Lambert, and other colleagues, have also identified what they call the ‘geocapabilities’ arising from the study of geography. The three ‘geocapabilities’ they identify are:

1. Promoting individual autonomy and freedom, and the ability to use one’s imagination and to be able to think and reason;
2. Identifying and exercising one’s choices in how to live based on worthwhile distinctions with regard to citizenship and sustainability;
3. Understanding one’s potential as creative and productive citizens in the context of the global economy and culture. (Solem *et al.*, 221)

However, considering this list it is evident that these are wider educational aims rather than something specific to geography. Alaric Maude (2016) has further explored the ways in which geography provides young people with powerful knowledge. These include: knowledge that provides students with ‘new ways of thinking about the world’; knowledge that provides students with powerful ways of analysing, explaining and understanding; knowledge that gives students some power over their own knowledge; and, knowledge that enables young people to follow and participate in debates on significant local, national and global issues (2016: 75). With only weak reference points in society, an understanding of the intrinsic value and distinctiveness of different knowledge types are essential ingredients to ensure successful teachers and schools.

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