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Helping students think geographically

– Teaching key geographical concepts and skills

This article explores how instructors can teach students to think geographically, helping students master key concepts and spatial thinking skills. Geographical knowledge and skills can help students make informed decisions in their professional life (Bednarz *et al*. 2013: 7), and can enable them to understand and participate in debates about complex issues such as globalization, migration and climate change (American Association of Geographers). A geographical perspective, focusing on interlinkages between people, places and environments, can help students cope with the complexity of these issues. This is the *power of thinking geographically*, which "enables a unique way of seeing the world, of understanding complex problems and thinking about inter-connections at a variety of scales" (Jackson 2006: 199).

Introducing the "problem"

In the popular imagination, geography is a fact-based and descriptive discipline that uses maps and studies the locations of places. This "Trivial Pursuit view of geography" (Jackson 2006: 199) does not help the general public – and students of geography – understand what geography *is* and what geographers *do*. Thus, it is a challenging task to help students think geographically.

How can we, as geography instructors, help students acquire the knowledge and skills to think geographically? And what are the key concepts that students should master to become proficient in geography? This article aims to address these central questions in geography education. In order to do so, the article first surveys the literature on key concepts in geography. Second, it discusses scholarly perspectives on geographical thinking and skills. The third section examines how these ideas can be integrated in geography courses, providing an example from an economic geography class on creative industries.

Key concepts in geography

Every academic discipline has a set of key concepts consisting of concepts, theories and analytical frameworks that describe the discipline's most elementary processes and phenomena. Taken together, these concepts can structure a discipline's knowledge in a meaningful and structural way. In order to master a discipline, students should know its *grammar* (i.e. key concepts and theories or "big ideas") and *vocabulary* (i.e. topics and phenomena) (Fögele 2017; Geographical Association 2009; Jackson 2006; Lambert 2004). "In order to use the vocabulary well requires grammar – and geography provides the 'doing words' helping us learn how places are linked and what forms of relationship ope-

rate over the spaces between the places" (Lambert 2004). The acquired language, then "provides a way of thinking about the world: looking at it, investigating it, perhaps even understanding it in new ways" (Geographical Association 2009: 10).

Geography scholars have identified key concepts in geography that are, together with theories, the *grammar* of the discipline (Bednarz *et al*. 2013; Geographical Association 2009; Holloway *et al*. 2003; Jackson 2006). Even though these academics may work in different subfields and/ or use different theoretical perspective(s), they arrive at similar key concepts (Bednarz *et al*. 2013). This convergence is quite remarkable in the discipline of geography, which includes epistemologies from the social-, natural- and information technology sciences. Below I will shortly discuss key concepts in human geography, drawing on literature about geography education in the US, the UK and Sweden. The US and the UK have strong research environments in geography education, and Sweden is included to examine whether, and if so how, Sweden has adopted recent innovations in geography education.

At the 2006 annual conference of the Geographical Association in the UK, cultural geographer Peter Jackson (2006) identified four key concepts in geography: space and place, scale and connection, proximity and distance, and relational thinking. The National Curriculum program for geography in the UK lists similar key concepts, namely place, space, scale, interdependence, physical and human processes, environmental interaction and sustainable development, and cultural understanding and diversity (Geographical Association 2009: 10). Thus, the national curriculum and Jackson (2006) share a similar perspective on human geography, while the former adds sustainable development, cultural understanding and diversity to its list. While not mentioned explicitly in Jackson's essay, these concepts are present in his discussion of consumer ethics and 'caring at a distance.' The UK's Action Plan for Geography (Geographical Association and Royal Geographical Society 2006) lists place, connectedness, scale, process, and skills as key concepts, thus adding the importance of *mastery* of geography (Brooks 2017).

Geography education in the United States also aims to teach key concepts and help students master the discipline. The key concepts include spatiality, human-environment interaction, interconnections between places, and place-based and regional analysis (Bednarz *et al*. 2013: 19). In order to think geographically, students should understand "the systemic relationships between and among people, places and environments" and be able to use appropriate methods to "inquire about, describe, represent, and make meaning of geographic phenomena" (Bednarz *et al*. 2013: 27). In addition, geography education "integrates spatial and temporal analysis … offering unique techniques for integrating the analysis of variation over time with analysis of variation over space" (Bednarz *et al*. 2013: 20).

While the key concepts discussed above vary somewhat, they all include place, space, scale, and relations/ connections/ interdependence. Thus, the foundation of geography as a place-based and spatial science is reinforced in these listings, as well

as the study of relations and interdependencies between places, and connections between human and physical environments. In regards to the latter, some scholars also include landscape and/ or the environment, emphasizing that geography is particularly well-positioned in explaining relations, connections and interdependence between people, places and environments.

Teachers tend to use key concepts in their lesson plans to help students develop a geographical way of thinking: "Key concepts help learners pose geographical enquiries, identify key issues, encourage assumptions and thus provide an orientation aid within the context of 'challenging inquiries'" (Fögele 2017: 67). The teaching of key concepts alone, however, risks reducing geography to a list of "essential facts" (Hirsch 2007 in Lambert 2014) and losing sight of broader learning goals. Ideally, students learn to master key concepts as well as how to *think* like a geographer and *practice* geography. The next section discusses these broader learning goals in more detail.

Learning goals in geography education

What students should learn, and how the subject matter should be taught, is the subject of ongoing debates. Geography educators have noted a widening gap between students' knowledge and skills, as the curriculum places most emphasis on the former (Butt 2017). The knowledge debate centers around the question whether students should predominantly learn facts and subject knowledge (i.e. 'essential knowledge'), or whether geography should concern itself with discussions of social issues and assisting with 'opinion forming' (Butt 2017). This section examines the learning goals in geography education as stated by geography associations in the UK and the US, and the Swedish National Agency for Education in Sweden. It pays particular attention to the knowledge and skills that students should acquire according to these organizations.

In 2009, the Geographical Association in the UK published a manifesto to promote geography in school curricula. In a section on thinking geographically, the association argues that: "An essential educational outcome of learning geography is to be able to apply knowledge and conceptual understanding to new settings: that is, to 'think geographically' about the changing world" (Geographical Association 2009: 9). In order to master the language of geography, the association emphasizes the importance of learning its vocabulary *and* grammar.

The National Geography Standards for the United States emphasize the importance of spatial thinking: "Geographic skills enable a person to understand the connections between patterns of rivers and the physical processes that create them, between patterns of cities and the human processes that create them, and between what happens in the places in which we live and what happens in places throughout the world, near and far" (Heffron and Downs 2012). Thus, examining where phenomena occur, and their connections with other phenomena in the same place or elsewhere, is a key skill that students of geography should master.

The Swedish National Agency for Edu-

cation introduced a new curriculum for state schools in Sweden in 2011 (Swedish National Agency for Education 2011). The agency lists specific abilities that geography students should develop, building on the concept of *bildning* that was introduced in 1992. Bildning refers to the acquisition of different forms of knowledge that includes subject knowledge and the "development of students' character, values and personality" (Örbring 2017: 138). Thus, it is the school's responsibility to help students become more independent thinkers, and to promote reflection and problem-solving. The emphasis on students' role in the learning process is reflected in a change of terminology from *inlärning* (teacher-led transfer of knowledge) to *lärande* (the learning process itself) (Örbring 2017).

In Sweden, the Swedish National Agency for Education sets the learning goals for geography education. With the implementation of the 2011 curriculum, which is still used in schools today, students should be able to:

- "Analyse how natural processes and human activities form and change living environments in different parts of the world,
- Explore and analyse the interaction between people, society and nature in different parts of the world,
- Make geographical analyses of the surrounding world, and evaluate the results by using maps and other geographical sources, theories, methods and techniques, and
- Assess solutions to different environmental and development issues based on considerations concerning ethics and sustainable development" (Swedish National Agency for Education 2011: 150–151; the English translation is taken from Örbring 2017:142)

The main goal of the curriculum is to develop students' subject-specific abilities, in addition to acquiring tacit, theoretical and practical knowledge (Örbring 2017: 148).

Ideally, geography education integrates the teaching of facts, concepts, skills and reasoning to help students reach higher levels of learning (Bednarz *et al*. 2013). Recently, geographers and other academics have discussed these abilities of students and teachers in terms of "powerful knowledge," which will be discussed in the next section.

Powerful knowledge

The concept of powerful knowledge was introduced by the education sociologist Michael Young (2007), referring to disciplinary knowledge that children and young people need to become active and responsible global citizens. He advocated for a "return to knowledge" in the curriculum, arguing from a social justice perspective that all young people are equally entitled to powerful knowledge. Young wanted to move away from knowledge of the powerful, consisting of elite cultural knowledge that is transmitted to a privileged few, promoting the need to provide *all* young people with knowledge that they do not have access to at home or at work. Young argued that powerful knowledge should incorporate knowledge that is "developed, accumulated and stored as a result of the work of generations of re-

searchers" (Young 2007: 4), moving beyond knowledge that students can acquire through their own experiences. This latter point has been subject to debates whether student learning should incorporate students' experiences in their everyday lives.

In an attempt to make geographical knowledge accessible to students, the American Association of Geographers has applied a Geocapabilities approach to geography education. Building on the capabilities approach developed by economist Amartya Sen and philosopher Martha Nussbaum, the project examines what students and teachers are capable of being and doing, and how geography education can enhance these capabilities. Its underlying principle is that students who are deprived of specialized knowledge and powerful thought "are deprived and restricted in their personal and intellectual growth to become fully capable adults" (Lambert 2016: 392). Overall, the Geocapabilities project reflects on the role of geography in "affording people with intellectual, moral, and existential capabilities for lifelong learning, economic and social agency in citizenship, and the pursuit of personal well-being" (American Association of Geographers).

Various scholars have examined how powerful knowledge can be incorporated in the geography discipline (see f.ex. Brooks *et al*. 2017; Roberts 2014; Solem *et al*. 2013). Solem *et al*. argue that geography is particularly well positioned to provide reliable explanations and new ways of thinking through the provision of "world knowledge:" "a theoretically-informed relational understanding of people and places in the world; and a propensity and disposition to think about alternative social, economic and environmental futures" (Solem *et al*. 2013: 218). Relatedly, Roberts (2014: 249) argues that "the powerful big ideas of geography can transform the way young people see the world."

Educators play a key role in providing young people access to powerful knowledge. They are tasked with helping students "become aware of the kinds of questions geographers ask, the methodologies used to select and interpret data and how these shape geographical knowledge. To make sense of geographical knowledge, they need to be able to understand, interpret, analyse and critique geographical data presented in different ways … they need to make connections of all kinds: between existing knowledge and new ideas; between different pieces of information; between different concepts" (Roberts 2014: 205).

Thus, educators can help students access powerful disciplinary knowledge, enabling them to "(d)iscover 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" (Maude 2017: 30). The next section discusses how these ideas can be integrated in university-level geography courses.

Case study: How to help students think geographically

This section provides an example how educators can help students think geographically and develop their spatial

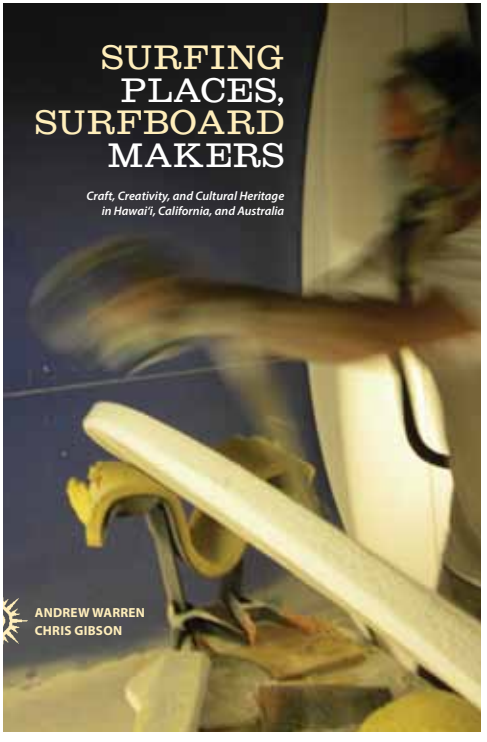

Image 1. Book cover of Surfing Places, Surfboard Makers by Andrew Warren and Chris Gibson..

thinking skills, using a case study of a bachelor-level economic geography class at Uppsala University. First, I present the learning goals and the class design. Thereafter, I describe how economic geography concepts and key concepts in geography are introduced, and how these are linked to the assigned reading.

The course is offered to undergraduate students in geography and consists of 8 weeks of lectures, seminars and a final exam (15hp). Approximately 30 students are enrolled in the course each term. I teach three classes on creative industries in this course, and will discuss how I teach a class about the surfboard industry. The students are assigned 3 chapters in a book written by Warren and Gibson (2014) on the art of surfboard making, the working conditions of surfboard makers, and the emergence of a global surfing industry. A week before I meet the students, I send an email informing them about active learning and its advantages for student learning, and I ask the students to read the assigned readings before coming to class.

I designed the class on the surfboard industry to connect students to "powerful knowledge" in geography, exposing them to geographical ways of thinking using the key concepts of place, space, scale, and relations/ connections/ interdependence. It also enabled students to participate in a debate on a complex issue, in this case the survival of creative industries in an era of global mass production, and to envisage alternatives (Maude 2016; Young 2007).

When I design my classes, I use Fink's (2013) method for creating significant learning experiences. This student-centered, integrated approach places active learning at the center of course design. Active learning strategies aim to engage students as active participants in the learning process through higher-order thinking tasks such as analysis, synthesis and evaluation (Bonwell and Eison 1991). Fink's method is based on an inverted course design: instructors first establish the learning outcomes for an entire course, followed by learning objectives for each lecture. Then, instructors design lectures aligned with the learning objectives, and create assignments and exams that assess whether the students have met the objectives.

Before I prepare a lesson plan, I identify

learning goals for the session and concepts that students should master. For the class on artisan surfboard makers, I wanted students to be able to:

- Provide examples of questions that economic geographers ask about creative industries, and link these to key concepts in human geography
- Explain how Warren and Gibson engage with these concepts:
  – Craft, creativity, cultural heritage
  – Economic, social and emotional aspects of work in culture industries
  – Gendered aspects of work in culture industries
  – Resilience of local surfboard makers
- Apply concepts discussed in class to other creative industries

The learning goals take students from basic to higher-order thinking skills (Bloom 1956; Anderson and Krahtwohl 2001). At the beginning of the class, students provide examples, link them to geography core concepts, and explain key concepts, thus using their lower-level thinking skills of remembering and understanding. In the last segment, students move into higher-order thinking skills, namely the application of their knowledge to other creative industries.

At the start of class I played three minutes of a video about surfboard making to provide context for the class. I then mentioned that we were going to discuss the surfboard industry from an economic geography perspective, and presented the learning goals that were projected on the screen. In order to tie the course material to students' lived experiences and interests, I asked "Has anyone surfed before?" This question enabled students to tap into their previous knowledge (Davis 2009) and to tie their personal experiences to the course topic. Then I shortly asked the students who raised their hands where they had surfed and how they selected their surfboards. I noted that these examples illustrate the importance of physical geography for surfing and surfboard making, as artisan surfboard makers adapt the shape and size of surf boards to local wave and weather conditions (which is discussed in Warren and Gibson's book). This warm-up exercise linked students' everyday experiences to geographical knowledge.

I gave the students five minutes to discuss questions that economic geographers ask about creative industries. The assignment was projected on the screen to remind students of the task. I wrote "economic geography/ creative industries" in the middle of the whiteboard, and circled the concept. After the students discussed the question in small groups, I asked several groups to summarize the key point(s) in their conversation. As the students shared their insights, I drew lines from the "economic geography/ culture industries" circle and I wrote down words based on the students' contributions (see image 2). Students mentioned, among other questions, "How do creative industries work?" "How is the creative class defined?" (this class was preceded by a lecture on Richard Florida's creative class thesis); "Where does innovation happen?" "How do markets work?" "What makes entrepreneurship successful?" And "how can artisans remain competitive?" (a key question that this class engages with).

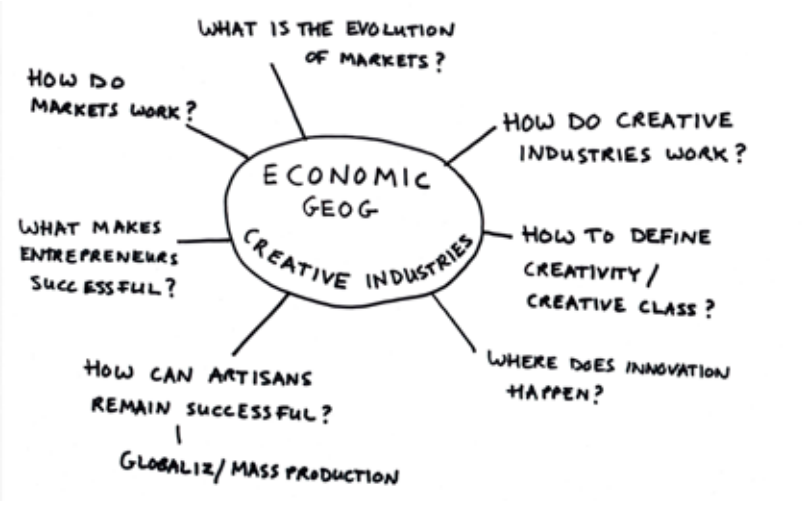

Image 2. Mind map of questions that economic geographers ask about creative industries.

I asked whether anyone wanted to add or change any information on the board, and I provided additional information. Thereafter I asked students to shortly define key concepts in geography, writing place, space, connections/ interactions/ interdependence, and time in the board, underlining that these processes are in a constant state of "becoming." As the students provided input, I wrote their answers on the board.

I then added more information, explaining that place can be thought of as a locality, as "we are in Uppsala." However, place is not just about *where* we are located. It is also important to consider a place's position in relation to other places, and the production of places through the actions and interactions of its inhabitants. Using Massey's (1991) example of the London neighborhood Kilburn, I shortly discussed interlinkages and interdependencies among places. Tying this discussion to creative industries and innovation, I noted that an unequal distribution of resources contributes to an uneven positioning of places regionally, nationally and globally. Thereafter we shortly discussed spatial relationships in the production and marketization of goods, and the spatial distribution of industries.

The mind-mapping activity let students use their existing knowledge, enabling them to tap into knowledge they acquired in previous courses in geography and elsewhere (Fink 2018). Research in cognitive psychology has shown that learners place new material within their existing framework of knowledge (Davis 2009). When students relate new material to their already existing knowledge, they are more likely to understand and remember it (ibid).

The mind mapping exercise quickly established the knowledge that students already possessed, and challenged them to

concisely formulate their thoughts. After the students shared their answers, I took them beyond what they already knew. I then related the students' concepts to key concepts in geography, explaining that these form the core body of knowledge in geography and that they are powerful tools in helping students think like a geographer. I reiterated that thinking like an economic geographer was a key goal for the class, in addition to acquiring factual knowledge.

Thereafter I guided the students through each core concept, asking specific questions to help students think like an economic geographer about the assigned chapters. For example, I wrote "place" on the whiteboard and circled it as a key concept. I then asked the students in what ways place matters in surfboard making. We discussed the importance of knowledge about local surfing conditions; the location of surf shops close to popular surfing spots to ensure customer traffic; and the need to locate surf shops close to suppliers of raw materials and *glassers* who apply fiberglass cloth to surfboards. We then discussed the globalization and commercialization of surfing, and the ways in which local surfboard makers can capitalize on place-specific advantages, local networks and surfing traditions. We also addressed the linkages between places, as surfboard makers take up employment in surfboard shops in other continents during the off-season.

We repeated this exercise using spatial relationships and interdependence, discussing that surfing has become a global commodity, and how major brands like Rip Curl, Quicksilver and Billabong have commodified surfing. We also discussed how these companies have created a global brand through international distribution networks, global branding, and commercialization. In this segment, I highlighted the spatial relationships that these companies have created to advertise, distribute and sell their goods. Then we discussed the changes in the surfboard industry, fueled by the rise of mass-production of low-cost surfboards, and explored how artisan surfboard makers can remain competitive in the global economy. This was followed by a discussion of the concepts listed in the learning goals, using examples from Warren and Gibson's book.

At the end of class, I asked students to apply the concepts they had learned to other creative industries, either in Sweden or elsewhere. I encouraged them to incorporate the notes on the whiteboard into their argument, and to add new concepts if they could. The students then shared their reflections, and I wrote their responses on the board. Groups discussed, among others, how economic geographers would study the gig economy; the role of influencers in the survival of creative industries; and traditional music in Dalarna. We analyzed these examples in more detail, using the concepts on the whiteboard and adding new ones. This exercise enabled students to tap into their own interests, tie their previous knowledge and interests to the course material, and helped them think like an economic geographer. The last five minutes of class we revisited the learning objectives for the class, I circled key ideas and concepts on the board and re-iterated the take-home messages of the class.

Conclusion

This article has provided an example how instructors can help students think geographically and develop their spatial thinking skills. The class provided a short overview of the discipline's *grammar*, defining key concepts in geography with the students in the course. These were linked to *vocabulary* in economic geography, in this case concepts related to creative industries. By linking this vocabulary to geography's key concepts, students learned how economic geographers can study a particular social phenomenon.

The class progressed from basic knowledge (facts, definitions, examples) to higher levels of learning, namely the application of concepts to other creative industries. I wrote the concepts on the whiteboard to enable students to incorporate them into their group discussions. Using the notes, students could review what they had learned and apply this knowledge to a new context. They were also encouraged to add new concepts, applying knowledge they had acquired in other classes and courses. In these consecutive assignments, students were provided with the tools to think like a geographer and use their spatial thinking skills.

The exam questions for this class were closely aligned with the course goals. In this case, an exam question asked how surfboard makers can remain competitive in an age of global mass production, asking students to use literature and concepts that we discussed in class. This question addressed several learning goals for the class, and addressed the discipline's *vocabulary* (i.e. creative industries; resilience) and *grammar* (i.e. global-local interconnections; importance of place).

Of course, more than one course is needed to help students master core concepts, "big ideas" in geography, and to understand the connections between them. A sustained effort to promote geographical *thinking* in geography courses, rather than mere transmission of knowledge, can help students develop their geocapabilities. When educators make a consistent effort in emphasizing and applying key concepts in geography, students will be more equipped to integrate geographical questions and methods in their thinking about – and understanding of – societal issues.

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