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## Geography and Political Skills: A Case Study in a School of Education

This article is a case study based on the work of a group of students being trained to teach. They design a lesson for 10–11-year-old pupils on geography and education for sustainable development and aim at linking civic and social skills to scientific geography. This goal is changed in this case study when the prevailing idea about relations between school knowledge and “...educations” (citizenship education, environmental education) is put into question: disciplines such as geography are *servicing* the development of citizenship skills in order to promote a critical education instead of a standard one. Furthermore, based on philosophy, history and sociology of science this case study offers alternative ideas of understanding how pupils can become critical citizens. These ideas focus on the hypothesis regarding a general skill often unseen though essential to any critical approach to world problems: which knowledge should be used when? In this perspective, geographical knowledge refers less to “knowing something” than to scientific, collective and linguistic practices specific to the viewpoints of various scientific disciplines, in particular the construction of spatial problems.

Cet article est une étude de cas basée sur le travail d’un groupe d’étudiants en formation pour devenir enseignants. Ils travaillent à construire une séquence pour des élèves de 10–11 ans en géographie et EDD. Ces deux thématiques s’articulent dans le développement de compétences civiques et sociales, et du savoir géographique de référence. Cet exemple constitue un cas dans le sens où il remet en question une idée dominante concernant les rapports qu’entretiennent les savoirs disciplinaires et les “éducations à”: les disciplines enseignées seraient *au service* du développement de compétences citoyennes, dans le but de permettre une éducation critique plutôt qu’une inculcation. Au-delà de la remise en question, ce cas donne des pistes alternatives qui s’appuient sur la philosophie, l’histoire et la sociologie des sciences pour penser le développement de l’esprit critique des élèves. Ces pistes travaillent l’hypothèse d’une compétence générale souvent non questionnée, mais essentielle dans toute approche critique du monde: quel savoir utiliser à quel moment? Le savoir géographique réfère alors moins à des savoirs propositionnels qu’à des pratiques scientifiques, collectives et langagières, propres au point de vue spécifique qu’institue la discipline de référence. En particulier, la construction de problèmes spatiaux.

### Keywords

geography, criticism, skills, problems

### 1. Introduction

Fifteen students of a master degree program (education, teaching and training for primary school teachers) are involved in a course named *Teaching geography and education for sustainable development, critical approaches*. 15 hours out of 30 take place during the first semester and focus on designing a course for 10–

11 year-old pupils on a local issue: the upcoming opening of a tram line in the Nantes urban area. This issue links the teaching of geography to education for sustainable development: will this tram linetrack do good to the people and the environment? The students' work is organised around this town and country planning project and aims at connecting the learning of geographical concepts and approaches (on the planning of a metropolitan area, scales and density) with the development of political skills that are supposed to foster the learning of citizenship in regard to sustainable development.

Actually, this intention determines the structure of the training course. What the students do with it is what matters here: this paper deals with how the students, in their attempts to combine geography and political skills, end up challenging their first attempts to use geographical knowledge to provide political answers.

The question *What is disciplinary knowledge good for?* could be the guideline of this case. It indicates the scope of the questioning: sciences – including social sciences – are constantly looking for a balance between independence from society's requests and a normative stand point; they challenge questions built upon the stream of everyday life but claim they tell the truth about it<sup>1</sup>. While science is somewhat detached from society, it is not aloof of it. I.e., it claims to inform political decisions from its more panoramic point of view, but not to guide them. In society and at school, the relationship between knowledge and action can be depicted through the following linear pattern: political question → detour through knowledge (scientific, school) → back to the question (see Audigier et al. 2011).

At school, projects to educate pupils in sustainable development are thus implemented in classes where teachers apply knowledge from different disciplines (Maingain, Dufour, Fourez 2002, 83) in order to bring up non-disciplinary questions (Audigier 2001). In the media, experts recognised as scientists answer journalists' questions, or are asked to debate among themselves about questions from the everyday world. They are expected to use their specific knowledge as a resource to solve political problems.

As the teacher responsible for both designing and implementing the course, it struck me how – from time to time – students deviated from this usual pattern. This is the reason why my initial purpose in recording what the students were saying and writing changed: instead of focusing on their suggestions, I started focusing on these specific moments when they challenged the knowledge-as-a-tool pattern (section 4). For that purpose, I will display the general structure of the course and the role played by the training device beforehand (section 3).

However, this study cannot simply describe what happened: it has to clarify the theoretical background of the description, along with the hypothesis involved.

Any didactics study relies on the comparison between the science at stake (geography) and the related school subject-matter. The gap we have previously underlined between the constant effort that science makes to build a specific distance with the world and what happens at school and in the media can be the source of a first didactical hypothesis. This way of making use of knowledge in school projects ignores an obstacle in educating pupils in sustainable development and, generally speaking, in citizenship education, in particular, regarding their relation to specific knowledge: the ability scientists show to

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<sup>1</sup> Didactics as a social science is in the same situation: in that respect, "(school) world ask didactics researchers for direct prescriptions" (Joshua & Lahire 1999, 36) while didactics researchers, acting as scientists, try to keep social demands at a distance.

choose which knowledge to use in which situation. This ability is not a mere technique but relies on the whole community (of geographers, for instance) whose autonomy has emerged from the construction of specific tools and practices. When geographers design a concept such as urban sprawling, they intend to rise above common sense categories and dichotomies (suburbs, town versus countryside, etc.). But autonomy does not magically derive from the concepts themselves; it mostly comes from the vindication of the relevance of these mind tools: some settle while others disappear in the course of investigation. Can education for sustainable development school projects ignore this essential process of construction of knowledge?

In that respect, we shall first try to depict this gap through history and sociology of science. That is, on the scientific empowerment process (section 1) that leads to substitute problem-building to problem-solving (section 2). This should help us understand why our students sometimes seem to be uncomfortable with the political instrumentation of geographical knowledge.

## 2. Science as an Autonomous and Legitimate Outlook on the World

This general skill – to know when to use which knowledge – is often ignored in official texts. Let us look at two examples at two different levels. First, it is left out in the latest texts published by the Ministry of Education to help teachers implement case studies in geography. The texts systematically refer to a split between the pupils' work on documents and the teacher's role to "put into perspective": the choice of relevant concepts is the teacher's responsibility only. Second, this skill is overshadowed in the multiple examples shown by the Ministry of Education, such as in the following:

"In the third year of secondary school, pupils have worked in history, geography and maths through an IDD (*itinéraire de découverte* = discovery path) about fair trade. The final item was the planning of two meals at the school cafeteria with fair trade products. The construction of the menus and the cost calculation of the meals showed the pupils that solidarity costs money for northern countries' citizens"<sup>2</sup>.

Why take this cost criteria into account, except to support the involvement of mathematics? According to which reference? These questions do not belong to this presentation: there are no justifications of them for pupils, nor for teachers who would like to work with this example. The relation between facts, arguments, and assessment criteria is not taken into account as if it were obvious. This seems to be strongly different from what happens in the scientific fields.

### 2.1 History of Sciences: How to Create a Suitable Detachment from the World

The history of the sciences tells us how they progressively develop, aiming at building up a position somewhat detached from the world: neither entirely embedded into empirical observations nor fully regardless of them, they constantly move between from radical empiricism (embedded) to scholastic positions (that moves towards loneliness). The search for objectivity and control over subjectivity is at the heart of the gradual construction of scientific communities separating from the rest of society. This autonomy is the main support of the critical dimension of scientific knowledge, and this process has

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<sup>2</sup><http://eduscol.education.fr/cid48498/developpement-durable.html#sensibilisation>

led to more and more specialised realms of research, which means more disciplines as well as borders between disciplines. However, autonomy simultaneously exposes scientists to the risk of forgetting the relationship of their work to the real world, because the texts they work on are a representation of the reality only. This is the reason why this process has gone together with its opposite: not only have these communities studied the world (in a descriptive and analytical perspective), but at the same time they have endeavoured to take into account the relation between the data and the accounts that they produce<sup>3</sup> (Boltanski 2009; Bourdieu 1997; Berthelot 1996).

This phenomenon is more recent in social sciences than in natural sciences and gained strength throughout the 19th century in Europe. Thus, in history, Grafton (1998) showed how tools and language operations as they appeared in communicative situations materialized in footnotes and lead to the emergence of critical history at the turn of the 19th century. Footnotes are an annotation to fellow historians' accounts (past, present and anticipated) supplementing the narrative text (mixed with quotations of historical sources). They thus play a part in the implementation of dialogue that guarantees a triangulation between relics of the past, accounts and critique.

Thanks to sociology and history of sciences (Fleck 2005; Bourdieu 2001; Pestre 2006) we can figure out how far scientific activity seems to be from a common sense interpretation merely linking a subject (the scientist) and an object (the world). According to Bourdieu (2001, 151), sciences rather operate on "a relation between subjects (all the agents engaged in the field) about the relation between the subject (the scientist) and his object". Thus,

"scientists are never lonely geniuses as put in hagiographic history; they are collective subjects who, as embodied collective history, make present all the relevant history of their science (...) and work among communities with instruments that are also objectified collective history" (ibid. 139).

Thanks to this shift we are able to account for the scientific generalisation showing that "science is a construction that set out a discovery that overpasses the construction and social conditions that made it possible" (ibid. 151).

## 2.2 Science and Appraisal

The distinction between science and expert scientific appraisal given by Roqueplo (1997) accounts for this specificity on a synchronic level. An expert is a scientist who loses his autonomy by answering questions he does not choose. Moreover, appraisal texts and scientific texts are nearly the same.

A scientist who takes on a political stake not only gives away his usual activity of examining problems ("the construction of research questions is an essential part of scientific investigation and the art of the scientist dwells in his ability to ask the 'right' questions, that is those which are scientifically fruitful", Roqueplo 1997, 36), but he gets involved in the scientific appraisal field while taking the risk of mixing things because both use the same words. Indeed, the statements' backgrounds are different: one does not speak to high ranking officials like one does to other scientists in a conference.

It is actually "through their effective capacities to translate social and political questions they are asked (or they have to answer) that sciences of the social

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<sup>3</sup> Bourdieu (2001, 138) states two specifications for the scientific field ("champ") "closely linked: closing (or pairs competition) and arbitration of reality".

world prove their scientific strength and vitality” (Johsua, Lahire 1999, 36). As Roqueplo puts it, when a scientist becomes an expert, he “inevitably breaks the borders of his own knowledge” (1997, 20). Thanks to this distinction we are able to specify the scientist’s main activity compared to that of the expert: he builds or rebuilds problems by establishing them in a field of knowledge structured by its own tools and its own means of communication.

Confronting both categories (scientist and expert) enables us to escape from a purely theoretical approach of scientific investigation<sup>4</sup>. Concepts are the instrumental frame of science, but they do not have any scientific value outside a community that ensures the critical role of these tools through specific ways of thinking, talking and acting (Berthelot 1996; Bernié 2004; Jaubert 2007). To make a long story short, conceptual tools and academic practices are bound together (Bachelard 1949), and they give its scientific force to knowledge which is thus made of statements along with their conditions of production. Thence, what happens when one takes these concepts into another community? What happens when they enter classrooms? What happens then to the critical value of scientific knowledge?

### 2.3 Science, Practices and Instruments

These questions confront us with a didactical problem. In a recent study, Audigier et al. (2011) worked on an issue they qualify as “detour/return”, according to which studying social and political situations at school requires for pupils “cognitive resources” from social sciences (among them geography). Their paper actually challenges this linear sketch: although these resources are made for “giving details on the knowledge” and “providing a frame to analyse and interpret data” (Audigier et al. 2011, 58), there are no mechanical links between scientific disciplines and political questions. The study of schoolroom situations framed according to this pattern lead them to conclude that the abilities that pupils must develop are based on the fact that “knowledge is transformed by an imaginative interpretation that calls for a strong culture of interpretation” (Audigier et al. 2011, 231).

It appears to me that we should try and imagine how the relationship between these general principles (such as “culture of interpretation”) and the real world of the schoolrooms could be figured out. In order to understand how the pupils “should be taught to use these tools to understand the situation and its issues” (Audigier et al. 2011, 55), we certainly must open this black box called “the study” of the situations, and clarify the difference between knowledge as text, tool and practices, as well as the “universe” in which they make sense. Critical anthropology (Bensa 2010) is warning us about categories such as *culture* which may prevent us from considering strategies (thus tools and practices), as if the cultural context was controlling behaviours.

For that purpose, discipline tools should not be considered as separate from knowledge, but rather as part of it. Under such a proposal, tools are simultaneously material and mental. Based on Vygotski's psychological instruments, Rabardel (1995, 1997) has created the idea of tools as “mixed bodies” that are both artefacts and individual schemes. According to him, “the instrument changes some functions with others, rebuilds and reshapes the whole behaviour structure. The explanation of the upper behaviour types relies on the means that allow man to control his own behaviour” (1997, 37). Thus, theoretical

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<sup>4</sup> At least on that point Bourdieu and Latour meet: “focus on practice – including theoretical practices – rather than linking concepts” (Latour 2005, 253).

instruments can only be thought of as emerging from a process of collective “instrumental genesis” which denies that users and designers are relevant divisions. On the contrary, that scientific tools cannot be understood as simple artefacts provided by others to be handled according to written procedures. They have their effect on their users’ mind while the users become designers of their tools to a certain extent: making use of the tool for their own purposes (what Rabardel calls “*intrumentalisation*”) while modifying their own action schemes (what he calls “*instrumentation*”). In our case study, tools such as the set of scale in geography or the various aspects of the notion of distance can be seen as part of instrumental genesis.

By following these considerations, we aim to avoid imprudently linking scientific and school practices and underestimating the complexity of the relation. Rather we consider scientific concepts as independent and collective tools (not designed to answer questions from outside the scientific community). This should be the ground on which to rest a comparison of collective tooled up practices in both communities (the scientific one and the classroom): on the condition that we hold together the development of skills and the transformation of the classroom into a relatively independent and specific to the subject-matter community. We therefore refer to the notion of “discursive community” (Jaubert 2007) based on the switch-over from an everyday type of discourse and action to a scientific one, through the transfer and arrangement of scientific instruments into the classroom (Doussot 2012).

### 3. From Political to Scientific Problems

In order to conduct such a comparison we now have to inquire how scientists handle the construction of scientific problems out of everyday questions. As seen earlier, a scientist – but not an expert – focuses on the construction of problems with specific tools and collective practices; but we also stated that this process should focus on the assessment of the relation between data (facts) and accounts (arguments). This specifies the problem-building practices under way in the scientific realms. What does it mean outside these realms?

#### 3.1 The Problem and the Test

Framing a geographical problem can first be seen from the perspective that living in the world means that you are regularly under stress to make decisions and compare possible solutions (Fabre 2003). In that case, problems and solutions are always bound together by previous experiences and remembered through practical knowledge. When new situations arise, various answers can thus be inspiring. Afterwards, reality picks up the relevant answer. That is what happened to Phileas Fogg whose bet to travel around the world in 80 days (Verne 1873) was based on his knowledge of the world transportation system, and tested by the actual journey (Fabre 2003, chap. 3). The trouble emerges when what is at stake requires a collective decision and cannot be easily verified (as for town and country planning: any test would be extremely expensive). In that case, the risk is high that we talk about solutions without envisioning the problem at stake, as seen in numerous media debates.

Another option would be to assess these available solutions in order to construct the problem which was disclosed by the starting question (in a process called *problématisation* – problem-setting – by Fabre 1999, and Orange 2005). We could then escape from the linear approach (from questions to solutions

through the shift of data into evidence) by figuring out and discussing what it requires to accurately change data into evidence.

In the case of Phileas Fogg, this would mean to add schedules and length of the journeys to the different means of transportation to assess which ones would be the best suited. Results would be assessed according to the following requirements: “if there are no blanks in the web and if the following means of transportation only leaves after the arrival of the former” (ibid. 68). But the best way – in Verne’s fictitious circumstance – is to travel: this means validating the hypothesis with reality.

This case is, however, barely relevant for sustainable development issues, for this kind of validation is too costly or impossible in such issues. We have to rely on debates and knowledge, whereas decision is often compulsory and thus made without calculation (Roqueplo 1997).

### 3.2 Concepts and their Field of Relevance

This problem building approach provides us with some analysis tools: experience-based answers, data and requirements for data to become evidence have to be used together. But these tools do not supply people with fixed strategies: combining possible answers, data and requirements depends on the problematical background through which the world is viewed. In the *Tour du monde en 80 jours*, one can identify “three problematical backgrounds: the transportation network engineer’s, the travellers’ whose aim is to race through this network as fast as possible, and Detective Fix’ whose problematical background is to catch Philéas. From one background to the other, the problematical tools get new functions: there are no answers, data or requirements in themselves (...). A micro-world can thus be described as the unity of numerous problematical backgrounds, as a cross of problems: each one defining the functionality of its components” (Fabre 2003, 71).

In a way, this means there is no circumstance without problematical context. Every time we try to understand a circumstance we talk about data, requirements and answers. However, we can face problematical backgrounds more or less visible and structured. When this is about training for civic and political issues (unlike Jules Verne who takes his reader to local issues), debates need to be openly expressed and developed to lead to a collective decision that relies on specific reasons. The accumulation of reasons thus requires the formulation of a collectively accepted problem rather than the simple comparison of possible answers.

### 3.3 Back to Our First Hypothesis

The scientists’ specific ability to choose which knowledge to use according to the question asked hides a deeper problem that makes it difficult for teachers to figure out how to link the knowledge of a discipline to the development of citizenship skills.

Scientists rather change the question than choose the right knowledge (concepts, facts or statements) to answer. Indeed, they focus on the available answers and their justification according to their realm of knowledge (what Bourdieu (2001) calls their “equipment”: accounts and instruments made over time by the community) to redefine the initial problem. In doing so, they do not directly use their knowledge to help people make a decision, unless they act as experts. What does this tell us about schoolrooms?

It can first be stressed that the usual way of connecting disciplines to political

skills in order to engage sustainable development problems at school refers more to the expert's way than to that of the scientist (Doussot 2012). But this may create problems: since pupils are all but experts (say, in geography), their lack of knowledge may be patent, and prevent them from finding any satisfying answers (without the teacher's help or validation). On the other hand, the scientists' approach may appear unreachable for pupils, since the school context is significantly different from that of the scientific community. However, the ability of formulating problems from shared questions may appear essential to future citizens<sup>5</sup>.

These are the foundations for entering into our case study, eager to understand the surprising moments when students pass from the experts' way to that of the scientist.

#### 4. Students' Epistemological Strategies

The raw corpus of this case study consists of the recordings of the discussions among the students who have to elaborate the school project (groups of 4–5, all groups together with the trainer), along with the writings they produce and modify through the four courses. The present section is described and analysed according to the previous issues (sections 1 and 2). It also shows how I, as the trainer, organised and guided their work: my task as a trainer is to have them find ways to connect geography learning and the development of political skills. This is based on regular questioning about assessment of their proposals: will the pupils learn geography? Will they develop one of the political skills at hand?

##### 4.1 Learning Geography to Solve Political Problems?

According to the usual approach for a project-based session (*versus* a curriculum-based session), the starting proposals of the four groups of students are focused on the outputs the pupils are supposed to produce. These outputs directly show the way students consider "education of choice" (one of the main aims officially defined for sustainable development education, and the objective stressed at the beginning of the course), and the part geographical knowledge should play in such projects.

Group 4 plans to have the pupils work on an advertisement poster to promote the tramline. The search for arguments in favour of this construction is discussed by the students who try to help the pupils inquire about advantages. Here, geographical knowledge is only considered as a medium for illustration (for instance, they plan to ask pupils to sketch the location of the tracks). Two other groups (1 and 3) suggest that pupils could create an exhibition to be seen by families and other pupils. Group 1 wants to state "benefits and problems". According to their writings, the political issue is to be raised in accordance with a media-type debate presenting various answers (positive and negative). The first part of their lesson would ask pupils to compare the tramline with automobile in a questionnaire for families about the way they commute. The exhibition planned

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<sup>5</sup> "The possibility to build (or re-build) problems is the most visible evidence of freedom of thought. Democracy cannot be based on a bounded-freedom that consists of solving problems set and expressed by others, or of casting a vote for this or that answer. The actual participatory – or outreach – citizenship (the one which is precisely under the idea of sustainable development) calls for a right to set problems and simultaneously to denounce non-problems (Deleuze 1969)" (Fleury, Fabre 2007, 77).

by group 3 is about the possible changes in the landscape after the construction of the tramline. It would be achieved through various unconnected activities about transportation habits of families and decision making for such a construction. This landscape analysis is a traditional activity in school geography and has little to do with a scientific approach of space set in contemporary geography<sup>6</sup>. In both groups, geographical knowledge is not used to cross-examine a town and country planning policy but rather to illustrate or describe it.

The last group (2) goes further into the political dimension of the project. They plan to ask pupils to write a press notice for a local newspaper through a journalist-like inquiry (interviews with operators of the tram project, use of maps, questionnaires for the local inhabitants). The final product – the paper – is the logical output of the entire inquiry process that frames the lessons. We can assume by reading their proposal that this process is aimed at avoiding instilling the right way of thought and allows the social and civic skills at stake to be practised through the contradictory speeches found (that is “knowing how to assess subjectivity or partiality of a speech” and “knowing how to distinguish rational arguments from statements”). However, there are barely any differences with the other groups in the way they consider geographical knowledge: it is considered as a simple tool that is to be handled appropriately to find answers to political questions. As they put it at the end of session 3 of their project: “the idea is to explain the pros and cons as a result of these considerations”.

#### 4.2 Back to the Geographical Knowledge at Stake, and the Idea of Skills

The second lesson with the students was elaborated according to these observations stating the deep disconnection between geographical knowledge and political skills at stake, and especially the poor questioning on the function of this knowledge. It is thus based on a few scientific papers such as one by J. Lévy (2010) of which the main point is the fundamental part played by the concept of density (of people, housing, jobs...) in understanding how cities grow and are organised. Students work on that paper in relationship to the local situation of the peri-urban city where the school is supposed to be. This paper touches on “the urbanisation of the suburban areas” (50) to envision an alternative to commuting for work, whether by car or by tramline. Through this extension of the possible answers, the political issue is changed to some extent: from the initial pollution problem to a job-housing distance problem which can be solved through mobility or co-spatiality (Lussault 2007, 56–58). These geographical concepts are then discussed among the students.

The word “*périurbain*” in the “*Dictionnaire de la géographie et de l’espace des sociétés*” (Lévy, Lussault 2003) is also studied to characterise the peri-urban cities (discontinuity, low density, low diversity) in order to consider possible requirements for public transport, along with access to the tram option (this article insists on the idea of accessibility). Finally, the word “*Métropolisation*” from the same dictionary helps students to take into account the multiple scales to understand town planning, from the urban area level to the world level. It also emphasises that these different spaces are connected by relations of power, especially the power of a central city over peri-urban cities, along with the power of Paris over the regional citiesmetro.

This work on papers is completed with one lesson to clarify the concept of “skills”, which is then compared with “competencies” at the beginning of the

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<sup>6</sup> Only 4 among the 14 students have geography degrees (most of them graduated in history).

third lesson. This notion is studied using excerpts from a text by Rey (1996) which emphasises the difference between procedural skills (that can be trained and are valid for related circumstances) and general skills (valid for various circumstances). The political skills the students choose to put at stake for the pupils (*knowing how to assess subjectivity or partiality of a speech*) belong to this latter category. This work on skills is completed with a paper by Audigier (2009) stating the necessity to “introduce pupils to subject-matters concerns” along with skills. Let us now concentrate on the third and the fourth lessons in which the students use these papers to work on their classroom projects again.

### **4.3 The Development of the Relations Between Geographical Knowledge and Political Choices**

Initial projects have been modified, and I focus my questioning on the space they open up for geographical knowledge to accumulate.

The students’ work on papers (all groups) first show a list of elements in the first column (of the table requested by the trainer) – “knowledge/skills” – that do not connect together. However, they also display the will to develop debates between pupils’ points of view and those of the project stakeholders; direct or indirect discussions (through the writing of a press article, for example) are imagined that aim at linking political skills and the understanding of the town and country planning situation.

This can be identified in group 1 when they suggest the pupils write to the mayor to adapt the new parking project according to the possible traffic increase in the area of the school: “through this letter and the answer, pupils – who may disagree among each other – would certainly call into question their opinion in order to find a common statement”. This discussion is based on a fictitious issue: the extension of the parking lot would shrink a parkland. To show the negative impact of this project, the students plan to “have the pupils use their geographers’ skills through maps and sketches; and their citizen’s skills confronted with the environmental issue and the relations between various stakeholders”. The geographical knowledge keeps serving a cause – a “noble” one: environment. In this group of students, knowledge and skills are used to design a structured school project, but the “noble cause” at stake is not called into question. In that respect, there would be no problem in the classroom: neither geographical, nor political; in the students’ view, it is just that some people go wrong or are not environmentally aware.

In group 4 a meeting is planned to talk with a representative of the local assembly: “we will check that pupils’ questions are focused on the impact on school and pupils (as citizens) instead of on the general impact. Work on geographical problems and concept of scale (to think local)”. Though short, this excerpt suggests that pupils could see the difference between the global approach of the representative (at the urban area scale: which is the usual scale for town and country planning projects as can be read in all official papers) and their local approach (city and school area). This would give knowledge a new place in the learning context: instead of being an external resource, it would be part of the process that gives them access to a political issue. Since they will have to discuss questions about the school area to talk with the representative, they will need to change scales to match questions and answers. This is a critical point for our study that the last two groups also display.

Starting with their initial idea to separate benefits and disadvantages, group 2 now plans to bind them with the notion of scale through “various sketches” taking together local and global scales: “the idea is to explain benefits and

problems as a result of notions [cited before: urban area, metropolisation, density]”. Here too, geographical knowledge is no longer a mere tool serving the political issue: it rather gives a clearer understanding of the political statements. We can thus assume that the number of benefits and disadvantages will not be the solution to assess the issue and lead to a decision. Assessment according to geographical criteria will rather fulfill this role by “explaining benefits and disadvantages”.

*This is also visible in group 3:*

Activities	Knowing / knowing how	Justification
6. Prospective work → jaunt + pictures of Clisson	City and neighbourhood landscape study	Understanding urbanisation
7. Thinking about the impact of tramline	Gathering subject-matter knowledge	Knowing how to elaborate an individual opinion
8. Meeting with the mayor in connection with the scenarios of city development	Knowing how to distinguish rational arguments from statements	Developing citizen attitude

In the left column (“activities”), “prospective”, “impacts” and “scenarios of city development”<sup>7</sup> (action plans) show a considerable relation. In this group, the idea of prospective work comes from a professional dimension of geography: geographers can work for local communities to help in designing the future. Based on this professional practice<sup>8</sup>, students connect geography to political issues as it is done outside of school: as a field of expertise. But what kind of appraisal is it? An appraisal to design arguments for a pre-existing answer, or to help decision-makers to think about it (see 1.2 about Roqueplo 1997)? What we know from their table (line 8) is that this appraisal should end up in a discussion with a stakeholder: a critical discussion (see central column “knowing/knowing how” and right column “justification”), the main point being that the meeting with the mayor should be “in connection with the scenarios of city development” which assumes a previous geographical check.

Our interpretation of their table is supported by the recording of their discussions. In fact, “meeting with a representative” is the activity that is planned first. But facing the difficulty to cope with a critical approach for pupils (the skill they aim at developing), they consider using the last activity they planned (scenarios of city development) in relation with geographical knowledge. At this point of their argument, the professional practice of geography is used as a go-between in order to make the visit of a project stakeholder in the classroom meaningful; the idea being that pupils would lead part of the discussion instead of listening to a ready-made speech of the representative. Using a power-point in this context derails any such effort. As the students say: “bang, this is a catastrophe”, as it makes it highly difficult to interfere with the instructor’s presentation and to initiate a debate (511–512<sup>9</sup>).

This essential step in the way students take scientific knowledge into account when dealing with a political issue has to do with the idea that knowledge serving politics does not work that well. What is at stake in this group is to find a

<sup>7</sup> The recording of their discussions indicates that these scenarios are supposed to describe the city surroundings after the implementation of the tram-train. They would be made out of questionnaires to the families.

<sup>8</sup> There too, the recording allows us to identify the source for this idea. One of the students who graduated in geography takes up an idea stated by the trainer (lesson 2).

<sup>9</sup> These figures relate to the transcription of the whole lesson 3.

way to design a new possible connection between geographical knowledge and political skills. This may give us access to the reasons why they could not simply do as usual.

The peculiarity of this case is essential for shaping new links. Its double dimension (students thinking about how pupils would manage) is a critical point for my inquiry in that it provides students with a go-between object. The mediation of the pupils gives them opportunities to discuss and find possible answers to questions about the relationship between knowledge and action. We focus on group 3 for which I identified two key-moves (discussion excerpts used below are chosen according to this issue: they show when students question the weakness of their usual approach). In the other groups, the students show less discomfort with these weaknesses.

## 5. Geographical Problems, Didactic Problems and Political Problems

Our analysis of group 3 displayed the way these students try to go beyond the list of activities and knowledge. This is in fact the result of a long process of discussion among the students, especially during the third lesson. For the first 45 minutes they resume the initial work (from their table): “we could add another activity” (312), “That’s already enough” (314), “since we still have to deal with the skill *acting as a citizen*” (315). But after that, they gradually work on the logical connections between activities because of the trainer’s requests.

### 5.1 Handling data means assessing their argumentative value

Our first episode focuses on the efforts the students undertake to link two activities they initially listed: a questionnaire about the everyday commuting patterns of the families – before and after the setting up of the tram line – and a list of available transportation means:

319	D	OK, good, then let's recap the three lessons. First, they design the questionnaire they will give their parents. For the trips. By the second lesson, they have collected these questionnaires, they draw a sketch including arrows...
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331	D	Then, second lesson... then they draw sketches with... the questionnaires they received. Then there... they have an idea regarding the trips according to the different... to the two scales.
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Activities are designed for pupils to get closer to geographical knowledge (“the new geographical structure of cities”: 332), in order to achieve the learning goal. This is done through a common geographical practice: “they’ll have to make another map” (336). Moving from one activity to the other to learn geography entails handling data (facts about the local situation), but also integrating these data into geographical concepts (“the two scales”: 331). However, the students always relate their goal to the “real<sup>10</sup>” situation: listing benefits and disadvantages of the tram line (this is the 5<sup>th</sup> activity in their table) in order to rationalise the political issue (“Using, hum..., using their own car, or by train, but this is much less flexible, see”: 339; “We have to write down benefits

<sup>10</sup> This refers to the opposition enlightened by Boltanski (2009, 93) between reality and the world. Here the situation is real in that it ties in the students’ representation of the world.

and disadvantages”: 342). All this leads them to design a tool to appraise their findings: “well a table, to be filled up; exactly; a comparative table” (343–345).

This is the moment when geographical knowledge becomes important as a way to put the didactics problem the students have begun to see into perspective. They notice that the choices to be made to build the comparative table cannot be based on simple trips from one point to another:

346	B	Yeah... but I don't know, it is easy to say that the tram is a choice, but they don't know if it starts from home
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Since they are aware of how regional cities such as Nantes work (lesson 2: scientific papers), they have to set this comparative transport problem up geographically:

357	D	This is to go into Nantes here, those who live in Nantes
358	C	Well [reading the papers] those living in the Nantes ring road. Is it OK?
359	A	No
360	C	Hum Clisson is on the outskirts of Nantes
361	A	Oh, outskirts? I thought it was about the ring road
362	C	You're right, the ring road. Are there any differences?
363	A	Of course
364	D	What is it, could you repeat?
365	A	Ring road means around Nantes
366	C	Oh, ok
367	A	Well ok, but, however, it is also used by many people dwelling there
368	C	Wait, residents inside the ring road, residents outside the ring road
369	A	Ah ok, yeah, there you go, then this matches... well we'll find them anyway. So

Here, the students show they have difficulties dealing with the questionnaire for the families, so that they must have it interpreted by the pupils in relation to all the possible trips. That is, they have to think about the tram line solution as one of a set of possibilities<sup>11</sup> processed by geographers. By doing this, they face the pupils' difficulties which they had anticipated (346), but also their own difficulties in figuring out the issue (357–368). They thus start to sketch a geographical problem of zoning<sup>12</sup> using the case of commuting to work. The comparative table of means of transport cannot be easily thought out – in an empirical way with data from the pupils – without using geographical zoning conceived upon how a metropolitan area works (outskirts, urban sprawling,

<sup>11</sup> See Boltanski (2009, 24–25). Sociology separates from common critique since it follows two steps: “getting out of reality by imagination first means to deprive reality of its implicit necessity in order to do as if it was arbitrary (as if it could be different or could not be at all); this leads to a second step: getting reality back with necessity. This move gives necessity a global reflexive feature; namely, local necessities are now referred to as a set of possibilities”.

<sup>12</sup> Here I follow categories set by Lussault (2007).

housing, job localisation...). Though this issue is barely touched upon at that moment because of the lack of information, it leads them to a new problem based on the need for everyday commuting and the location of jobs and housing (and the distance between them). This problem is then considered.

This first episode can be interpreted as the outline of the problem. The initial didactical question (how to help pupils learn geographical knowledge) is dealt with in the following way: giving them a map to draw, having them fill out a table. Working on the data (locations, distances, existing transportation web, etc.) to obtain answers to this question leads the students to theoretical and complex geographical knowledge: they anticipate that the difficulties they face will be difficulties for the pupils as well. Comparing trips (to choose the best one) means locating them on the functional zoning of the urban area. If these concepts are only words at first for the students (after lesson 2) then they become useful as analytical tools over time capable of dealing with data and to assess the various hypotheses. As conceptual tools they can only be used under specific conditions which give these concepts their specific value over simple vocabulary. Requirements stemming from zoning, urban area, peri-urban sprawling and other concepts guide the search for new data (new transportation means according to their location in the urban area) and how to deal with them. A possible extension to what they achieve here could be to do another questionnaire to bring new data according to these new concepts (asking, for instance, whether people would prefer local jobs or new means of transportation).

## 5.2 The geographical problem gives meaning to the political problem

The second episode shows up when the students put the interview with the mayor into perspective with the pupils' work on the different *action plans* (see section 4.3). This can be seen as a radical change in relations between knowledge and action: data (such as the mayor's speech) depend on the conditions in which they are valuable (such as the role the mayor plays in the project). This can be so in the students' discussion which leads them to abandon their usual empiricism and directly confronts their perception of the world.

Between those two episodes, the students try to put their proposals in line with the curriculum requirements. They do so by listing their planned activities as landmarks in their work. What they call "decision-making process" and "scenarios of development" are the two important activities in this second episode:

422	A	I do believe it's important to let them know the decision-making process... It does not just happen
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515	B	I don't know, otherwise we could link to... link the interview with the mayor to the scenarios of development, you know what we said we were keeping for the end
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As in the previous episode, what is at stake is how to link activities:

426	A	I would see this afterwards... and I would include this... it would be OK to do this and the decision-making process
427	B	Yeah, right, I would link both but not...

428	D	Why are they going to make a tram line anyway? What are they doing that for?
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The first idea is to play with both the decision-making process and the advantages of the tram line. For that purpose, they consider asking a stakeholder of the project to come and explain the positive aspects of this investment.

430	C	OK then we call the lesson... yes... I don't know, why the project...
431	A	The birth of a project.

442	B	Getting in touch with these representatives to learn how this decision was made
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But soon the students put into question knowledge as a true representation of objective facts (here the organisation chart for decision-making in such a project), the citizen skills and the ability of pupils to understand:

443	A	And if you want to act as a citizen, you have to know who you are talking to... In what background you...
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Their own difficulties lead them to anticipate those of the pupils:

457	C	I do consider that we often lose time, well, when..., because these are very complicated issues, I am not sure the pupils... have much to say about that, you know.
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468	B	We do not know, then teaching 10-year-old pupils...
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514	C	You're gonna lose those little kids
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On the other hand, the textual nature of the organisation chart is not compatible with the idea of developing citizen skills.

Finally, geographical concepts again appear unavoidable for dealing with the emerging problem. Understanding the role and the place of the mayor depends on the place in the project and scales at stake. One cannot understand the chart if one does not localise the stakeholders in the operation of the city:

448	A	Yeah because I think that in town and country planning everyone has a specific role
449	D	Yeah while here we are not talking about the township any more, but the whole urban area
450	A	Yes
451	D	Or maybe even further away to Clisson, and you will obviously have the national level too...

The didactical problem or task is to induce the pupils develop a critical distance. This is to be achieved or at least supported by the help of an adult

talking in the classroom about the geographical issue. The students themselves have to clarify the different scales of the project which leads them to add another dimension to the geographical issue (by cutting of the space and drawing of limits) by comparing the stakeholders' scale with that of the users (an issue first sketched by comparing the different means of transportation, see section 4.1). Therefore, the students hesitate between just listening to the mayor and preparing questions before the meeting.

485	C	But the mayor, what is he doing, is he explaining the project or... say well he has...
486	D	Well he answers questions

The way the students anticipate the meeting focuses on how to understand where the mayor and his speech are positioned in the project.

They follow up believing that the pupils cannot assess this kind of speech unless they have previously worked on the project itself, in which the mayor would be included:

515	B	I don't know, otherwise we could link to... link the interview with the mayor to the scenarios of development, you know what we said we
516	A	Ah, yeah, no. No, no, but yes, that's true it can be cool
517	B	Well, in fact, a talk about...
518	C	About the future of the township
519	B	About the impact of the tram line
520	C	Ok, but then
521	B	But the meeting with the mayor comes later indeed
522	C	What about the decision-making process?
523	B	What?
524	A	Do we leave the decision-making process aside?
525	D	We don't but we do otherwise

What has changed here is how they deal with knowledge as a statement (the decision-making organisation chart, the organisation of the urban area). The prospective work (constructing possible scenarios of town and country planning after the tram line has been built) plays an intermediary part between the mayor and the pupils. And this go-between should structure the meeting, or at least the analysis of the mayor's speech<sup>13</sup>.

The first two lessons allowed the students to study the project theoretically, challenging the one-way technical solution (tram line is good to fight pollution). This new perspective on the project leads them to consider several other solutions by stretching the initial problem: they know that the tram line could only be a way to move the traffic problem to another place in the urban area, and that it does not deal with the problem of job-housing distances. These various

<sup>13</sup> One of the other groups plans to record the interview in order to work on it later.

possible answers and the need for a critical approach (skills to be trained) help them to understand the personal interests behind any answer. This is what they do by localising the viewpoints of both the pupils and the mayor in the city's operations. Therefore, these viewpoints are related to data and speeches (stand takings): the mayor would promote what would help bring his city closer to the next major city, focusing on the trip duration; the pupils would talk about the impact of the increased traffic around the school or on their daily trip to school, focusing on the size of the parking lots planned. Only through a global understanding of the operation of the entire urban area are we able to compare those two ways of relating data to the perspectives of the speakers.

Through their shifts in reasoning, we have observed that the students alternatively deal with epistemic issues (knowing the circumstance) and epistemological issues (comparing opinions by focusing on how they deal with reality); which potentially leads up to a more general statement. The students are managing both logical as well as practical issues.

The lesson they plan for the pupils makes the geographical problem-building a necessary condition to discuss with the mayor in order to develop citizen skills. The geographical anticipation of the situation after the tram line has been built puts them at a distance from the project, namely from the specific interests of one side (pupils, their families) and the other (stakeholders):

537	C	Acting as a citizen...
538	A	Acting as a citizen means asking him if he has anticipated the... an extension of the school, you know, if the population grows
539	B	So this still is in relation to the mayor
540	A	It is, yes
541	B	So this will be done with the scenarios?
542	A	The prospective scenarios, yes.
543	B	The scenarios we will have built together
544	A	Isn't that acting as a citizen to ask oneself, well..., what will become of us?
545	C	Well, of course
546	B	Absolutely.
547	A	Before acting on the world, you act on your own vision of the world.

Acting does not only refer to action as moving<sup>14</sup> (going out of school, talking to real people and not only teachers...), but also to science in action (Latour 1987) which gives you the means to "act on your own vision of the world" (547). At that point the students have abandoned their tendency to separate knowing and acting and the way they link them together has to do with different kinds of problems: to be reshaped the political issue is squeezed between the geographical problem and the didactical problem.

## Conclusion

This case study is worthwhile in that it challenges the ordinary way we – at school and in the media – think about relations between social science knowledge and political issues. When confronted with the necessity to have pupils work on both geographical knowledge and political skills, students

<sup>14</sup> See Lahire (2001, 126).

sometimes feel they have no choice but to find another way than using geographical concepts to answer political questions, since this would prevent pupils from developing the critical skills involved.

As we pointed out earlier, they thus challenge the expert way, which is the prevailing reference for school projects. When implemented in the classroom, such projects give the teacher too much control over the circumstance, which counters the aim to train pupils in making their own choices. Moreover, the students in group 3 realised that it would also prevent pupils from learning how to use geographical concepts as tools (and pupils would continue to view concepts as simple words to learn).

However, scientific debates cannot be considered as an easy pattern that can be imitated in the classroom. What happened in this training course, however, allows us to better understand what is at stake behind the skills to be developed with reference to science practices. "Knowing how to distinguish rational arguments from statements" can be reduced to listening carefully to what the other says; or to understand and respect each other's arguments, but posing fruitful questions implies stronger analytic skills and creativity. When thinking about these implications, our group of students give us a clue towards this second level critical capacity.

The first one deals with the possibility to transfer scientific autonomy, i.e. its ability to detach from the political issue and to reshape it, into the classroom: not to change the classroom into a scientific community, but to simultaneously construct the answers and the conditions in which the answers are worthwhile. From what our case study suggests this problem-based approach could thus be considered for use at the school level (to be adapted from primary school to university).

This can be seen in the way the students deal with the decision-making process: the concept of scale is at first a simple word to describe the hierarchical structure ranging down from the national government to the district and the city. But in the course of the work, students change this use of scale from a simple word into a tool to understand positions and statements of the people involved. Initially, the scale is a way to speak geographically in order to make a description of the issue. Later it becomes an instrument to localise the stakes not only in the urban area, but also in the space of interests. One can talk about the urban area (cartographic scale) to promote specific interests (mobility of employees: social groups scale); and one can talk about a section of the peri-urban area (cartographic scale) to promote general interests of the entire urban area (all inhabitants of the urban area: social scale). This set of scales has only been sketched by the students during the two episodes highlighted in this paper, but it shows how concepts can be re-thought on the occasion of a political problem.

This leads us to suggest that researchers could try and implement new experiments in classrooms. One could focus on reversing the usual projects, starting with a media-type debate among the pupils over a sustainable development issue and then working on the recording of the debate to assess main arguments in a disciplinary (or multi-disciplinary) perspective. Assessing arguments rather than solutions may be part of a new approach in education for sustainable development.

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