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Field trips in French schools: teacher practices and motivations

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ABSTRACT

We explored the use of field trips for educational and teaching purposes by French kindergarten, primary-school teachers and natural science teachers in secondary schools. More specifically, we studied field trips in a *natural* environment by undertaking a French curriculum analysis and surveying teachers. We examined the responses of 511 teachers about their practices and motivations, as well as the levers and barriers to implementing these field trips. Results showed that this practice is widespread at all years of education, and differences between years seem to be related to the curriculum. We found few differences in learning motivations (reasons/objectives and interests/specific feature) and perceived barriers between different school teachers. Indeed, the teachers' motivations are essentially scientific and rooted in a scientific inquiry approach. Studying 'on real' was the interest most often cited by teachers, essentially for the purpose of scientific learning. The only notable difference we found concerns the levers for implementing the field trips: a larger proportion of kindergarten and primary-school teachers see field trips as an ideal support for environmental and sustainable development educations. These results are dependant of the French official curriculum which plays a key role in influencing the current implementation of school-organised field trips by the teachers.

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field trips; teacher practices and motivations; natural sciences; curriculum

Introduction

Since the beginning of this century, we have witnessed an increasing disconnect between humans and nature. This disconnect, referred to as a *nature deficit syndrome* by Louv (2005), and as the *extinction of experience* by Miller (2005) and Soga and Gaston (2016), particularly concerns children, who are spending more and more time in front of screens, thus reducing their physical contact with nature. Whereas screentime activities heighten stress and reduce attention span and creativity, activities in contact with nature promote wellbeing and the development of imagination and creativity (Charles

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& Louv, 2009). In addition, Malone and White (2016) claim that learning in the natural environment has numerous benefits for health, academic learning, life skills, and pro-environmental behaviours. Moreover, there seems to be a consensus on the positive dimensions that can be developed through this practice.

In the present study, we explored the notion of *field trip*, namely, an outing in the natural environment and one component of the broader field of outdoor education. In some countries, like the United Kingdom and Switzerland, this practice has tended to decline at the primary-school level in recent years (Grodos, 2014; Humberstone & Stan, 2011; Lock, 2010; Maynard & Waters, 2007). Similarly, concerning the secondary-school level, a decline in fieldwork has shown, particularly in biology and ecology (Lock, 2010; Tilling, 2018). In France, no research, to our knowledge, has explored this theme of field trips as part of the formal education system. This article reports a qualitative and quantitative exploratory research which contributes to a better understanding of the field trips'use in the French context. The twin objectives of our research were thus to identify current trends among teachers in kindergartens or primary schools and secondary schools in relation to field trips, and to identify the motivations among teachers involved in this type of school trip, in order to highlight its reasons, objectives, concerns, as well as the levers and barriers to its implementation.

Theorical framework

Field trips' practices of teachers and curriculum

The term practices here designates, as do other studies (Beames, Higgins & Nicol, 2012; Ernst, 2014; Fuz, 2018; Oost et al., 2011; Tal et al., 2014), the frequency and duration of teachers' use of field trips over the course of a school year, as well as the characteristics of these trips in terms of distance from the school. Furthermore, in this part we consider contextual and institutional factors that affected teacher decision-making about the implementation of field trips.

First, we explore the studies carried out in different countries in order to identify various elements relating to teachers' practices. Secondly, we describe the French curriculum in the kindergartens and primary schools (3–11 years old) and in the secondary schools (middle and high schools – 11–18 years old) to understand the evolution and the current context of institutional prescriptions regarding the field trips.

Field trips' practices

If the frequency of field trips can provide us with a quantitative snapshot of teachers' practices, the locations visited as well as the content worked on during the outing provide qualitative elements on the possible reasons for their implementation. Based on the literature (Grodos, 2014; Rickinson et al., 2004), we have identified three types of locations: the school grounds; the environment near the school (local area within walking distance); and the environment further away, requiring a means of transport (day trips and residential trips involving at least one overnight stay). For field trips in the natural environment, within biological learning, in Finland, Henriksson (2018), stated that all the fifteen primary school teachers interviewed go on outings several times a year and near the school (on foot or by bike). In Scotland, Ross et al. (2007)

surveyed primary and secondary teachers. The majority of primary teachers report using field trips: mainly in the school grounds and in the local area and over a day-long duration. For the biology secondary teachers, all but one used the school grounds and half the local area. Lindemann-Matthies & Knecht (2011) study of forest education in primary Switzerland schools, shows, from 257 answers to a questionnaire, that the majority of teachers make several trips to the forest during the year (71%) at a mean distance close from the school (1.2 km).

Although there seems to be a consensus on the effectiveness of field trips among researchers who have worked on this topic (Dillon et al., 2006; Gill, 2014), it should be noted that a number of barriers to implementing a field trip have been identified in several studies (Dyment, 2005; Lock, 2010; Michie, 1998; Rickinson et al., 2004; Scott et al., 2015). The most noted barriers that can hinder field trips are cost (especially transport), the time needed for preparation and organisation, and administrative procedures and class sizes. Lock (2010, p. 63), for example, notes that « seven key factors impact on teachers who are actively engaged in fieldwork; time, cost, health and safety, the curriculum, its assessment, teacher enthusiasm and expertise ».

Underlying most of these barriers is the fact that field trips are viewed with some misgivings by the school headmaster, as a result, are considered optional rather than integral parts of the formal curriculum (Derman & Gurbuz, 2018; Nespor, 2000; Orion, 1993). Integrating field trips into the curriculum is an important lever for their implementation. In fact, a number of studies indicate that connecting fieldwork to the classroom curriculum is an important issue to stimulate and encourage teachers to consider field trips in the natural environment in their teaching programmes (Behrendt & Franklin, 2014; Esteves, Fernandes & Vasconcelos, 2015; Tal, Lavie Alon & Morag, 2014, Tilling, 2018).

We have therefore highlighted that teachers' practices are based on the formal curriculum, for this reason, we present the evolution of these recommendations of natural sciences French curricula since the early twentieth century, in kindergartens, primary and secondary schools.

Field trips in the French curriculum: change and continuity

In kindergartens and primary schools, teachers are multi-skilled, and teach 10 different subjects to the same class of pupils all year round. In secondary schools, by contrast, teachers specialise in just one or two subjects, and only meet students from each class for a few hours a week. A description of the French education system is provided in Appendix 1. In addition to the curricula, official texts called *circulars* that set out educational policy for the education community are published. We analysed those relating to environmental education (EE) and education for sustainable development (ESD), as they might refer to field trips.

Field trips for kindergarten and primary-school pupils. Historical analysis revealed that *walking classes* were first mentioned in official instructions in 1923, where the objective was to bring 'the child into direct contact with the earth and life'. Over the years, regular mention has been made of field trips in the context of so-called *discovery classes* or *green classes*. The 1999 circular setting out the educational objectives and the conditions for organising outings, stated that school outings 'help to give meaning to learning by promoting direct contact with the natural or cultural environment'. The different

environment discovery should involve a scientific focus from kindergarten onwards. On field trips, pupils 'observe, handle, explore and describe' in order to understand the interactions between space and human activities.

To conclude, all levels are concerned by field trips recomandations, from kindergarten onwards. Although these recommendations have generally been a feature of the curriculum since the beginning of the previous century, they have become stronger in recent years (since 2015).

Field trips for secondary-school students. Our analysis of natural science curricula at the secondary level showed that field trips have been an official requirement since the early twentieth century. A detailed examination of curricula over the past 50 years showed that several different academic levels have been associated with the recommendation of conducting field trips, with greater or lesser incentives.

Field trips mainly took place in the first and third years of middle school until 2007, and today only concern first-year of middle school students, focusing on the surrounding environment. Recommendations for field trips have fluctuated since 1982. For example, a field trip was compulsory for the third year of middle school (13 14 years) until 2007 and for the second year of high school, in the 2001–2011 curriculum (recommended duration: 1 week). Now field trips are presented as an essential practice ('field studies and sampling promote learning' and 'fieldwork is a prime means of introducing students to complex real-life situations') but only as incentives.

Field trips in EE and ESD circulars. In France, as in many other countries, field trips in the natural environment could be considered as a part of environmental education (Mannion et al., 2013) and education for sustainable development (Christie et al., 2016). Since the very first EE circular, in 1977, the aim has been to put students in direct contact with the environment, to enable them to discover it in a concrete way, if possible through interdisciplinary projects. In this context, the observer attitude is primordial, as 'students will learn to remain first and foremost "external observers" of the environment they are studying'. This allows them to develop an attitude of understanding and responsibility. The organisational and administrative obstacles are removed by the provision of an exit strategy for headteachers and school principals. In the 2004 ESD circular, 'school outings in all their forms' are mentioned as a framework for EE for sustainable development. Their implementation and objectives are not specified. The two most recent ESD circulars (2015 and 2019) recommend the use of field trips: 'School trips in natural spaces are key moments in students' schooling. You will therefore ensure that you facilitate their organisation and encourage them, in compliance with the safety rules in force'.

In addition to recent school curricula, these latest circulars emphasise the usefulness of field trips, particularly in the current context of issues related to biodiversity and climate change.

We have just shown that field trips have been promoted in the French education system (via curricula and circulars) for more than a century, in kindergartens, primary and secondary schools, albeit with varying degrees of intensity. If the references to field trips in the French curriculum therefore seem to be a lever for their implementation, we can ask ourselves what motivates teachers to implement its, in terms of learning.

Teachers' motivations in the implementation of field trips

When exploring the literature on teachers' motivations for conducting field trips, in terms of learning, the teachers' motivations implies reasons for choosing to lead them, i.e. stated objectives, intentions and interests (Kisiel, 2005; Ross et al., 2007).

We identified three theoretical anchors in research on field trips teachers' motivations. We describe the implications of each one in turn, in order to highlight their complementarity. These anchors are as follows: (1) the field trip as a means of scaffolding science teaching and a scientific approach; (2) the field trip as a means of gaining an authentic experience of the natural environment; and (3) the field trip as a means of raising awareness of environmental issues through EE/ESD, thereby developing concern for the environment.

Teachers' motivations for science teaching and a scientific approach

Whether it is in the context of a museum or scientific centres' field trips (Kisiel, 2005; Michie, 1998) or more precisely in the context of a natural environment field trips (Henriksson, 2018; Lindemann-Matthies & Knecht, 2011; Ross et al., 2007), the motivations that teachers highlight to lead a field trip are linked with science learning effectiveness. Indeed, fieldwork plays a core role in science learning, especially in relation to biological (Boeve-de Pauw et al., 2019; Lock, 2010), ecological (Braund & Reiss, 2006; Magntorn & Helldén, 2007; Tilling, 2018) and geoscience (Esteves et al., 2015; Mogk & Goodwin, 2012) themes. In the study of Ross et al. (2007), all the secondary school biology teachers' interviewed about their motivations to taking students in a natural environment, declare 'that outdoor study is integral to their discipline'. According to them, some topics like 'the measurement of abiotic factors' in the case of biology or 'visits to the shoreline' in the case of primary schools, 'lend themselves especially to outdoors study category' (p. 165). Braund and Reiss (2006) mentioned five ways in which out-of-classroom contexts add to and improve science learning: promoting the development and integration of scientific concepts, extending practical work and making it more authentic, offering access to unique and rare materials, improving attitudes to school science through explicit links to *real science*, and providing opportunities for collaborative work. In this regard, among the motivations most mentioned by teachers who practice field trips are the following: 'studying nature in concrete terms or ''on real'' ' (Henriksson, 2018, p. 19) or 'give students hands-on, real life experiences' (Michie, 1998, p. 4).

The external environment is also regarded as an educational or learning environment in the same way that a classroom or a laboratory is (Orion & Hofstein, 1994). Some authors have found that learning experiences outside the classroom are more effective in developing cognitive skills (Eaton, 1998; Fägerstam & Blom, 2013; Orion, 1993). For example, in a literature review, Gill (2014) found that children who participated in school gardening projects improved their science learning more than those who did not. Farmer et al. (2007) suggested that positive effects may be related to students' long-lasting memories of authentic outdoor experiences. Scott and Boyd (2016) observed higher literacy levels for students who participated in ecological fieldwork than their peers who did not. Furthermore, during field trips, students may show an increased interest in and motivation for science learning (Behrendt & Franklin, 2014; Fägerstam & Blom, 2013; Patrick, 2010; Uitto et al., 2006).

Field trips enable students to develop new knowledge in order to understand the world around them better. The natural environment is seen here as an object of knowledge that students explore and discuss, linking theory to practice (Magntorn & Helldén, 2007). It provides them with an opportunity to learn to make field observations, carry out investigations, and apply the concepts they have learned. The primary teachers respondents of Lindemann-Matthies and Knecht' study (2011) 'most often approach forest education by means of playful, sensory hands-on investigations of nature, the free exploration of the forest environment, and by investigations of forest organisms' (p. 14). Thus, field trips seem to be a prime tool for promoting the method of scientific inquiry (Osborne & Dillon, 2008), a centrepiece of science teaching (Contant et al., 2017; Leblebicioglu et al., 2019). Students observe the real-world and use it as a basis for applying a scientific approach, questioning and hypothesising, observing in order to look for answers, and then documenting to structure, validate and explain these direct observations.

Teachers' motivations for providing an authentic experience in the natural environment

Another teachers' possible motivation is the 'promotion of nature experiences' (Lindemann-Matthies & Knecht, 2011, p. 12). For Dewey (1938/1997), *experience* is defined as a process of linking thoughts and actions at the level of people's interactions with their environment. He based his theory on the concepts of continuity (between past and future experiences) and interaction (the way in which past experiences interact with current situations). Learners actively experience the thing instead of being the mere recipients of the experience of others. We can therefore define *experiential learning* as a process by which participants shape their knowledge and representations through affective and cognitive transactions with their biophysical and social environments (Pruneau & Lapointe, 2002). This process promotes the emergence of emotions through the sensory and sensitive exploration of the environment (Chawla, 2007; Kals et al., 1999; Pruneau & Lapointe, 2002).

The integration of experience (i.e. learning based on concrete experience) into outdoor education in the twentieth century led to a diversification of approaches and subjects of study, from outdoor camps to environmental and ecological education. Dewey was one of those who sought to overcome the dichotomy between an experiential or aesthetic experience with the environment and a reflective experience, thereby prefiguring the anchoring of field trips in science (Quay & Seaman, 2013). It provides a means of enriching the modalities of knowledge appropriation, and legitimising experience (Orion, 1993). A sensory and sensitive experience of the environment can be seen as the basis of cognition. This theory of embodied cognition was developed by Varela et al. (2017).

In order to be effective, experiential learning must be based on concrete and direct experiences and on hands-on activities (Jose et al., 2017). It is through natural sensory experiences that children connect their outer world to their inner world (Louv, 2005). By putting learners in direct contact with the concepts being discussed, these experiences give meaning to learning by taking a much more sensory approach (Pruneau & Lapointe, 2002). Ballouard et al. (2012) showed the importance of field trips that include physical contact with wildlife to develop affection for animals that are generally disliked (snakes). This affective dimension is therefore linked not only to

the scientific knowledge dimension, but also to the behavioural dimension (commitment, values, etc.). In addition, field trips can be a positive learning experience because they are shared by students and teachers (Lindemann-Matthies & Knecht, 2011; Scott et al., 2013).

Teachers' motivations for fostering concern for the environment

Educational field trips are a common practice in EE and ESD. In line with the decisions taken at the UNESCO intergovernmental conference on EE in Tbilissi in 1977, the aim is clearly to immerse students in the environment so that they can build awareness (Hungerford & Volk, 1990; Kaiser et al., 1999).

Although awareness of environmental issues and the responsibility of different actors can be built in the classroom using various educational tools (stakeholder debates, controversies, role-playing, etc.), going out into the environment provides a first-rate opportunity to become aware of biological, economic and social issues. An active learning method, such as one based on field trips, can be used to address complex environmental issues, which is a central issue in EE and ESD (Jeronen et al., 2017; Palmberg & Kuru, 2000; Rickinson et al., 2004). Studies exploring how field trips can enable students to reconnect with nature and consider environmental issues have highlighted two potentially decisive factors. First, the earlier that children encounter nature (before the age of 11 years), the more influential these encounters will be (Wells & Lekies, 2006). Second, the more time children spend in the field, the more likely they are to develop an affinity with nature (Kals et al., 1999; Schultz & Tabanico, 2007).

This relationship between field trips and the development of a proenvironmental attitude was highlighted, for example, by a study carried out with Spanish students (Fernández Manzanal et al., 1999). Moreover, many studies have shown that a direct relationship with the natural environment has an impact on the commitment to eco-citizenship (Farmer et al., 2007; Finger, 1994; Wells & Lekies, 2006; Zelenski et al., 2015). One of the objectives is therefore to become aware of one's actions in order to modify them. However, the direct relationship between awareness of environmental issues and the development of pro-environmental behaviour is not always clear (Kaiser et al., 1999; Wells & Lekies, 2006). Hungerford and Volk (1990, p. 267) observed that 'issue awareness does not lead to behaviour in the environmental dimension', and proposed a more complex and less linear model of the variables involved in the development of responsible environmental behaviour. For Roczen et al. (2014), it is the attitude towards nature that is the most determining factor when it comes to developing environmentalism in relation to environmental knowledge.

It would be relevant to consider teachers' motivations described above as a set with an increasingly global and holistic learning objective: learning about science, experiencing nature, and finally becoming aware of environmental issues. It seems prudent here to stress that these different possible teachers' motivations are not mutually exclusive and can be considered as complementary or even inseparable. For Adkins and Simmons (2002), if children's outdoor education, experiential education, and EE approaches are combined, then the outcome will be 'strong and lasting' (p. 2). This complementarity reflects the three main principles of Brody's (2005) theory of learning in nature: acting, thinking, and feeling.

Research questions

The overall aim of this research was to analyse the perspectives of kindergarten, primary-school teachers and natural science teachers in secondary schools when they organise field trips in natural environment for their students. We addressed the following three research questions:

(1) What are teachers' stated practices (i.e. frequency, locations, study year and disciplines concerned) regarding field trips?
(2) What are their stated motivations (i.e. reasons/objectives and interests/specific features) for going on field trips?
(3) What are the levers and barriers (i.e. factors that facilitate or constrain the implementation of field trips) identified by teachers?

We looked at whether responses to these three questions were comparable across kindergarten, primary- and secondary-schools teachers.

Material and methods

We designed a questionnaire for kindergarten and primary-school teachers (KPTs) and natural science teachers in secondary schools (STs) in digital format (LimeSurvey[1]). Comprising questions in a variety of formats (open-ended, closed, nonordered and ordered categories), this questionnaire was placed on a platform and a link sent to teachers. Teachers responded to the questionaire between April and August 2017.

Different dimensions were probed, in order to provide an overview of these practices: a teleological dimension questioning the aims and objectives of field trips, a curricular dimension aimed at determining the relationship with school curricula, and a praxeological dimension exploring the modes of implementation, motivations, levers and barriers identified by respondents. The questions were therefore divided into five categories: (1) teacher profile (age, sex, university degree, and number of years in teaching); (2) school profile (location, local population, and number of students); (3) field trip practice (locations, environments, frequency, duration, and time of year, disciplines in the curriculum); (4) teachers motivations to use field trips, in terms of learning (reasons/objectives, interests/specific features, students' feelings, exploitation, and relevance to curriculum; and (5) levers and barriers.

With the exception of the teacher and school profiles (categories 1 & 2), the questions were jointly constructed with a primary-school teacher and a secondary-school teacher. The descriptions of the 10 levers and 15 barriers to be ranked in order of importance were also informed by the relevant literature (Behrendt & Franklin, 2014; Dyment, 2005; Remington & Legge, 2016; Waite, 2009; see Appendix 2).

Only teachers who stated that they conducted field trips were concerned by categories 2, 3, 4 and 5. All teachers, however, answered the questions in the last category, concerning barriers.

We used the mixed methods design, defined as combination of 'elements of qualitative and quantitative research approaches (e.g. use of qualitative and quantitative viewpoints,

data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration' (Johnson et al., 2007, p. 123). In our case, the quantitative approach predominated and served as the backbone of our study. More specifically, the qualitative approach (open-ended questions) was interleaved with the quantitative approach (closed questions) at every level (data collection, analysis and interpretation). The answers to the open questions were content-analyzed and sorted into broad categories according to the type of responses given. Coding was discussed between the two researchers and a primary- and a secondary-school teacher. Reliability of the categories used to analyse the contents is derived from the common thread of the two researchers and the two teachers.

The statistical analyses were carried out using XLSTATS 2018 software (Addinsoft, Paris, France). Qualitative variables are reported as numbers and percentages for each category. Comparisons between KPTs and STs were carried out with either a chi-square test (large groups) or Fisher's exact test (at least one small group) for the qualitative variables (objectives, interests and levers), and with either a Student *t* test or an analysis of variance (ANOVA) for the continuous variables (number of outputs). The threshold for statistical significance was set at $p = 0.05$.

Results

Characteristics of population sample

A total of 511 teachers (255 KPTs and 256 STs) responded to our questionnaire. The dominant age range of respondents was 40–49 years (40%), and the majority (78%) were female (Figure 1).

The mean number of different grade levels in which teachers taught was higher for STs than for KPTs: about three different grade levels for STs (47%), and two or less different grade levels for KPTs (40% taught in a single grade level, and 40% taught in two different grade levels). The sample was balanced in terms of the grade levels that were represented.

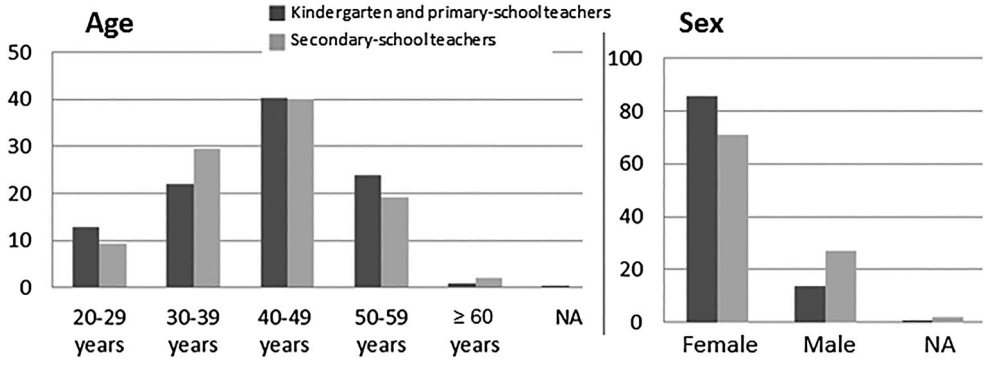

Figure 1. Age and sex of respondents, expressed as percentages for kindergarten and primary-school teachers (dark grey) and secondary-school teachers (light grey) (NA: no answer).

Teacher field trip practices

Frequency

More than 90% of teachers ($n = 462$) reported going on field trips in the natural environment. This practice appeared to concern a large majority of the teachers, regardless of level, although the proportion was slightly higher for KPTs (95%) than for STs (86%).

Among the teachers who reported going on field trips, the mean annual frequency was higher for KPTs ($M = 6.1$, $SD = 4.8$) than for STs ($M = 3.9$, $SD = 3.7$), all levels and all types of field trip considered ($p < 0.0001$).

When we looked at the subcategories of teachers, we found that high-school teachers went on fewer field trips than the other three subcategories (Figure 2). The ANOVA was significant ($p < 0.0001$), indicating that the mean number of field trips generally differed across subcategories. Tukey tests revealed significantly different means between kindergarten and high-school teachers ($p < 0.0001$), primary- and middle-school teachers ($p = 0.011$), and primary- and high-school teachers ($p < 0.0001$).

Location

Regarding location, the questionnaire asked respondents to say whether the field trips took place within the school grounds, close to the school (i.e. within walking distance), or further away, requiring a means of transport.

Among the 462 teachers who reported going on field trips 40% used the school grounds (39% for kindergarten teachers, 35% for primary-school teachers, 65% for middle-school teachers and 23% for high-school teachers), 61% went close to the school (77% for kindergarten teachers, 81% for primary-school teachers, 60% for middle-school teachers and 31% for high-school teachers) and 73% went far from the school (76% for kindergarten teachers, 74% for primary-school teachers, 67% for middle-school teachers and 87% for high-school teachers). Of the teachers concerned, nearly one-third of KPTs reported go to a single location (36% for kindergarten teachers and 31% for primary-school teachers), compared with 39% for middle-school teachers

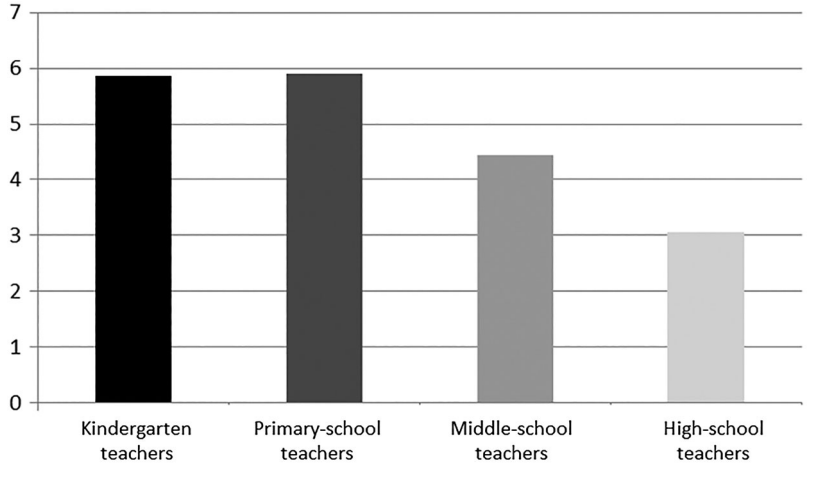

Figure 2. Mean number of field trips per year for each subcategory of teachers.

and 65% for high-school teachers In this single location categories, high-school teachers overwhelmingly reported field trips to distant locations (54%), whereas among teachers in the other three subcategories only 13–19% reported this far location. Field trips within the school grounds concerned mainly middle-school teachers (12.5%) (Figure 3).

For teachers who go out in two types of locations (35%), the majority do so close and far from the school (60%): about a third of KPTs (26% kindergarten teachers and 38% primary-school teachers) conducted them compared with only around 10% of STs (7% middle-school teachers and 14% high-school teachers).

Finally, outings to the three types of location taken together were conducted by equivalent proportions of KPTs (23%) and STs (20%), with a far higher proportion of middle-school teachers (33%).

Field trips used for each study year of secondary school

A total of 40% of all ST field trips were conducted with the first year of middle school, and most of them took place within the school grounds (Figure 4). This figure was around 15% for the second year of middle school and the first year of high school, and 10% or less for the other years.

Disciplines involved in field trips for kindergarten and primary-school pupils

Of the 242 KPTs, 74 confirmed that the field trips they organised were associated with a particular subject, and 72 indicated which one. The most frequently cited subject was science, sometimes even life sciences, either on its own or in combination with others

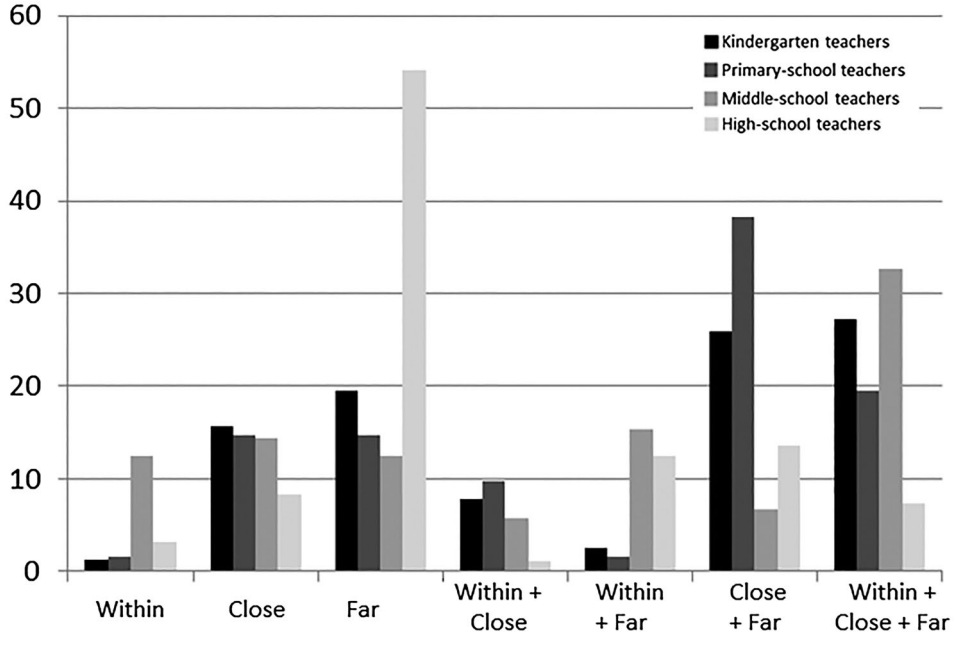

Figure 3. Percentages of field trips within, close to or far from the school for kindergarten, primary-, middle- and high-school teachers.

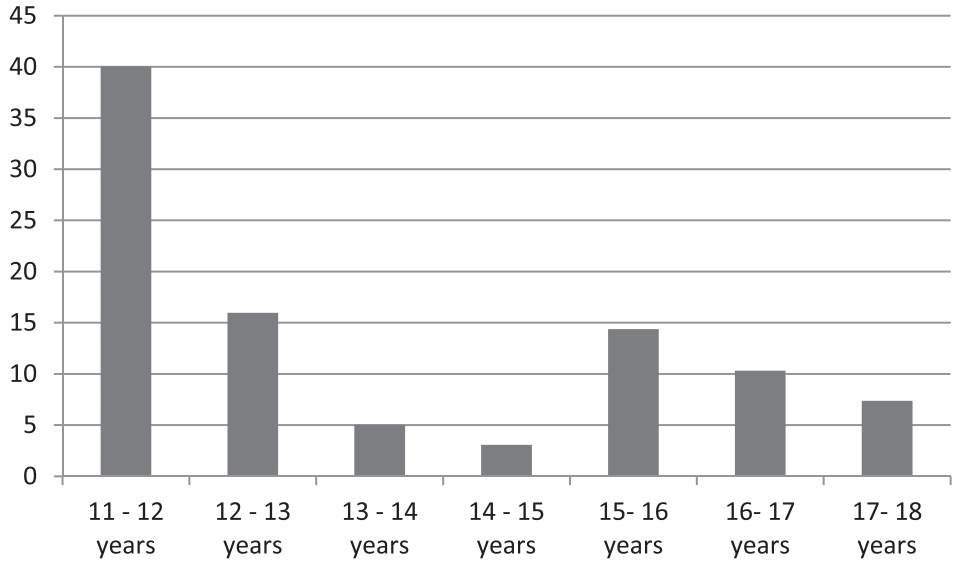

Figure 4. Percentages of field trips for each year of secondary school.

(64%). For the most part, *exploring the world* (for kindergarten pupils) and *questioning the world* (for pupils in the first 3 years of primary school) involved several subjects, including natural sciences (66%). When field trips were multidisciplinary, science was associated with language proficiency, geography, the visual arts, or physical education. In rare cases (5%), there was no multidisciplinarity, no science, and only reference to either physical education or the arts.

Motivations assigned to these field trips by the teachers

Reasons and objectives assigned

We divided KPTs' and STs' responses to the open question 'Why do you go out? What are your objectives?' into three main categories: those that referred to scientific knowledge (e.g. scientific notions, concepts); those that highlighted student motivation; and those that highlighted the appropriation and/or implementation of a scientific approach (e.g. questioning, problematising, observing, identifying). It should be noted that some responses corresponded to more than one category (Figure 5).

The aim of improving scientific knowledge (SK in all categories) was present in 76% of KPTs' responses and 80% of STs' responses. For example, teachers propose answers such as 'acquiring knowledge about local geology', 'notion of biodiversity at different levels', or 'observing animals and plants in their environment'. It appeared to be by far the most important objective of field trips in every year.

The second most important objective was the acquisition or implementation of a scientific approach (SA), which concerned 43% of KPTs' responses and 52% of STs' responses. For example, teachers respond 'manipulation, observation, experimentation', 'scientific approach: observe, test hypotheses, take measurements', 'make observations to ask questions'.

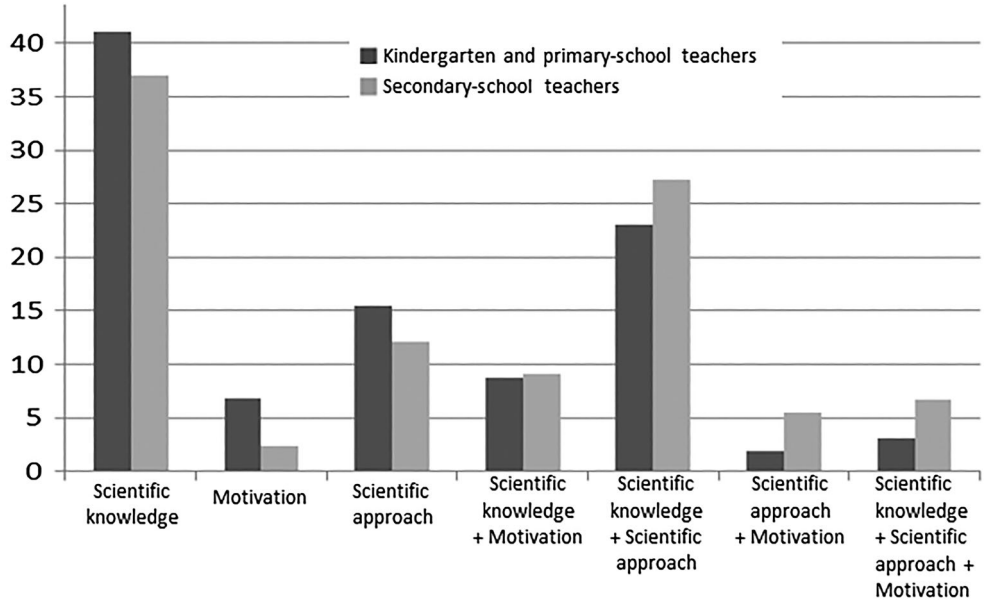

Figure 5. Percentages of field trip reasons/objectives identified by kindergarten, primary-school and secondary-school teachers for each category or combination of categories.

Finally, student motivation (M) was cited in 20% of KPTs' responses and 24% of STs' responses. For example, teachers answer 'motivating students', 'motivating and making students appreciate geology'.

Almost two-thirds of teachers' responses belonged to a single category, and a minority of responses fell into all three categories (3% for KPTs and 7% for STs). Teacher categories did not differ significantly on the distribution of objective categories (Fisher's exact test, $p = 0.129$).

Specific nature of field trips

Teachers were asked about the interest of field trips in relation to classroom sessions: 'What are the interests /specific features of a field trip compared with a classroom session?' Their responses to this open-ended question were divided into four categories (see Figure 6): (1) developing students' **motivation**, by encouraging students to take part in the tasks and activities on offer; (2) being **outdoors**, with no further clarification or justification; (3) **studying 'on real'** in a concrete situation; and (4) stimulating **critical thinking**.

As before, categories could be combined.

Highlighting the real-life concrete situation that students encounter when they go on a field trip was cited by 48% of KPTs and 45% of STs. For example KPTs say 'it's more concrete, so the children experience it and therefore integrate it', 'to see in real life', 'easier to relate to reality', 'concrete experience'. STs propose 'the real', 'being closer to reality', 'more concrete', 'application in situ'.

Motivation was the second most frequently cited category (11% for KPTs and 16% for STs). The development of critical thinking did not appear to be a major priority for

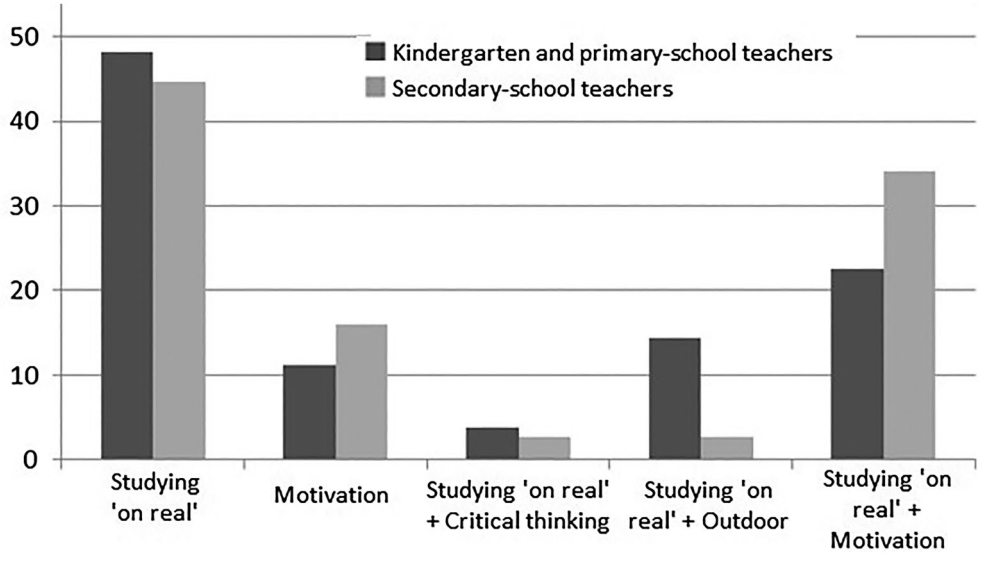

Figure 6. Interests and specific features of field trips versus classroom sessions.

field trips, as it was mentioned by fewer than 5% of teachers. KPTs and STs differed significantly on the distribution of these categories (Fisher's exact test, $p = 0.001$), with KPTs making more references confrontationwith reality and being outdoors than STs.

Levers and barriers to implementing a field trip

For this part of the questionnaire, the first step was to rank the 10 possible responses to the question 'For you, what are the main levers for implementing a field trip?' Figure 7 shows the three levers that were ranked the highest by a majority of teachers.

Almost twice as many KPTs as STs related field trips to EE and ESD (30% vs. 17%). Student motivation was again an important lever for 22% of KPTs and 25% of STs. Finally, 14% of KPTs and 21% of STs referred to the curriculum as a reason for organising field trips. The chi-square test revealed significant differences between KPTs and STs on these three types of levers ($p = 0.021$).

To answer the question 'What are the main barriers to implementing a field trip?', respondents had to order a list of 15 barriers, from the greatest to the smallest. Figure 8 illustrates the four barriers most frequently ranked top by teachers.

A large proportion of KPTs and STs who went on field trips identified cost as the main barrier (40% and 45%), and few chose administrative procedures as the main barrier (13% and 15%). By contrast, 20% of teachers who did not go on field trips identified administrative procedures as the main barrier.

Finally, the amount of time needed to prepare the field trip and the resulting lack of time to complete the curriculum were regarded as the main barriers by far smaller proportions of teachers (5–12.5%).

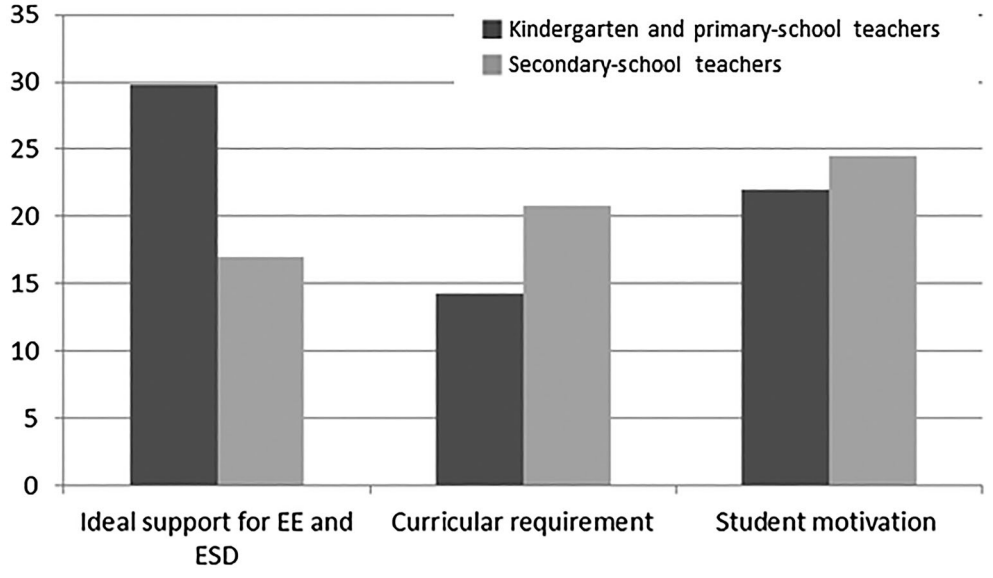

Figure 7. The three field trip levers ranked highest by a majority of kindergarten, primary-school and secondary-school teachers. For each of these three levers, the histogram represents the percentages of primary- and secondary-school teachers who ranked it ahead of the other nine options.

Discussion

The results presented here were, of course, based on teachers' statements in response to the questionnaire, and do not necessarily tally with what students actually experience and acquire during these field trips, in terms of attitudes, scientific knowledge, and the investigative approach. Nevertheless, teachers' views on this practice are extremely informative, and comparisons between KPTs and STs remain possible in this context.

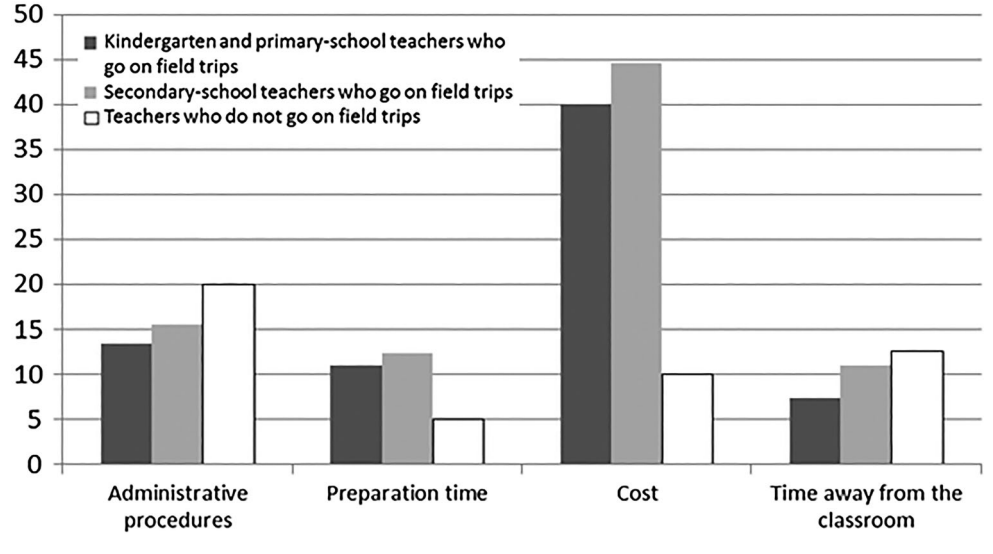

Figure 8. The four barriers to field trips most frequently ranked top by teachers.

Frequent field trips and different locations from kindergarten to high school

The vast majority of teachers in our sample (95% of KPTs and 86% of STs) reported going on field trips. However, KPTs went on more field trips than STs. Across the secondary school, it was students in the first year of middle school (11–12 years) who went on the most field trips. In a study in Switzerland of 257 primary school teachers, 71% said that they made field trips to the forest in education programme (Lindemann-Matthies & Knecht, 2011). In their sample of teachers, science teachers take the most field trips. Our analysis of curricula down the years suggested that incentives for going on field trips had been present for 40 years in France, targeting certain years in secondary schools, such as the first year of middle school. Moreover, these incentives had recently been reinforced by EE and ESD circulars, which may explain why the vast majority of teachers reported taking their pupils on field trips. However, we did not have any older data that would have allowed us to look for the downward trend that has been reported in some studies (Grodos, 2014; Humberstone & Stan, 2011; Lock, 2010; Maynard & Waters, 2007; Tilling, 2018).

Our results highlight the fact that disparities exist about the type of location used (within, close and far from the school). For example, high-school teachers overwhelmingly reported field trips to a single location (65%) and for distant locations (87%). On the 61% of teachers who go close to the school, it is preferentially kindergarten and primary-schools teachers (77% and 81% respectively). Finally, the school grounds is the least used place (40% all categories combined) and middle-school teachers are those who practice it the most. These field trip locations were specially chosen to support the biological and geological concepts targeted by the teachers (e.g. forest ecosystem, stages of vegetation in the mountains, or a particular geological feature of the environment). This connection with the curriculum explains the predominantly scientific anchoring of KPTs' field trips. In the Ross et al.' study (2007), primary-schools teachers also referred generically to 'science' and 'environmental studies' of topics studied in the outdoors. While close and distant locations are widely used for field trips by kindergarten and primary-schools teachers, they make little use of the school grounds contrary to what has been shown by Ross et al. (2007). Indeed, researches into school grounds demonstrate the fact this location as a learning environment is very attractive in terms of outdoor education (Dyment, 2005; Rickinson et al., 2004). We can interpret our results by proposing two hypotheses: either the school grounds of the teachers surveyed don't have natural environments (gardens, trees, parks, etc.) or these don't allow them to deal with the official themes of the curriculum.

Similar motivations for all teachers

Scientific knowledge and a scientific approach were the predominant learning reasons why respondents of our study go out. In the Lindemann-Matthies and Knecht study (2011), didactical and methodological considerations on the one hand and the training of 'scientific' skills on the other hand, are also stated among the main reasons why the elementary-school teachers conducted forest education. Furthermore, field trips were fully integrated into a process of scientific inquiry, viewed as a prime tool for encouraging pupils to question, observe and integrate knowledge (Glackin, 2016).

In addition, our results indicate that studying 'on real' was the interest most often cited by primary and secondary teachers. This motivation is among the most frequently mentioned by teachers whether in the context of field trips in the broad sense (museums, science centres … : Kisiel, 2005; Michie, 1998) or in the context of the natural environment (Henriksson, 2018; Lindemann-Matthies & Knecht, 2011). The field trip was viewed as giving 'the ability to direct learning to a concrete interaction with the environment' (Orion & Hofstein, 1994, p. 1097). However, this studying 'on real' can become just a pretext for conducting a field trip and lead to certain excesses. In this case, teachers may appear to believe in the intrinsic value of outdoor learning, without implementing any direct environmental observation or even a sensory approach, as Waite (2009) observed in her survey. These excesses can also occur during worksheet-based work (to keep track of observations and questioning), which may come to replace direct observation and questioning of environmental elements. In this case, the field trip is simply a lesson held outdoors that only lightly touches on the relationship to reality and experiential and sensory dimensions. To build learning by confronting students with the real-life world, it is not enough simply to take them outside (Glackin, 2016). A more relevant approach would be to organise the education system so that students engage in a genuinely reflective process (questioning, observing, handling, sampling, measuring, etc.) whilst providing a real-life, embodied experience of and through the environment (Varela et al., 2017). Moreover, the field trip in itself does not guarantee scientific learning and heightened awareness of environmental issues. Just as in an ordinary classroom situation, the teacher's objectives, role and attitude towards the pupils during a field trip influence pupils' learning, reflection and critical thinking (Fuz, 2018; Humberstone & Stan, 2011).

In their study of nearly 300 students, Orion and Hofstein (1994) showed that the educational quality of a geology field trip is determined by the organisation of the trip and the teaching method used. The factors that most influence the effectiveness of learning during a field trip are related to the preparation that is done with the students, such as working with the actual materials they will encounter in the field. As well as highlighting the importance of studying 'on real', this study also identified important dimensions to consider when preparing for a field trip. For example, having students work in small groups and making them engage in active learning during the field trip, particularly through relationships with each other and with the environment, are both effective practices (Jeronen et al., 2017). Encouraging teachers to visit the locations beforehand makes their teaching more efficient and helps them develop a sensory approach to the environment (Mannion et al., 2013).

Reported barriers and levers

All the teachers in our study chose the same top three barriers to implementing a field trip (with no difference in mean rankings): *cost*, *administrative procedures*, and *preparation time*. Cost was the greatest barrier for those teachers who did go on field trips, and administrative procedures for those who did not. In the literature, these barriers are among those that are most frequently identified (Dyment, 2005; Oost et al., 2011; Remington & Legge, 2016; Remmen & Frøyland, 2015; Ruether, 2018; Scott et al., 2015; Waite, 2009). The major barriers observed in our study were not related to

professional training, being more organisational or even institutional. The authorities do not give teachers the financial resources and the time they need for organisation and preparation, despite the recommendations of the French curriculum and circulars. There are several ways in which these barriers to field trips might be reduced. First, as school budgets are limited, teachers have to make choices in terms of outings (field, cultural, artistic or sports). One way of following ministerial incentives would be to earmark a portion of the budget specifically for field trips. Second, streamlining the administrative procedures and/or providing assistance with these procedures would also help teachers. Third, it takes longer to prepare for this type of activity than it does a traditional classroom activity, and even more time is needed for organisation and preparation when several teachers have to coordinate their activities in order to meet their respective objectives. Freeing up working time, either for individual teachers or for several of them working together, is an essential lever if we wish to encourage teachers to implement these practices.

The other barriers to teaching outside the classroom included *need for safety*, *teachers' lack of expertise*, and even *curricular constraints* (Dillon et al., 2006; Ernst, 2014; Oost et al., 2011). The last two were highlighted as major challenges in a recent overview (Ayotte-Beaudet et al., 2017). The similar barriers identified in our study (*students' behaviour outside is difficult to manage*, *not feeling competent*, and *the curriculum requires otherwise*) were seen as only minor ones by our participants. Of the 15 barriers that had to be rated by teachers, these were ranked first and second by fewer than 3.5%. The *teachers' lack of expertise* barrier may reflect a perceived lack of preparation and professional development (Ayotte-Beaudet et al., 2017; Ernst, 2014), so we can assume that French teachers' initial training makes them feel comfortable with the scientific aspect. For example, during their initial training, future natural science teachers in secondary schools reinforce their biological and geological notions by going into the field with their instructors. Future primary-school teachers are taught what they will need to do to prepare for an outing, in terms of administration and regulations, while the relevant biological concepts are more accessible to them. Moreover, the French curriculum is not a constraint, as it actually promotes field trips, and circulars can provide additional support for implementing them. This was confirmed by our results, as *ideal support for EE and ESD* and *curriculum requirement* levers were ranked first by our teachers (respectively, 30% and 14% of KPTs; 17% and 21% of STs).

However, the relative impact of the curriculum on the field trip implementation must be qualified. Although incentives are becoming more and more pronounced in the curriculum, making these field trips compulsory would be a powerful lever in their implementation. In their free comments, at the end of the questionnaire, a number of secondary-school teachers (13 responses out of 65) wrote that when the field trips were mandatory this implies the financial responsibility of the administrators. For example, one teacher writes 'Making some field trips mandatory, by including them in the curriculum, would be a greater incentive for headmasters to release credit (especially for the bus budget, which is often the most substantial)'.

In addition, the *student motivation* lever was ranked first by 22% of KPTs and 24.5% of STs. The motivational dimension was also mentioned in our questionnaire, as specific feature. One fifth of respondents believed that because of their unusual nature, field trips motivate students in their learning. These results are consistent with those of

other studies (Fägerstam & Blom, 2013; Osborne & Dillon, 2008; Uitto et al., 2006). We believe that the main reasons for this student motivation are the experiential and well-being dimensions of being outdoors, the fact that they often work in groups, and finally the fact that they learn from and in nature.

Dimensions to (re)emphasise during a field trip

We showed in the first part of this article that field trips continue to be recommended by the education system (curricula and circulars) and are recognised by researchers as having effects in terms of learning and building relationships between human beings and their environment. In our study, the sensory dimension was not reflected in the objectives identified by teachers, including KPTs, as Remmen and Frøyland (2015) also found in their study. Nevertheless, this dimension is present in kindergarten curricula and EE/ESD circulars. More broadly, although the affective and emotional dimensions play an important role in learning (Eaton, 1998; Fägerstam & Blom, 2013), they did not appear among our teachers' motivations.

The reflective and critical dimension also seems important to work on with students. As societal and environmental challenges become increasingly complex, they require high levels of thinking skills to solve problems and make decisions that lead to informed and responsible actions. Ernst and Monroe (2004) found that participating in an education project where the local environment serves as a context for integrating different disciplines and a source of real-world learning experiences, improves students' critical thinking. In our study, critical thinking was rarely associated with the confrontation with reality in teachers' primary objectives. This dimension, like the sensory experience of the environment, seemed less visible in responses to the questionnaire, and probably needs to be explored through interviews. It can help to build the 'critical observation skills' students need if they are to engage in environmental action (Pruneau & Lapointe, 2002, p. 251). Commitment, regarded as a major objective of EE/ESD, can arise from this critical reflection, when it is fostered in the context of environmental issues (Farmer et al., 2007; Kaiser et al., 1999; Soga et al., 2016; Zelenski et al., 2015).

In our study, one-third of KPTs and one-sixth of STs viewed field trips as a lever for implementing EE or ESD. They are therefore potentially part of a broader objective, which may include awareness of environmental issues. In this context, students may develop critical thinking skills, as prescribed in science curricula, in order to tackle EE/ESD issues (Christie et al., 2016). This critical reflection is particularly needed in ESD, where problems are contextualised and rooted in the students' local environment. This context-based approach is one way of situating students' learning in a real-world context, connecting school science to the ecological, social, and cultural contexts of informal settings (Subramaniam, 2020). From this perspective, the aim is to help students become fully fledged citizens capable of identifying and understanding issues related to their home area, graspiing the personal relevance of social debates and, if they so wish, playing an active role. However, there is a limit to what these local areas can offer in terms of biological or geological resources, in particular. This is probably why, in our study, the majority of high-school field trips took place far from the school.

Conclusion

This exploratory study shows that the practice of field trips is very widespread among kindergarten and primary-school teachers and natural science teachers in secondary schools, certainly partly because of institutional incentives. We argue that the French official curriculum plays a key role in influencing the current implementation of school-organised field trips. The learning motivations are essentially scientific and rooted in an approach of scientific inquiry, based on a real and concrete experience. By contrast, the dimensions relating to the development of a sensory, emotional and critical approach probably still require greater emphasis. Teacher training could be a lever here, focusing on the tools and objectives to be selected beforehand, the preparation of the field trip, and the enhancement of activities before, during and after the field trip.

Despite some barriers, field trips are therefore a particularly relevant means of promoting a better understanding of complex real-world systems, as well as of reconnecting students with their immediate *natural* environment. This allows them to develop a strong empathic relationship with their environment and exhibit better social behaviour and higher moral judgments.

Note

1. https://www.limesurvey.org

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Appendices

Appendix 1

Table A1. French education system: school and year.

		Age (in years)
Kindergarten & Primary-school teachers: KPTs	Kindergarten	3–4
		4–5
		5–6
	Primary school	6–7
		7–8
		8–9
		9–10
		10–11
Secondary-school teachers: STs	Middle school	11–12
		12–13
		13–14
		14–15
	High school	15–16
		16–17
		17–18

Appendix 2

Table A2. Levers and barriers for teachers to rank.

Levers	Barriers
Proximity of field trip location	Involves too many administrative procedures
Student motivation	I don't have time to organise and prepare everything (preparation time)
Teamwork, preparation and organisation with colleagues	Opposition from parents
I know that the partner is relevant	It's too expensive (cost)
I feel competent	Students' behaviour outside is difficult to manage
I love the outdoors/I feel close to nature	Too dependent on the weather
Curriculum requirement	Not enough time to complete the curriculum (time away from the classroom)
Better teacher/student relationship	The curriculum requires otherwise
Ideal support for EE and ESD	Too many adults required
Better socialisation of students	Too great a responsibility
	Lack of companions
	I don't feel competent
	Students are distracted, valuable learning time is wasted
	The headmaster does not authorise them
	Other(s)