

Philosophy for Children and the Incidence of Teachers' Questions on the Mobilization of Dialogical Critical Thinking in Pupils

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Abstract

More and more, education programs from many countries consider Critical Thinking (CT) to be an essential 21st century competency. Our conception of CT corresponds to a socio-constructivist epistemology and the context of our research is situated in the Philosophy for Children approach. This text presents a study, in which we compared results from two exchanges, one which was conducted with closed anecdotal-type questions, and the other with open philosophically-oriented questions. The analysis tool was the operational model of the developmental process of Dialogical Critical Thinking (DCT), developed and validated in previous studies. Participants were five groups of Moroccan pupils aged 10 to 15 years. Results indicate that in the exchange conducted with closed anecdotal-type questions, the overall epistemology of groups of pupils aged 10 to 15 years was simple, and the dominant epistemological perspective was post-egocentricity. In the exchange conducted with open philosophically-oriented questions, the overall epistemology for the majority of pupil groups was simple with a tendency toward a complex epistemology, and the dominant perspective for the majority of groups was relativism.

Keywords

Questioning Techniques, Dialogical Critical Thinking, Epistemological Perspectives, Primary and Secondary School, Philosophy for Children, Teaching Methods

1. Introduction

In contemporary industrialized societies, education is increasingly oriented toward neo-liberalism. The underlying values are, among others, problem-solving, economic reasoning, competitiveness, efficiency and profitability (among others:

Fabre & Gohier, 2015; Lenoir, 2016).

However, our position is situated in a perspective which some refer to as social-constructivist (for a definition, see Meyer et al., 2003; Wertsch, 1997), according to which the school's responsibility is to guide pupils toward the shared construction of their knowledge and skills with collective and individual emancipation in mind (Dewey, 1983¹; Freire, 1970). In this view, educational goals should be oriented toward the development of ethics and collective citizen consciousness (among others: Lenoir, 2016). As a corollary, education programs should emphasize transversal and disciplinary competencies that are likely to stimulate within pupils' values associated in particular with questioning, dialogue and critical thinking (CT).

As to CT, it is not defined consensually. Most conceptions of CT are rooted in a *technicist* perspective, that is, CT is reduced to teaching/learning the rules of formal logic, and its evaluation occurs through individual tests that measure the pupils' skills associated with the proper application of these rules (Kwack, 2007; Lenoir, 2016; Winstanley, 2008). Other conceptions of CT are oriented toward *humanistic* values. These are expressed through an intra-subjective reflection focused on understanding others—which could, when pushed to its limit, lead to an unconditional acceptance of what others say, and in so doing lead to a relativist reflection in the absolute sense of the term, leaving a moral and intellectual vacuum (Bourdon, 2008; Bourgeault, 2012; Tardif, 2012). Finally, some conceptions of CT are rooted in a *social-constructivist* perspective, that is, these conceptions are oriented toward emancipation of people and societies through critical dialogue among peers (Freire, 1970). These conceptions emphasize responsible CT that can help youngsters understand others, the world and the pluralism in which they are to live and act (see Bourdon, 2008; Leroux, 2016: chap. 2). It is this type of CT that is recognized by international entities such as UNESCO (2015) and is aligned with international conventions such as the Convention on the Rights of the Child, which was ratified in 1990 by a majority of countries around the world (among others: Butler, 2012). However, to get engaged in a social-constructivist conception of CT implies, for both teachers and pupils, a commitment on various levels (cognitive, emotional and social) that is seen as demanding and even repugnant to some (see Kpazaï, 2015).

To stimulate in pupils CT that is based on interactions and social commitment, several strategies have been proven effective in classrooms, including: dialogue within a community of inquiry, metacognitive reflection, reflective writing, mind-mapping, guided cooperative questioning, critical questioning (among others, Galichet, 2002, 2012; King, 1994; Lacroix, 2010; Lipman et al., 1980; Marceau, 2010; Melo-Leon, 2015; Michalko, 2006; Tallent & Barnes, 2015).

In this paper, we focus more specifically on the questioning strategy. We explore the question: *What is the impact of teachers' questions on the mobilization of Dialogical Critical Thinking in pupils?* Firstly, we present a brief review of the

¹The educational principles of pragmatist philosopher John Dewey are at the very foundation of the social-constructivist epistemology (see Daniel & Fiema, in press).

literature examining types of questions (closed and open) and their impact on the cognitive development in youngsters. Secondly, we describe the Philosophy for Children approach, which constitutes the context of our study. Thirdly, we describe the methodology and introduce the tool that was used for the comparative analysis of both exchanges among pupils, namely the model of the developmental process of what we name “Dialogical” CT (DCT). Fourthly, we present our results. Finally, in the discussion, emphasis is on the importance and difficulty of stimulating DCT in pupils with open philosophically-oriented questions as well as the necessary praxis of questioning within teacher education programs, and we suggest questions that are likely to stimulate DCT within pupils.

2. Teachers’ Questioning

Ever since Socrates, teacher questioning has been an integral part of teaching. The pedagogical literature suggests different approaches to classifying teacher questions. In this text we focus on closed and open questions.

2.1. Closed Questions

Studies conducted over the past decades in the United States show quite consistently that closed questions are favoured by teachers because they do not disturb order in the classroom, and because they leave the teacher in charge of verbal interactions (see Bressoux et al., 2002; Bressoux & Dessus, 2003). Closed questions are manifested in various forms: some are conducive to answers of a “yes or no” or “true or false” type; others present pupils with interrogative options (i.e.: choosing the correct answer among two options provided by the teacher). Another form of closed question that is frequently used in classrooms is tied to monitoring pupil learning. These questions converge toward a single and expected answer; they require pupils to remember a particular fact or to transfer information in a predictable manner anticipated by the teacher (among others: Margutti, 2006; McComas & Abraham, 2004; Schwarz & Slakmon, 2015).

To the list of closed questions found in the literature, we add closed questions that are anecdotal. This type of questions supposes that teachers ask pupils concrete questions that are centered on personal anecdotes (e.g.: *What are your favorite animals? What did you do yesterday?*). These questions may be considered open by some, because they include various possible answers; however we consider them closed, because they refer to a personal opinion, feeling or memory. This type of question constitutes a limiting factor for the group’s reflection in that it elicits a detail from a pupil’s experience, and thus leads an answer which can neither be completed nor generalized by the pupil’s peers. In short, we consider anecdotal questions as closed since they elicit a narrow scope of answers and do not lead to a shared construction of a common point of view (see Dewey, 1960; Gadamer, 1990 quoted by Weber & Wolf, 2017).

2.2. Open Questions

Open questions are questions that transcend specific information and generalize

situations, experiences and concepts. In this sense, open questions presuppose various contexts in which the concepts may be used (Weber & Wolf, 2017). Open questions are complex and often divergent (McComas & Abraham, 2004). Although related to pupils' interests, they explicitly contain a challenge (Critelli & Tritapoe, 2010). Open questions can be directed to a pupil or to a group. In the latter case, all of the pupils are considered potential answerers; together they participate in the construction of knowledge through verbal interactions. However, dialogical interactions among peers are rarely observed in classrooms, even though scientific studies recognize their merit in pupil learning (Martin & Hand, 2009). One of the reasons could be lack of teacher formation in open questioning or lack of time for this type of activity (Martin & Hand, 2009). Another reason could be that open questions create a more disconcerting environment for pupils when compared to closed questions since the pupils either cannot or can hardly predict them (Margutti, 2006).

It should be noted that although open questions are complex, they are not all critical (King, 1994; Smith & Szymanski, 2013)—which is explicitly aimed by open philosophically-oriented questions. Indeed, the latter aim at stimulating in pupils appreciative judgments, position taking and evaluation. Open philosophically-oriented questions are related to a problem that is likely to generate cognitive conflicts in pupils' minds. Open philosophically-oriented questions do not look for the truth but for a diversity of meanings.

2.3. Impact of Questions (Closed and Open) on Pupils' Cognitive Development

In the late 1980s and early 1990s, research showed that closed questions were more appropriate to elementary school pupils than open questions, and that in elementary and secondary classrooms, a combination of open and closed questions was more effective to stimulate cognitive skills than exclusively using one or the other type of question (for a compilation, see Cotton, 1988). These researches also indicated an absence of interdependence between the complexity of a question and the complexity of an answer. In other words, they indicated that whether questions were open or closed had no significant impact on the complexity of pupil answers (Arends, 1994; Cotton, 1988; Wilen, 1991).

On the other hand, several recent studies show that a close correlation does exist between the types of questions posed and the nature of the associated answers. These research results demonstrate that closed questions stimulate simple thinking skills associated in particular with memorization and comprehension of curriculum content within pupils (among others: Curenton, 2016; Smith & Szymanski, 2013; Margutti, 2006), whereas open questions foster various complex thinking skills and attitudes within pupils². For example, in a study recently conducted with Moroccan engineering students, the fact that teachers used questioning as one of the activities to trigger students' CT was seen to encourage

²Based on Bloom's taxonomy, there exists a consensus in the literature on associating enunciation, identification, memorization, etc. to simple thinking skills, and analysis, reasoning, divergent relationships, argumentation, synthesis, evaluation, etc. to complex thinking skills (among others: Gallagher & Aschner, 1963; Smith & Szymanski, 2013).

students “to reflect on each other’s answers and opinions...to express their point of view...to answer open-ended questions, and to try to investigate and explore other possibilities” (Belghiti et al., 2016). Results of other studies also establish that open questions guide pupils toward rigorous thinking and well thought-out decisions (among others: Ali-Sheir et al., 2014; Brookhart, 2016; Buckley et al., 2015; Colley & Windchiti, 2016; Fasco, 1994; Francis, 2016). Open questions motivate pupils to actively participate in a discussion and to understand peer statements and lessons taught by the teacher (King, 1994; Melo-Leon, 2015; Smart & Marshall, 2013), stimulate divergent thinking and elicit a variety of answers that enable pupils to extrapolate, to create new relationships and to consider new points of view (Smith & Szymanski, 2013; King, 1994; McComas & Abraham, 2004).

Finally, concerning teacher’s questions within the specific framework of pupils *discussions*, several authors maintain that in order to stimulate the reflection process within an exchange, it is necessary to question pupils in order to create doubt or cognitive conflict in pupils’ mind or, in other words, to create a rift in their certainties (among others: Dewey, 1960; Sorsana & Troadec, 2007). However, questioning pupils to unsettle their certainties is interpreted by some researchers and educators as an anti-pedagogical action in that it interrupts the construction of a personal point of view and represents an unnecessary constraint on the pupil (Ikuenobe, 2001; Levine et al., 2004). Finally, to other authors, teacher’s questioning indeed remains a constraint, but a necessary constraint in that it enables the emergence of thinking. They explain that interrupting with questions destabilizes pupils’ representations and, in so doing, leads to problematizing ideas and to more sustained argumentation. In short, to these authors, interruption by questioning leads to a process of critical inquiry that results in a more complex resolution of the problem posed or a more refined representation of the concept being discussed (Barth, 2008; Berland & McNeill, 2010; Golding, 2009; Haynes & Murriss, 2011; Karabulut, 2012; Martin & Hand, 2009).

In this text: a) we examine two types of questions that are not much covered in the pedagogical literature, namely “closed anecdotal-type” questions and “open philosophically-oriented” questions; b) the criterion selected to evaluate their respective impact on stimulating CT in pupils goes beyond thinking skills per se to focus on the “epistemological complexity” of pupils’ interventions, as we consider CT a process rather than a final outcome (a description of epistemological perspectives is provided below); c) the pedagogical context in which our study was conducted is the Philosophy for Children (P4C) approach (described in the next section).

3. Philosophy for Children

P4C was proposed in the 1970s by American philosopher Matthew Lipman. Lipman and his colleagues (Lipman, Sharp, & Oscanyan, 1980) believe that if schools develop active pupils who question their personal and social experience, pupils will in turn create conditions conducive to critical questioning, emancipa-

tion and democratization (see also Dewey, 1960, 1983; Gregory, Haynes, & Murriss, 2017). Thus, the objective of P4C is to stimulate in pupils a type of CT that enables them to solve common problems in collaboration with their peers. In P4C, critical reflection is not theoretical; it takes root in pupils' personal and social experience, and it aims at the improvement of this experience. Questioning, which is at the heart of P4C, occurs in teacher-pupil interactions just as in interactions among peers and in a pupil's internal deliberations (Kohan, 2004; Murriss, 2013; Weber & Wolf, 2017).

3.1. Application

To implement P4C in the classroom, Lipman and his colleagues (1980) suggest three steps: 1) Reading a philosophical text or other discussion catalyst; 2) Collecting pupils' questions; 3) Conducting a dialogue within the community of inquiry.

Catalyst. The catalyst can be a philosophical text adapted to the pupils' age; it can be associated with any material (e. g.: images, photographs, works of art, music, films) as long as it introduces paradoxes and ambiguities and brings pupils to question ideas. Originally, Lipman and colleagues suggested a philosophical novel. The novel is considered philosophical if it contains open concepts that are likely to captivate pupils' intellectual curiosity. Pupils take turns reading the text out loud. This activity is important to instill peer cooperation; it constitutes a first active involvement in the community of inquiry. Pupils are no longer receptacles who receive narrative data, they become active participants in a common reading.

Collecting questions. Next, pupils are invited to ask questions regarding ambiguous situations or concepts inherent in the text or other catalyst that they would like to discuss. Formulating questions is a fundamental step, on one hand because it presupposes that pupils are engaging in an autonomous reflection process and that they are making an effort to understand the catalyst in a critical manner. On the other hand, formulating questions is fundamental because it implies pupil co-responsibility in the philosophy sessions: through their questions, the pupils rather than the adult decide on the theme of the exchange. Formulating questions is also a gratifying step for pupils since "the right to ask questions" which usually belongs to the teacher, is transferred to them. The vertical power structure (teacher-pupils) becomes horizontal, and the principle of equality among participants advocated by P4C finds its coherence. In sum, formulating questions implies that pupils are persons-who-think-and-question.

Philosophical dialogue within a community of inquiry. In order for pupils to find meaningful answers on their own to the questions they have posed, the teacher guides them toward a philosophical/critical dialogue within the community of inquiry. The community of inquiry is a cooperative environment in which pupils can feel motivated and comfortable in expressing their doubts, their points of view and their disagreements. The community of inquiry is fundamental, in that the philosophical questions the pupils attempt to answer do

not presuppose a single correct answer prefabricated by adults and to be found in textbooks, but are rather sufficiently complex to require the group's input to solve them. The community of inquiry requires and encourages interactions among peers and stimulates skills and competencies on the cognitive, emotional and social levels.

As for the dialogue, it is synonymous neither with verbal sparring nor with simple conversation. Studies conducted with pupils aged 4 to 12 years have brought to light a philosophical dialogue learning process in pupils who experimented with P4C during an entire school year. At the beginning of philosophical praxis, the exchange is *anecdotal* with pupils speaking in a non-structured manner about specific and personal situations. The exchange can also be *monological* with pupils entering into a process of inquiry essentially oriented toward a quest for "the" correct answer. After several months of praxis, it was observed that the exchange becomes *non-critical dialogical*, which is manifested when all of the pupils together are involved in the construction of knowledge or representations, without, however, considering the need to evaluate peer points of view or the validity or viability of the criteria or issues at stake. The exchange is *semi-critical dialogical* when certain pupils express disagreement or criticism without influencing their peers' points of view. By the end of the school year, we sometimes observe a *critical dialogical* exchange, which is characterized by reciprocity, openness to divergence and intersubjectivity. Critical dialogue is not the rhetorical argumentation of a previously constructed point of view nor a competitive debate; it consists of looking for meanings within a community of inquiry aimed at the improvement of the individual and social experience (Daniel, 2000; Daniel & Delsol, 2005; Daniel et al., 2011).

3.2. Teachers' Questions in P4C

To stimulate pupils' critical dialogue and to transform the classroom into a community of inquiry, Lipman and colleagues (1980) favour the Maieutic Socratic approach since, as a holistic learning philosophy, it involves dialogue, questioning and caring evaluation. They suggest that teachers ask pupils philosophical questions. Indeed they believe that children are natural philosophers and, as such, that this type of question should foster their curiosity and start their reflective process.

Moreover, following Vygotsky, Lipman argues that the philosophical questions teachers ask may become a thinking model for pupils, who will gradually come to ask themselves and their peers this type of question (Lipman, 2003). This has been corroborated by linguists who have shown that the syntax of teacher's questions gives rise to this specific discursive and syntactic form in pupils (Rispaill, 2007) and that the teacher's judgment abilities become integrated into the pupils' thinking modes after some six months of philosophical praxis (Auriac-Peyronnet & Daniel, 2002).

A philosophical question is defined by Dewey as a conceptual "problem" rather than a simple "question". Generally, a simple question is specific and strives

for a unique and conclusive answer. On the other hand, a philosophical question is likely to generate cognitive conflicts in pupils' minds; it is oriented toward a resolution that will be subjected to revision (Dewey, 1960). Lipman and colleagues specify that a question carries philosophical meaning when it questions concepts, develops around causes and consequences, calls into question achievements, traditions and biases, searches for justifications, valid criteria, nuances or relationships between concepts, etc. (Lipman et al., 1980).

3.3. Variants of P4C

Over the past decades, several variants of the Lipmanian approach have put forward diverse objectives and facilitation styles (see UNESCO, 2007). In these variations, the teacher's objectives can center primarily on one level or another (cognitive or social or emotional). Also, the teacher's type of facilitation in a session might vary on a continuum that ranges from very guided to fairly passive. In passive facilitation, the teacher respects pupils' development but without stimulating any transcendence of viewpoints; the teacher's role thus consists in listening without asking pupils any questions. In a guided approach to facilitation, questioning gains in importance in that the aim of philosophical sessions is for pupils to progress in their learning. Here also, the types of questions posed by teachers vary according to the intended objective (Auriac-Slusarczyk & Colletta, 2015).

Diversity of approaches is necessary in that it addresses the various contexts in which philosophical praxis takes place and, in so doing, better addresses the diversity of pupils' experiences and needs. Nevertheless, we feel it is appropriate to verify whether, with regard to approaches aimed at developing CT in pupils, the teacher's questions attain their objective. Indeed, although studies that fall within the Lipmanian perspective mention the fundamental contribution of questioning to the development of logical reasoning in pupils, or to the development of CT in Higher Education (Golding, 2011), to the best of our knowledge, no study has compared the respective impacts on two exchanges conducted in elementary and secondary school classes—one based on closed anecdotal-type questions and the other based on open philosophically-oriented questions—on stimulation of pupils' DCT and, more specifically, on stimulation of the epistemological perspectives inherent in DCT.

4. Methodology

The study we present in this text is a comparative study developed according to a qualitative paradigm. It is part of a research project on DCT within groups of pupils aged 10 to 19 years in three locations: Morocco, France and Quebec. The project was subsidized by the Social Sciences and Humanities Research Council of Canada (#435-2013-0212). A certificate of ethics was delivered by *Université de Montréal* (CPER-13-030-D).

The sample population selected for this study consisted of five groups of Moroccan pupils aged between 10 to 15 years old. These pupils were randomly cho-

sen from two public schools in Rabat. They were also selected from two levels of education. The first two groups of pupils were selected from a primary school. At this school, two groups of pupils, belonging to the 5th grade (aged 10 to 11 years old) and the 6th grade (aged 11 to 12 years old), participated in the exchanges. The other three groups that participated in the exchanges included pupils from the first year (pupils aged 12 to 13 years old), second year (aged 13 to 14 years old) and third year (aged 14 to 15 years old) of a secondary school. There was an average of 30 pupils per group.

Two 45 to 60 minutes exchanges per class were recorded on audiotape and then transcribed verbatim, for a total of 10 verbatim and 3,891 pupil interventions.

Both exchanges focused on the same theme: “*What does it mean to be free?*” Both exchanges included closed and open questions, since P4C, while it aims at philosophical reflection, remains related to pupils’ experiences and interests (see Buckley et al., 2015). Nevertheless, the first exchange was mainly characterized by closed anecdotal-type questions (e.g.: “... *For you, being free is to play on your computer...at what do you play exactly?*”). The second exchange was mainly characterized by open philosophically-oriented questions (e.g.: “*On what are you basing your point of view?*”; “*What do you mean by ...?*”; “*Who can build on and clarify this idea?*”; “... *Who can suggest a different idea ...?*”).

Both exchanges were animated by the same facilitator, and took place a few days apart. To make sure that the first exchange did not constitute training for pupils to develop their epistemologies, we conducted a similar study in Quebec and France, in which two exchanges were conducted a few days apart on the same theme. In the latter two locations, the facilitators’ questions were identical in both exchanges (mainly open philosophically-oriented questions). Analysis of the verbatim transcripts revealed that in the second exchange, the epistemology of pupils in Quebec and France was quite similar to that of the first exchange. In other words, these results indicate that a single exchange is not sufficient to influence or modify the pupils’ epistemologies. This ensures the reliability of our results concerning the impact of the type of question on the epistemological mobilization of the pupils.

As a first step, all verbatim interventions were coded by one of the team’s researchers. As a second step, the interventions were all blind re-coded by a different researcher. If there was disagreement about the codes, a discussion was held until both researchers reached a consensus.

Analysis Tool:

The tool used to analyze the verbatim transcripts was the operational model of the developmental process of Dialogical Critical Thinking (DCT), which comprises four thinking modes with six epistemological perspectives³ (see the analysis grid in **Appendix A**).

³Based on the Grounded Theory methodology, a model of the developmental process of DCT emerged from our previous research projects conducted with pupils aged 4 to 12 years in Quebec, Ontario, France, Australia and Mexico. These research projects were funded by the Social Sciences and Humanities Research Council of Canada (SSHRC).

First, the analysis grid allows us to determine which thinking modes are manifested in pupils' discourse as they exchange with their peers: The mode is *logical* when the pupil's intervention reflects coherence. It is *creative* when it reflects novelty and divergence. It is *responsible* when it refers to social and ethical rules, principles and values. And it is *metacognitive* when it reflects thinking concerning peers' and one's own points of view.

Second, the analysis grid allows us to determine whether pupils' thinking (as manifested in their interventions) is simple or complex by referring to six epistemological perspectives: In *egocentricity*, pupil interventions remain anecdotal, concrete and specific (e.g.: I, myself ...). In *post-egocentricity*, pupils' interventions are concrete, but they become slightly distanced, since they begin to include their relatives (e.g.: My brother, he ...). In *pre-relativism*, pupils' interventions become more general, but remain concrete and descriptive (e.g.: Friends, they are ...). In *relativism*, pupils' interventions manifest themselves in convergent relationships between their statements and those of their peers (e.g.: I agree with ...) and they manifest empathy (e.g. We should take care of ...). In *post-relativism/pre-intersubjectivity*, pupils' interventions manifest themselves in more complex relationships, as they are divergent (e.g.: I do not totally agree with your idea because...) and they concern a distant environment (e.g.: Children from another country). In *intersubjectivity*, pupils' interventions manifest themselves in the collaborative construction of relationships that are complex and evaluative, aiming at the improvement of a common good (e.g.: School, society, the planet) (see Daniel et al., 2005; Daniel & Gagnon, 2011).

5. Results

Other than the fact that the groups of pupils' epistemologies remains relatively stable from the end of elementary to the end of secondary school⁴, results show that on an epistemological level (including the four thinking modes): in the exchange conducted with closed anecdotal-type questions, the dominant perspective in the majority of pupil groups is post-egocentricity (see Table 1), which indicates that pupil interventions are comprised of units (not relationships) centered on specific and concrete events experienced by pupils or those close to

Table 1. Epistemologies mobilized using closed anecdotal questions.

Age group/Epistemological Perspective	10 - 11 years	11 - 12 years	12 - 13 years	13 - 14 years	14 - 15 years
Egocentricity	22%	37%	30%	24%	16%
Post-Egocentricity	32%	39%	34%	28%	31%
Pre-relativism	23%	16%	25%	30%	27%
Relativism	21%	9%	10%	17%	26%
Post-relativism/pre-intersubjectivity	2%	0%	0%	1%	0%
Intersubjectivity	0%	0%	0%	0%	0%

⁴We will further study this aspect of the question in another paper.

Table 2. Epistemologies mobilized using philosophical questions.

Age group/Epistemological Perspective	10 - 11 years	11 - 12 years	12 - 13 years	13 - 14 years	14 - 15 years
Egocentricity	1%	2%	4%	3%	0%
Post-Egocentricity	31%	24%	29%	28%	15%
Pre-relativism	20%	33%	38%	32%	18%
Relativism	46%	40%	29%	38%	59%
Post-relativism/pre-intersubjectivity	1%	0%	0%	0%	8%
Intersubjectivity	0%	0%	0%	0%	0%

them, and the interventions are not justified.

Here is an example of a post-egocentric intervention in the group of 10 - 11 years old: *I find my freedom in playing with my friends.*

Here is an example of a post-egocentric intervention in the group of 14 - 15 years old: *For me, freedom is to go out with my friends when I want and where I want.*

In the exchange conducted with open philosophically-oriented questions, the dominant perspective in the majority of groups is relativism (see **Table 2**), which indicates that pupil interventions are formulated with convergent relationships between their peers and their own points of view, that the points of view are characterized by empathy, and are somewhat generalized and justified with concrete reasoning.

Here is an example of relativist intervention in the group of 10 - 11 years old – when pupils were discussing freedom of expression: *If the pupil did not answer correctly it is because he does not know, he had not understood even if the teacher had maybe explained before. The other should not laugh at him and if he talks with him (...) he should tell him it is by making mistakes that we learn.*

Here is an example of relativist intervention in the group of 14 - 15 years old: *The concept of freedom is found in peace, which guarantees us not to be exposed to harassment. Thus the boy and the girl in the family would be equal and if there is a peaceful environment the girl will be able to go out as she wishes and get back home when she wishes without being harassed. And even if a boy goes out with a girl this means they would respect each other and they would respect their environment.*

It is also significant to note that in the exchange conducted with closed anecdotal-type questions, the percentages for egocentricity were relatively high (between 16% and 37% of interventions), and in the exchange conducted with open philosophically-oriented questions, the percentages for the same epistemological perspective were almost zero (between 0% and 4% of interventions). In both exchanges, few or no interventions were observed in the post-relativism/pre-intersubjectivity perspective and no intervention was noted in the intersubjectivity perspective.

Furthermore, because DCT is a dynamic process (vs. a final product), the re-

sults should also take into account the movement reflected in the epistemological perspectives as a whole. This movement develops like a “scaffolding” process, in other words, it implies a recursive variation between simple and complex perspectives, it advances and retreats until learning is stabilized. More specifically, it brings to light: a) learning that is about to be appropriated by pupils and that is manifested in the perspectives that precede the dominant one, b) learning that is appropriated and that is manifested in the dominant perspective, c) learning that is about to be acquired; it indicates that an epistemological transformation is taking place within the groups of pupils and this is manifested in the perspectives that follow the dominant one (Daniel & Gagnon, 2011).

To take into account this scaffolding process, we divided the percentages relating to the perspectives into two groups according to whether they applied to simple or complex perspectives. The perspectives of egocentricity, post-egocentricity and pre-relativism are considered simple in that they reflect representations marked by concreteness and centering. Relativism, post-relativism and intersubjectivity are considered complex in that they reflect representations marked by generalization/abstraction and decentering.

Figure 1 and Figure 2 show that in both exchanges (the first with closed anecdotal-type questions and the second with open philosophically-oriented questions), the percentage of interventions displaying simple epistemological perspectives remains predominant except in the group of 14 to 15 years old, where the complex epistemology dominates when the exchange is conducted with open philosophically-oriented questions. Nevertheless, when we consider the disparity between each group of pupils, it becomes apparent that in the exchange centered on closed anecdotal-type questions (see Figure 1), the gap between the simple and complex epistemologies in the groups of pupils is large, varying from 48% to 83%. This gap indicates that pupil interventions are mostly rooted in simple epistemologies (pre-relativism, post-egocentricity or egocentricity).

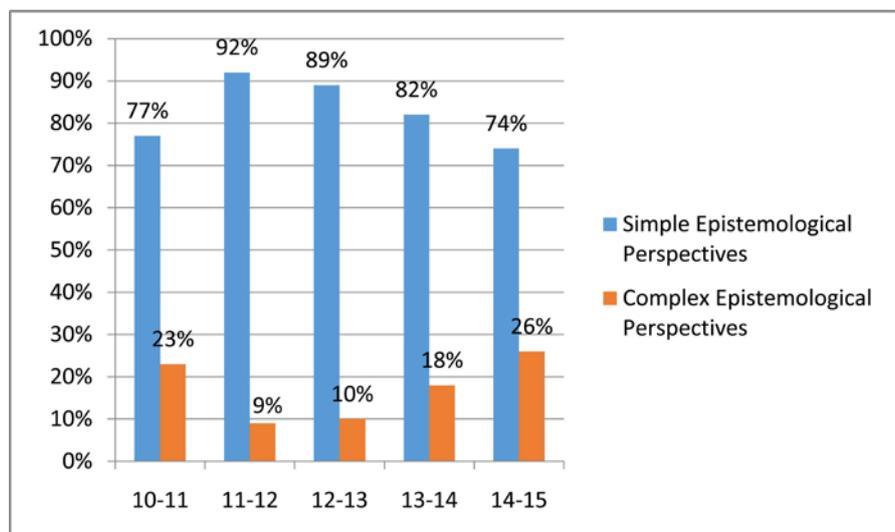


Figure 1. Grouped perspectives—closed anecdotal-type questions.

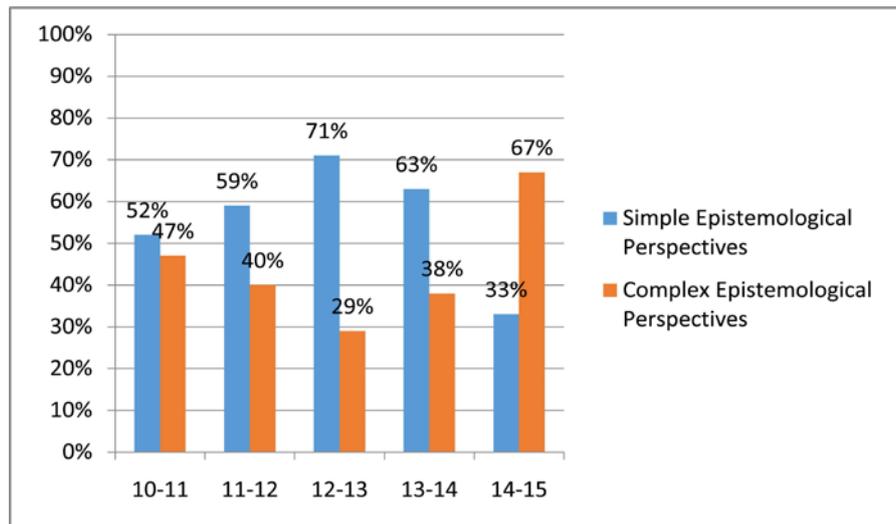


Figure 2. Grouped perspectives—open philosophically-oriented questions.

Whereas in exchanges centered on open philosophically-oriented questions (see **Figure 2**), the gap between the simple and complex perspectives is significantly less (between 6% and 42%) in four groups out of five, and is even reversed in the group of 14 - 15 years old (−34%), in which the complex epistemologies dominate. The reduced disparity indicates that, thanks to the use of open philosophically-oriented questions, simple epistemologies are about to be surpassed (relativism has already been integrated in four of the five groups), even though the complex perspectives have not yet been appropriated.

In sum, results from the first analysis confirm the point of view of some authors, according to whom pupil interventions are closely linked to the types of questions teachers pose (among others: [Curenton, 2016](#); [Smith & Szymanski, 2013](#); [Margutti, 2006](#)). More specifically, this analysis shows that, in a context of exchanges among pupils, teachers' questions have an observable incidence on the epistemological complexity of groups of pupils. In other words, closed anecdotal-type questions stimulate simple representations centered on personal experience and concreteness in pupils, whereas open philosophically-oriented questions encourage complex representations characterized by decentering, willingness to listen to others and generalization of viewpoints.

Results of the second analysis indicate, on one hand, that open philosophical-oriented questions activate a process of increasing epistemological complexity of DCT. On the other hand, this analysis shows that this process, far from constituting “ready-made thinking”, represents a “thinking-with-others” mode that develops with time and praxis.

6. Discussion and Conclusion

These results lead us to insist—if the goal is to stimulate/develop DCT within pupils—on the importance of asking open philosophically-oriented questions within the context of sustained (once per week) and regular (during at least one entire school year) dialogical critical praxis. In the following pages, we emphas-

ize: a) the difficulty for teachers and pupils to engage in a dialogical critical exchange based on open philosophically-oriented questions; b) the necessity to add a praxis of questioning within teacher-education programs. Finally, we suggest questions that are likely to stimulate DCT in pupils.

6.1. Type of Exchange and Intersubjective Reflection

One of the conditions to favour a dialogical critical exchange and stimulate DCT in pupils is, for the teacher as well as the pupils, to agree to reflect on what they do not know (Schwarz & Slakmon, 2015). Then the teacher must ask critical questions and allow pupils to present arguments, multiple, diverse and unexpected points of view, even allow them to express constructive criticism (Martin & Hand, 2009; Tallent & Barnes, 2015). However, the pedagogical literature shows that, for the teacher, it is easier and more reassuring to facilitate an exchange by asking closed questions that will lead pupils to relate personal anecdotes or to identify facts from textbooks or to endorse the teacher's own personal beliefs or knowledge (Margutti, 2006; McComas & Abraham, 2004; Martin & Hand, 2009; Smith & Szymanski, 2013). Among possible reasons for this, let us note the fact that teachers may either lack self-confidence because of a lack of practice in this activity or, on the contrary, are over-confident because they feel they often "talk" with their pupils (Chesters & Hinton, 2017). Also, worth mentioning is the inertia of the culture of compliance that thrives in schools (Baumfield, 2017; El Kirat & Belghiti, 2014).

Parallel to this, observations in classrooms of pupils aged 10 to 15 years indicate that talking about oneself and personal experience is more popular than reflecting on philosophically-oriented questions. Participating in an anecdotal exchange is more fun and less demanding than engaging in critical dialogue because the dialogical exchange that is mobilized and ensues from critical questions is likely to confront pupils with the unknown, with uncertainty about the correct answer, even with their own errors in judgment, their beliefs and their ignorance. The dialogical exchange implies that pupils must subsequently reconstruct their opinions, judgments, values, etc. (see Weber & Wolf, 2017).

In spite of this, some researchers and teachers consider that a narrative or anecdotal exchange (conducted with closed questions) is by no means insignificant, in that it allows pupils to share with others, to reminisce, to become aware of their emotions, aware of their intentions. Thus, the anecdotal or narrative exchange would give meaning to pupils' everyday experiences (among others: Bouchard, 2002; Chesters & Hinton, 2017; Nussbaum, 2004). Along with some other researchers, we consider that this type of exchange is nevertheless likely to engender a superficial reflection, an "empty shell" that does not serve to improve individual nor social experience (Tardif, 2012). All the more so since the human brain has a tendency to make errors, to fabricate biases and to preserve original beliefs rather than self-question and self-correct (Buckely et al., 2015).

Therefore, we believe that dialogical critical exchange is desirable because it underpins an intersubjective reflection process that is oriented toward improv-

ing the individual and social experience (see Daniel & Gagnon, 2016).

6.2. Teacher Education Programs

The scientific literature indicates that if, on one hand, experienced teachers lack practice to efficiently make the transition from their role as information transmitters to that of facilitators (Auriac-Peyronnet & Daniel, 2009; Chesters & Hinton, 2017; Martin & Hand, 2009), on the other hand, novice teachers and future teachers lack adequate training in this field.

In major reports from the Association of American Colleges and Universities, we note that a number of students enrolled in teacher education programs in universities have neither learned to develop nor to use complex thinking skills (AACU, 2002, 2007). In Quebec, France and Morocco, the authors concur that, by the end of their initial training, the discourse of teachers is consistent with simple epistemologies (Belghiti et al., 2016; El Kirat & Belghiti, 2014; Forges, 2013; Lechasseur, 2015; Pettier, 2015). Studies explain that teachers' exposure to a type of instruction that fosters memorization over thinking and questioning affects the teachers' perceptions of what CT is, as well as the teaching practices they opt for in their classes, and thus affect the extent to which these teachers can develop their students' CT (El Kirat & Belghiti, 2014; Belghiti et al., 2016). Nevertheless, interacting with pupils can be learned (Auriac-Peyronnet & Daniel, 2009).

In that sense, a number of suggestions have been put forward, including reintroducing philosophy in teacher education programs (Chesters & Hinton, 2017) and regularly exposing teachers to in-depth questioning (AACU, 2002, 2007; Martin & Hand, 2009; Smith & Szymanski, 2013). In these cases, *praxis* is fundamental since questioning and reflecting critically is not just a tool or a method that is transmitted or acquired theoretically; it implies an active engagement on the part of the teachers, an engagement that involves a transformation of their own epistemological perspectives. This epistemological transformation presupposes and develops the intellectual habit of clarifying and justifying the theses, actions and situations that are an inherent part of their learning and their everyday experiences (logical mode); it develops the intellectual habit of questioning, (re)-defining and suggesting solutions in order to improve them (creative mode); it develops the intellectual habit of evaluating the consequences of their decisions on pupils, on their school and on their society (responsible mode); and the habit of self-correcting when necessary (metacognitive mode). As a corollary, if future teachers integrate these intellectual habits during their education programs, as practicing teachers they will be able to transform their classroom into a community of inquiry in which the learning of many school subjects would be furthered thanks to critical questioning and dialogical praxis (see Baumfield, 2015, 2017)—which should be part of the professional and civic responsibility of any teacher.

6.3. Open Philosophically-Oriented Questions

Dialogical praxis occurs differently according to whether participants are adults

or children (Chesters & Hinton, 2017). In the following paragraph we suggest guidelines for teachers to facilitate dialogical critical exchanges among young pupils.

Several authors have suggested ways to facilitate philosophical or critical dialogues with pupils (among others: Buckley et al., 2015; Cam, 2008; Canuto, 2015; Lipman et al., 1980; McComas & Abraham, 2004): In order to encourage pupils' interest during the exchange, the teacher prepares a discussion plan to challenge and answer the questions pupils posed beforehand; the discussion plan does not orient pupils toward one outcome or another, but rather helps them progress in their comprehension of the meanings of the concepts; the discussion plan reflects a progression in questions that range from the most concrete to the more conceptual; questions posed are likely to arouse the pupils' curiosity and to generate cognitive conflicts in their minds; wording of the questions must be adapted to the pupils' age group; questions must be meaningful for pupils and take into consideration their daily experience; questions can be preceded or followed by a game (for the younger ones) or an intellectual exercise (for the older ones); the teacher encourages the participation of all pupils without insisting if a pupil wishes to remain silent; the teacher follows up with questions to help pupils transcend their initial statement; the teacher encourages pupils to talk to each other directly (dialogue) instead of simply answering the teacher's questions (monologue); the teacher encourages pupils to listen to each other actively and caringly, to question each other and to support, complete, clarify, nuance, and criticize peers' points of view; the teacher gives pupils time to think before answering; the teacher makes sure pupils have fun and increase their self-esteem during dialogical critical praxis.

More specifically, we suggest questions oriented toward stimulating the epistemological perspectives and thinking modes inherent in DCT (Daniel, 2013). To stimulate logical thinking: *How is your point of view related to the question being discussed?*; *Can you reformulate your idea so it can help us progress?*; *Why do you say that ...?*; *When you say ... what are you basing your statement on?*. To stimulate creative thinking: *What would happen if ...?*; *Can you illustrate what you are saying with an example?*; *Who can provide a counter-example?*; *Who has another point of view on the question?*. To stimulate responsible thinking: *What would happen if everyone did x (action, gesture ...)?*; *Is x (behaviour, point of view, value ...) acceptable in all contexts?*; *Is x (behaviour, rule, value ...) useful to many people?*; *What are the consequences of x (point of view, decision, behavior ...) for you? for others? for society?*. To stimulate metacognitive thinking: *What are we doing right now (on the cognitive, discursive or social level)?*; *Do you want to modify your point of view after hearing your peers' points of view?*; *Did we philosophize today?*; *What thinking skills were mobilized during our exchange?*.

Also, following are some examples of teacher's questions to increase epistemological complexity in pupils' thinking. For post-egocentricity and pre-relativism (toward generalizations): *Does what you say about x (i.e.: your dog) apply*

to all x (i.e.: all dogs) Does it apply to all y (i.e.: all animals)? Does it apply to all z (i.e.: all living beings)?. For relativism (toward convergent relationships): *Do you agree with the idea expressed by X ?; In relation with what X just said, do you think that ...?; Who wants to pursue X 's idea?*. For post-relativism and intersubjectivity (toward evaluative relationships): *Who can expand on ...?; What are the advantages and disadvantages of such an action, tradition, value ...?; What are the positive and negative aspects of such a point of view, of such an action?; Among the criteria we have just mentioned, which seems the most reliable, appropriate or useful?*.

6.4. Future Directions

This research should be expanded upon with similar research projects that would compare the incidence of closed questions and open philosophically-oriented questions on different groups of pupils that are academically strong and academically weak; who come from different socio-economic backgrounds; who attend different types of schools (private, public). It would also be relevant to verify these results in the long term, for example, to look at which epistemologies groups of pupils are situated in after one year of philosophical *praxis*. And, within these groups, it would also be relevant to study the impact of the teachers' questions on the types of questions posed by the pupils themselves during their exchanges, and to verify the type of verbal exchanges (anecdotal, monological, non-critical dialogical, semi-critical dialogical, critical dialogical) that each type of question elicits. It would be worth examining pupils' written reflections. Finally, the whole question of teacher training (initial and continued) has yet to be fully explored.

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Appendix A. Operational Model of the Developmental Process of DCT

MODE/ EPISTEMOLOGICAL PERSPECTIVE	LOGICAL	CREATIVE	RESPONSIBLE	METACOGNITIVE
EGOCENTRICITY	Statement based on the perceptual experience of a specific and personal fact.	Statement that gives meaning to a personal and concrete point of view.	Statement that is related to a personal and specific behaviour tied to a social or moral belief.	Retrospective statement about a personal and specific task, point of view, feeling, etc.
POST-EGOCENTRICITY	Statement based on experience (personal or someone close) + reasoning.	Statement that gives meaning to a personal point of view (but distanced from self).	Particular/concrete statement tied to a moral or social rule (learned). Not contextualized.	Retrospective statement about a personal task, point of view, feeling, etc. (distanced from self).
PRE-RELATIVISM	Somewhat generalized statement that is not justified or with an implicit, circular or false justification.	Statement that is new, divergent or that presents different situations/ solutions/hypotheses (units) in relation to a personal idea or to someone else's idea (peer or text).	Statement linked to a somewhat generalized action in a moral or social perspective.	Descriptive retrospective of a personal task, point of view, feeling, etc. (distanced from self).
RELATIVISM	Incomplete or concrete justification (explanation)/reasoning based on experience.	Relationship that gives meaning to a peer's point of view (by completing it or adding a nuance).	Statement that explains a will to understand/ include others (from the immediate environment). (Contextualized).	Descriptive/explanatory retrospective of another person's task, thought, etc. (immediate environment).
POST-RELATIVISM/ PRE-INTERSUBJECTIVITY	Justification based on "good reasons"/simple reasoning.	Relationship that presents a different context that takes into account the group's perspective.	Statement that justifies a desire to understand/ include others (distant environment). (contextualized)	Descriptive/ explanatory retrospective of another person's task, thought, etc. (distant environment).
INTERSUBJECTIVITY	Justification based on criteria. Conceptualization based on evaluative reasoning.	Evaluative relationship that provides a different meaning and transforms the perspective.	Doubt that underlies the evaluation of categories (rules, principles, social/moral values).	Evaluative statement that expresses a change in perspective following the integration of criticism.
	<i>Conceptualization</i>	<i>Transformation</i>	<i>Categorization</i>	<i>Correction</i>

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