

OUR RELATIONSHIP WITH KNOWLEDGE: ITS ROLE IN EDUCATION*



MATHIEU GAGNON
Associate Professor
Université de Sherbrooke

Relationships with knowledge lie at the heart of the teaching profession. Although this statement may seem excessive, in both the English- and French-speaking worlds, such relationships are increasingly associated with teaching strategies, assessment methods, types of learning, educational contracts, students' role, learning approaches, perseverance, academic success, and so on. This article delves deeper into the concept of relationships with knowledge in an effort to identify useful benchmarks related to individual teaching perspectives and educational response.

RELATIONSHIPS WITH KNOWLEDGE: SOME CLARIFICATIONS

To begin, we should note that relationships with knowledge form part of epistemology in education. It then becomes essential to clarify what we mean by “epistemology.” From a strictly etymological view point, the term “epistemology” comes from the Greek words *episteme*, which means “know,” or “know how to do”, and *logos*, which means “word”, and “reason”. Thus, epistemology refers to all discourse that deals with knowledge. Originally, epistemology was a branch of philosophy dealing more specifically with so-called “scientific” knowledge, and its criterion of validity. That is why connections are regularly made between epistemology and methodology: the former is a discipline that is focused on establishing general principles intended to guide the process of formulating knowledge; the latter is the domain of reflection through which these principles are operationalized and their validity and rigour ensured. However, since its emergence, the term “epistemology” has been associated with diverse meanings, sometimes remote from the definition attributed to it at the outset. Indeed, derived from the field of philosophy to which it initially referred and continues to do so in certain cases, epistemology has become a matter for psychology (particularly since Piaget conducted his work on the subject of what he called “genetic epistemology,” which refers more closely to the act of knowing) as well as a matter for psycho-pedagogy, sociology, didactics, and even anthropology.

Although we have attempted to clarify the concept of *epistemology*, we acknowledge that we will not be able to resolve all the difficulties involved in rendering an account of it. Indeed, the later association between this concept and psychology,

sociology, psycho-pedagogy and didactics implies that the term “epistemology” does not have quite the same meaning in every discipline. Such an impression is not unsubstantiated. In fact, on taking a closer look, we note that in the field of philosophy, epistemology is more closely linked to the processes of formulating knowledge that stem from a process of negotiating meaning, most often crystallized in and by different disciplines. In other words, philosophers are interested in the processes of formulating knowledge in terms of communities of disciplines. In the fields of psychology or sociology, epistemology refers more to relationships “of meaning, and therefore, of value, between an individual (or a group) and the processes or products of knowledge” (Charlot, Bautier and Rochex, 1992, p. 29). In education, epistemology is more broadly inspired by psychological, sociological and anthropological perspectives, relating instead to the many processes of the (co)construction of individual knowledge.

Thus, there would be at least two avenues of inquiry through which questions of an epistemological nature may be approached – through that of the disciplines, and through that of learning. The first was formed from reflections concerning the processes of formulating academic and scientific knowledge; the second, from the study of the multiple relationships that associate an individual with knowledge and information, and from the meaning of the individual attributes of such knowledge and information and what emerges from these relationships through assimilation. These two avenues of inquiry are linked, on the one hand, to the processes of formulating knowledge and, on the other hand, to the development of knowledge (if not competencies). However, they do not exist in silos; quite to the contrary. Before we further explore these principles, we should note that no reflection concerning the matter of relationships with knowledge, in education, can take place without consideration of the two main schools of thought evident in the field of epistemology, i.e., those of the French- and English-speaking worlds. Let's take a closer look.

Generally speaking, in Québec, most of the work dealing with relationships with knowledge falls squarely within the French-language schools of thought. In fact, apart from research by Therriault (2008), very few Québécois studies are based on

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English-language publications, which have shed significant light on the matter—we will return to this. In any event, much of the French-language work dealing with the issue of relationships with knowledge builds on the social-anthropological approach, initially developed by Charlot, Bautier and Rochex (1992). This approach is based more particularly on sociology of subjectivity, meaning it is concerned with “the relationship to the world, to the other, and to the self” that an individual displays when “confronted with the necessity of learning” (Charlot, 1997, p. 93). The anthropological dimension of this approach refers to the fact that human beings constantly grapple with situations in which they must learn.

Of course, such necessity is associated with an individual’s history, but it is also part of a social and cultural context. This context orients all individuals by encouraging them to acquire some forms of knowledge instead of others (based on a variety of criteria such as tradition, usefulness, scientific value, and so on). An individual is thereby confronted with a “natural” and social necessity of acquiring knowledge that is conveyed by institutions, including schools. From such a perspective, the relationships with knowledge are envisaged more specifically from the angle of *relationships with learning*, meaning seeing oneself through one’s links to school, class and teacher (educational contract). Other approaches have also been developed in the French-speaking world¹ which have examined knowledge by considering it as an object of desire, and more specifically, as the object of the desire to learn and to know, which is, according to researchers, at the heart of any

learning dynamic. Then, there is the didactic approach², which instead focuses attention on the relationship that learners and educators have with knowledge, on the didactic relationship that forms between a student or a teacher and the academic subject, as well as on the relationship between individuals and scientific knowledge.

Trends of thought in English-speaking cultures address relationships with knowledge from the standpoint of the concept of *epistemological beliefs*. From this perspective, the concept of *belief* also falls within the cognitive domain. However, the focus here is on the status of knowledge under consideration. Since a belief is a question of perception, we could therefore associate this concept with that of *conception*. If English-speaking authors talk about beliefs, it is because they wish to convey the idea that no knowledge can be considered as absolute truth—ultimately, knowledge is always belief and, in most cases, the fact of knowing raises a number of emotional and cognitive dimensions, and their dynamics. Most of the English-language studies attempt to determine, using questionnaires, the “personal epistemology” of respondents, then to establish links between this personal epistemology and various factors, including perseverance and academic success. Currently, the operationalization of the concept of epistemological beliefs according to two focuses each consisting of as many continuums, one concerning the *nature of knowledge*, the other, concerning the *act of knowing*, seems to have won consensus among researchers. **Figure 1** illustrates these continuums.

FIGURE 1

OPERATIONALIZATION OF THE CONCEPT OF EPISTEMOLOGICAL BELIEFS

FIRST FOCUS: THE NATURE OF KNOWLEDGE

- | | | |
|---|---|---|
| 1. Knowledge of a series of isolated, unambiguous facts. | ↔ | Knowledge of a series of complex interrelated concepts. |
| 2. Knowledge is fixed, absolute (<i>Certain knowledge</i>). | ↔ | Knowledge is tentative and evolving. |

SECOND FOCUS: THE ACT OF KNOWING

- | | | |
|---|---|--|
| 1. Our ability to learn is innate (<i>Innate ability</i>). | ↔ | Our ability to learn develops. |
| 2. Learning occurs quickly, otherwise, it cannot occur (<i>Quick learning</i>). | ↔ | Learning is a gradual process and requires personal investment and effort. |

¹ Notably the clinical (or psychoanalytical) approach created by Beillerot (1999) as well as Mosconi and his colleagues (2000).

² The proponents of this approach invoke specific concepts, such as *the understanding of objects of knowledge in a teaching-learning context*. They include Albe and Venturini (2002), Caillot (2001), Jonnaert and Vander Borgh (1999), Désautels and Larochelle (2004), Jonnaert and Lenoir (1993), Maury and Caillot (2003) and Venturini (2007).



► **TYOLOGY OF RELATIONSHIPS WITH KNOWLEDGE**

Having built on schools of thought from both French- and English-speaking cultures while at the same time drawing on work of an epistemological nature in philosophy to date, we previously proposed a typology of relationships with knowledge, which groups together five distinct types (Gagnon, 2011a). A summary of each of these types is presented below (see table 1).

When we examine this typology, it is clear that from our perspective, there cannot be a “relationship with knowledge” in the singular. Rather, in our view, there are multiple relationships with diverse areas of knowledge. Thus, in our opinion, we should always talk about “relationships with knowledge,” in the plural.

First, let’s address the concept of *multiple relationships* since the type of relationships will vary for an individual depending on the object being related to. For example, the ways in which the same individual will represent establishing fields of knowledge, their truth value, and the learning processes that the individual must negotiate to assimilate them will be different. To this is added the fact that the relationships that this individual has with areas of knowledge may well fluctuate just as much depending on the spheres he or she considers. Indeed, after conducting research work, in particular with adolescents and secondary school teachers, we noticed that their conception of processes of formulating knowledge differs depending on the learning or subject area. This is also the case for the truth value attributed to each of these fields of knowledge. Furthermore, it appears that our relationships with knowledge vary, within

TABLE 1 **TYOLOGY OF RELATIONSHIPS WITH KNOWLEDGE**

TYPE OF RELATIONS WITH AREAS OF KNOWLEDGE	DESCRIPTION	STANCE MATCHING EACH TYPE OF RELATIONSHIP
EPISTEMOLOGICAL RELATIONSHIPS	Process of formulating, constructing and producing knowledge (particularly academic and scientific knowledge)	Perceiving that science evolves through an accumulation of facts (positivism); or through the possibility of refuting hypotheses (refutationism); or that these facts are the fruit of a process of constructing meaning, a construction that is performed by a community of researchers or experts who interpret phenomena (social constructivism)
EPISTEMIC RELATIONSHIPS	Process through which the truth value of knowledge is attributed	Considering that knowledge originate with an objective discovery of reality or that they are certain and true (realism, objectivism); or that they correspond to theories considered viable; or that they depend on individuals (subjectivism/absolute relativism)
DIDACTIC RELATIONSHIPS (WITH LEARNING)	Process during which we represent the learning approach and the teaching-learning dynamic, particularly in an academic context (educational contract, reciprocal engagement of student and teacher, their respective expectations)	Believing that the facility with which we learn is a gift (innatism); or that learning is a developing ability that requires personal investment and effort
GNOSEOLOGICAL RELATIONSHIPS	Process of developing “individual” knowledge	Taking the viewpoint that learning is facilitated through personal discovery and interactions with classmates (social constructivism) or that learning is fundamentally based on an ability to memorize and on training that allows for developing reflex responses and for processing information (cognitivism)
IDIOSYNCRATIC RELATIONSHIPS	Perspectives on which to base approaches to knowledge and sources of knowledge	Approaching knowledge from a dualistic perspective (true and false); or a dogmatic perspective (areas of knowledge deemed true and conveyed by experts); or based on a critical reading (evaluative or sceptical mode)



the same discipline, depending on the concepts approached. For example, the students and teachers who we surveyed had different epistemological and epistemic relationships with knowledge depending on whether we were talking about, in science, the elements of the periodic table, moles, the respiratory system, the law of gravity or climate warming. In fact, while they promoted the idea that the form of the periodic table or the mole are essentially *constructions* that depend on researchers and their creativity. In the same breath, they stated that the elements of the periodic table or the knowledge that we possess about the respiratory system correspond to objective discoveries and are independent of researchers. Furthermore, they declared that older theories or hypotheses (the law of gravity, for example) are true. However, they said that the more recent theories (the role of human activity in climate warming, in particular) seemed to correspond more to suppositions and postulates that must be examined and that are far from being an object of consensus among scientists. Consequently, it appears to be more appropriate to talk about “differentiated relationships varying according to a variety of areas of knowledge” in order to take into account the subtlety and complexity of personal epistemologies (Gagnon, 2011b).

FROM THEORY TO PRACTICE

Some clarifications concerning the connections that exist between relationships with knowledge and the educational response

To further explore how relationships with knowledge may be important for the teaching-learning dynamic, we will build more specifically on three of the five types described above, specifically the epistemological, epistemic and gnoseological relationships. We will attempt to examine them from the standpoint of both teachers and students.

First, we should recall that our epistemological relationships with knowledge relate to our conception of the processes of formulating knowledge and that they vary depending on the domain. Thus, an individual (a student or a teacher) might think that scientific knowledge develop through an accumulation of facts that are basically drawn from observations or experiments. In this case, the work of an expert in the sciences might be perceived as a process of gathering evidence. Another individual might take a different position. Although this individual does not think that the formation of scientific knowledge results from an accumulation of “positive” facts, (a stance that falls within positivism³), he or she might believe that knowledge emerges from seeking situations in which facts

that are assumed to be “true” must be contradicted (which would stem from falsificationism⁴). In this way, scientists would be limiting themselves to revisiting their explanatory models, their theories and their hypotheses. Moreover, these two individuals might have different epistemological relationships with other fields of knowledge. For example, they might believe that knowledge stemming from the field of ethics or areas of professional knowledge are acquired through experience (which falls within empiricism⁵) and that they all depend on situations, individuals, and indeed, on cultures (which connects with relativism, in part).

These epistemological relationships are associated with epistemic relationships, that is to say, ways of perceiving the truth value of fields of knowledge. Do such areas appear to us to be true, objective, or universal? Do they seem to us to be viable, rather, objectivated and constantly changing? To illustrate certain attitudes that can be adopted with regard to such questions, let’s return to our previous examples.

Let’s say that an individual presupposes that knowledge is formed based on observable facts. This person will likely have a strong, objectivist conception its truth value. Furthermore, the observed facts and the knowledge that flow from such facts will appear to be objective, even true. In this person’s view, it will not depend on the specific perceptions of individuals nor of cultures. A person who holds a more falsificationist view, informed by the idea that progress may be made through seeking contradictions, will have a different epistemic relationship to knowledge. In this person’s eyes, knowledge will be refutable and mutable. From this perspective, knowledge will not be perceived as true either in itself or in absolute terms. In the same vein, the value attributed to knowledge by a person who assumes that it is formed based on individual experience falls within relativism. In the eyes of this individual, what is true for one person may be false for another.

Table 2 attempts to establish associations between a number of epistemological stances as well as various teaching-learning dynamics that might be associated with them.

³ In this regard, the reader can consult the writings of Auguste Comte or the publications of thinkers associated with the Vienna Circle.

⁴ The reader can consult the writings of Karl Popper to further understand this stance.

⁵ The reader can refer to the works of David Hume to gain a better grasp of this perspective.



TABLE 2

DIFFERENT EPISTEMOLOGICAL CONCEPTIONS IN EDUCATION

EPISTEMOLOGICAL STANCE	RELATIONSHIPS TO KNOWLEDGE	CONCEPTION OF THE TRUTH VALUE OF KNOWLEDGE
REALISM / CLASSICAL POSITIVISM	<ul style="list-style-type: none"> • Knowledge corresponds to reality; it is a copy of it. • Knowledge correspond to observable facts. 	<ul style="list-style-type: none"> • Knowledge is considered true and objective.
COGNITIVIST RATIONALISM	<ul style="list-style-type: none"> • Nature is governed by universal and immutable laws that can be discovered through the use of reason. • Knowledge correspond to observable facts. Natural phenomena can be understood by breaking down complex problems into simple units. 	<ul style="list-style-type: none"> • Knowledge is considered objective. It is a tool provided through reason, which makes it possible to understand the world.
RELATIVISM / SUBJECTIVISM	<ul style="list-style-type: none"> • Assertions correspond to personal opinions, which depend on individuals. 	<ul style="list-style-type: none"> • Knowledge is considered to be basically subjective. It is neither true nor false in itself. • In absolute terms, it is impossible to determine whether an assertion is true. All assertions are equally valid.
FALSIFICATIONISM	<ul style="list-style-type: none"> • Knowledge is structured as the result of a discovery of errors. • Models are refined through research derived from crucial experiments that make it possible to refute theories. • The more models are developed through the discovery of errors, the closer we come to knowledge of reality. 	<ul style="list-style-type: none"> • Knowledge is considered true unless disproved. • Errors are the only thing we can know with certainty. • The goal that we can associate with processes of formulating knowledge is the search for and discovery of contexts in which our theories reach an impasse.
SOCIAL CONSTRUCTIVISM	<ul style="list-style-type: none"> • Knowledge is socially constructed by various actors and depend on the paradigms to which it belongs and on projects that are undertaken. • Interpretations of the same phenomenon will necessarily vary based on the frameworks we refer to in order to consider such a phenomenon. 	<ul style="list-style-type: none"> • Knowledge is considered viable. • We subscribe to it because it is effective with respect to the frames of reference that we adopt and to the projects that we undertake. • Knowledge is always “negotiated” interpretations of the world that are not true or objectivated (not objective). No theory is equivalent. The value of each theory depends on the contexts in which it takes form, its explanatory scope, and its effectiveness.



TABLE 2

DIFFERENT EPISTEMOLOGICAL CONCEPTIONS IN EDUCATION

ROLE ATTRIBUTED TO THE USE OF CRITICAL THINKING	TEACHING-LEARNING DYNAMIC
<ul style="list-style-type: none"> At best, critical thinking is a means of comparing certain assertions with reality and of determining which ones correspond to it. 	<ul style="list-style-type: none"> The dynamic is generally centred on the transmission of information that must be learned. The favoured teaching mode is giving lectures.
<ul style="list-style-type: none"> The use of critical thinking is basically structured by the principles of formal logic, which are applied here. 	<ul style="list-style-type: none"> The logical structure of knowledge is highlighted. The dynamic is rooted in cognitivism. It promotes the breaking down of knowledge, moving from simple to complex, training through repetition and the development of automatic responses. Generally, direct or strategic teaching is used.
<ul style="list-style-type: none"> Critical thinking is not perceived to be relevant or useful, since every individual reasons in his or her own way. 	<ul style="list-style-type: none"> Knowledge is presented as sets of opinions. The dynamic uses conversations or discussions during which students share their opinions, which are not necessarily subject to an evaluation. This type of dynamic is common in philosophy and humanities courses and so forth.
<ul style="list-style-type: none"> Critical thinking is a vehicle that, combined with the use of creative, divergent thinking, makes it possible to discover situations resulting in the refutation of theories. 	<ul style="list-style-type: none"> There is a connection between epistemological falsificationism and constructivist theories of learning. This involves creating situations, particularly when solving problems, in which implicit theories or the initial conceptions of students will be contradicted by experience, the goal being to prompt them to accept changes of a conceptual nature.
<ul style="list-style-type: none"> Critical thinking is necessary in that it enables us to evaluate the strength and the relevance of theories in terms of paradigms, contexts and special projects. 	<ul style="list-style-type: none"> Teaching is generally based on approaches that encourage students to interact and solve problems in groups. Knowledge is not presented as truth, but as multiple interpretations, which vary according to the various domains and fields of knowledge. Course content is always “situated” with respect to the context in which the elements being taught originally took shape. Greater attention is paid to processes. Learning through problems, case studies or interdisciplinary approaches (for example, the “little islands of rationality” approach developed by Fourez⁶) take precedence.

⁶ To further explore this model, the reader can consult [ife.ens-lyon.fr/publications/edition-electronique/aster/RA0;25-10.pdf]. NDLR: An article on the topic was published in this journal: Chantal Pouliot and Audrey Groleau, “Interdisciplinary Islands of Rationality: An Approach to Science and Civic Education”. *Pédagogie collégiale*, vol. 25 no. 1, Fall 2011, pp. 1-6 [aqpc.qc.ca/en/journal/article/interdisciplinary-islands-rationality-approach-science-and-civic-education].



THE ROLE OF RELATIONSHIPS WITH KNOWLEDGE IN TEACHING

Now, let's examine why it is important that all teachers take these elements into consideration.

Many reasons can be given to explain why it is important to take into account the epistemological and epistemic beliefs of teachers and students. First, it should be noted that while there are connections between these two types of beliefs or relationships, they are also associated with our gnoseological, even didactic relationships! We need only recall the strong reaction to the promotion of education programs geared to competency development. Why was there such resistance in certain environments? One of the explanations is that this call for change, which affected pedagogical approaches, was based on a transformation of the epistemological and epistemic relationships with knowledge, relationships that notably supported the programs.

Indeed, the so-called social constructivist approaches were implemented based on three types of relationships with knowledge. First, based on a gnoseological relationship, the way in which learning processes function is more closely inspired by the work of Vygotski. In other words, from a social constructivist point of view, learning is facilitated to a greater extent through interaction among peers rather through individual problem-solving. Second, based on an epistemological relationship, affecting the processes of formulating academic and scientific knowledge, such knowledge is thus perceived as processes of co-developing meaning⁷ rather than the result of an accumulation of "objective" facts. Lastly, based on an epistemic relationship, knowledge is seen, from a social constructivist perspective, as closely linked to various frames of reference, cultures and paradigms. Therefore, here, epistemic relationships revolve more around the concepts of *viability and objectivation*⁸. In this sense, we could say that such epistemological, epistemic and gnoseological relationships with knowledge have influenced our conception of teaching, and consequently, our didactic relationships with knowledge.

In fact, we have outlined several connections among our conceptions of processes used to formulate knowledge (epistemological relationships), our visions of their truth value (epistemic relationships), theories of learning (gnoseological relationship), and the ways in which teaching and learning strategies are implemented in education. In this respect, a teacher who has a positivist and objectivist view of knowledge associated with his or her field will tend to favour content-focused teaching. He or she will adhere to a more deductive

model and will draw inspiration from this type of teaching paradigm. In this context, he or she will favour certain modes of evaluation that primarily focus on so-called declarative knowledge, memorization or the development of an algorithmic type of thinking (based on models, technical skills and so on). On the other hand, a teacher holding a more social constructivist view of the processes of formulating the knowledge that prevail in his or her field, thus a teacher who considers knowledge to be "objectivated" and "viable," will tend to use inductive approaches (not deductive) in his or her classes. This teacher will situate the elements studied in their context, will discuss them, "negotiate" their meaning, and criticize them, and so on. As a result, he or she will choose evaluation methods that focus on strategies, action and scenarios.

THE ROLE OF RELATIONSHIPS WITH KNOWLEDGE IN LEARNING

Such relationships can also be established for students. Thus, there are connections between students' epistemological, epistemic and gnoseological relationships with knowledge, their behaviour in the classroom and their learning. That being the case, when students subscribe to the idea that knowledge developed in a particular domain is part of an accumulation of facts or that these areas of knowledge fall within a series of objective discoveries, students usually believe that their own role boils down to acquiring knowledge, and that it holds meaning as the result of an accumulation, that it is sufficient to learn and to memorize, or that it is sufficient to practise with "objective" facts. Lastly, based on an epistemic relationship, knowledge is seen, in a social constructivist perspective, as closely linked to various frames of reference, cultures and paradigms. Thus, epistemic relationships hinge more on the concepts of *viability and objectivation*. In this sense, we could say that the epistemological, epistemic and gnoseological

⁷ On this topic, the reader can look at the work of Gérard Fouré, among others.

⁸ Let us note that the concept of *viability* is opposed to that of *truth* in that it refers to a view according to which knowledge and theories is not considered true, but relevant, effective and functional with regard to paradigms, contexts and projects pursued. Thus, in the social constructivist perspective, a theory is chosen because it is effective, not because it may be true. Similarly, *objectivation* is opposed to the idea of *objectivity* because it corresponds to a process of negotiating meaning, which takes place among researchers, a process that never negates the share of subjectivity and interpretation of these actors, but that nevertheless remains stabilized. Conversely, the concept of *objectivity* tends to negate the interpretation and subjectivity of individuals by virtue of the principle holding that areas of knowledge usually correspond to reality.



relationships with knowledge have coloured our conception of teaching, and our didactic relationships with knowledge.

Conversely, when students have a more relativist or social constructivist vision of knowledge, they have a greater interest in exercising their critical thinking and in questioning (Gagnon, 2011b). We should emphasize that students usually construct their viewpoints about knowledge when they come in contact with such knowledge and the discourse pertaining to it, whether this happens in society as a whole (that is the sociological dimension of relationships with knowledge) or at school. Indeed, the way in which teachers talk about the academic subjects could influence the conception that students will develop of these subjects. This is why, in our view, teachers need to clearly describe knowledge, the epistemological status of this knowledge and the activities proposed in the classroom. In this way, they will help students to refine their epistemological beliefs and consequently, to hone their interest in taking a critical view of what they are learning.

Furthermore, the relationships students have with knowledge are increasingly considered as determining factors with regard to perseverance and academic success. As an example, when students consider knowledge to be fixed, i.e., generic and immutable, they show greater difficulty with formulating hypotheses. When they believe that knowledge corresponds to a set of isolated facts, they usually struggle to understand complex texts or to engage in self-regulated learning and are often less motivated to learn. When they believe that their capacity to learn consists of innate abilities (the math “genius,” for example), they are usually less successful in solving complex problems and often attribute less value to education. When they think that learning must happen instantly, they show less aptitude for engaging in tasks requiring more time. They are also less likely to adopt comprehensive learning strategies and are more prone to experiencing unsatisfactory results.⁹

CONCLUSION

For a more comprehensive view of epistemology in education

In our view, the above considerations demonstrate the full significance of paying particular attention to the epistemological aspect of teaching and in our conception of learning. Learning means having relationships with different areas of knowledge. For a student, it means engaging in processes that are often complex but that lead to greater freedom and autonomy. Yet such freedom cannot be acquired when the context determines

a dogmatic relationship with knowledge, any more than it can be facilitated if we assume that learning is a matter of talent or giftedness, rather than one of investment and effort.

As we have seen, multiple relationships can be woven between the various types of relationships with knowledge. Education programs prove this and are based on such connections. We have seen that relationships with knowledge likely have an impact on perseverance and on academic success; determine, in a sense, the types of learning achieved; condition, in part, the teaching and learning strategies used; influence the educational contract; orient modes of evaluation proposed to students; result in a more-or-less effective mobilization of critical thinking; and that the relationships that teachers have with knowledge influence the relationships that students have with knowledge. It seems obvious that to neglect this dimension of teaching is to impoverish the pedagogical and didactic situations proposed in the classroom.

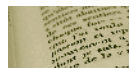
In this sense, we believe it is important to create “spaces for reflection”, through which teachers could discover their own epistemological beliefs and the effects of such beliefs on classroom pedagogical intervention. But above all, such spaces should also allow students to engage in epistemic cognition processes, and should help every student to refine, develop and embrace more complex relationships with knowledge.¹⁰ ◆

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⁹ A great many studies have illustrated such facts, including those by Dweck and Leggett (1988), Lodewyk (2007), Paulsen and Feldman (1999), Schoenfeld (1989), Schommer (1993), Schommer and Dunnell (1997), Schommer and Walker (1995).

¹⁰ Annie-Claude Prud'homme makes a proposal in this vein in her article published in this issue of *Pédagogie collégiale*: “The Hidden Origins of Knowledge: Questioning Our Beliefs and Knowledge so as to Provide a More ‘Genuine’ Education”, pp. 1-7, vol. 29 no. 1, Fall 2015 [aqpc.qc.ca/en/journal/article/hidden-origins-knowledge-questioning-our-beliefs-and-knowledge-so-provide-more].



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Mathieu GAGNON is an associate professor in the Faculty of education at the Université de Sherbrooke. His research mainly deals with the practice of philosophical dialogue with children and adolescents, ethical education, the development of critical thinking and the epistemological beliefs of students and teachers in different areas of learning.

Mathieu.Gagnon3@USherbrooke.ca

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