

College Documentation Bulletin

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THE SCIENCE OF DIDACTICS

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Introduction

The teaching profession faces multiple challenges. Teachers must develop course outlines, give their courses and evaluate what has been learned. But, as all those involved at college-level instruction know, the teaching profession is not limited to those three activities. Teachers must also take part in program development and evaluation, in the production and revision of master plans, in the development of course outlines. They must select appropriate teaching methods for the different types of content they teach. They must also carefully choose methods to seek out students' learning difficulties that are often specific to their subject matter. In addition, they must accompany students on the road to conceptual and formal understanding of their subject, in spite of the individual differences and varying learning goals. This list is far from being comprehensive but all activities referred to have one thing in common: They are fundamentally didactics-related activities.

Within educational studies, the field of didactics concentrates on the content such as school subjects, as well as teaching and learning objects (Reuter and coll., 2013; Tochon, 1999). Though this is above all a university subject and a component of educational studies, didactics is a deeply pragmatic science: it is aimed at fulfilling concrete and functional goals along with practical objectives (Tochon, 1999). As Université de Montréal professors Réal Larose and Sophie René de Cotret stated, "The didactics of a subject matter may be developed as a concrete action in the same way that, for certain people, the road grows as one walks on". ([Larose and de Cotret, 2002, p. 18](#))

1 The science of didactics is not pedagogy

Pedagogy is very demanding within the professional development of teachers, both in the sense of individual development and training activities such as the aptly-named "professional development days" ([Lapierre, 2008](#)). Highly relevant subjects such as class management or evaluation which are horizontal aspects of the teaching profession are examined. These are *horizontal* aspects in the sense that they apply to all subjects and that all teachers may be interested in them; pedagogy does not deal specifically with subject matter (Reuter and coll., 2013). Rather it examines relationships between teachers and students, between students themselves, class atmosphere, the choice of teaching methods and problems such as loss of motivation and dropping out.

However, teachers sometimes require a more *vertical* thought process focusing on their own subject matter. It is didactic questioning that will guide this vertical reflection. Didactics and pedagogy are the two pillars of educational studies and one must not set them one against the other: "These are two complementary approaches that teachers should exercise concurrently, whether they like it or not", ([Lapierre, 2008, p. 5](#)). However, one should be careful to distinguish the two, at least regarding their objects as these two pillars each represent their own set of

conceptual tools and particular answers. Didactic questions in the teaching profession find their answers within the terms of reference of the science of didactics.

Didactics focuses as much on teaching as does pedagogy but didactic questioning always revolves around knowledge to be taught; the current paradigm of didactics defines the social objectives assigned to knowledge (Tochon, 1999). Everything a teacher says in class regarding teaching of his subject matter is considered as didactics. At the post-secondary level, numerous professional reflections made by a teacher are therefore part of didactics. As CEGEP teachers are post-secondary professionals, they maintain a great amount of control over the content they teach and over the way they teach it. Works regarding didactics may help set a framework for their professional reflections.

Didactics research is aimed at answering a very basic question teachers have: How can one improve content and teaching methods (Martinand, 1986)? In the past, the answer would come by borrowing from other disciplines such as psychology, sociology and epistemology. These loans became permanent and led to the creation of didactics, a distinct discipline within educational studies. The field of didactics now possesses its markers, its theory framework, its experts who share the same challenges and seek to resolve the same sets of problems (Martinand, 1986).

As challenges and questions are often specific to the matter being taught, we speak of didactics when we mean a set of specific questions or challenges surrounding each subject matter. Thus, there exists a didactics of French, a didactics of mathematics, a didactics of history, arts, science, physical education, nursing, early childhood education, etc.

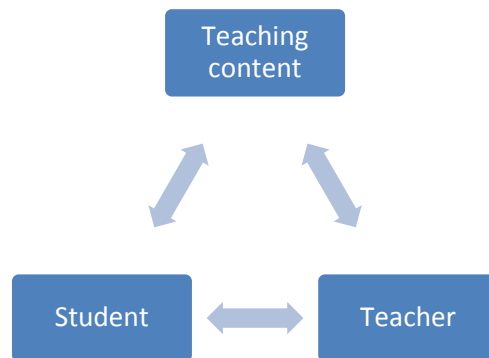
In the first section of this *Bulletin*, we will deal with three concepts that cut across all disciplines, that is to say the didactic triangle, didactic transposition and the model for didactic questioning.

In the second part of the *Bulletin*, we will suggest additional readings of different didactics for those interested in specific disciplines.

2 The didactic triangle: content, student and teacher

Probably, the most commonly known representation of didactics is the renowned didactic triangle illustrated on the following page. Even though other educational models exist, the didactic triangle adds the teacher-content relationship and the relationship with students to considerations involving teaching and learning and it is this addition that has made it successful.

This didactic triangle may be analyzed in pedagogical or didactic terms, depending on the point of view (Tochon, 1999, p. 14). Different variants exist but we will examine the most common triangle here.



The teacher-content relationship

The “content pole” distinguishes didactics from pedagogy or the psychology of education. The teacher-content relationship is entirely a question of didactics (Reuter et coll., 2013). It is characterized by ownership and transposition activities and pedagogical choices. It concerns didactics but also the epistemology of the subject matter. Teachers find themselves in a position of didactic subject in relation to their subject matter.

The student-teacher relationship

The student-teacher relationship involves what is best called pedagogy. In fact, this pedagogical relationship does not specifically take into account content. Pedagogical issues may include motivation, the question of dropping out, or the classroom environment. The teaching content may include knowledge, but also know-how, the relationship one has with knowledge, etc.

The student-content relationship

The student has, with content, a learning and connective relationship to knowledge¹. This relationship involves psychology (in particular cognitive psychology), but learning “[also] specifically involves didactics as the educational system is structured by subject matter”, (Reuter and coll., 2013, p. 17).

¹ About this translation: In the french version of the Bulletin, the author refer to «*rapport au savoir*». In other writings you can also read «Relation to knowledge».

3 Didactic transposition

Didactics deals with types of knowledge as objects of teaching and learning. Knowledge constitutes the formal, constructed, depersonalized aspect of understanding (Reuter et coll., 2013). It is therefore the sum of concepts, theories, models, procedures and attitudes that make up a subject matter. In didactics, we speak of “varieties of knowledge” - in the plural - to show their plurality. When they are reassembled in the students’ minds, these kinds of knowledge become understanding; this is the learning process.

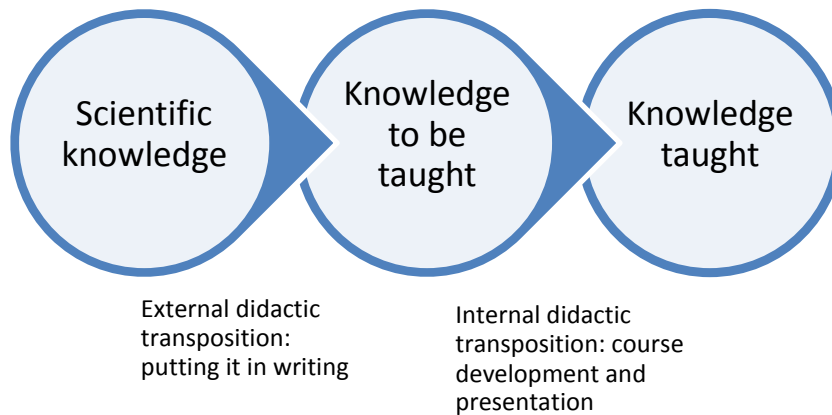
On the other hand, not all types of knowledge have the same degree of proximity with students. It is for this reason that didacticians split types of knowledge into three categories: scientific knowledge, knowledge to be taught and knowledge taught.

The first category is made up of types of knowledge that are the farthest from students. In fact, a new scientific discovery that has barely been put up for a peer review following appearance in a specialized publication does not normally constitute a kind of knowledge that CEGEP students must acquire. On the one hand, notions that are addressed are often much too advanced and probably exceed program content and on the other hand, it is only with hindsight and confirmation by the scientific community that new discoveries make their way into the current paradigm. Therefore, these types of knowledge called scientific knowledge are not directly those taught to students.

More in tune with students are types of knowledge that are explained within programs and are called “knowledge to be taught”. In order to be taught, scientific knowledge must be transposed because scientific models are too complex and interrelated for students to understand them initially (Astolfi et coll., 2008). Even if they are more accessible to students after having been selected and subdivided before being taught, they have also not been directly formulated for students. These types of knowledge are inspired by scientific knowledge and delineate what is included in the curriculum and what is not. Knowledge to be taught at the college level is determined in ministerial specifications or in course master plans. The organization, limits and formulation of these types of knowledge are aimed at teachers who are specialists in these fields. In reading them, the students would first understand very little while they will be very clear for teachers: and this is exactly what we expect them to teach students at this level.

The knowledge taught is drawn from the knowledge to be taught and teachers reformulate it in a manner that it can be learned. There are two overriding issues at this time: Knowledge taught must therefore be understood by students and it must include all that is delineated by the knowledge to be taught.

Didactic transposition is the process by which types of knowledge must flow from scientific knowledge into knowledge to be taught and finally into knowledge actually taught (see illustration below).



Didactic transposition is one of the most cross-cutting concepts within didactic fields (Reuter and coll., 2013, p. 225). In fact, whether they concern science, languages, physical education or any other field, successive didactic transpositions must be accomplished by those who decide on the content and by teachers that stand upstream from the teaching as such.

3.1 External didactic transposition: putting it in writing

In order to go from scientific knowledge to knowledge to be taught, a first didactic transposition called “putting it in writing” is necessary. By putting it in writing, you compartmentalize the scientific knowledge, taking it out of the context of research and resetting it in a classroom context (Reuter and coll., 2013). Typically, for example, at the primary and secondary school levels, the people in charge of program development at the Ministère de l’Éducation are responsible for setting it down in writing. At the college level, though this process may begin at the Ministère de l’Enseignement supérieur, de la Recherche et de la Science, it is mainly accomplished by local program committees. In fact, programs are developed based on the interpretation of teachers and college pedagogical counsellors. This peculiarity at the college level is important: ministerial specifications allow leeway to program committees regarding didactic transposition which is possible for two reasons: firstly, CEGEP teachers are experts in subject content, therefore experts regarding scientific types of knowledge; secondly, as colleges are part of the post-secondary education system, this transposition is above all the duty and responsibility of teachers.

Being responsible for deciding what must be learned is a heavy burden to shoulder; this is why having to develop or revise a program is burdensome. Nonetheless, teachers, even those new to the profession, should find this interesting as the exercise of external transposition is specific to college-level teaching, as compared to primary and secondary teaching where all external transposition is achieved outside the sphere where teachers evolve ([Bizier, 2008a](#)). This

opportunity to decide on our subject matter in order to transform it into something to be taught gives us a greater control over didactic choices that must be made in our profession. .

Certain reference types of knowledge are not necessarily scientific knowledge: Active listening in the context of social interventions or reading an architectural plan are not exactly within the scope of scientific research, but they nonetheless represent types of knowledge that constitute subject matter. Jean-Louis Martinand (1986) proposes the concept of reference social practices to refer to these other types of knowledge. In teaching languages, “the objective is less to teach knowledge than to develop language skills” (Petitjean, 1998, p. 25). Language skills are reference social practices. These reference social practices are therefore what must be achieved, actions that must be accomplished in a certain way (they are therefore “practises”) as determined by a community (they are therefore “social”) which proposes them as guidelines (they therefore act as “references”) (Martinand, 1986).

Following didactic transposition, certain objects are exclusively created in order to help learn a specific type of knowledge. Thus, grammar as taught in schools is not a scientific type of knowledge. It was simply created so that we could teach it in a classroom setting. The same could be said of the periodical table of chemical elements: Mendeleev had didactic motivations in classifying the elements that were known during his time into families according to their properties. It turned out that these properties were periodical, the periodicity having only been used later by chemists.

Didactic transposition is a kind of reflection and action on the content of subject matter. Nicole Bizier sees this quite positively: “We are giving knowledge its rightful place within the didactic triangle which because of pedagogical development has lately given priority to aspects of the teacher-student relationship and the student-content relationship” ([Bizier, 2008a, p. 39](#)).

3.2 Internal didactic transposition: course development and presentation

The second component of didactic transposition requires a rather more internal transposition in order to go from knowledge to be taught to knowledge that is taught. Teachers accomplish this transposition in a very practical manner, for instance, when they write out their course outlines at the beginning of each term, when they choose which content they will in fact cover, when they prepare each class, when they select the examples and exercises they will give out during a given class. This is because, even in these day-to-day actions, the teachers’ anchor point remains the types of knowledge to be taught, put in writing by the program via the course master plans.

Some authors, including Chevallard (1985), reduce didactic transposition to just what occurs outside the classroom. However adjustments are often required during a course per se and these adjustments (rhythm, probing, even evaluation methods) are based on a transposition mechanism. Petitjean believes that didactics plays a role regarding teachers in the classroom: “Within their classrooms, teachers are far from being powerless agents limited by external didactics transpositions, but, based on their training and their involvement in their work (for

instance, project pedagogy), they are the single most important artisans in the didactic transpositions that depend upon discursive events within a teaching session”. (1998, p. 23).

But let us look further into the course preparation itself. Nicole Bizier notes that teachers new to the profession, who probably first imitate in a natural and beneficial manner their own teachers at the beginning of their careers, sometimes adopt their predecessors’ material and content without questioning these elements ([Bizier, 2008b](#)). Yet, the choice of references (manuals and reading lists) in a CEGEP-level course, as well as clarification of these choices based on a solid reasoning, constitute “a major professional didactic act” ([Bizier, 2008a](#)). However, in order to make these choices, teachers must fully understand the limits regarding the knowledge to be taught in addition to those concerning scientific knowledge. Didactic transposition enlightens the reflection of teachers and of those who decide upon the subject matter.

4 Didactic questioning at the college level

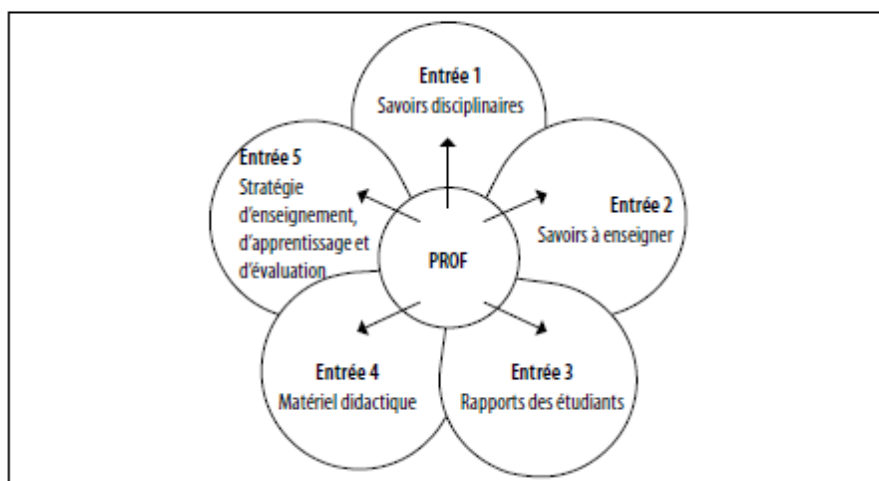
Various issues involving external and internal didactic transpositions by CEGEP teachers generate didactic questioning that is specific to the college level. In 1997, [Turcotte](#) identified some of the questions regarding didactics that may be examined:

“What form of teaching is best suited to the types of knowledge I must transmit?”

“How can my teaching practice take into account my students’ strengths and weaknesses and lead them to my course objectives?”

“What means must I adopt in my teaching practice to build on the positive attitudes and perceptions and counter the negative aspects?”

Regarding this type of questioning, the Performa work group on teacher knowledge of teaching subjects (GT-SEEM) has proposed a model for didactic questioning that is specific to issues at the college level (Bizier, 2009). This model called the “flower” of didactic questioning allows us to place the five components that are required to make the questioning successful.



Reference : *L'impératif didactique au cours de l'enseignement collégial*, Bizier 2014, p. 33

4.1 Subject-related knowledge and knowledge to be taught

Following the didactic transposition, the two first components or means of entry into didactic questioning are in fact types of knowledge. First of all, scientific knowledge which the GT-SEEM calls subject-related knowledge or teachers' specialized knowledge, and then, knowledge to be taught.

Concerning scientific knowledge, it is understood that CEGEP teachers are above all experts in their respective fields. It is for their specific expertise that they were hired as CEGEPs are in the post-secondary education network. But knowledge of subject content and pedagogical content knowledge² are two different things³. If the former depends on expertise within a field, the latter adds a series of didactic questions: What content should I teach? In what order? How should I teach it? So, for instance, a physics teacher specialized in his field must not only know Newton's three laws, but he must also reflect on how they should be taught, taking into account difficulties the students may encounter. A CEGEP teacher is more than a physicist: he is a physicist who knows that students may believe that constant movement requires constant force. Such an erroneous concept was diagnosed through didactic research, and a physics teacher's work must be based on research results and on his own professional experience. Given the quantity and variety of preconceived, misunderstood and erroneous ideas that science students may have, the teacher must therefore consider this component of didactic questioning as fundamental.

4.2 The relationship with knowledge

According to the constructivist perspective of education, students each build their knowledge from what they have been taught. Nevertheless, students do not only develop knowledge but

² On «Pedagogical Content Knowledge» : Gess-Newsome, Julie and Lederman, Norman G. (1999). *Examining Pedagogical Content Knowledge : The Construct and Its Implications for Science Education*, The Netherlands: Springer Science & Business Media (Kluwer Academic), 292 p. [Ebook available with a CDC's personal Code. [Ask for you code](#)]

³ In the [french version of this Bulletin](#), you can read here a French translation for «Pedagogical Content Knowledge», by Raymond (1998).

also their relationship with knowledge. This didactic concept designates “the cognitive and socio-psycho-affective relationship that students maintain with different types of content and which partly determines their learning experience” (Reuter et coll., 2013, p. 189). The relationship with knowledge is an important component of didactic questioning as conflicting relationships with knowledge can produce learning difficulties. This is a highly didactic question as the relationship with conflicting types of knowledge are more often linked to the subject matter being studied rather than to the classroom or school in general. When didactic questioning involves the student, it is often questioning his relationship to knowledge.

The relationship with writing as a form of knowledge, a subject that has been studied in didactic research is an example of a relationship with knowledge that might be conflicting. Students are called on to write both in school and in day-to-day life and there is a cognitive break between these two related activities: we often hear students say that they don’t pay attention to the quality of the language they use in their emails because they consider that emails are less important than their class work, even when they are emailing their teachers. One of the challenges teachers face, in languages as in other subjects, is to awaken students to the importance of the written language in all settings, even the most informal ones.

The relationship with knowledge may also be the “relationship with one’s self as being more or less able to learn a given subject” (Charlot, 1997, quoted by Reuter and coll., 2013, p. 190). A student who is going back to school to study nursing, for instance, and who has to take a remedial class in chemistry to be admitted into the program could experience such a conflicting relationship. On the one hand, she may find it hard to grant a certain value to the content of the chemistry course as it is far from her ambitions or interests and on the other hand, she may perceive herself as being unable to understand chemistry. The chemistry teacher will therefore have to adapt his teaching methods in order to allow the student to experience a learning success early on in the course in the hope of showing her that she can succeed.

4.3 Didactic material and strategies regarding learning and evaluation

While the first three components of didactic questioning regarded sources or “basic elements teachers use in planning courses or programs”, ([Lapierre, 2008, p. 8](#)), the two final components stand mainly as resources or “technical and strategic means that allow one to go from the planning stage to interventions” ([Lapierre, 2008, p. 8](#)).

The question of didactic material leads teachers to evaluating the quality of the material that is available on the market and maybe considering the option of producing their own didactic material. Selecting a manual can be a complex task given the number of documents that are available in certain subjects, notably in science and mathematics. These two tasks, choice and production, are based, consciously or not, on didactic considerations: First of all, is the content you want to cover available in this material? This question means that teachers must clearly establish their own requirements regarding their course. For an experienced teacher, the question is rather easy to answer. But in the case of a new teacher, the difficulty of knowing what in fact must be included in the course content adds to the evaluation of actual teaching

material. Such an evaluation is relevant however even if only to take stock of concepts to be covered.

In addition to examining the completeness of the content of material being assessed, teachers must look at the presentation: Is the content offered in a way that it will stimulate learning? Considerations regarding students' relationship with knowledge, notably regarding their natural interest (or disinterest) for the subject matter, must be part of the reasoning leading to the selection of didactic material or to its creation by teachers.

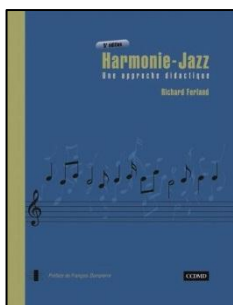
The learning and evaluation strategies component is the most pedagogical of the five as it is based on the pedagogical concept of evaluating learning, a concept that is more horizontal than vertical. But beyond the fundamental principles of docimology, you certainly don't use the same evaluation tools to assess the ability to factorize a polynomial and the ability to print a silicon wafer. Types of knowledge – declarative, procedural or conditional – or their taxonomic level determine the choice of evaluation strategies. Similarly, mathematical and engineering physics notions, for example, are not evaluated in the same manner. Questioning by teachers who wish to select the best evaluation tools is therefore pedagogical and didactic.

5 Concepts and objects specific to didactics-related subjects: suggested readings

Didactics of Arts and Music



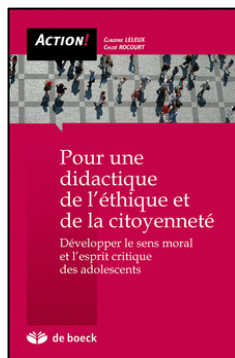
Arts plastiques : éléments d'une didactique-critique / Bernard-André Gaillot. Paris, PUF, 1997. (Available at the CDC, class number: [726852](#))



Jazz harmony : A didactic approach / Richard Ferland. Centre collégial de développement de matériel didactique, 2013. (Available at the CDC, class number: [788608](#))

Terrien, P. **Pour une didactique de l'enseignement musical.** In **Les didactiques en question(s)** / M.-L. Elalouf, A. Robert, A. Belhadjin & M.-F. Bishop (dir.). Bruxelles, De Boeck, 2012, p. 170-180. (Available at the CDC, class number: [788431](#))

Didactics of Ethics

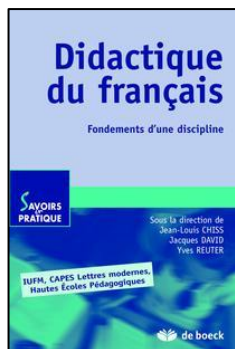


Pour une didactique de l'éthique et de la citoyenneté / Claudine Leleux. Bruxelles, De Boeck, 2010. (Available at the CDC, class number: [787572](#))

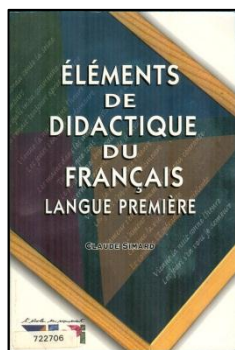
Didactics of Early Childhood Education

[Le savoir didactique en éducation à l'enfance \[ressource électronique\] : un savoir professionnel à comprendre](#) / Marie Alexandre. 2006.

Didactics of French



Didactique du français : fondements d'une discipline / conducted by Jean-Louis Chiss, Jacques David, Yves Reuter and coll. Bruxelles, De Boeck, 2008. (Available at the CDC, class number: [787005 2008](#))



Éléments de didactique du français langue première / Claude Simard. Saint-Laurent, Éditions du Renouveau pédagogique, 1997. (Available at the CDC, class number: [722706](#))

Didactics of Geography

Retour sur les recherches en didactique de la géographie: quelles intelligibilités? Quels modèles de compréhension? / Niclot, D., & Philipot, T. In *Les didactiques en question(s)* / M.-L. Elalouf, A. Robert, A. Belhadjin & M.-F. Bishop (dir.). Bruxelles, De Boeck, 2012, p. 202-210. (Available at the CDC, class number: [788431](#))

Didactics in Health services: technical training program

[What contributory scientific disciplines mean to technical programs](#) / Sophie Maheu.
« Pédagogie collégiale » 21(2), 2008

Didactics of History

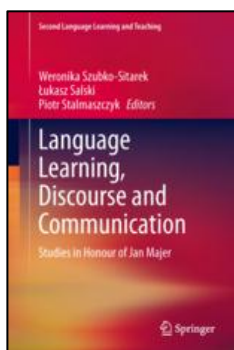
[Fondements et pratiques de l'enseignement de l'histoire à l'école : traité de didactique](#) / Robert Martineau. 2010.

Didactics in Information and communication technology



[Handbook of Research on Educational Communications and Technology](#) / Spector, J.M., Merrill, M.D., Elen, J., Bishop, M.J. (Eds.). Springer Science & Business Media, 4th ed. 2014.

Didactics of Language and communication

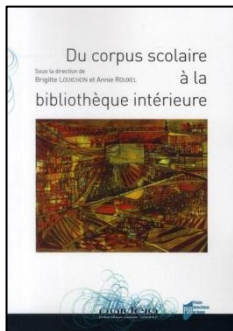


[Language Learning, Discourse and Communication : Studies in Honour of Jan Majer](#) / Szubko-Sitarek, Weronika, Salski, Lukasz, Stalmaszczyk, Piotr (Eds.). Springer Science & Business Media, 2014

Didactics of Literature

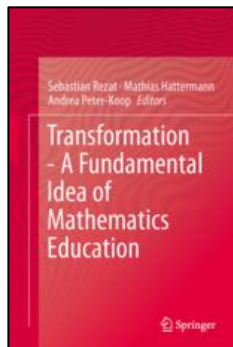


Enseigner la littérature au secondaire et au collégial : une démarche stratégique / Jacques Lecavalier, Suzanne Richard. Montréal, Chenelière Éducation, 2010. (Available at the CDC, class number: [787451](#))

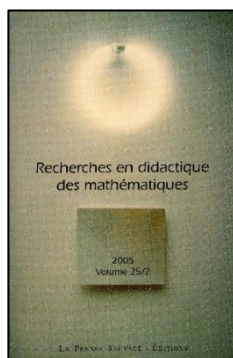


Du corpus scolaire à la bibliothèque intérieure : actes des neuvièmes rencontres des chercheurs en didactique de la littérature, April 4, 5 and 6, 2008. Rennes, Presses universitaires de Rennes, 2010. (Available at the CDC, class number: [787466](#))

Didactics of Mathematics



[Transformation - A Fundamental Idea of Mathematics Education](#) / Rezat, Sebastian, Hattermann, Mathias, Peter-Koop, Andrea (Eds.). Springer Science & Business Media, 2014.



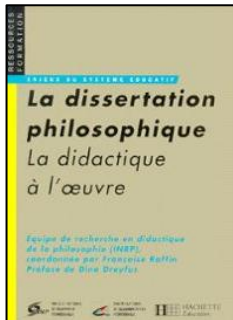
Recherches en didactique des mathématiques. Grenoble, La pensée sauvage, 1999. (Available at the CDC, class number: [728041](#))

Perspectives théoriques en didactique des mathématiques / Heinrich Bauersfeld, Montréal : Université du Québec à Montréal, Centre interdisciplinaire de recherche sur l'apprentissage et le développement en éducation, 1993. (Available at the CDC, class number: [702128](#))

Didactics of Paralegalism

[La didactique appliquée à la recherche juridique informatisée](#) / Jean-François Cloutier. «Pédagogie collégiale», 2002.

Didactics of Philosophy



La dissertation philosophique : la didactique à l'oeuvre / Research team into the Didactics of Philosophy (INRP), coordinated by Françoise Raffin. Paris, Hachette, 1994. (Available at the CDC, class number: [705610](#))

Didactique of Physical Sciences



Rénovation de l'enseignement des sciences physiques et formation des enseignants : regards didactiques / Jean-Marie Boilevin. Bruxelles, De Boeck, 2013. (Available at the CDC, class number: [788494](#))



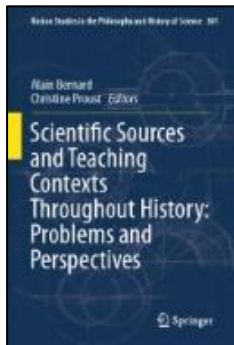
[Frontiers of Fundamental Physics and Physics Education Research](#) / Sidharth, Burra G., Michelini, Marisa, Santi, Lorenzo (Eds.). Springer Science & Business Media, 2014.

Second Language Didactics



Regards sur la didactique des langues secondes / Collective led by Claudette Cornaire and Patricia M. Raymond. Outremont, Logiques, 2001. (Available at the CDC, class number: [728003](#))

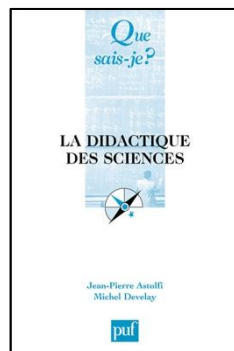
Didactics of Sciences



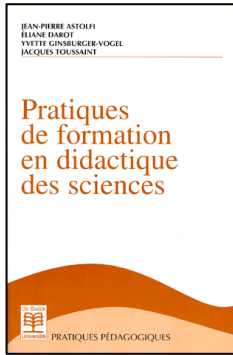
Scientific Sources and Teaching Contexts Throughout History : Problems and Perspectives / Proust, Christine, Bernard, Alain. Springer Science & Business Media, 2014



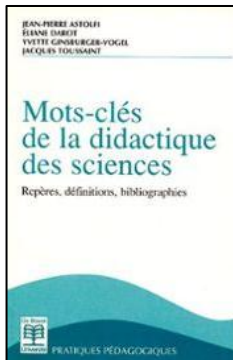
Topics and Trends in Current Science Education / Bruguière, Catherine, Tiberghien, Andrée, Clément, Pierre (Eds.). Springer Science & Business Media, 2014.



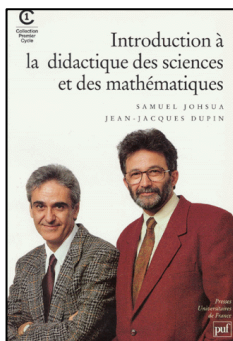
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Conclusion

CEGEP teachers are often more concerned with didactics than pedagogy. At the post-secondary level, the content to be taught is more important than socialization between people. Students who are no longer required to go to school have a clearer view of their roles and responsibilities within the classroom and outside it. They are less concerned with questions of dropping out and motivation. Knowledge and know-how at the college level lead to a greater concern with making it easier to understand difficult notions. It becomes essential that teachers be in control of content they have to teach. Their specialization, initially regarding subject matter, should lead them to ask questions regarding didactics.

We are asking questions of a didactic nature when we try to express our subject-related knowledge for which we are experts in order to transform it into knowledge destined for our students. Pedagogical counsellor and didactics researcher, Nicole Bizier, recently stated that “didactic questioning sets the teacher on the path of the first reason why he chose his field and reintroduces him to his passion and ability to act as a cultural transmitter and awakener of minds,” (Bizier, 2008). She proposes that pedagogical counsellors use the passion for a given field to begin accompanying teachers in a manner that differs from the traditional approach (Bizier, 2010), where the counsellor sets himself out as a pedagogical expert who relinquishes responsibility for content expertise, and by the same token, field expertise to the teacher.

Didactic questioning when developing, revising or evaluating programs could benefit from basing itself on didactics and didactic concepts. Such a reflection could help ensure that subject content as a central element of post-secondary programs be transmitted to students with all the passion that drives the teachers.

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