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Developing critical thinking
Part two

Resource selection and writing
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Introduction

One of school's purposes is to help students develop critical thinking. Do schools fulfill this role adequately? Some of us will say yes and others will say no. However, all of us will agree that advancing intelligence has always constituted both an objective and a challenge for educators. Over the past few decades, this education goal has crystallised around the development or strengthening of critical thinking, particularly in the United States. There are several reasons why we should focus on enhancing greater intellectual rigor in students, notably to make them better learners.

The purpose of this bulletin is to provide teachers with the tools they need in order to help their students become critical thinkers. The first part defined what we call "critical thinking". This second part is devoted to the principles and practice of critical pedagogy while providing examples of critical thinking used in pedagogy.

Summary

1. **Critical thinking pedagogy**

■ Current state and challenges

■ Principles and strategy

■ Interventions at the college level

2. **Critique of pedagogy**

■ Advocating for a humanistic school

■ Critique of the educational reform

■ Critical analysis of 14 pedagogical myths

3. **Conclusion**

4. **Further reading**

1. Critical thinking pedagogy

This section is about critical thinking pedagogy. We first present the views of a few authors on the current state of critical thinking pedagogy and the challenges to be met. We then present the principles of critical thinking and a critical thinking teaching strategy while touching briefly on the modes of evaluation of this type of thinking. We then present a few interventions at the college level centred on developing critical thinking in specific courses and programs of study.

Current state and challenges
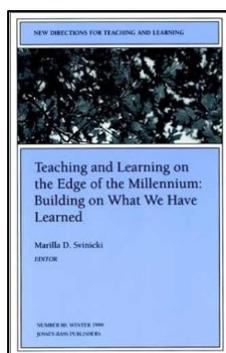
■ **HALPERN, D.F.** (1999). **Teaching for Critical Thinking: Helping College Students Develop Skills and Dispositions of a Critical Thinker**, *New Directions for Teaching and Learning*, No. 80 (Winter), pp. 69–74. (Available at the CDC, Call number 723587 v. 80)

In this 1999 article, the author **reviews the development of critical thinking**. In her opinion, **the various approaches share a set of common assumptions**: there are identifiable critical thinking skills that can be taught and learned, and when students learn these skills and apply them appropriately, they become better thinkers. In contrast to the 1980s editions of *New Directions for Teaching and Learning*, **there is the recognition that critical thinking instruction must also address student dispositions**: It is not enough to teach college students the skills of critical thinking if they are not inclined to use them. The changing nature of technology has also increased the need for the skills of critical thinking, particularly the ability to judge the credibility of an information source on the Internet.
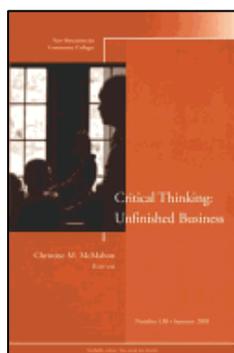
■ **BARNES, C.A.** (2005). **Critical Thinking Revisited: Its Past, Present, and Future**, *New Directions for Community Colleges*, No. 130 (Summer), pp. 5–13. (Available at the CDC, Call number 723679 v. 130)

This text, published in 2005, highlights **what had been accomplished in critical thinking in U.S. community colleges[1] since the early 1990s, what was learned, and what is still left to do.** According to the author, critical thinking was part of the mission and practices of many institutions. She notes the publication of tens of thousands of books, articles, Web sites, and monographs on the topic. Referring to LaGuardia Community College and Alverno College, Barnes notes the engagement of teachers from a variety of disciplines and the opportunity to critically examine their own disciplines. According to the author, **the cross-disciplinary immersion of critical thinking into the curriculum seems to be a key component** to institutionalizing its teaching.

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[1] **Community college:** institution of post-secondary studies with two and three-year programs, offering courses that can be recognized in the pursuit of a diploma of collegial or university studies. (Legendre, 2005, p. 231)

While the critical thinking movement of the 1980s and 1990s resulted in a great number of activities and publications, it is nevertheless **not clear that this fundamentally changed the way people teach.** Critical thinking is significantly anchored within curricula and the teaching objectives, but developing critical thought is not supported and taught systematically in daily instruction. The author explains this observation by the fact that **teachers are not educated in critical thinking,** and **have no time or other instructional resources** to integrate critical thinking into their daily instruction. **To address these shortcomings, she proposes a comprehensive professional development model** to help faculty. The 10 components of this model, presented at the end of the chapter, include among others, involving faculty in planning, ensuring institutional support, and critical thinking assessment practices.

■ **PAUL, R.** (2005). **The State of Critical Thinking Today**, *New Directions for Community Colleges*, No. 130 (Summer), pp. 27–38. (Available at the CDC, Call number 723679 v. 130)

Richard Paul analyzes the current **state of critical thinking in higher education**. He finds **three disturbing facts**. 1) Most college faculty at all levels lack a substantive concept of critical thinking. 2) Most faculty **don't realize they lack a substantive concept and instead believe** they understand critical thinking sufficiently and **are already successfully teaching it within their discipline**. 3) Despite "reform" efforts, lectures, rote memorization, and short-term study strategies are still the norm in college instruction and learning today.

Richard Paul establishes **essential connections between a substantive concept of critical thinking and teaching and learning**. Each discipline generates a *form of thinking* (biological, historical, sociological, etc.). **A skilled thinker is a skilled learner**: Critical thinking provides the tools necessary for acquiring the basic concepts of a topic or in a discipline. One of the most important abilities is for students to learn to direct and evaluate their own thinking while considering the thinking of others.

The author reports the **results of an extensive study of the faculty of 36 colleges and universities** in relation to the question "To what extent are faculty teaching for critical thinking?" In summary, **the study revealed how little typical faculty members know about critical thinking and yet—in contrast— how much they think they know**. According to Richard Paul, real development of critical thinking requires knowledge of a robust concept of critical thinking applied across the curriculum, a new emphasis on engaging students to think critically and deeply through course content, and a long-term plan for institutional improvement because **"deep change takes time, patience, perseverance, understanding of the problematics, and sustained commitment."**

■ **CALDERONE, S.M.** (2005). **Critical Thinking Sources and Information for Community College Educators**, *New Directions for Community Colleges*, No. 130 (Summer), pp. 97–106. (Available at the CDC, Call number 723679 v. 130)

This text **provides relevant information and refers to critical thinking tools** for college faculty, administrators, and other college staff members who want to implement new or strengthen existing critical thinking capabilities.

Some 15 methods relate to **pedagogical strategies** useful in promoting the development of critical thinking: for example: Kitchener and King's seven-stage reflective judgment model, strategies for online or remote teaching, and the Perry scheme of intellectual development with its practical classroom applications. Calderone also mentions the Foundation for Critical Thinking on the Critical Thinking Web site, which contains four tools for **evaluating critical thinking skills**. The California Academic Press and Insight Assessment Web site has a number of critical thinking assessment tools. Calderone also mentions the popular Holistic Critical Thinking Scoring Rubric (HCTSR), which can be administered to college faculty and students alike to measure conceptual understandings of critical thinking, intellectual habits, and individual traits and dispositions. Three references are given for critical thinking from an **organizational perspective**, including an article outlining the effects of campus culture on students' critical thinking.

Principles and strategy
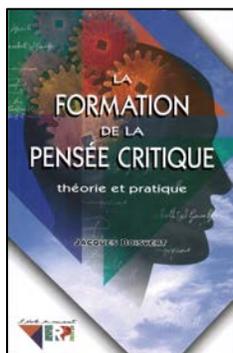
■ **BOISVERT, J.** (1999). *La formation de la pensée critique. Théorie et pratique*, Saint-Laurent (Quebec), Éditions du Renouveau Pédagogique, Bruxelles, Éditions De Boeck Université. (Available at the CDC, Call number 723069)

The principles of critical thinking instruction
Global teaching model

Chapter 2 of Boisvert's book deals with the principles of teaching critical thinking. He promotes a **global teaching model** to which several approaches can be linked. The aim of **the multidimensional approach** is to provide a comprehensive overview of the capabilities, attitudes, and dispositions necessary for critical thinking and aims to take them all into consideration in teaching. Robert Ennis's list of dispositions and attitudes is an example of this approach. **The holistic approach** combines teaching thinking with communication for the purpose of improving a student's intellectual functioning. From this perspective, the modes of communication, such as writing, oral presentation, and communication in a small group drive the expression of thought. **The enculturation approach,** connected to teaching thinking, emphasizes the overall educational environment and recommends that teachers create a thinking culture in their class by means of numerous interactions among students themselves and between the students and teachers, using all the opportunities we have for thinking. **These three teaching approaches from the global model are then compared to the four following approaches, which seem less effective** in explaining this judgment: the skills approach, the problem-solving approach, the logic approach, and the information processing approach.

Transfer of learning and metacognition

Chapter 2 then goes on to describe the teaching choices and presents their advantages in order to guide the principles of critical thinking instruction. In addition to considering several dimensions of critical thinking, the global teaching model is also concerned with the **transfer of learning**. The **infusion** approach, which explains the general principles of critical thinking and applies them to a course in a certain discipline, helps with learning transfer. **Metacognition** promotes the autonomous practice of transfer as well as identifying cognitive deficiencies in order to correct them. The **three objectives of critical thinking teaching** are: teaching *for* thinking, teaching *of* thinking, and teaching *about* thinking. These objectives ensure meeting the conditions of teaching to guarantee learning as well as activating

and transferring the dimensions of critical thinking selected for the course. The purpose of the exercise and questions on reflections at the end of the chapter is **to bring teachers to take action** by making personal choices for their teaching that meet their needs and by formulating thinking objectives adapted to their courses.

Critical thinking teaching strategy

Chapter 3 concretely and precisely describes the method for developing a teaching strategy centred on the development of critical thinking. The first section of the chapter **sets forth a cognitive approach to teaching and learning**, so as to ensure the development of critical thinking during the course, and presents the principles of learning and the consequences for teaching. The second section details each of **the five stages of the development of a critical thinking teaching strategy**. The third section gives **15 examples** of critical thinking teaching strategies suitable for different levels of education.

The five stages of the development of critical thinking teaching strategy

A course on critical thinking requires precise and operational planning. The teaching strategy is based on Beyer's work (1988, 1987) and consists of **five steps a teacher must take**, the first four *before* intervening in class.

1. Choosing the dimensions of critical thinking to teach
2. Describing the selected dimensions of critical thinking
3. Organizing an environment conducive to critical thinking
4. Planning the teaching of the critical thinking dimensions selected
5. Evaluating the quality of teaching and learning of the dimensions of critical thinking in the course.

Examples of the application of a critical thinking teaching strategy at the various levels of education

The 15 examples affect all levels of education and their presentation respects the order in which academic progress is made from elementary school to university. **They illustrate the diversity of approaches that can be adopted** and encourage teachers to **draw on the paths offered to develop their own strategy** to meet their specific needs.

Given that these examples are excerpts from books, we recommend that teachers refer to the sources indicated in the book to have a better understanding of the strategy outlined and the theoretical principles on which they are based. The titles given to examples designate the targeted critical thinking dimension, the task to perform, the topic, or the preferred teaching mode.

1. Problem solving – Inductive mode
2. Differentiation of characteristics – Inductive mode
3. [Problem solving][2] – Survival of beluga whales
4. Reflection on critical thinking
5. Scientific reasoning study – Do snails see?

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[2] Editor's note: Add the pedagogical formula suggested for this activity.

6. Handling stress through stretching
7. Risk/benefit assessment (of a risk-oriented decision)
8. Distinguishing facts from value judgments
9. Identifying stereotypes
10. Critical analysis of causal reasoning
11. Critical analysis of inductive reasoning
12. Critical analysis of fallacious arguments
13. Critical reflection on the media
14. Identifying unstated assumptions
15. Case study

For further reading, note the following:

■ **WILLINGHAM, D.T.** (2007). **Critical Thinking: Why Is It So Hard to Teach?**, *American Educator* (Summer), pp. 8–19.

In this article, Willingham explains why critical thinking is so hard to develop and to teach. He explores how students acquire a specific type of critical thinking: thinking scientifically. According to him, students tend to focus their thinking on the surface structure of a problem instead of its deep structure. He stresses the importance of metacognitive strategies to the implementation of critical thinking. Being able to think critically requires domain knowledge and practice.

To teach critical thinking, he offers the following strategies, which he considers to be in line with research results:

• Special programs aren't worth it
• Thinking critically should be taught in the context of subject matter
• Critical thinking is not just for advanced students
• Student experiences offer entrée to complex concepts
• To teach critical thinking strategies, make them explicit and practise them

■ **BOISVERT, J.** (1999). **Dix conditions d'une pédagogie de la pensée critique**, in GUILBERT, L., J. BOISVERT et N. FERGUSON. *Enseigner et comprendre: le développement d'une pensée critique*, Sainte-Foy (Quebec), Les Presses de l'Université Laval, pp. 99–113. (Available at the CDC, Call number 726579)

Under what conditions can educational interventions foster the development of critical thinking in our students? Boisvert suggests organizing the points of the answer to this question in the form of **10 conditions to be met in critical thinking pedagogy:**

1. Focus critical thinking teaching on both attitudes and skills.
2. Pursue three complementary objectives of teaching thinking.
3. Promote the transfer of critical thinking to other situations.
4. Master the discipline or the course material.
5. Know how to integrate the discipline or course material into a process targeting the development of critical thinking.
6. Have the motivation to learn the course material.
7. Study the course material in depth.
8. In the academic setting, ensure ways of acting that are consistent with critical thinking.
9. Counter ambient utilitarianism.
10. Persevere in the desire to change the pedagogical situation.

■ **BOISVERT, J.** (1999). *La formation de la pensée critique. Théorie et pratique*, Saint-Laurent (Quebec), Éditions du Renouveau Pédagogique, Bruxelles, Éditions De Boeck Université. (Available at the CDC, Call number 723069)

Critical thinking—Modes of evaluation

The fourth and final chapter of Boisvert's publication addresses the modes of evaluating critical thinking. The author first presents considerations that precede the choice of these modes, and then presents the main ones.

Prior considerations

The three following aspects must be taken into consideration to facilitate the choice of critical thinking assessment modes:

1. The importance of an accurate definition of critical thinking
2. The awareness of the goals of the evaluation
3. The diversification of methods of evaluation

Main critical thinking assessment modes

The instruments used to measure and gather the information on critical thinking can be quantitative or qualitative, or can combine both evaluation techniques. While an author like Facione (1986) believes that it is possible to evaluate the critical thinking of very large groups using automated scoring instruments, others, such as Marzano and Costa (1988), consider this to be impossible and advocate the use of qualitative assessment techniques. Yet others, such as Guilbert and Pelletier (1990), favour a mixed approach that is both quantitative and qualitative. Here are the four main modes of evaluation of critical thinking:

1. Multiple-choice tests
2. Observation
3. Interview
4. Texts written by students

The following section presents a critical thinking assessment mode in nursing that calls on observing students, interviewing students, and having them draft texts.

■ **LAVERTU, É.** (2013). **Évaluer la pensée critique en contexte de stages en soins infirmiers: proposition d'un outil d'évaluation**. (Master's thesis, Université de Sherbrooke)

The purpose of this research was to design and validate a tool to measure the mobilization of critical thinking in nursing during internships in a clinical setting. The project was conducted in collaboration with the members of the Nursing Department of Cégep de Sainte-Foy. The **definition of critical thinking in nursing** selected is: "Critical thinking in nursing is a process of rational, intentional, reflexive, and self-regulating thought used by the nurse in order to produce a nursing judgment or to perform a nursing act adapted to the context of the situation in accordance with professional and ethical standards" (p. 245).

The final version of the tools is a grid with nine critical thinking evaluation criteria and four levels of development. The appendix (Annexe F, pp. 243–249) presents this grid (French). The first part evaluates **four dispositions of critical thinking**: intellectual curiosity; questioning data, information, and the ideas of others; accountability; and flexibility The second part evaluates **five intellectual skills of critical thinking:** a reasonable and intentional thinking process; a reflective thinking process; a regulatory thinking process; a process adapted to the context; and a process that complies with ethical and professional standards.

For both parts of the grid, the student first makes a self-assessment of the mobilization of his or her critical thinking and then submits the self-assessment to the internship teacher at the agreed time. The teacher then performs the evaluation and plans a meeting with the student to explain the evaluation and give feedback. Appendix G (French: pp. 250–260) presents the nursing internship companion guide for students and teachers. The guide defines the skills and attitudes of critical thinking presented in the evaluation grid, and gives examples of relevant questions for the evaluation or self-assessment of critical thinking.

Interventions at the college level

In college courses

What is the situation in regard to developing critical thinking in courses? Several attempts to foster the development of critical thinking have been carried out in specific courses. Here are three examples at the college level:

■ **BEAULIEU, R.** (2005). **Élaboration de stratégies pour l'enseignement de la pensée critique dans les cours de philosophie au collégial**. (Master's thesis, Université de Sherbrooke)

Beaulieu developed a directory of pedagogical strategies for developing critical thinking in college philosophy courses while also ensuring the teaching of content aimed at mastering the discipline's competency elements. The pedagogical material, focused on **an approach that integrates the teaching of critical thinking and writing tasks**, was validated by a group of experts.

The two following texts by Beaulieu are suggested for further reading:

◼ **BEAULIEU, R.** (2005). **Développer la pensée critique dans les cours de philosophie**, in *Actes du 25ᵉ Colloque de l'Association québécoise de pédagogie collégiale*, Montreal, Association québécoise de pédagogie collégiale, pp. 133–140.

After presenting the questioning underlying his research, Beaulieu presents some theoretical models that underpin the teaching of critical thinking, and describes six teaching strategies applicable in the Quebec college context.

◼ **BEAULIEU, R.** (2005). **Stratégies pour l'enseignement de la pensée critique dans les cours de philosophie au collégial**.

This text of some thirty pages is a guide of strategies useful for teaching critical thinking, especially in the second philosophy course, which deals with conceptions of the human being. It contains a wealth of content and offers concrete and practical methods for developing the critical thinking of students. **The 19 teaching strategies presented are adapted from a publication by Bean (2001) and are grouped according to the first three of four stages of development inspired by Kolb (1985)**. Here are the titles of an example of a writing activity for each of the three stages: 1) letter of opinion (concrete experience); 2) broad exploration (reflective observation); 3) portfolio (conceptual abstraction). Each of the 19 strategies mentions the skills and the attitudes targeted by the activity, the pedagogical intentions, the description of the writing task, and the theoretical justification of the activity.
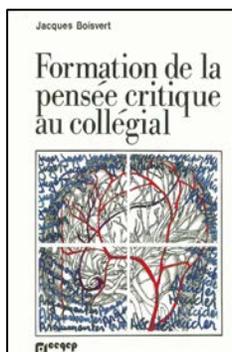
◼ BOISVERT, J. (1996). *Formation de la pensée critique au collégial. Étude de cas sur le développement de la pensée critique en première année du collégial dans un cours de psychologie* (PAREA), Saint-Jean-sur-Richelieu, Cégep Saint-Jean-sur-Richelieu.

Boisvert seeks to answer the question "To what extent does teaching a course of a certain discipline–*Introduction to psychology*–given in one semester in accordance with a concern for intellectual development focused on critical thinking, develop this kind of thinking in the first year of college?" This case study, which aimed to explore the conditions under which and the degree to which certain dimensions of critical thinking developed, **showed that during the semester, students made progress in the four following targeted abilities:** judging the credibility of a source, analyzing arguments, presenting a position by means of an oral or written argument, and following problem-solving steps.

◼ **MEDIAVILLA, B.** (2013). **Concourir pour développer son esprit critique**, *Pédagogie collégiale*, Vol. 27, No. 1, pp. 35–36.

As part of the course *Discours critique en cinéma* (critical discourse on cinema) for fourth-semester students enrolled in the Cinema profile of the Arts and Letters program at her college, Mediavilla asked her students to individually produce two critiques of works in contention for the *Prix collégial du cinéma québécois*. This authentic learning context requires rigorous preparation and **leads students to very**

significantly improve their ability to talk about a film. As the teacher noted: "Speaking in a group, holding intensive sessions, and defending their point of view in a real regional or provincial context, makes a real difference to them." (p. 36).

In college programs of study

Developing critical thinking is an essential objective in student education. To what extent is this objective attained in programs of study? The following research, carried out in both general education programs and technical programs, provides some answers.
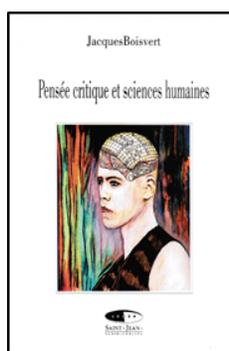
■ BOISVERT, J. (2002). *Pensée critique et sciences humaines. Étude sur l'évolution de la pensée critique des élèves du programme de sciences humaines au collégial* (PAREA), Saint-Jean-sur-Richelieu, Cégep Saint-Jean-sur-Richelieu.

Drawing on the critical thinking concepts of Robert Ennis and Richard Paul, Boisvert's research focused on the development of critical thinking in students enrolled in Social Science throughout the four semesters of their program. The results revealed a **marked overall improvement in their critical thinking during their program of study, in their abilities including analysis and presenting arguments and in their attitudes, especially open-mindedness**. Some dimensions of critical thinking, however, improved less: in terms of abilities, in particular, judging the credibility of a source and problem solving, and in terms of attitudes, particularly, objectivity, rigour, and perseverance.

■ BAUDRY, P. (2010). *Étude de la pertinence et de l'efficacité des stratégies pédagogiques favorisant le développement de la pensée critique en Techniques d'orthèses et de prothèses orthopédiques*. (Master's thesis, Université de Sherbrooke)

Baudry conducted a study on the relevance and effectiveness of strategies that promote the development of critical thinking in the program of study *Techniques d'orthèses et de prothèses orthopédiques*. Overall, the results achieved using a number of data collection instruments helped **validate the pedagogical strategies developed and used during the third year of the program**. This research has led to a better understanding of the whole of pedagogical processes associated with the development of professional and intellectual competency in the program.

■ DUCHESNEAU, D., M.-P. LACHAÎNE et C. PROVOST (2013). **L'apprentissage à l'ère du web 2.0: quand un wiki contribue à la formation du jugement**, *Pédagogie collégiale,* Vol. 26, No. 2, pp. 4–10.

Duchesneau, Lachaîne, and Provost conducted qualitative, longitudinal research on the Nursing program. Their line of questioning was: **If critical thinking is central to nursing practice and if it goes together with a college education, what can be done to foster its development?** Among others, the findings emphasized the fact that metacognitive regulation and *monitoring* strategies as well as cognitive strategies such as organization and the ability to discriminate are not as well developed and are used inadequately. The researchers give **four recommendations** they consider to be useful for college-level

teaching, including the recommendation to more closely supervise problem solving by formally teaching learning strategies.
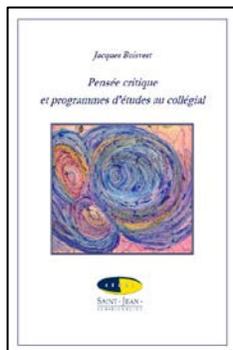
■ BOISVERT, J. (2004). **Pensée critique et programmes d'études au collégial. Examen de la formation de la pensée critique en Sciences de la nature, Design d'intérieur et Soins infirmiers** (PAREA), Saint-Jean-sur-Richelieu, Cégep Saint-Jean-sur-Richelieu.

Jacques Boisvert conducted exploratory and collaborative research to examine the development of critical thinking in three college programs of study: Natural Sciences, Interior Design, and Nursing. Data were collected during the first three semesters and focused on specific training courses as well as classes in general education. Data analysis highlights a **marked concern for the development of critical thinking**. Each program organizes **around its own process and** this serves as a pivot for organizing the pedagogical interventions: **the scientific approach in Natural Sciences**, **problem solving in Interior Design,** and **decision making in Nursing**. The findings also showed **a clear evolution in critical thinking of students** during their instruction in all three programs of study examined.

2. Critique of pedagogy

Critical thinking also involves pedagogy itself, in the broad sense, whether in terms of educational goals, educational reform, teaching approaches, or pedagogical trends. The following documents are about what could be called the "critique of pedagogy."

Advocating for a humanistic school

■ **CHASSÉ, É.** (2010). **Educational Objectives and Commitment**, *Pédagogie collégiale,* Vol. 23, No. 4, pp. 1–5.

The first part of this article, entitled Sand in the Gears, reviews the state of a **certain general malaise associated with the reform in college education**. Referring to various critical authors, Éric Chassé wonders if the humanist aims of schooling have been eliminated from programs, or at least, distorted. Yet, as he notes, official documents published by the Ministère de l'Éducation, du Loisir et du Sport stress the importance of basic education, knowledge, and civic values**. This gives rise to the question "Are the competency-based approach and humanistic educational objectives so antithetical?"** Some would say that the school has become caught up in the laws that govern the marketplace, subscribing to a culture of productivity, performance, competitiveness, and excellence. To the author, **schools' taking this direction forces teachers to reaffirm humanistic values, to clearly define them and make them an integral part of the pedagogical relationship**. He asks how we can "lead our students to define their values as well as their moral principles, whatever the disciplines we are teaching may be or whatever

roles we may play within the establishment." (p. 4). He concludes that this particular mission, within broader educational aims, makes our work, at the same time, very meaningful and very satisfying.

Critique of the educational reform
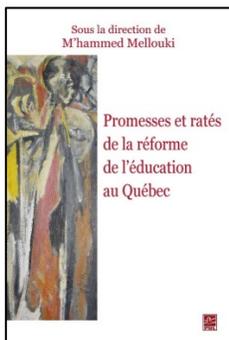
■ **MELLOUKI, M.** (2010). *Promesses et ratés de la réforme de l'éducation au Québec*, Saint-Lazare (Quebec), Presses de l'Université Laval.

This collective work, supervised by M'hammed Mellouki, involves Quebec educational reform at the **elementary and high-school levels**. With the exception of two outside authors, this publication is a result of the collective work of faculty and researchers who are members of the Université Laval's Centre de recherche interuniversitaire sur la formation et la profession enseignante (CRIFPE). **It basically examines the disparities between the official discourse and the so-called founding texts of the reform**.

Part 1: Foundations, scope, and limits of the reform

Part 1 contains six chapters. As M'hammed Mellouki summarizes in the introduction: "The authors situate the reform in its historical and ideological context in trying to understand the spirit of the reform, define its foundations and promises, point out its contradictions, track the resulting adjustments, and point out the grey areas, the hints of déjà-vu, and the failures of the official discourse" (p. 8).

For example, in Chapter Six, written in lampoonist style, Antoine Baby presents a "socio-polemical" analysis of the school reform. He **seeks to show that this reform is useless because it will bring nothing new, and that it is harmful due to its doctrinal nature**, especially by mandatory recourse to socio-constructivism and to the competency-based approach. Using a "ghosts" allegory, he illustrates ten or so of these elements of previous reforms presented in a new guise in the present reform, particularly the fact of advocating that "the student is the principal active agent of his own process"—as if this were something new— whereas, according to the author, the principle of "active pedagogy" has been the essence of Quebec pedagogy since the 1960s.

Other ghosts haunt this reform, such as "the guidance-oriented school" and "pedagogy by project." As for the competency-based approach, which, according to Baby, was imposed as dogma in Quebec, the author mentions that elsewhere in the world, it is only one pedagogical process among others and it may accentuate the utilitarian vision of the school. According to the author, we must immediately stop implementing the reform and **remove the obligation to identify with socio-constructivism as well as the obligation to rely on the competency-based approach**.

Part 2: Promises and failures of reform in school disciplines

The second part consists of five chapters. As M'hammed Mellouki states: "Each chapter attempts to identify in an educational domain at the high school level—French as a first language; history and citizenship education; ethics; science; and, information and communications technology—what school reform has become when comparing the promises of the founding texts and vision that shows the

official discourse, the guidance documents, programs and accompanying instruments developed by the Ministry of Education" (pp. 11–12).

Conclusion

In his general conclusion, M'hammed Mellouki points out that despite a good design of programs in the 1990s, the educational system was deeply changed based on fallacious reasoning: namely by applying to all students what was necessary for only a few of them. By establishing a comparison between what the fundamental texts promised as improvements and what the official texts offer as reform (see the summary table that official texts offer as reform, p. 322), the supervisor of this collective work points out numerous discrepancies.

While we promised to train citizens to be better prepared for the requirements of the knowledge society, the official rhetoric on reform is confused and lacks a guiding thread and consistency. The cultural enrichment of programs has been outdone by the competency-based approach. We seem to have adopted the least effective teaching strategies for weak students or students in difficulty. Despite the promise to renew content and pedagogical approaches, Mellouki considers that instead, we have recycled old ideas and erected the dogma of constructivism as a learning approach. According to him, several questions about the reform remain unanswered and "everything should be calmly and systematically done over," in particular with the contribution of those most directly exposed to changes in education: namely teachers, students, and parents.

In the same spirit, also consult the two following books:

■ **BAILLARGEON, N.** (2009). *Contre la réforme. La dérive idéologique du système d'éducation québécois,* Montreal, Les Presses de l'Université de Montréal. (Available at the CDC, Call number 787363)

This book presents the foundations of reform, and its deep flaws. The first three chapters give the essentials of the author's position: 1) a philosophical bankruptcy 2) reform and research 3) radical constructivism and the seven deadly sins of the reform.
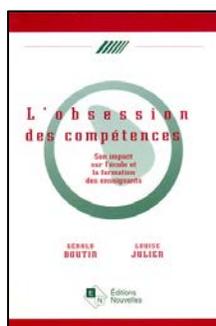
■ **BOUTIN, G., et L. JULIEN** (2000). *L'obsession des compétences. Son impact sur l'école et la formation des enseignants*, Montreal, Éditions Nouvelles. (Available at the CDC, Call number 727397)

In this book, the two professors from the Department of Educational Sciences at Université du Québec à Montréal offer their critical analysis of the reform of the educational system in Quebec, which affects all levels of education. In their opinion, this reform centred on "building competencies" is based on **theories that lack clarity and coherency**.

See Jacques Boisvert's summary in *Pédagogie collégiale*, under the heading Notes de lecture (reading notes). Vol. 14, No. 1, October 2000, pp. 34–35.

Critical analysis of 14 pedagogical myths
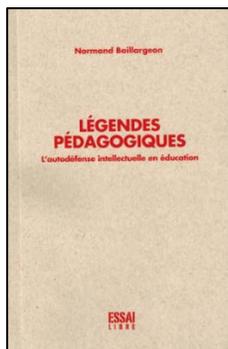
■ **BAILLARGEON, N.** (2013). *Légendes pédagogiques. L'autodéfense intellectuelle en éducation*, Montreal, les éditions Poètes de brousse. (Available at the CDC, Call number 788578)

In this book, Baillargeon denounces what he calls "pedagogical legends," the sometimes strange or even bizarre beliefs not founded in education, a little like the urban legends we are familiar with. The book looks at 14 pedagogical myths, in as many chapters, dealing with the most widespread and in his opinion, the most pernicious. In the preface, he **presents the basis of his work of systematic analysis and the methodology he uses**. He first examines the formulation of an advanced thesis and its origin, so as to determine its value. His examination is extended by the analysis of concepts and the value of the evidence presented.

Here are some of **the questions he suggests we ask about pedagogical myths**. "Can we identify a certain number that are especially widespread?" "What is the source of their power of attraction?" "How and why do they spread?" "What are the effects on the practice of teaching?" "What significance should be attributed to their prevalence?" And finally, the most important question: "How do we guard against them?" (p. 13).

Among the pedagogical myths analyzed, we note the following: multiple intelligences, learning styles, NICT that will revolutionize education, the Mozart effect, the right brain and left brain, the Brain Gym and neuro-linguistic programming. Why are some practices adopted in education despite the fact that credible, relevant research clearly demonstrates their disastrous effects? According to Baillargeon, **valid educational research is ignored or misunderstood**, while research that is known and used by decision makers is not reliable. In training teachers, **good research and the relevant criteria for identifying it should be publicized**. According to him, the introduction of pedagogical myths into the educational environment is also the result of a misunderstanding of philosophical thinking in education, and of authors who influenced pedagogy. To quote the last sentence of his book: "This ignorance has a price and this book shows how high that price can be" (p. 271).

See also by the same author:
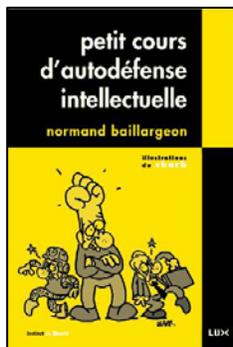
■ **BAILLARGEON, N.** (2005). *Petit cours d'autodéfense intellectuelle*, Montreal, Lux Éditeur. Available at your college library

See Jacques Boisvert's summary: **BOISVERT, J.** (2005). Notes de lecture, *Pédagogie collégiale*, Vol. 19, No.1, pp. 35–37.

3. Conclusion

To conclude this two-part bulletin on the development of critical thinking, here is a brief summary of the three topics discussed. First, **the nature of critical thinking**. We have tried to describe this concept by specifying the main characteristics and by presenting three models of critical thinking. Although there are differences, we noted many convergences on numerous essential elements. Keep in mind, especially, that a precise and substantive definition of critical thinking is required to be able to formulate educational targets. Second, **the pedagogy of critical thinking**. Following the presentation of principles and of a teaching strategy centred on critical thinking, it was established that several paths are open and that it is to the teachers' advantage, using writings and practices, to themselves determine the approach best suited to them based on their specific teaching situation. Third, **a critique of pedagogy**. Teachers and educational administrators are called upon to do their own critical thinking on what is of primary concern to them, namely pedagogy. Whether it is a specific approach to teaching and learning, a fashionable educational trend, key pedagogical concepts, or tools and instruments proposed for performing their task, it is essential for front-line pedagogical stakeholders to carefully scrutinize these elements in the light of the criteria they consider to be relevant. It is a question of pedagogical freedom at the service of their educational mission.

4. Further reading

■ **ALBE, V.** (2009). *Enseigner des controverses*, Rennes (France), Presses Universitaires de Rennes. (Available at the CDC, Call number 787524)

Virginie Albe, a professor of the didactics of science and technology, considers that, in the current social and educational context, there **is a major issue to target at school: an informed understanding of science and technology practices**, **and the overlapping of questions about science and about society**. She presents a critical analysis of the controversies to target critical and reasoned usage of expertise and democratic participation in public debate, and expertise procedures and decision making in techno-scientific issues. The book presents the mapping of various controversies and the analysis of arguments based on the latest developments in sociology and in the social and cultural history of science and technology, as well as expertise in the scientific fields concerned.

■ **BILLOUET, P.** (2007). *Débattre. Pratiques scolaires et démarches éducatives*, Paris, L'Harmattan. (Available at the CDC, Call number 787179)

Starting with a summary of the intellectual context and the institutional framework witnessing the emergence of academic debate, this book examines the distance between school practices and social practices. It clarifies the political or philosophical boundaries and **opens (theoretical and practical) pedagogical perspectives for the various types of debate at school**. It problematizes the issues in relation to academic difficulties and the building of subjectivity in adolescence. This book will interest teachers, trainers, researchers, and all those who question the meaning and relevance of the debate device.

■ **BOISVERT, J.** (2015). **Pensée critique : définition, illustration et applications**, *Revue québécoise de psychologie,* Vol. 36, No. 1, pp. 3–33.

The purpose of this theoretical article is to present the concept of "critical thinking." The concept of critical thinking is first defined according to the major characteristics of critical thinking and then by presenting two related models. Critical thinking in action is further illustrated by reference to the behaviours of the characters in the play *12 Angry Men*. Finally, reflection is proposed on two domains where critical thinking is applied: teaching and psychotherapy.

■ **CorteX**: a critical thinking and sciences teaching and research group

CorteX (Collectif de Recherche Transdisciplinaire Esprit Critique & Sciences) (corte**cs.org**) is a group that formed in 2010** in Grenoble, Marseilles, and Montpellier. **Its purpose is to bring together all stakeholders—**teachers, researchers, students—**working on a topic connected to critical thinking,** whatever their discipline; the objective is to make their work widely available. The members of Cortex say they have no conflicts of interest and no link to any source of industrial or private funding. They invite you to participate in the network and show your work.

■ **DANIEL, M.-F.** (2005). *Pour l'apprentissage d'une pensée critique au primaire*, Sainte-Foy (Quebec), Presses de l'Université du Québec.

After experimenting for many years, the authors suggest the **"philosophy for children" approach** as a relevant and meaningful way to stimulate cross-competencies in students, such as using critical judgment.

■ **GUILBERT, L., J. BOISVERT et N. FERGUSON** (1999). *Enseigner et comprendre: le développement d'une pensée critique*, Sainte-Foy (Quebec), Les Presses de l'Université Laval. (Available at the CDC, Call number 726579)

This book focuses on a set of questions related to the role and the place of critical thinking in school. The three main themes are: teaching and learning, critical thinking and argument, and critical thinking and curriculum.

■ **HALPERN, D.F., and S.G. NUMMENDAL** (1995). **Special Issue: Psychologists Teach Critical Thinking**, *Teaching of Psychology*, Vol. 22, No.1.

This special issue of the journal *Teaching of Psychology* is devoted to teaching centred on developing critical thinking and suggests various approaches to this end.

■ **ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT** (1991). *Learning to think: Thinking to learn*, Paris, OECD. (French version, ORGANISATION DE COOPÉRATION ET DE DÉVELOPPEMENT ÉCONOMIQUES. (1993). *Apprendre à penser, penser pour apprendre*, Paris, OCDE. (available at the CDC, Call number 703591)

This book grew out of a conference organized in July 1989 by the OECD's Centre for Educational Research and Innovation (CERI) to take stock of what we know about how young people think and reason. The book analyzes **three broad ways of thinking in the context of education**: the "skills" approach; the "infusion model"; and thirdly, the belief that the traditional disciplines and pedagogy of education already provide for the development of thinking.

Other publications are a result of research on critical thinking by the author of this Bulletin.

- **BOISVERT, J.** (2005). La formation de la pensée critique en Sciences de la nature, Design d'intérieur et Soins infirmiers, *Pédagogie collégiale*, Vol. 18, No. 3, pp. 36–42.

- **BOISVERT, J.** (2002). Comment évolue la pensée critique des élèves en Sciences humaines au collégial?, *Pédagogie collégiale*, Vol. 15, No. 4, pp. 37–43.

- **BOISVERT, J.** (1997). Une stratégie d'enseignement de la pensée critique, *Pédagogie collégiale*, Vol. 11, No. 2, pp. 6–10.

- **BOISVERT, J.** (1996). Développer la pensée critique au collégial, *Pédagogie collégiale*, Vol. 10, No. 2, pp. 33–37.

- **BOISVERT, J.** (1999). **Doit-on et peut-on enseigner la pensée critique?**, dans GUILBERT, L., J. BOISVERT et N. FERGUSON. *Enseigner et comprendre: le développement d'une pensée critique,* Sainte-Foy, (Quebec), Les Presses de l'Université Laval, pp. 19–26. (Available at the CDC, Call number 726579)

The author considers that the teaching of critical thinking is a necessity and an obligation. He believes, however, that the opportunities to do so are currently limited.

About the Author

Jacques Boisvert began teaching psychology at Cégep Saint-Jean-sur-Richelieu in 1974. He holds a master's degree in psychology from Université de Montréal and a doctorate in education from Université du Québec à Montréal. His research, conducted at the college level starting in the early 1990s includes five studies: three studies on developing critical thinking; a study on social representations of boys in Social Science, and a comparative study on the academic motivation of boys and girls in Social Science. About 20 of his publications, and close to 30 abstracts/presentations relate directly to the development of critical thinking. In 2008, he received the Teaching Excellence Award from the Association of Canadian Community Colleges/Colleges and Institutes Canada. Jacques Boisvert retired in 2008 and provides consulting services in his fields of expertise, in particular to Cégep à distance for updating psychology courses.

Most of the documents referred to in this Bulletin are available online or upon request from the Centre de documentation collégiale (CDC).

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