LEARNING OR IMITATION?

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According to a number of researchers, both general and specific courses still provide college students with only passive knowledge that, while easily mastered for the purposes of testing, is rarely transferable to other contexts. (Crahay 2006; Perrenoud 2000). This is due to the fact that learning is usually limited to the *memorization* and *retrieval* of information (Develay 2007; Orange 2012), the *reproduction* and *imitation* of techniques (Schneuwly 2007), or the *use of "recipes"* (Lessard 2004).

In themselves, these three approaches to learning are necessary and worthwhile, and in many circumstances, constitute the essential foundations of more advanced learning outcomes. When they become the ultimate goal of education, however, the significance of the knowledge gained is largely diminished. To ensure deeper learning that can be transferred to new situations, we must understand from the outset what distinguishes it from memorization or imitation, as well as the conditions that promote and hinder it. As any reflection of this type requires a choice of perspective, I will discuss obstacles to deep learning in relation to the role of conceptualization in teaching—a vital avenue if educators are to avoid imitation and promote sustainable learning and transferable knowledge.

THE OBJECTIVE OF LEARNING: COMPREHENSION AND KNOWLEDGE TRANSFER

From the viewpoint of many educators, *learning* is, first and foremost, "learning how to think"; in other words, it involves, not only the process by which students understand the knowledge acquired, but also how they use that knowledge so it shapes their minds and becomes a genuine tool for thinking (i.e., opening up new ways of seeing, interpreting, and explaining the world and giving it meaning—thereby allowing them to reflect and discuss it with others—and guiding them in their actions). Such knowledge can be transferred from one situation to another, which is not the case if learning is limited to memorization or reproduction (Astolfi 2008; Barth 1993; Develay 1992; Orange 2012; Vanhulle 2009).

In the technical stream, deep and complete learning means that students, rather than blindly implementing the procedures taught, actually understand their justification, mechanisms, functioning, and scope, and that they are capable to determine their pertinence in a given situation, adapting them where necessary. In the pre-university stream, it means students are not merely accumulating passive knowledge; they are assumed to be able of consciously referring to newly-mastered concepts, operationalizing them so they become utilizable knowledge, and reflecting on them in order to solve multiple problems or develop a better understanding of the world. In chemistry, for example, if learning the periodic table is to be useful, students must grasp the logic on which it is based, how the elements are distributed, what the associated numbers represent, and so on. Otherwise, knowledge of the values in the table remains passive in students' minds, and cannot be transferred to another context.

A CONDITION ESSENTIAL FOR LEARNING: CONCEPTUALIZING AND MODELLING

Learning that does not consist of more than memorization or reproduction is frequently attributable to the pedagogical practices involved. Too often, commonly used pedagogical practices do not allow learners to master knowledge so as to be able to make use of it subsequently, rendering the learning superficial. The basic problem is that students, because they are not regularly asked to truly comprehend what they learn, misunderstand what it means *to learn* and refer to memorization and other superficial strategies (Barth 1993).

Having students *truly* understand means involving them in building their own knowledge and enabling them to use it (Barth 1993). In this connection, Barth suggests representing knowledge as *concepts*. Conceptualizing (modelling)[1] allows instructors, together with their students, to develop a paradigm for reflecting and for exploring knowledge, its characteristics, and the attributes identifying its relationship with other knowledge. As stated by Barth (1993), concepts (i.e., knowledge) are related to other concepts and form part of a greater structure, i.e., a concept map, which is a system of inter-conceptual relationships in which our understanding of the world takes root.

Once this conceptualization (or modelling) has taken place, the author suggests that, to be complete, the process emphasizes teaching as a dialogue on knowledge. Educators help their students build knowledge in order to *show* them what

[1] As defined by Barth (1993), conceptualization and modelling are the same—i.e., they both involve establishing a model. I wanted to use both terms, i.e. *conceptualization* and *modelling*, in order to avoid opening the whole "can of worms" that has long existed in the field of didactics. In this article, the terms are synonymous, and refer to the same action.



they are not capable of seeing by themselves, i.e., the scope of that knowledge, its relationship to other knowledge, what it involves, and how to use it in a variety of situations.

The practice of conceptualization described by Barth (1993) has recently been echoed in various disciplines. Regarding the teaching of French, for example, Schneuwly (2009) submits that, to be taught effectively, knowledge must be modelled by instructors. In other words, it must be broken down into its constituent components (attributes), which in turn, can be broken down further or themselves be taught, so as to make their inner logic, and their relationship with other knowledge, accessible to learners. Without this deliberate awareness of what is to be taught and learned, there will be only reproduction or imitation, which reduces learning to mere technique (Leeman 2006; Schneuwly 1995, 2007). Regarding the teaching of science, Orange also posits that knowledge cannot reside solely in answering the question asked; it must take account of the structure of the problem (2012). Elaborating a problem involves conceptualizing or modelling knowledge, as models are tools that link knowledge *and* its use in order to solve a problem. Without this second dimension, knowledge becomes a simple statement of content that is understood in a fragmented manner and cannot fully function as an intellectual tool (Orange 1997).

The emergence of these similar reflections concerning the role of conceptualizing/modelling in learning, as they apply to general education and individual disciplines alike, reveals the fundamental importance of this process to the quality of teaching and learning in all fields. It promotes the concept of *general* didactics, namely, of principles that are common to all disciplines as well as of the teaching-learning process. Conceptualizing/modelling is therefore central to learning, regardless of the specific area involved.

A STARTING POINT FOR DELIBERATION

While the concept of conceptualizing/modelling is not new, the literature contains little on the subject at the college level.[2] However, as we know a bit more about the obstacles to its implementation at the primary and secondary levels,[3] I will discuss those here in an effort to launch more in-depth deliberations on college instruction.

Obstacle 1

Teacher and discipline-oriented training

In 1993, Barth argued that training for future educators, which was essentially discipline-based, is not enough to truly assist teachers in helping their students build knowledge. Mere mastery of a particular discipline tends to train instructors to present knowledge that has already been constructed, by reproducing or imitating implicit methods they have personally experienced or by "cobbling together" various pedagogical strategies they felt were effective when they were students (Barth, 1993). Discipline-oriented training gives future teachers expertise and theoretical knowledge, but not modelled knowledge or the *knowledge of how to conceptualize/model* (Hétu 2014) what we might also call *knowing how to explain*. Simply because we know how to write or to solve equations does not necessarily mean we are capable of teaching others to do so. Grasping the theory behind a given subject or knowing how *to do* something does not mean we are capable of explaining it, and understanding something does not make us capable to put it into practice (just as we do not necessarily comprehend everything we know how to do). It is even possible to provide a good explanation of false information (Moliner 2001).

In practice, knowing how to explain is based on the ability to conceptualize/model knowledge. Because disciplinary expertise does not involve the development of knowledge *for* teaching (Hétu 2014), educators who distinguish themselves by their ability to explain have generally developed that skill through experience, after being confronted by their students' questions and not being able to provide a satisfying answer. The realities of the job, however (wich leaves little time for reflection), along with firmly anchored (and unmodelled) ideas of what it means to teach and what must be taught (see Obstacle 2), often jeopardize our efforts to conceptualize.

In a recent study, I asked future teachers of high-school French[4] to *explain* certain disciplinary concepts. Between 80% and 90% of them gave me a definition supported by examples or contexts, but nothing else. Although essential, these teaching strategies do not allow for deep, complete learning because they fail to promote true comprehension by providing access to the inner logic of knowledge (Hétu 2014). By way of illustration, whether at the high-school or college level, teaching the concept of "thesis" by repeating its definition (a position

[2] As part of my ongoing doctoral research, I am attempting to describe how conceptualizing/modelling is demonstrated and organized in college teaching.

[3] As studies on learning at the college and university levels are still in their infancy, I hope readers will pardon the ties established with those carried out in others. I am fully aware of the limitations of such parallels, and the need for caution in establishing them. The studies mentioned here have been selected because of their pertinence, their ability to illustrate the phenomena discussed, and their contributions to the reflections at the heart of this article.

[4] See my Master's thesis, entitled *Les représentations sociales des savoirs dans l'enseignement du français chez des futurs enseignants du secondaire*, written at the Université de Sherbrooke in 2014.

on a given subject), giving examples ("It is unacceptable to legalize capital punishment because there have been too many judicial errors."), and having students faithfully reproduce it in accordance with that example is inadequate, as this does not really help them understand what a thesis is, recognize all its attributes, or understand its significance in different contexts. This type of explanation develops students' ability to reproduce a given grammatical structure in an identical context, but does not enable them to transfer their knowledge to other situations.

Conceptualizing (or modelling) allows instructors, together with their students, to develop a paradigm for reflecting and for exploring knowledge, its characteristics, and the attributes identifying its relationship with other knowledge.

To help students understand the true meaning of "thesis", each of its attributes could be taught on its own (using identification, characterization, creativity, knowledge transfer, etc.) and linked to other contexts (subject and theme must be mastered in order to analyze a text) or concepts (e.g., establishing the distinction between a thesis and an opinion based on the presence or the absence of certain attributes). Ideally, conceptualizing/modelling would also help students realize the scope of this knowledge and the effects its transformation can have on communication (in debating, for example). This type of teaching also helps students analyze and criticize what they hear and read about in their daily lives.

Although the data for my study were collected from future high-school teachers, they led me to believe they are as well characteristic of the college level, insofar as postsecondary instructors are hired for their disciplinary expertise and often receive no pedagogical or didactic training. Continuing with our example of the thesis, college teachers who focus on the conceptualizing/modelling of the concept could work with their literature students on the similarities and differences between a thesis (in debating) and a statement (in literary analysis), which would place the concept in a broader context and help students understand similar knowledge. Teachers who are satisfied with giving students the definition and examples of each term, on the other hand, give the impression that knowledge is merely content to be memorized, and that there is no relationship between knowledge and an understanding of the world. This state of affairs tends to give learners the feeling that they have to quickly forget what they have just learned in order to acquire new knowledge (Develay 1992).

The fact that teacher training can indeed constitue an obstacle may be explained as follows: although didactical research has shown that postsecondary learning cannot depend solely on the logic of academic (disciplinary) knowledge (Bizier 2014), the notion that educators' disciplinary expertise is enough to inform their teaching is still widely accepted (Lapierre 2014). This situation is not limited to French instruction.

Questions to promote deliberations on conceptualizing/modelling as it relates to TEACHER TRAINING

- **What do my students have to understand before they can integrate the knowledge I am trying to impart?**
- **What are the attributes of that knowledge? Should I provide instruction on each one separately to ensure they will help students understand the knowledge in question?**
- **What relationship does this knowledge have with other knowledge? What position does it occupy in a broader concept map? What role does it play on that map?**
- **What should be put forward so my students are able to use this knowledge, to operationalize it and make it usable?**
- **When I explain a concept, do I merely repeat the definition, give examples and put it in the context of the target knowledge?**
- **How can I develop professionally to be able to better conceptualize and model the knowledge I want to teach?**

Obstacle 2

Views on disciplines and teaching

The second obstacle to conceptualizing/modelling stems from the apparent tenacity of *what it means to teach* and *what is to be taught*. Ideas about knowledge (whether discipline-related, didactic, or pedagogical) are doubtless difficult to change. The fact of the matter is that, in everyday life as in the workplace, as soon as the kernel of an idea is challenged, most of the individuals or groups concerned use protective strategies to maintain what they have learned in the past (Moliner 2001). Among educators, this phenomenon is reinforced by the fact that their ideas on what it means to teach (and how to do so) are so intimately associated with their professional identity. According to Chartrand and Lord (2013), as all faculty have been students immersed in the academic culture and its disciplinary manifestations, for most, teaching primarily involves reproducing and transmitting that culture.

Or, in the words of Rouquette (2000), if ideas do not change, neither do practices. Taken together, these factors explain why, despite government prescriptions and changes in the makeup of faculty, and in spite of advances in the teaching of French and educational psychology, the practices and beliefs



of high-school French teachers did not change much between 1985 and 2008 (Chartrand and Lord 2013).

In my view, this situation could also apply at the college level, regardless of the discipline involved. Ideas on *what it means to teach* also prevent changes to beliefs on the *knowledge to be taught*. When confronted with a new teaching situation, educators revert to patterns inherited from prior practices, i.e., when beginning to teach a concept, they tend to mobilize memories of how they themselves learned it (Simard et al. 2010). My research findings also show this to be the case: the future teachers I met felt that, during their own secondary or college studies, they had acquired a large part of the knowledge they would use in teaching their students. If we refer back to the afore-mentioned theory of patterns, it would appear that, once these individuals start to practise, they will rely heavily on what they learned as students, and tend to reproduce the same choice of knowledge to be acquired and same type of instruction they received as learners (Hétu 2014). An implicit emotional bond would appear to exist between what they experienced and what worked for them, and what should work for others. Even when they complain about students' low level of learning, teachers sometimes continue to teach the same way, hoping to obtain different outcomes. What we have here are defence mechanisms that protect deeply entrenched ideas, making it hard to view knowledge and teaching methods from a different perspective (Moliner, 2001).

Questions to promote deliberations on conceptualizing/modelling as it relates to
VIEWS ON DISCIPLINE-RELATED KNOWLEDGE AND TEACHING

- **What are my own ideas on what it means to teach and what needs to be taught?**
- **How does the way I usually teach knowledge differ from the kind of instruction I was given?**
- **How could I impart that knowledge differently, in order to promote deep understanding and learning transfer?**
- **How can I teach this knowledge to someone less familiar with the discipline?**

Obstacle 3
Academic consistency

The third obstacle to conceptualizing/modelling also partly explains the above problem. Many teachers are not necessarily aware of the epistemological "disconnection"[5] they represent. They do not realize their practices are preventing them from reaching their objectives. The future teachers involved in my study, for example, said their goal was to teach students, equip them intellectually by helping them think critically, and to give them a taste for reading and writing. The methods they actually planned to implement to that end, however, relied more on imitation (Hétu 2014). The phenomenon is not new: the gap between stated and actual practices has been widely documented, and articles encouraging teachers to become aware of their epistemological stance on their discipline or teaching as a whole are increasingly numerous.[6]

Nevertheless, such awareness, although vital, is not sufficient in itself. In a study involving a sample of history teachers, Demers and Éthier (2013) discovered that several participants were living in a state of dissonance: their personal epistemology, i.e., their views on learning and their personal discipline, was inconsistent with their professional epistemology, i.e., their method of instruction. In teaching history, one of the main objectives is the development of historical reasoning. However, the dominant disciplinary ideology, the *acquisition of facts* and *need for the right answer*, is more consistent with reproduction/imitation, a practice that does not allow students to develop the requisite mindset. While the competency involved definitely requires the learning of facts if it is to be fully mastered, it also requires the conceptualizing/modelling of those facts via the exploration of questions and their related contexts (Develay 1992), a discussion of their import, and the conceptualizing/modelling of the historical reasoning process in itself, as well as its relationship with the facts studied.

Questions to promote deliberations on conceptualizing/modelling as it relates to
ACADEMIC CONSISTENCY

- **Is my personal epistemology (i.e., my views on of my discipline and teaching) consistent with my professional epistemology?**
- **How does the knowledge I impart help students achieve the course objectives?**
- **How does my teaching style help my students fully understand that knowledge?**
- **How could my teaching methods be more consistent with my personal epistemology?**

[5] See Demers and Éthier (2013) for their comments on epistemology as regards learning that occurs through consistent didactic and pedagogical activities.

[6] See Mathieu Gagnon, Our Relationship with Knowledge: Its Role in Education, *Pédagogie collégiale* 29 (1), Fall 2015 [aqpc.qc.ca/en/revue-volumes/fall-2015].

Obstacle 4

The use of pedagogical strategies

In most academic fields, the type of instruction provided does not allow for the full development of the competencies involved, especially if the latter are advanced (Muller 2006). It is not enough to conceptualize/model knowledge, then *expose* students to it, for learning to take place. This process merely requires a higher level of memorization; it does not improve learning. At the same time, using so-called *active* teaching strategies or systems does not guarantee learning, either.

Barth warns teachers against implementing pedagogical methods or strategies without grasping their underlying concepts and the analytical tools they require; unless accompanied by proper comprehension, their use may produce negative results (Barth 1993). Research conducted by Orange (2012) highlights the fact that the problem-based learning approach used in science is too often satisfied with answering a question, neglecting to take account of the construction of the problem or the modelling required to develop the critical aspect of knowledge that allows it to act as an intellectual tool and be used in other situations. Under these circumstances, this approach does not necessarily develop students' ability to problematize. If their attention is not focused on the process, and teaching is not structured so as to allow them to conceptualize/model it or become aware of the possibilities, limits, and mechanisms of 'problematization' (e.g., asking questions, presenting problems, forming hypotheses, identifying and isolating variables, envisaging data-collection methods, etc.), problem-based learning may be limited to the application of a technique. Moreover, laboratory work is also often limited to the use of "recipes". In short, the problem-based approach can, like any other pedagogical strategy, result in mere reproduction-imitation. Regardless of this fact, however, a good many educators are convinced they can promote learning simply by using an active learning method recognized by the research as effective. Everything depends on how these methods are used: in order to promote learning, pedagogical strategies should be used from a conceptualizing/modelling point of view.

Let us take an example from the field of college French:[7] the concept of the *sujet amené* (general context), which is central to various literary genres. Many teachers hold a rigid view of the term, asking students to discuss (1) the time at which the work was written; (2) the literary movement of which it was a part; (3) the author; and (4) the work to be analyzed. Although this definition is perfectly valid, teaching and assessing the concept based on such narrow criteria does not help students develop a broad idea of what a *sujet amené* is or can be.[8] Instead, it makes it difficult for them to fully grasp the function of such knowledge, the forms it can take, and how it relates to other knowledge, such as argumentative strategies or text structure. In specific terms, this method of teaching the *sujet amené* does not really help students understand the stylistic choices made by a writer or their effects on conveying the message outside a learning context, such as a newspaper editorial or any other type of publication. Because writing an academic paper is a type of assignment students will likely never perform again once they have completed their postsecondary education, it is critical that it be taught in such a way that it *goes beyond* an academic exercise and shows students that their knowledge of the *sujet amené* can also be used in many other circumstances. Without falling prey to utilitarianism, we must go back to the main function of school: to teach students to think and understand the world.

To improve their practices, educators must therefore step back and take a fresh look at how they contribute to deep, transferable, and sustainable learning.

Education should promote knowledge that enables learners to understand and explain the world, as well as to guide them in their actions and help them integrate new knowledge. It also creates interest: by learning about the *sujet amené* in greater detail (i.e., that it is more than the four steps described above), students have a greater chance of noting that a writer might have opted not to include a *sujet amené* at the beginning of his text, for example. They can then analyze the effects of that choice and integrate the whole into their network of knowledge, rather than concluding that the knowledge gained at school does not correspond to the reality around them, that what they have learned is useful only at school, and that there is a disconnection between their personal knowledge and their education (Crahay 2006; Perrenoud 2000). Similarly, despite the fact that a given teaching method can give rise to a broader idea of the *sujet amené*, if subsequent assessments do not recognize the value or legitimacy of that idea, the outcome will be the same: students will find it difficult to go beyond imitation. It would therefore seem paramount to ask ourselves what learning results from students' ideas about the knowledge taught, the way in which it is taught, and the way it is assessed.

[7] This example is also closely related to Obstacle 2.

[8] The *sujet amené* is an essential component of several types of texts, which can take all sorts of shapes; the most frequent, though certainly not the only ones, are the summary, comparison, anecdote, and definition.



Questions to promote deliberations on conceptualizing/modelling as it relates to
THE USE OF PEDAGOGICAL STRATEGIES

- **Is the knowledge I impart open or closed? If the former, i.e., if it goes beyond the academic context and allows students to explain the world and integrate new knowledge, how important is that fact? If the latter, why must it take this shape at this stage of the learning process? How can I transform it into open knowledge?**
- **Do my pedagogical strategies allow for deep understanding that promotes learning transfer in different situations and a grasp of "real-life" phenomena, or are they limited to meeting the needs of the academic environment or promoting imitation?**
- **What pedagogical and assessment strategies can I use to conceptualize/model the knowledge I want my students to acquire?**

Obstacle 5
Pressure to Succeed

The fifth obstacle to conceptualizing/modelling stems from the social context of the education system itself. According to many stakeholders in and observers of the Quebec school system, pressure to succeed at all levels has caused a growing proportion students and teachers to adopt a utilitarian approach to knowledge, as that pressure makes diplomas and degrees (not knowledge or competencies) the key to personal financial success (Bourdon 2008). In fact, many teachers would seem increasingly prone to "teaching to the test" (Lessard 2004), despite the fact that their personal epistemological stance involves loftier objectives (Demers and Éthier 2013). Pressure to pass exam in disciplines involving final assessments by the government or a professional order often dictate the choice of content and types of teaching involved (this is notably the case for the Ministerial Examination of College French, for which instructors teach students how to write simple sentences and correct their serious mistakes just to help them pass).

Furthermore, for some students, a utilitarian view of knowledge appears to create a "consumption" mentality (Montoya et al. 2006), meaning knowledge is of no value other than helping them obtain a passing grade. From this perspective, learning is reduced to a process of memorization that can be managed in order to "learn for the test" (Develay 2007; Lessard 2004). Retrieving knowledge that has been learned by rote places students dangerously outside the reach of any effort to have them truly master that knowledge, and, unfortunately, prevents them from thinking about and grasping its inner logic, or linking it to other knowledge (Cariou 2006; Vanhulle 2009).

Too often, this pressure also motivates teachers to *deliver the material* and, for want of time, favour lectures and limit discussions on knowledge. The notion that students must *see everything* in order to learn is very likely one of the most tenacious in our education system. As counter-intuitive as it may seem for educators, targeting essential knowledge, building on students' comprehension of that knowledge, and taking time to ensure they master it are ways to guarantee success an ensure more in-depth learning, which necessarily means it is impossible to have them deal with *all* the material.

Questions to promote deliberations on conceptualizing/modelling as it relates to
PRESSURE TO SUCCEED

- **To ensure my students succeed, do I feel forced to deliver the material via "recipes"?**
- **Regarding my course's curriculum, what are the essential components to be taught to ensure optimal comprehension of the discipline?**
- **How can I get beyond the tendency to teach to, or learn from, the test, in order to give my students an in-depth understanding of the knowledge concerned and transfer it to new situations?**

CONCLUSION

As described above, the diverse obstacles to conceptualizing/modelling are intended to provide food for thought. As shown in Roberge (2016), they illustrate Milgrom's point to the effect that, simply because what we teach seems not to present any problems, our choice of content or methods does not necessarily promote learning. For Milgrom, teachers should be careful not to take comfort in the natural acquisition of experience and greater confidence, as in themselves these factors are not sufficient; we can almost always do better. To improve their practices, educators must therefore step back and take a fresh look at how they contribute to deep, transferable, and sustainable learning. I invite you to continue and deepen your deliberations on your practices by using the questions at the end of each section as your starting point.

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