Professional Didactics and Teacher Education: Contributions and Questions Raised

EL MOSTAFA HABBoub, YVES LENoir

Riassunto: Sulla base dei risultati della tesi di dottorato (attualmente in fase di conclusione) e di un articolo di ricerca del primo autore, questo articolo prende in esame l’idea di didattica professionale, in primo luogo facendo riferimento alla definizione delle sue caratteristiche, in secondo luogo presentando la cornice concettuale, che prende da tre correnti teoriche, la teoria dello sviluppo di Piaget, la psicologia ergonomica e del lavoro, la didattica disciplinare. L’articolo sottolinea la differenza tra formazione iniziale dell’insegnante e formazione nelle attività, da cui emerge la didattica professionale. La sezione seguente dell’articolo esplora vari contributi che questa forma di didattica deve offrire alla formazione dell’insegnante, inclusa la funzione essenziale della nozione di situazione e logica dell’azione. Il testo conclude con una serie di domande relative a vari tipi di conoscenza, le relazione tra due tipi di didattica e la dimensione sociale coinvolta nell’implementazione della didattica professionale nella formazione iniziale dell’insegnante.

Abstract: Based on results from the first author’s research paper and doctoral thesis (currently being finalized), this article examines the conception of professional didactics, first by referring to its characteristic definition, then by presenting its constitutive conceptual frame, which draws from three theoretical currents: Piagetian developmental psychology, ergonomic and work psychology, and disciplinary didactics. The article then distinguishes between initial teacher education and training for the occupations from which professional didactics emerged. The following section explores various contributions that this form of didactics has to offer to teacher education, including the central function of the notion of situation and the logic of action. The text concludes by raising a number of questions relative to, among other things, the place of various knowledge types, the relations between the two types of didactics, and the social dimension involved in the implementation of professional didactics in initial teacher education.

Key Words: teacher education, professional didactics, disciplinary didactics, contributions, questions raised.
1. Introduction

This text draws on some of the results of two research studies. Its objective is to assess the relevance of introducing professional didactics into the field of initial teacher education. In the perspective of professionalizing the teaching occupation, which is currently promoted in initial teacher education, it is important to question the usual modes implemented, especially since reforms of this training call for a competency-based approach. Indeed, the impact of this professionalization combined with the use of competencies to train future teachers is by no means insignificant. The question now arises: What is the potential contribution of professional didactics to teacher education, which has undergone substantial change with the introduction of new aims and operational modes?

After presenting the principal components of professional didactics, we will distinguish the field of teacher education from training for other occupations, including continuing adult education, the field in which this form of didactics was originally developed and applied. Next, we will identify the potential contributions of professional didactics to teacher education. Because the use of professional didactics appears to hold more than simply potential contributions, we will also deal with questions regarding its implementation in this field.

2. The development of professional didactics

2.1 The definition of professional didactics

The definition of professional didactics has changed little between 1992 and December 2009. Professional didactics, whose origins lie in continuing professional development (Ginsbourger, 1992; Pastré, 1992a, 2002), emerged «on the one hand, based on the questions and objectives stemming from professional training in which the main preoccupation concerns the modes and conditions of acquiring and transmitting professional competencies, and on the other, based on the convergence of a number of communities: didactic specialists, psychologists, and ergonomists facing the same types of problems» (Samurçay, Pastré, 1998, 119). Presented as a recent approach (Pastré, 2004b), professional didactics takes into account the temporal dimension of development (Mayen 1998a; Pastré, 1992a) and...


In short, professional didactics generally targets three major objectives; the first two are practical and the third, theoretical. The first objective is the analysis of work and the development of training (Mayen 1998c, Pastré, 2002; Vidal, Samurçay, 1998). The second is the mastery «of situations to the greatest extent possible, by constituting them as problems to be solved. However, this constitution process always results in some of the complexity of reality being lost» (Pastré, 1999b, 28). The third is the description of professional situations (Ibidem) and «the modelling of specific professional competencies in their developmental dynamic and in terms of transposing work situations into training situations» (Vidal-Gomel, Samurçay, 1998, 118).

To reach these objectives, professional didactics is based on a conceptual frame involving at least three different but complementary disciplinary areas.

2.2 The conceptual frame of professional didactics

To ensure genuine work analysis, from the start, professional didactics has been based on the confluence of three theoretical currents: Piagetian developmental psychology, ergonomic and work psychology, and the didactics relative to the disciplines.
2.2.1 Developmental psychology – As previously stated, professional didactics was originally developed in the field of continuing education for adults. Early on, practitioners of adult training dreamed of retaining the integrative and developmental aspect of Piaget’s work and the cognitivist theory of functional learning through action. In other words, they sought to combine cognitive development and functional learning. This is the general framework in which professional didactics should be situated (Pastré, 1992b).

Piagetian developmental psychology draws from the work of Vergnaud (1992), who underscores the role of conceptualization in action. On the one hand, this current reduces the gap between the pragmatic concepts underlying the implementation of daily concepts developed by Vygotskian socio-constructivism (Pastré, 2002). Vygotsky advanced a dynamic, living conception of knowledge and conceptual development as well as a social conception of this development (Mayen, 1998a), which had received little or no consideration from Piaget (1974) (Pastré, 1999d). On the other hand, Vergnaud’s contribution is central in the perspective adopted by professional didactics. As Pastré (1994a, 2001, 2004a) reminds us, Vergnaud (1994a, 1994b) associates a situation not only with its functional dimension, but also with its conceptual dimension, specifying that it is the schemes that are conceptual in a situation. Vergnaud (1994a) defines a scheme as a “functional dynamic totality” (1994a, 180), an «invariant organization of conduct for a class of given situations» (Vergnaud, 1996b, 283), insisting on the importance of operational invariants as concepts— or theorems—in-action. Otherwise said, there is no situation without a scheme. Together, the scheme and situation form the scheme-situation pair as a founder of the process of learning through active adaptation (Pastré, 2002).

It should be specified that the need to use the concept of situation stems from its crucial importance in ensuring the development of competencies and from the fact that it concords well with the pragmatic and operational dimension of knowledge. «A situation is primarily what makes sense to a subject. It is a set of issues, opportunities or threats, and the intelligence linked to the situation is above all the ability to negotiate it successfully. This is why it is not very surprising that concepts acquire meaning only in reference to the situations that allow for them to be used» (Pastré, 1999b, 47). The situation is also and simultaneously part of a larger class with which it shares a set of common characteristics, what Pastré (1999a, 2002) and Mayen (2004a) refer to as the conceptual structure of a situation or
what Galpérine (1966) refers to as an orientation base (Mayen, 2004b), since the success of the action partly depends on its orientation. Drawing on Pastré (1999c), Mayen (2004a) defines the conceptual structure of a situation as «the network of relations between the characteristic variables of a situation, the ordering of its common traits into a meaningful configuration» (Mayen, 2004a, 3). The conceptual structure of a situation is based on the activity to be carried out (Mayen, 2001). Designing teaching/learning situations thus provides bases for a training process targeting the development of competencies. Hence the intervention of the teacher not only as a mediator, but also as a creator of didactic situations (Vergnaud, 2000).

Besides Piagetian constructivism and Vygotskian socio-constructivism, the conceptual frame of professional didactics is completed by the contributions of work psychology, and more specifically the psychology of cognitive ergonomics and disciplinary didactics (Pastré, 2002, 2004a; Samurçay, Pastré, 1998).

2.2.2 Ergonomic cognitive psychology – The current of ergonomic and work psychology (Pastré, 2002) indeed emphasizes an examination of the cognitive dimension of professional activity (Mayen, 1998a; Pastré, 1997, 1999a, 1999b, 2002, 2006). Cognitive psychology, especially in terms of cognitive ergonomics, constitutes a second major contribution to professional didactics.

With Francophone work psychology, professional didactics became enriched by «the techniques and methods of work analysis. Most importantly, this work analysis provided professional didactics with a study of the cognitive dimension of professional activity» (Pastré, 2002, 11) by distinguishing between prescribed work and actual work, task and activity. The reference especially concerns Faverge (1955) and Leplat (1985, 2000). The reference made to Faverge (1955) is tied to the fact that this author considers work to be a behaviour by which individuals seek to adapt themselves to the characteristics of a situation using an active approach. Drawing on Leplat (1985, 2000), who is inspired by Faverge, Pastré (2004a) distinguishes and articulates what, in a work context, is related to the prescribed task and to the activity. He maintains that «there is always more in the actual work than in the prescribed task» (Ibidem, 11). Furthermore, Leplat (1991, 1997) introduces the ergonomic dimension of developing competency frameworks. This work analysis is directed toward competencies (Pastré, 1997).
By establishing «synthesis between the training dimension and the work analysis dimension» (Ibidem, 91), professional didactics should be able to «identify the conceptual structure of the situation, the central core enabling the constitution of an occupational framework» (Pastré, 2004a, p.7). This is because, according to Leplat (1985, 2000), the work situation is not only defined by the modes of what is prescribed; it also «includes certain objective dimensions of the situation that will guide activity. Consequently, it can be said that the work analysis developed by Leplat is organized around the situation-activity pair, the situation including the prescription and cognitive structure of the task, and making for an introduction to the analysis of the activity, which remains the purpose of the analysis» (Pastré, 2002, 11).

It is important to note that the analytical approach used in professional didactics also enriches ergonomic cognitive psychology. Indeed, professional didactics first borrows from this form of psychology its approach for analyzing the task as a “given objective under determined conditions” (Leontiev, 1976, 96). It then analyses the activity in terms of its progress, which is expressed by the actual task (Leplat, Hoc, 1983). Thus, in a concern for diachronic analysis, professional didactics complements ergonomic cognitive psychology, as it goes beyond identifying the competencies applied through and within a task; it imposes the need to analyse these competencies in a development perspective, in order to go from a work analysis that is “task-activity” oriented to one that is “competency” oriented (Leplat, 1991, 1997). Hence the insistence of professional didactics on situations in which are produced ruptures in the use of competencies, as this is what enables an identification of the indicators of evolution (Pastré, 1997).

If the relations between professional didactics and ergonomic cognitive psychology appear to be both simple and obvious, can the same be said of the relations between professional didactics and disciplinary didactics?

2.2.3 Disciplinary didactics – The third reference area called upon by professional didactics is that of disciplinary didactics. While the relation between professional and disciplinary didactics is characterized by certain elements that bring the two areas closer together, it also raises a number of questions. With a view to reconciling the two, Samurçay and Rogalski (1998) advance that professional didactics is parallel to disciplinary didactics insofar as «the transposition process and the management of the didactic situation are two
key concepts in educational analysis. The epistemological analysis of the knowledge in play is here replaced by the analysis of professional tasks and activities» (Samurçay, Rogalski, 1998, 340). This reconciliation can also be illustrated by the fact that professional didactics «concerns more than actions. It also increasingly touches upon enunciation and dialogue. The disciplinary didactics are concerned not only with the best possible restitution of verbalizable knowledge, but also with actions» (Vergnaud, 1996a, 43); they are oriented toward the acquisition and application of endorsed knowledge. Two differences between these didactic fields have nevertheless been noted: the place of scholarly knowledge and of practise, and the importance given to concepts (Ibidem). In other words, what characterizes professional didactics is its interest in the development of professional competencies in action without reference to a given discipline, but rather to professional practises (Rogalski, Samurçay, 1994) – which in no way precludes the recourse to concepts stemming from the system of scientific disciplines.

But disciplinary didactics cannot be referred to without taking into account certain limits. These limits have been articulated by Pastré (1997, 2004a) and by Samurçay and Pastré (1998). One of them concerns the concept of activity, whose place and function constitute one element opposing professional and disciplinary didactics. In the beginning, although the two forms of didactics originated following the methodical intent of learning in and through an activity, in the case of professional didactics, learning was related to situations in a practical objective of mastery. The disciplinary didactics, for their part, involved learning knowledge «with an epistemic objective of understanding» (Pastré, 2004a, 5). Pastré (Ibidem) nevertheless nuances this opposition, citing the fact that the mastery of a professional situation requires the mobilization of operational knowledge for the action, whose origin is diversified (occupational knowledge, scientific and technical knowledge): «to learn situations, it is necessary to have access to knowledge, even if assimilating this knowledge is a necessary but insufficient condition for the mastery of situations» (Ibidem, 5).

These relations between professional and disciplinary didactics will be discussed further when we raise certain questions relative to the implementation of the former in initial teacher education. Because we especially examine the use of professional didactics in this form of education, we must now, for clarification purposes, address the issue in three steps: first,
world of education in coming years» (Gouvernement du Québec, 2001b, ix, original quote), that of the teaching staff in occupational training seeks to align this training with changes in the sector of professional occupational training and to make it «better adapted to the new realities of this sector» (Gouvernement du Québec, 2001a, ix). A training aim pursuing general teaching practice targeting social, cultural, and cognitive objectives – preparing students for future studies – contrasts with a training aim pursuing teaching with the central objective of inserting students into economic life via the learning of an occupation.

The second distinction concerns the targeted population. That of professional education, unlike that of general education, is trained in view of the labour market. The students in this teaching sector must develop competencies specific to one of the offered occupations. General education, for its part, prepares students for pre-university studies in a cégep⁶, and, later, university studies. In addition, the population of primary and secondary level students is globally homogeneous insofar as it is made up of youths⁷. For teachers, this population stability and homogenization create a different situation than that in which the population is unstable and made up of both young and adult students, as is the case in occupational training. The greater adult population makes this sector characterized by the heterogeneity of its population (Comité d’orientation de la formation du personnel enseignant (COPFE, 1998). This heterogeneity has a direct impact on teachers’ professional act and necessitates a differentiation in the teaching act (Gouvernement du Québec, 2006; Caron and St-Aubin, 1997).

The third difference between the two areas concerns the teaching staff. First, recruiting teaching staff differs in that future teachers of general education pursue their studies seamlessly, while future teachers in occupational training for the most part have professional experience; they have already practised an occupation. Second, the teaching staff in general educational training contrasts with that of professional occupational training when it comes to professional identity. While training for a profession, for instance education, is essential in constructing the professional identity of its members (Altet, 1994), for general education, initial training targets the construction of a professional identity in line with the missions of instruction and socialization mandated by the Quebec ministry of education. Professional identity is either generalist at the preschool and primary levels – as teachers «have taught most of the subjects specified in the basic school
we will distinguish initial teacher education from occupational training, which, it must be recalled, constitutes the original field of professional didactics; second, in continuity with this first point, we will expose various potential contributions of professional didactics to initial teacher education; third, we will address several questions raised by the recourse to professional didactics in initial teacher education and requiring both reflection and adjustment.

3. The specificity of initial teacher education in terms of occupational training

As already mentioned, professional didactics has, until recently, been chiefly concerned in the field of occupational training. The interest in professional didactics applied to the field of teacher education and training is relatively new. The fields of occupational training and its teacher education, on the one hand, and so-called general education and its teacher education, on the other, can be distinguished by several aspects. These differences raise questions concerning the contributions, conditions and limits that can be generated by the recourse, in teacher education, to an approach drawing upon professional didactics, whose links with occupational training are well established. This is why, before considering these contributions, conditions and limits, it is important to distinguish the specificities differentiating the field of occupational training and its teacher education, and so-called general education and its teacher education. In comparing the characteristics of these two fields of teacher education, we will limit our study to five elements. These elements concern the training aims of the two fields, their respective populations and teaching staff, and the professional identity sought by each, as well as their apprehended goals and respective didactic approaches. We would like to highlight that this comparison concerns Canada, and more specifically Quebec. There should nevertheless be strong similarity with other teacher education systems in the world (Organisation de coopération et de développement économiques [OCDE], 2006a, 2006b).

The first difference concerns the aims of these two areas. Although the training of teaching staff in general education (preschool, primary, and secondary) in Quebec targets adaptation to «the changes affecting the system as a whole, in order to adapt them to the new realities that will define the
regulation to a single group of students» (Gouvernement du Québec, 2001b, 169, original quote) – or its identity is strongly marked by the discipline to be taught. At the secondary school level, for example in the teaching of languages, mathematics or science and technologies, the disciplines constitute monodisciplinary exit profiles (Gouvernement du Québec, 2001b). If professional identity is especially constructed following the practice of the teaching profession (Habboub, Lenoir, Tardif, 2004), in the case professional occupational training, the developed identity will be professional, in the sense of an identification with the occupation that is taught.

The fourth difference between these two training and teaching areas concerns their respective goals, and has to do with an epistemic relation to distinct knowledge. In general education, as much in preschool as in primary and secondary school, teaching subjects are relative to the missions of socialization and instruction, with variable intensity. Besides the learning of “living together” (socialization), it is the knowledge belonging to the various academic disciplines (instruction) that constitutes the teaching content. Qualification, the third mission bestowed upon the school system, is understood in terms of academic success, in a perspective of preparation for further training, for further studies. In professional occupational training, it is the professional practises or social practises of reference – in the sense given by Martinand (1986) – that are imposed (Habboub, 2005) and that provide the backdrop and purpose of this training. Both the area of occupational education and its related teacher education are characterized among other things by the specificity of the teaching content, since «they are not traditional academic disciplines and, for this reason, they are scarcely “universitarized” and evolve rapidly» (Pelpel, 1996, 21).

Finally, the fifth difference concerns the didactic approaches used in each area. In general teacher education, the use of didactic disciplines is systematic. In the case of professional teacher education in Quebec, likely due to a lack of research, the situation is quite different, as it is centred on the development of professional competencies appropriated according to the tasks to execute in the context of the occupation or profession. This is why this form of training has adopted a double logic required by the competency-based approach: an action logic (Raisky, 1993) and a situational logic (De Ketele, 2007). Disciplinary knowledge constitutes the «central lever for analyzing and theorizing professional situations and practices» (Lenoir, 2008, 314). The emphasis in teacher education placed on the pro-
fessionalization of the teaching occupation and on the competency-based approach requires a conception of professionality distinct from the previously dominant one. Conceiving of the teacher’s professionality in this new conceptual frame requires its apprehension as a complex and integrating system in which various knowledge types – content-related, contributory, and professional – intersect and intertwine with one another and with practices in usage, with *habitus*\(^9\), values, ideological options, etc., each of these knowledge types being itself composed of various knowledge types. This is the fundamental issue that appears to be generating the current situation in all professional teacher education. It must be observed that the conceptualization of the initial teacher education process struggles to make necessary links between the elements of professionality recommended by the ministry of education (Gouvernement du Québec, 2001a, 2001b) and the teaching activities related to the teaching content.

In the perspective of conceptualizing an approach enabling an actualization of such links, we have conducted an analysis of some 80 texts produced by the designers of professional didactics in the context of our master’s degree in education science (Habboub, 2005). Then, in the frame of the doctorate currently in progress (Idem, 2010), we have carried out another critical review, this time on texts addressing professional didactics in teacher education. This work has allowed us to observe that in Europe, a set of devices in initial teacher education today draw from professional didactics. Basing ourselves on the work and results of international study days organized by the Canadian Research Chair in Pedagogical Intervention and by the Centre de recherche sur l’intervention éducative (CRIE) of the Université de Sherbrooke on the relations between professional and disciplinary didactics (Lenoir, Pastré, 2008a), we now turn to the possible contributions of — as well as the questions raised by — the use of professional didactics in teacher education.

4. Potential contributions of professional didactics to initial teacher education

We will attend to what we consider to be contributions of professional didactics to initial teacher education. We will present only five, once again without pretending to exhaustivity and even less to a hierarchization of their importance, and will describe each briefly.
First, both fundamentally and globally speaking, professional didactics is part of the movement of revaluing the area of professions that had been progressively disqualified «all along the 18th and 19th centuries as underscored by Stichweh (1991, 1994)» (Lenoir, 2008, 311). The system of scientific disciplines first resulted, as Stichweh explains, in «a subordination and subservience of the system of professions to that of disciplines» (Lenoir, Larose, Dirand, 2006, 18) and in the fact that the university hold on training processes led to the «devaluation of knowledge directly stemming from or associated with the actual practice of the profession» (Ibidem).

Second, professional didactics clearly stresses the primordial place of action (the productive dimension) and its analysis as a conceptualization (the constructive dimension), whose fundamental importance in terms of indissociable and complementary functions is explicitly emphasized. One could say in essence that all professionalizing training is animated by a logic of action. This is all the more true in education because it is a service profession, based on social interaction. On the one hand, the insistence on conceptualization is central to works in professional didactics and this insistence is not only relevant in terms of teaching action, in terms of the need to take a critical and thoughtful distance, but also in terms of teaching/learning processes in which conceptualization is fundamental, regardless of the favoured cognitive approach. On the other hand, the emphasis placed on the need to approach a training process from the standpoint of a professional act imposes a re-centring of teacher education on teaching practise, but a practise that can only be activated directly and closely in line with the conceptualization. The actualization of the competency-based approach expected in both teacher education curricula and teaching itself imposes the use of this logic of action and of conceptualization in action, with the effect of overcoming the age-old opposition between theory and practise.

This angle of approach based on the professional act requires decreased compartmentalization between action and its analysis. Pastré (2006) specifically points out that «not everything is learned through action. Many things are learned only through retrospective analysis… Didactization thus essentially consists in combining learning through the practise of the activity and learning through analysis of this activity. Action and reflection are equally indispensable… Activity analysis after the fact is probably the principle avenue leading to the level of conceptualization. Not everything
is learned in the field. Not only can lasting faults be acquired therein, but it has been observed that certain related errors are persistent and resist correction» (Pastré, 2006, 340-341). As we have noted elsewhere (Lenoir, 2008), «Vanhuille… strongly emphasizes the central importance of promoting the exercise of ‘distanced reflectivity’ in teacher education. This reflectivity thus reinforces the previously cited position of Pastré (2006) concerning the tension between experience (professional action within a situation) and knowledge in a teaching/learning situation, between what he qualifies as an operational model and the cognitive model that ‘is expressed according to two registers of conceptualization, namely a practical register and an epistemic one’» (Ibidem, 315-316; see also Pastré, 2008b). Professional didactics therefore underscores the inseparability of theory and practice, as well as the need for mediation through a conceptualizing “distanciation” afforded by a posteriori verbalization. «This distancing ability relative to common-sense daily practise enables the development of reflective distancing, or critical capacity, the awareness of relations with the self, others and the social and natural worlds – and the actions resulting from them – all of which requires the production of verbalized knowledge capable of functioning as tools for analyzing reality» (Ibidem, 316).

Third, professional didactics principally examines the competencies to develop through life-based situations. The notion of situation is central, consistent with the centring on the logic of action and the professional act. It well highlights the fact that, in a training or education process, what is “central” is neither the student, nor the trainer/teacher or the knowledge, but rather the situation as a meeting point between the learning subject and the educator in terms of the required learning. Professional didactics thus paves the way, in our view, for the orientation that should be adopted in teacher education.

In this perspective, pursuing a professionalization process would result primarily from situational analysis (see the situation-activity pair). Although, for professional didactics, the place and function of knowledge appear secondary because it is the situation and activity it requires that is at the heart of the process of developing competencies, this form of didactics nevertheless offers a different logic for conceiving of learning. As noted by Pastré (2004a), there are two possibilities: either «the logic of training construction consists… in constructing a type of learning enabling the assimilation of knowledge, going from simple to complex or from fundamental
concepts to applications and inferences based on them» (Pastré, 2004a, 6), or «training can be organized around situations representative of an occupation. In this case, it is the situation that is the principal organizer and that leads – according to need and thus in a fairly opportunist manner – to drawing from information belonging to various disciplines, and that does not necessarily mobilize the whole of each disciplinary knowledge type» (*Ibidem*). In our view, teacher education that is professionalizing should promote the second possibility, that afforded by professional didactics.

Understanding the work involved in teaching implies understanding and identifying the components of professional knowledge that characterize this work. Through activity analysis, professional didactics offers a way to identify this knowledge. It seeks to examine how operators can use their practical knowledge to make it evolve into a more rigorous conceptualization. It adopts analysis as its principal procedure, accomplished in three phases: 1) analysis of the professional task to extract from it a problem situation that is relevant from a cognitive standpoint; 2) didactic integration of this competency through the construction of a simulation; 3) integration of this simulation into a training device» (Pastré, 1992c, 205). Thus, by calling on various concepts on an operational level, including that of situation, professional didactics «identifies the competencies to be developed in view of constructing training based on problematized didactic situations issuing directly from the professional activity, by transposing them to create didactic situations» (Idem, 1992b, 34). In this perspective, as already mentioned, the area of professions is inscribed in an action logic, which no longer belongs to that of the system of scientific disciplines, but which sees disciplines as indispensable additives or ingredients and no longer as ends. Moreover, as Bouillier, Asloum and Veyrac (2008) highlight, «professional didactics may constitute a relevant frame of reference for the didactization of what Pastré (1994) calls the ‘live’ part of professional situations that leads to an adaptation to the singularity and complexity of work situations» (190).

Fourth, Vanhulle (2008) aptly signals a number of difficulties raised by the implementation of professionalization processes that must combine knowledge, competencies and experiences in real situations. Specifically, professional didactics emphasizes the importance of experience and, more generally, of what is implicit and tacit in professional action, in terms of unspoken or practical knowledge types, incorporated competencies, habitus,
etc. Professional didactics insists on the importance of experience, as both «the goal of the activity and the concept for the activity» (Mayen, 2008, 58), as «it occupies a place and exerts an active function in systems of representation, positioning, thought and action for all players» (Ibidem, 59). We should not neglect the fact, in teacher education, that future teachers have a great deal of experience relative to school and teaching/learning processes, in addition to that which they acquire in practicums in the milieu. This experience and its diverse implicit elements need to be made explicit, formalized, debated in view of their respective professional activities.

Fifth, as we have mentioned elsewhere (Lenoir, 2008), «professional didactics… has the double advantage of centring on the actual situation in its complexity, and on the progress of the activity in a sense differing from that of disciplinary didactics» (Lenoir, 2008, 313). If it pursues an «attempt at rich synthesis between the development of professional competencies to ensure appropriate education and the essential acquisition of disciplinary knowledge needed to design teaching/learning situations» (Ibidem, 313-314), and in so doing it asserts, through its founding orientations based on professional action in a situation context, «the need to consider the teaching practise in its complexity, multidimensionality, and multireferentiality» (Ibidem, 314). In our view, this imposes the need to conceive of professionalizing teacher education using an approach we characterize as circum-disciplinary, which goes beyond the interdisciplinary perspective (Lenoir, 2000a; Lenoir, Larose, Dirand, 2006). Formed using the Latin preposition circum, “around” – adverbial accusative of circus, “circle” – circumdisciplinarity seeks to express the fact that professional training refers not only to disciplinary knowledge and other endorsed knowledge, but also to social practises of reference, knowledge required for action, used as frameworks in training. It is therefore a question neither of apprehending professional training in one or another sense of transversality within two or more scientific or academic disciplines (through), nor of going beyond the discipline and hence leaning toward unity in science based on a set of unifying principles, concepts, methods, and goals acting on a metascientific level and leading to the fusion of various programs or of practise as an indistinct whole (beyond), nor of centring on competencies (below), but rather of action that is integrative, synthesizing and dynamic (in a dialectical, praxeological structure), and finalized by the professional act between the various knowledge constituting professional knowledge, which can in no way be reduced to mere disciplinary knowledge (Lenoir, 2003).
5. Questions concerning the use of professional didactics in the frame of initial teacher education

The use of professional didactics in the frame of initial teacher education does not only present contributions; it also raises questions. We will critically examine two specific points relative to the origins and primary aims of professional didactics that, in our view, must be carefully analyzed in the perspective of its implementation in teacher education: the social aspect and the knowledge that is taught.

Let us begin with the social aspect. Pastré (2002, 2004a, 2008a) points out at numerous occasions that the theoretical origins of professional didactics can be found in the convergence of cognitive ergonomics, Piagetian psychology reinterpreted by Vergnaud, the Vygotskian vision, and the current of disciplinary didactics, whose own origins lie in Piagetian thought (Lenoir, 2000b; Vergnioux, 1991), all of which is geared toward practise, professional education, and continuing professional training. If, on the one hand, the concern for the context in which this practise is implemented is indeed marked in professional didactics – conceptualization being apprehended as an “adaptation to the context” in the Piagetian sense (Pastré, 2008a) – and if, on the other hand, the reference to Vygotsky implies an authentic concern for intersubjective social interactions, considering that the intersubjective dimensions are indeed taken into account, this is not the case for social factors in their external context characterizing both social relations and institutional structures, which can be explained by the fact that professional didactics has principally been involved in professional training in a business setting. But in professional teacher education, the social stakes are quite different, since the aims constitute a fundamental question. Pastré (2009) refers to Rabardel in order to highlight the fact that professional didactics is based on the idea of the “capable subject”. It is insufficient, in the area of education, to acknowledge the potential malleability of human beings and their ability to develop their potentialities to act; it is also important to pose the question of the social aims of these questions, and more specifically of professional action on the part of teachers and trainers, as well as of the social context in which this action is inscribed. It is thus fundamental to pose this question as much in terms of the various stakes – political, economic, ideological, cultural, ethnic, etc. – involved in all educational processes, as in that of the ethical issues that must guide the educational act. We have already shown, for example, the
extent to which ethical concerns may be diverted to managerial or economistic aims in education (Lenoir, 2004), the question of the “how”, of procedures, having evacuated that of the “why”, the aims (Enriquez, 1993). Such a diversion leads to the adoption of a performance model, economic reason having prevailed over democratic values such as solidarity or sociability, hence considered outdated because they cannot be measured and accounted for. The ethical question is thus in the service of organizations. But this ethical question, which has been seized by businesses, can only be a disguised ethic, as Enriquez shows, in that it is in fact much more of an ethology that «borrows its canons from animal behaviour science to implement devices of voluntary servitude ensuring adhesion to the exclusive objectives of businesses and organizations» (Ibidem, 28). In sum, professional didactics cannot, in our view, be implemented in the context of teacher education without being associated, through an effort of reconfiguration, with sociological and ethical perspectives.

Furthermore, it should be kept in mind that schooling pursues two aims historically established during the radical reform of educational systems of democratic nation-states in the 18th and 19th centuries: that of instruction, which is realized through the teaching of disciplinary knowledge, and that of socialization, whose first sense refers to civic education. This last type of education cannot be reduced to an adaptation to the work world, even less to a tendency to conceive of “living together” as a psychological manipulation seeking social control and subjugation. Although it cannot address this aim specific to the academic educational process – like disciplinary didactics, for that matter – professional didactics must, in order to find its place in the area of professional teacher education, distance itself from the performance logic required of professional training in a business context to open itself to the other social dimensions in which professional teacher education and education itself are immersed.

But it must also be questioned – and this is our second point – in epistemological terms with regard to the status and function of knowledge. If professional didactics acknowledges the importance of knowledge, its apprehension differs according to the specificity of teacher education. As previously mentioned (Habboub, Lenoir, Tardif, 2008), for professional didactics, reference to disciplinary didactics cannot be made without taking into account certain limits. These have been articulated by Pastré (1997, 2004a) and by Samurçay and Pastré (1998). One of them concerns the
concept of activity, whose place and function constitute one element opposing professional and disciplinary didactics. In the beginning, although the two forms of didactics originated following the methodical intent of learning in and through an activity, in the case of professional didactics, learning was related to situations in a practical goal of mastery. However, disciplinary didactics involves learning knowledge «with an epistemic objective of understanding» (Pastré, 2004a, 5). Pastré (Ibidem) nevertheless nuances this opposition, citing the fact that the mastery of a professional situation requires the mobilization of operational knowledge for the action, whose origin is diversified (occupational knowledge, scientific and technical knowledge): «to learn situations, it is necessary to have access to knowledge, even if assimilating this knowledge is a necessary – but insufficient – condition for the mastery of situations» (Ibidem, 5). In our view, because teaching is a relational occupation by which a contributor intervenes in the relation established by a learning subject with knowledge objects, in view of creating conditions more favourable to the student’s establishment of a learning process (Lenoir, Larose, Deaudelin, Kalubi, Roy, 2002), it is essential first to distinguish (Lenoir, in press) between, on the one hand, knowledge on practise and formed by scholarly discourse elaborated by research, by the scientific discourse produced by researchers in the world of research, that is, the psychoeducational, didactic, organizational and other endorsed knowledge stemming from their work – and, on the other hand, knowledge stemming from practise, know-how, procedures, routines, recipes, skills, techniques, etc., in short structured discursive fragments issuing from social practices in education setting out explicit procedural competencies required for action.

This practise-related knowledge largely relates to what Pastré (in press) designates as an “operative model”, distinguishing this from a cognitive model. «The cognitive model of an academic subject is composed of the entirety of acquired knowledge enabling an understanding of the functioning of a given object… The operative model of a subject is primarily defined by a goal… This goal enables the selection of organizing concepts providing bases for diagnosing a situation. This is why an operative model constitutes a distortion with regard to its corresponding cognitive model… An operative model is selective because it is oriented by the goal of an action and the diagnosis of this situation that it implies. Besides organizing invariants, it comprises indicators gathered in the situation, which allow for concrete evaluation; it generates a categorization of situations organized
into broad classes, and this enables an orientation of action: each class of situations will correspond to an adapted procedure. An operative model is thus constructed based on the goal of the action and essential properties of the situation required to guide action. This set of essential goal-properties constitutes what we have termed the conceptual structure of the situation. This quote clearly stresses that the logic of action must underlie all professional training, including teacher education. An approach based on the professional act topples the conception that radically separated theory and practise and that subjugated the latter to the former, instead of seizing them in the perspective of a continuous back and forth movement of necessary and mutual enrichment.

But it is also important to distinguish between, on the one hand, contributory knowledge stemming from education science and disciplinary knowledge, a whole of endorsed knowledge serving as a reference, as contributory discipline-tools (epistemology, history of education, educational psychology, educational sociology, educational economics, etc.) that shed light on professional knowledge and give it meaning, and, on the other hand, the knowledge to be taught, the discipline-objects (Lacombe, 1989), issuing at least in part from the scientific disciplines (mathematics, linguistics, history, chemistry, etc.). These disciplines influence the cognitive teaching content of academic disciplines and in some cases are at the source of the academic knowledge contained in teaching curricula, not all academic knowledge being a transposition of scientific knowledge (Hansi, 2001).

It should not be forgotten that the knowledge issuing from the disciplines that are taught constitute the raison d’être of the school (its function of instruction), along with the function of socialization. But professional didactics has not yet confronted this aim of instruction, or of transmission, in other words, of the cultural heritage. Unless the aim of the educational system is reduced to occupational preparation, to the production of “human capital” ready to serve economic interests, education has a fundamental social aim, namely that of educating human beings for autonomy, for the ability to apprehend clearly and critically the world in which they live, for consequently interacting with others within increasingly complex social relationships, and for acting both on and in the world. In short, the primary aim of the school is emancipatory in nature. This issue is all the more important inasmuch as many primary school teachers, in Quebec in any case,
remain confused when it comes to the notions of knowledge, situation, device, etc. Almost obsessed with the development and implementation of activities that they consider likely to “seize” their student’s attention, they forget to infuse these activities with the knowledge to be learned, as if the situations themselves were sufficient (Lenoir, 2006). Thus, for instance, analysis of videotaped practises shows that the use of problem solving in learning situations concerns relational, socio-affective or organizational issues, but does not address cognitive content (*Ibidem*).

To resume the analyses of Vanhulle (2008), in the process of professionalizing teachers, the “training culture” «centred on the development of competencies deemed necessary to exercise the profession» (Vanhulle, 2008, 227) and the “professionalization culture” «which refers to the transfer of competencies and knowledge in defined professional contexts» (*Ibidem*) are supplemented by the “educational culture” «founded on the transmission of referential knowledge stemming from education science (including didactics) and on its appropriation by prospective practitioners» (*Ibidem*). How can professional didactics take into account this “educational culture”, the issue of the transmission/(re)construction of knowledge prescribed by teaching curricula? The status and place of this educational culture cannot be neglected, since it is centred on the teaching subjects for the teacher and on the learning subjects for the student, even when the objectives are specified in terms of competencies. The place of disciplinary knowledge is profoundly changed in the frame of professional training, insofar as this knowledge in no way constitutes the aim of professional training as is the case in disciplinary training, but rather becomes a set of essential and indispensable conceptual mediation tools. In dynamic professional training, it is the professional practices that constitute the aim; it is the professional activities to realize, according to the prescribed task, in the frame of situations that are central to this training.

We wish to recall that «according to Raisky (2009)... “professional didactics, under Pierre Pastré, essentially developed in the context of training devices for adults and continuing education, in which the question of disciplines is scarcely present” [106]. The fundamental question posed, then, is that of clarifying and operationalizing the relation to be established between professional action and the competencies it requires, on the one hand, and the knowledge to be taught, on the other. In the frame of teacher education, as in the practice of this profession, the sole mastery
6. Conclusion

It has been our intent, in this article, after having recalled the principal characteristics of professional didactics and its specificity with regard to the area of teacher education, to highlight various contributory elements that might enrich or reinforce this form of education, while revealing what we consider to be two of its primary and inherent stumbling blocks in light of its origins and areas of application. Studies in this branch of didactics may, in our view, constitute a major contribution to teacher education, but there remains research to be carried out – on the theoretical, empirical, and operational levels, as well as in terms of social stakes – in order to conceive of and ensure its successful insertion into the field of education.

Authors’ Presentation: El Mostafa Habboub, doctoral student in education science and member of the CRCIE and of the Centre de recherche sur l’intervention éducative (CRIE).
Yves Lenoir, research director, full professor, holder of the Canada Research Chair in Pedagogical Intervention (CRCIE), member of the scientific management committee of the Institut de recherche sur les pratiques éducatives (IRPÉ) and of the CRIE.

Notes

1 This article was translated from the French by Joachim Lépine, M.Ed.
2 First, the results of a master’s thesis dealt with critical analysis of the French language academic literature related to professional didactics and the didactics of professional knowledge (Habboub, 2005; Habboub, Lenoir and Tardif, 2008). Second, the primary results of a doctoral research work, entitled L’usage de la didactique professionnelle dans les situations de formation initiale à l’enseignement des sciences et technologies [the use of professional didactics in situations of initial teacher education in science and technology] (Habboub, 2010), is currently being finalized by the first author under the supervision of the second. The intent of this doctoral research is to identify, describe and distinguish the aims, justifications, foundations and operational modes of the use of professional didactics in the frame of initial teacher education.
3 In this article, all translations are ours unless otherwise noted.
4 We have translated the word schème as “scheme” in order to respect the intent of the French; however, translation always entails a shift in meaning.
5 We would like to recall that occupational training (the teaching of occupations) is a teaching sector that has gone by different names, such as special educa-
of the professional act, perfect though it may be in the appropriation of its complexity, is insufficient. Unless the cognitive aim of the educational act is excluded in favour of the aim of socialization, or unless the cognitive process is reduced to mere technological-instrumental dimensions, the disciplinary knowledge to be taught must be at the heart of the teaching practice» (314-315).

If, for instance, for Samurçay and Rogalski (1998), disciplinary and professional didactics adopt parallel approaches, the former makes the transposition and analysis processes primarily carry on knowledge involved in an epistemic objective of understanding, and the latter, on the tasks, situations, and professional activities involved with a pragmatic objective of developing competencies. But the problem of moving beyond this parallelism remains. How can a truly integrative perspective between the three cultures addressed by Vanhulle (2008) be ensured? For his part, Raisky (1993) advances that teaching/learning systems in teacher education should be identical to professional situations in actual workplaces and should have the same properties as actual educational activities. However, although Raisky (1993, 1995, 1996, 1998, 1999) distances himself from didactic transposition and from the didactic processes targeting the decontextualization of the knowledge in question, would it be possible to conceive, in a teaching/learning context, of modelling a situation-activity or situation-knowledge-activity of reference isomorphic with the situation of daily work? Does this signify, unrealistic though it may be, that training should exclusively take place in the milieu of practice? The risk of blunders is quite high, as demonstrated by the English experience. Atkinson (1998) and Goodson (1995) have already sounded the alarming when it comes to training carried out exclusively in the field and based solely on practical experience. Learning by doing is assuredly one relevant avenue, but it is insufficient insofar as, if it constitutes a sealed training universe, it cannot guarantee the development of reflective and critical thought as well as metacognitive abilities permitting distanciation from and conceptual analysis of one’s own practices. Is it not more realistic to think in terms of homomorphic situations, as conceived by Raisky (2008), inspired by Vergnaud (1981, 2000)? The question, in our view, still stands today, particularly in view of the links to be ensured between teaching content, disciplinary didactics and professional didactics.
tion (enseignement spécial), the teaching of arts and trades (l’enseignement des arts et métiers), trades training (l’enseignement des métiers), and, more recently, vocational education (enseignement professionnel). It is also known as professional training (formation professionnelle) in secondary school. It is therefore essential not to confuse professional occupational training with professional teacher education. In Quebec, this training is under «the responsibility of school boards and of certain private establishments». It ensures study leading to qualification for both young and adult students. It also promotes integration into the world of work as well as mobility and adaptation to the labour market. With the new program organization in effect in Quebec, professional education must also enable the pursuit of studies for interested students (Gouvernement du Québec, 2001a, p. 11, 2002a).

6 The Quebec school system is structured in the following way: two-year preschool education (including one mandatory year at 5 years of age); six-year primary education (from 6 to 11); five-year secondary education (12 to 16); three-year technical education (17 to 19) or two-year pre-university education (17 to 18) in a “collège d’enseignement général et professionnel” or “cégep”; three-year first-cycle university education (four years for doctors, engineers and teachers) leading to a bachelor’s degree; three- or four-year second-cycle professional or research training leading to a professional or research master’s degree; the doctorate whose time frame is not fixed, but generally involves four to five years of study, structured in various ways according to the disciplinary and professional fields involved.

7 The term “youth” refers to young students in both general and professional education. To be considered youths in general education, students must be under 18 years of age, but must have attended an educational institution (Gouvernement du Québec, 2003, 2005a). In professional training, the same criteria are applied with certain additional specifications for students 18 years of age and above. The term “adult” refers to students considered adults in general and professional education at the secondary school level. The term “adult” designates students above the mandatory schooling age, which in Quebec is 16 (Beaudet, 2003), as well as students who have acquired a secondary school diploma (Gouvernement du Québec, 2003).

8 According to Caillot (2002), «professional education is absent from the preoccupations of didactics researchers» (p. 3). And although Caillot (Ibidem) describes the situation of professional education in France, it is also applicable in the case of Quebec. Indeed, few research works have studied professional training (Gouvernement du Québec, 2006b; Habboub, 2005).

9 We have retained the word habitus in translation in order to respect the intent of the French; however, translation always entails a shift in meaning.

10 The procedure for analyzing work activity, as an operationalization process, seeks the development of training modalities (Mayen, 1998b, 2003; Pastré 1999b) or situations targeting the development of professional competencies (Mayen, 1997, 1998b, 1998c, 1999b, 2003; Pastré, 2002).

11 We have translated the term disciplines-objets as “discipline-objects” in order to respect the intent of the French; however, translation always entails a shift in meaning.
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