

## **An Element of Practical Knowledge in Education: Professional routines**

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Article abstract

The question of practical knowledge and its teaching has arisen more perceptibly since the appearance of the aim to professionalize teachers. How can imperceptible knowledge such as professional routines be taught? To establish a social fabric and effective class management, it is essential to call on creative and adaptive professional routines. These routines support the interpretation of daily life, effectiveness, and a sense of security among both students and teachers; it is a frame favouring successful classroom management. Professional routines come under the scope of integrated competencies, and this prompts their analysis in view of understanding a central link within initial training. This paper will present the concept of professional routines as an educational practice in which practical knowledge is combined with professional learning, then the conceptual frame, the analytical method, and the results of two research projects, followed by a concluding reflection.

# AN ELEMENT OF PRACTICAL KNOWLEDGE IN EDUCATION: PROFESSIONAL ROUTINES

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**ABSTRACT.** The question of practical knowledge and its teaching has arisen more perceptibly since the appearance of the aim to professionalize teachers. How can imperceptible knowledge such as professional routines be taught? To establish a social fabric and effective class management, it is essential to call on creative and adaptive professional routines. These routines support the interpretation of daily life, effectiveness, and a sense of security among both students and teachers; it is a frame favouring successful classroom management. Professional routines come under the scope of integrated competencies, and this prompts their analysis in view of understanding a central link within initial training. This paper will present the concept of professional routines as an educational practice in which practical knowledge is combined with professional learning, then the conceptual frame, the analytical method, and the results of two research projects, followed by a concluding reflection.

## ÉLÉMENT D'ANALYSE DU SAVOIR PRATIQUE EN ENSEIGNEMENT: LES ROUTINES PROFESSIONNELLES

**RÉSUMÉ.** La question du savoir pratique et de son enseignement se pose de manière plus perceptible depuis la visée de professionnalisation de l'enseignant. Comment enseigner un savoir imperceptible comme des routines professionnelles? Pour construire un tissu social et une gestion de classe efficace, il est essentiel de recourir à des routines professionnelles adaptatives et créatives. Les routines à l'œuvre soutiennent alors l'interprétation du quotidien, l'efficacité et le sentiment de sécurité tant chez l'enseignant que chez les élèves, c'est un cadre qui favorise la réussite en gestion de classe. Les routines professionnelles relèvent de compétences incorporées, ce qui force à leur analyse pour une articulation phare opérant en formation initiale et continue. Nous présenterons le concept des routines professionnelles comme une pratique éducative où savoir pratique et apprentissage professionnel se conjuguent, le cadre conceptuel, une méthode d'analyse, les résultats de deux recherches, pour conclure sur une réflexion.

## INTRODUCTION

In the 2000s teacher education aimed to professionalize teachers (Gouvernement du Québec, 2001) in view of reasserting the value of the teaching occupation, consistent with the threefold mission of Quebec schools – to instruct, to socialize, and to provide qualifications – instituted following the 1996 États Généraux (a commission on education, which over the course of a year surveyed the population on their needs and expectations of the future of the Quebec education system) in the province. This professionalizing aim raises the question of training in alternation (sandwich courses) developed in university programs from the standpoint of the logic of competency-based training, the paradigm of the reflective practitioner, and the tension between theoretical knowledge and explicit or implicit practice. One of the objectives of the professionalizing aim is to address the complexity of new demands made on teachers. Can this complexity be controlled by teaching relevant knowledge? Will this knowledge be pertinent to practice? What does continuing education for adults have to say concerning this knowledge? According to Malglaive (1990), observing the disciplines that make up the contents of student teacher preparation for practica does not necessarily reveal direct links between this knowledge and the competencies needed in practicum activities. Theoretical knowledge and knowledge related to professional experience are neither homogeneous, nor hermetic – a situation that sometimes leads to misunderstandings within a *dispositif* or training plan (Feyfant, 2010). What is the relation of theoretical work to practices and practitioners?

The theoretical knowledge involved in action plays a number of roles. First, according to Wulf et al. (2004) and Malglaive (1990), it plays a heuristic role of guiding action and its procedures by offering possible ways to accomplish the ends of this action. Practical thinking constantly seeks solutions, while always having at its disposal procedural knowledge previously tested in other conditions. For example, the thousands of hours spent in school by student teachers contribute to developing procedures and ways of doing things to successfully complete school activities. Second, theoretical knowledge plays a role of economy, since it enables action to take place on an abstract level – the symbolic world – before it takes place on a concrete level – in the material world. Consider the example of the conquest of space. People had no practical experience with space, but theoretical knowledge permitted enough learning about related conditions to make space exploration possible. It should be mentioned that practice must eventually take place in the conditions of reality. Finally, theoretical knowledge enables control of action exerted on reality by allowing one to learn of the transformation undergone by reality over the course of this action. An example would be the teacher who questions students about their understanding of a text. Theory explains the learning process involved in this questioning, but does not identify the means required within action to regulate the cognitive process. It is the theoretical relation of academic or

theoretical works to practices and practitioners that must be examined. The relation is not one of application, as is too often said, but rather of “intervention.” Theory is what comes in between. It contributes to practice, becoming the object of knowledge that permits more efficient action on reality, as in the above example. This is what must be described in work on the observation of practice in education.

We have just stated that practice derives from theory, but is it also a producer of theory? This is a difficult question to answer; following Malglaive (1990) one could say that the historical development of theory is rooted in practice. Of the complexity of the many dimensions of action, theory chooses only those that are distinctive for action and its effectiveness. This freedom from practices favours better piloting of professional practices, such as routines in education. Our research perspective is thus part of a greater effort to understand the process of professional development and of formalizing teaching practice among student teachers and experienced teachers. Within the current framework of professionalization, teaching is recognized as a practice requiring substantial expertise. Studying practice – rather than neglecting its existence or considering it only as an art – is thus a priority.

One challenge of the two research works here cited is to focus on actual teaching practice and not only on declared practice, which is sometimes marked by a discourse of desirability. To what extent are teachers able to construct, install, and consolidate their professional routines? We have questioned the paradoxical silence surrounding the process of building professional routines to support successful classroom management. Educational researchers such as Kagan (1992), Reynolds (1992), Wang, Haertel & Walberg (1993), Gelin, Rayou & Ria (2007), and Archambault & Chouinard (2009) underscore the importance of teaching professional routines to student teachers, but omit to specify how to construct them. Can this act be constructed? How? An imperceptible grey area remains when it comes to the training plan established to support the construction of this integrated competency. According to Leplat (1997) and Wulf et al. (2004), integrated competency in a sense adheres to action; it is easily accessible, difficult to verbalize, economical with regard to mental demands, and closely tied to (and difficult to dissociate from) a situated context, all of which renders it invisible within successful professional action. It is nevertheless essential to recognizing and assessing a more complex competency such as that of classroom management.

The conceptual frame used in our analysis draws from the sociology of work and the theory of knowledge investment and formalization. These components have led to characteristics of the construction process as a way to favour investigation of the actual practice of student teachers at the secondary level. They previously contributed to data analysis in the author’s doctoral research (2004) on the construction of professional routines among future teachers of

secondary school, as well as educational intervention and classroom management.<sup>1</sup> They also supported data analysis in the frame of research funded by the SSHRC<sup>2</sup> concerning the development of a professional framework based on teaching practice (Référentiel professionnel [RÉFÉPROF], 2007).<sup>3</sup> The primary question was, how do future secondary-level teachers and experienced primary-level teachers build professional routines? The secondary questions were, what are these routines? What are their functions? How are they learned (construction of practical knowledge)?

This article will first highlight the importance of professional routines as a competency integrated into action, then address the relevance of professional routines and the conceptual frame adopted. The methodology and empirical results of both research projects will be presented to answer the primary question as well as certain elements of the secondary questions.

### PROFESSIONAL ROUTINES IN CONTEXT

Professional routines have often been viewed negatively, as common sense tends to look down on them (Lacourse, 2004, 2008). Expertise in professional routines is nevertheless recognized in many professions (routine examination, routine investigation) and much research on work analysis recognizes its necessity. This recognition enables the sharing of effective structuring practices between members of a practice community, a reduction in the complexity of work situations, the avoidance of contempt, and the creation of a social fabric. Professional routines favour a sense of psychological security at work because they offer procedures to guide everyday actions and ways of doing. De Certeau (1990) and Wulf et al. (2004) mention that they are anchored in action schemes relative to interpreting daily life. The lack of professional routines generally entails frequent loss of time and irregularities in pacing and momentum in teaching/learning situations. This does not, however, preclude the existence of erroneous or calcified routines that yield dysfunctional practice, loss of motivation, and resistance to change. Moreover, some authors cite routines as an obstacle to change when introducing a given innovation. Many North American researchers and expert teachers refer to routines as a mandatory passage for student teachers and novices who want to succeed in classroom management (Carter, 1990; Doyle, 1986; Kagan, 1992; Reynolds, 1992; Lacourse, 2004, 2008; Eyster & Martin, 2010). Altrichter, Posch and Somekh (1993) point out that although some denigrate routines in education, their use presents numerous advantages. For example, they can:

- decrease the amount of information to deal with at the same time;
- decrease the number of decisions to make during action;
- increase the stability of activities;
- increase the teacher's availability to student reactions; and

- decrease anxiety among primary and secondary school students, by making the teacher's expectations more predictable.

The concept of professional routine is more complex than it might appear at first glance and warrants a definition.

## THE PROBLEM OF PROFESSIONAL ROUTINES IN EDUCATION

To accurately describe the professional routines used in effective everyday educational intervention, this article will analyze four dimensions: situated action, teacher thinking, functions, and characteristics.

### *Situated action*

Daily sequences of implemented lessons constitute recurrent cycles, and situated action plays a significant role in elaborating and implementing action. Suchman (1987) specifies that the realization of action is not entirely regulated by a prior plan. For her, the objective of a lesson plan is not to determine every detail of an undetermined educational situation, but to provide teachers with the conditions for an effective use of the incorporated competencies on which their success depends. Anticipating the details of the course of action within interaction is impossible for teachers before they reach a certain point in their action. In this conception, the actor, the activity, and the world constitute one another in a situated manner, and a sort of social fabric is created. As a result, we can consider that routines—these incorporated competencies—can, in the course of action, adjust to the particularities of the situation, to external factors such as student mood and incidents that are likely to arise.

### *Teacher thinking*

Studies on teacher thinking that take into account the expert/novice paradigm (Desgagné, 1994; Gauthier, Desbiens, Martineau, 1999; Leinhardt, Weidman and Hammond, 1987; Tochon, 1993) also confirm the existence of routines in the professional action of expert<sup>3</sup> and experienced teachers. They note that these teachers generally have a repertoire of 15 or so routines, including 3 or 4 variants. However, they also suggest that metacognitive competency is less developed among student teachers and beginning teachers, who consequently neglect contextual clues and useful information pertaining to the students they manage. This shortcoming slows the creation of relevant routines and hinders their effectiveness, saps their energy, and prevents them from establishing the critical distance required to correct their errors. It should be noted that 15-20% of beginning teachers abandon the profession within the first five years of work. Professional routines generally help to transform the negative element of a situation into a positive one.

### *Management functions*

Based on the work tools of expert teachers, researchers have been able to identify certain functions of routines. Leinhardt, Weidman and Hammond (1987) analyzed the logbooks of six mathematics teachers at the secondary level, as well as their planning and filmed interventions, then categorized the data. They identified three functions: a management function, a support function, and an exchange function (involving teacher-student communication). According to these authors, a sense of disorder and time loss is experienced when these routines are absent. The teacher ends up talking to himself and the students do not listen. For these authors, as well as Nault and Lacourse (2008) and Eyster and Martin (2010), it is crucial that teachers establish their management routines gradually from the beginning of the school year – that is, in the first three or four days of school – by training their students. When an action is successful, students should be congratulated to provide positive reinforcement; when an action is poorly carried out, the action should be corrected. In the first level of secondary school, a larger number of management routines are introduced at the beginning of the school year, while in the second level, teachers emphasize socio-communicational routines and routines that support teaching. At the middle of the school year, and regardless of the level, one can observe the maintenance of many routines that support teaching, including questions and transitions. The other functions wane. It is in transition moments that teachers use the most routines, that is, before activities and between the activities of a teaching cycle. Transitions prove to be the most difficult management moments to master for future teachers (Nault & Lacourse, 2008). Student teachers must be familiar with and understand their associate teachers' routines. If there is a change in procedure, the students must be made aware of it. Student teachers must be ready to create and maintain professional routines to attain fluid practice without idle time. The inconstant application of professional routines among student teachers leads to inconsistencies that destabilize students. It is important to get student teachers in the habit of installing professional routines during their practical training. Yinger (1979) spent five months examining the planning and planning-related discourse of an experienced primary school teacher. He identified four functions of routines: 1- managing the activities, 2- managing the teaching, 3- managing the classroom (time, configuration, and behaviour), and 4- managing the implementation of planning. He notes that “routinization” is not centred on the knowledge to teach, but on elements of the work context: participants, sequences, durations, conduct, and a positive atmosphere conducive to learning. According to this author, the routinization of planning frees more time to reflect on the teaching content and to develop original approaches to transmit this content.

Can these functions really be generalized in teacher education? This can be doubted, since it is experienced teachers who contributed to these works

prior to the 2001 reform. To summarize, three functions dominate: teaching management, spatio-temporal management (space, time, conduct), and socio-communicational management (questions, inter-communicational relationships). The teacher's implementation of a routine can cover one management function or more, since the functions are not impermeable or exclusive and, in general, the educational practice of an individual must be multi-dimensional (cognitive, affective, spatio-temporal, relational) to bear fruit.

### CHARACTERISTICS TO DISTINGUISH WAYS OF DOING THINGS

Routines have characteristics that enable, among other things, specification of the individuals concerned by the intentions of the teacher's action, thus giving students a feeling of security. Selleri and Carugati (1999) mention the academic macroroutines that organize microroutines. According to these authors, the macroroutines that shape lesson structure are clearly identified by teachers and students. These include, for example, welcoming students, discussions on modern themes, sessions for questions or written reports, exercise sessions, the end of class, in short "activities that characterize the life of the entire class, insofar as they belong to devices established by the school system" (p. 282, our translation). These macroroutines contain microroutines such as granting permission to speak, allowing or disallowing students to move around during class, and the like. Routines are collective when they address the entire class, individual when they concern a single student, and sometimes both.

As previously mentioned, routines can be explicit or implicit. They are primarily implicit because they are not conscious or formalized. They constitute a series of modular procedures put into place like an algorithm according to an arrangement relevant for attaining the initial intention. As in an expert system, one can find a variant of the procedure when an obstacle or a discrepancy from the intention appears. Using a heuristic allows the teacher to find an immediate solution. The characteristics just mentioned distinguish routines and are summarized in Table 1 below.

TABLE 1. *Conception of routine characteristics*

Macroroutines	Microroutines
Collective	Individual
Adaptive	Calcified or Fixed
Explicit	Implicit
Algorithmic	Heuristic

Table 1 uses two columns to present the eight characteristics of routines in their polarity, magnitude, and adaptive capacity.

In education, when routines are installed and maintained properly by the teacher, we observe effects on those of the students; this is the *effet maître* or teacher effect (Bressoux & Dessus, 2003). Established management rou-



tines therefore greatly contribute to raising student awareness and to making students autonomous in their commitment to the learning process. The students identify the type of support that will be provided. Many authors (Blin & Gallais-Deulofeu, 2001; DAVISSE & ROCHEX, 1997; Gauthier, Desbiens & Martineau, 1999) point out a number of problems at the source of a lack of discipline among students when the teacher has not routinized a large part of his or her actions related to the teaching process on a didactic-pedagogical level. To cite a few problems of classroom behaviour:

- student or classroom refusal to cooperate (lateness);
- refusal to follow rules of conduct and work procedures (chattering);
- rejection of certain individuals (mockery, scapegoating, bullying);
- lack of autonomy and attention (repetition of instructions, cheating);
- approval of deviant behaviour (approval of “class clown,” insolence);
- public criticism of the teacher (claims, accusations of injustice); etc.

The researchers referred to above submit without exception that the entire construction process appears to be implicit, natural, or spontaneous, though they also note the required repetition of action. The question now arises: How are professional routines constructed?

## A CONCEPTUAL FRAME TO INCREASE UNDERSTANDING

In light of certain unknowns, it seems essential to specify how the construction of professional routines is conceived through educational intervention, the sociology of work, and the theory of knowledge investment and formalization proposed by Malglaive (1990).

### *Educational intervention*

The concept of educational intervention enables the analysis of practice in all its complexity while taking into account, in particular, its organizational dimension, to which classroom management belongs. It makes possible an analysis of practice in its various phases (preactive, interactive, and postactive) and sheds light not only on the interactive relation between the students and the teacher (and vice versa), but also on the teacher’s cognitive and affective mediating function in the learning relation established between the students and the knowledge objects (Lenoir, Larose, Deaudelin, Kalubi & Roy, 2002).

Educational intervention implies meaningful justification; it involves a meaning that action alone does not require. In this sense, as Couturier & Daviau (2003) explain, intervention appears as the rational application of a method. This application is gradually constituted from tacit and implicit elements and requires a good relational climate – created by verbal means and by the social

fabric - to be effective. Consequently, the notion of educational intervention underscores the need to conceive of the relationship created between the learners and the teacher by using concepts (situation, mediation, device) that permit a description of this interactive phenomenon. Intervention also highlights the need to understand educational and training practices as a situated, collective, shared, and concerted undertaking (Tardif, Lessard, Lenoir & Gauthier, 2001).

It could be said that educational intervention is a condition for professionalism and is directly related to the current of professionalization in Quebec educational policies (Gouvernement du Québec 1992, 2001). To work on the educational intervention of teachers is to acknowledge the diversity of teachers' real know-how, such as professional routines, which are often perceived as unconscious but geared toward influencing learners. Using the notion of intervention nonetheless leads to recognizing the need to manage grey areas in the teacher's work. It requires an effort of rationalizing this work, its situation in the world of systems, with the technical- and Taylorization-related issues this entails.

### *A sociology of work*

One of the concepts most closely related to the idea of the routine is undoubtedly the "habitus" elaborated by the prolific French sociologist Pierre Bourdieu (1980). This habitus generates social practices learned by assimilation, social facilitation, and imitation: it is "a generative grammar of actions," a variable syntax of know-how, a mediation between internalized objective relations and the social and individual behaviours to create a functional social fabric. The more social relationships are standardized and institutionalized, the more likely learners are to fulfil typical expectations. This "how to" knowledge learned by social assimilation - without the intention of learning - will transmit ways of doing things that imply a certain reproduction (Wulf et al., 2004), sometimes with pernicious effects. Resorting to a pedagogical approach consisting only of lecturing in one's teaching practice, rather than favouring differentiated instruction, is a good example of the sometimes harmful effects of social reproduction. The habitus thus appears to concern practices that are learned, but repeated more or less consciously, without always being directly related to the situation at hand. Bourdieu (1980) nevertheless relegates the key role in constructing the habitus to a tacit process.

For Giddens (1987), routines are not carried out without thought, but must be continuously exercised in undetermined daily situations together with the other individuals present. For this British sociologist, social actors maintain a sort of interdependence, so that even from a position of subordination, they can influence the circumstances of action. One could cite students who spontaneously decide, on a Friday afternoon, to end the lesson five minutes early. What can the teacher do? Hence, all structuring of practice requires both a reproduction related to the notions of continuity and stability, and a

transformation that ensures change in practices. One cannot exist without the other. This observation establishes a relation of change and continuity that appears interesting insofar as it supports creativity.

### *A theory of knowledge investment and formalization*

What does it mean to construct, cognitively speaking? Constructing designates an abstract action that goes from the inside to the outside, an action by which constituents are organized in a stable and flexible way according to a proper serial order. All know-how has a beginning and an end, a trajectory, but it remains abstract as long as it is not integrated into an activity and thus made part of a procedure (Malgaive, 1990). As a result, all construction is elaborated based on prior knowledge and comparisons with other members of a professional milieu, so that each member creates a distinct syntax, a distinct grammar of action. In other words, cognitively speaking, know-how is broken down into component parts and reconstituted in a verbalizable and observable discourse. Constructing, in the frame of this study, means that the actor:

- invests procedural knowledge in action, within a stage that concerns a mode of action or know-how;
- transforms recurrently successful know-how into his or her practical knowledge; and
- formalizes discourse in a conceptual mode so as to ensure communication or transferability (if the know-how / practical knowledge pair is enunciated in discourse).

Verbalization of the steps of action and heuristics referred to as variants enables one to infer that a cognitive construction process has taken place. Malgaive (1990) clarifies this progressive construction process when he mentions, following Bruner (1983/1987),<sup>5</sup> that it is under the control of an intervention targeting an object that the modular actions of know-how are organized into a sequence. This intention precedes and guides action, providing it with the end criterion. For this author, intentionality is not an element that constitutes action, but rather an element that organizes the functionality of action. The key element to understand is that action is the visible and operational expression of intentionality. It is at the modularization stage that action presents a supple form of organization, as in the assembly of units on a wall shelf. The long-term intention ends up taking charge of the correct control and syntax of actions that it requires, and putting them together in a single act that can be described as modular know-how. If this action is analyzed, there will be a division of the serial whole in view of an explicit reconstruction. It should be noted that the situation analyzed in action must be seen as compatible with the next state expected or the next activity. This construct serves as a lever in our analysis of professional routines. Figure 1 presents the intra-structuring of the process of building a professional routine.

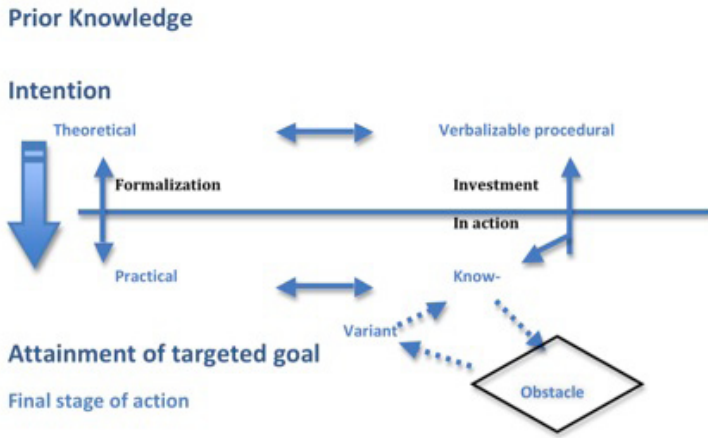


FIGURE 1. *Diagram of the process of constructing a routine* (adapted from Lacourse, 2004)

Figure 1 shows that the process of constructing a routine can be verbalized. Procedures are the steps that can be modelled, and thus illustrated, in a diagram. The intention animates, defines, and organizes the professional routine, in addition to making it functional. The two works referred to in this article postulate that, based on Malglaive's (1990) investment/formalization theory, it is possible to question the procedural knowledge invested in know-how by student teachers at the secondary school level as well as by experienced teachers at the primary school level. This conception of knowledge has the merit of accounting for real action by creating a network of logical links between actions. This process, which is presented in Figure 1, illustrates that the variant produced by the heuristic is central to our conception of construction. It is at this point that it is possible to confirm the integrated competency. It is this construction, through the creation of variants, that will allow routines to adapt to the situated actions involved in educational practice; these variants can then be integrated by the actor as know-how and may become practical knowledge, a component of professional *savoir agir* or "knowing how to act." This transformation completes the investment-formalization process as understood by Malglaive. The next section will address the methodology used to validate our conceptual frame.

## METHODOLOGY

This research is exploratory and descriptive. It has enabled the elaboration of tools that can be reinvested in research and in training. Following doctoral

research, a reinvestment was carried out in the context of a SSRHC grant, and titled RÉFÉPROF.<sup>6</sup> Given the aim pursued in the frame of both research projects – that is, understanding and describing the process of constructing routines among future teachers and experienced primary school teachers, as well as establishing a certain modelling approach – the semi-structured interview was chosen. A pre-testing phase allowed validation of the manual for the semi-structured interview and the addition of probing or follow-up questions. The objective was to reveal the syntax of procedural knowledge that composes the typical routines of student teachers and experienced teachers so as to infer the construction process. Finally, five themes in line with sought-after observable elements were identified: 1) intentions, 2) procedural knowledge, 3) know-how and its variants, 4) the functions and characteristics of routines, and 5) origins and influences.

### *The participants*

For the doctoral project addressing the secondary level, thirty graduates of the 1999-2003 cohort accepted to participate as volunteers in the summer of 2003, including students from the following profiles: English as a second language, French/history, French/geography, the humanities, mathematics/computer science, mathematics/physics, and experimental sciences. For the RÉFÉPROF research, six experienced primary school teachers (between 8 and 29 years of experience) – volunteers from the three cycles of primary school – participated in the semi-structured interviews in spring of 2006.

### *Data collection and analysis*

Data analysis was carried out using semi-structured interviews and video recordings. The interviews followed a certain progression. The data collection method was situated in a face-to-face relationship between interviewer and interviewee. The interviews were audio-recorded, then transcribed in accordance with the approved code of ethics. Finally, to analyze the corpus of data, our approach was based on extensive analyses of participant discourse. It can be summed up in four moments: pre-analysis, coding and counting, categorization, and interpretation. These four steps do not equate with operations that must be carried out sequentially and linearly, but with operations that must be carried out in a dynamic of mutual enrichment (Hasni, 2001). This way of processing the corpus of data from the textual discourse enabled validation of the analysis during at least three moments: the identification of discourse segments, the grouping of segments, and the answering of the objectives and of the research question during the introduction of inferences.

A FEW RESULTS CONTRIBUTING TO THE FIELD OF KNOWLEDGE

*Salient points of secondary-level research*

When it comes to the dimension of the procedural knowledge and know-how that compose a routine, among the 300 routines identified in the discourse of the 30 student teachers, we grouped ideas that were similar and that were mentioned by five or more participants, thus generating a typology of 15 routines. Table 2 presents these routines.

TABLE 2. *Distribution of student teachers in terms of typical routines (adapted from Lacourse, 2004)*

Number of student teachers	Routine name
5	Vocabulary (new words, language, etc.)
5	Example (everyday life or environment)
7	Correction (exercises, tests, exams, homework)
7	Obtaining attention (obtaining silence)
7	Feedback (motivation, reinforcement, feedback)
9	Instructions
9	Management of instructional materials (distribution and collection of handouts, etc.)
10	Content (visual illustration, overview of upcoming notions, module introduction, spatial geographical situation, drawing on the board, transparencies, links with content, de-dramatization of concepts, links with math notions)
11	Questions (personal, didactic, pedagogical, interactive question-answer)
13	Roll call
13	Active supervision of students (walking around the rows)
14	Agenda on the board
14	Review of... (last class, lesson, activity, learning, reminder, planning)
20	Welcome (greeting, introduction, daily announcements, activity introduction)
24	Conclusion (end of class, summary, recapitulation)

The left column of Table 2 shows the number of student teachers who mentioned the term either explicitly or through a closely related idea. The number of routines per student teacher ranged from five to thirteen, regardless of profile. The data reduction process revealed the diversity of terms used by student teachers to discuss the same action. In addition, few variants (heuristics) were identified. The temporal pedagogical structure of various routines involved in a lesson cycle was also generated. Moreover, a threefold structure of lesson progression can be observed: 1) the opening, 2) the development of teaching and the organization of action, and 3) the closing.

As for the dimension of routine characteristics and functions, the results obtained are largely consistent with the data results of other North American studies (Kagan, 1992; Leinhardt, Weidman & Hammond, 1987; Reynolds,

1992). The professional routines of student teachers are primarily characterized by the fact that they are collective, micro, and implicit. The characteristic of adaptability was impossible to validate based on the corpus of data examined, and caution remains necessary in regard to the rigidity of routines used by student teachers. In terms of the functions of the various routines, the results show the predominance of the teaching management function related to students' relation to knowledge and the pedagogical-didactic dimension of educational practice.

The result of the corpus analysis allows us to identify three categories of non-exclusive origins of routines: training program courses, spontaneity, and practicum experience. With regard to this last category, what is surprising is that the "roll call" routine is preponderant and exclusively comes from experience gained in practica, which means that it appears to be addressed only by the school environment. The nine routines referred to for practicum learning are the welcome, roll call, review of..., the content, the management of materials, the conclusion, obtaining attention, and instructions. The student teachers stated that nine routines were spontaneous and natural: vocabulary, questions, content, examples, management of materials, correction, class conclusion, and feedback. It is surprising that the "questions" and "correction" routines are exclusively related to spontaneous origins. What is taught in training? The observation of the implicit nature of professional routines is hence not exaggerated. The category of the influence of courses involves nine routines: class agenda, welcome, review of..., vocabulary, correction, conclusion, feedback, active supervision, and instructions. In this category, the student teachers attest to the contribution of university knowledge, so that one might consider that university learning does indeed play a part in the construction of professional routines. The devices that allow retention of this learning nevertheless remain to be identified. Finally, it is possible to say that the construction process is a non-linear process of knowledge investment/formalization. Based on prior knowledge, this process leads to procedural knowledge that is invested in know-how in action without, however, possessing variants.

### *Elements of the primary-level research (RÉFÉPROF)*

A larger number of variants were observed among the six experienced primary-level teachers. By extension, one can speak of integrated competencies among these teachers. The results of data analysis allowed identification of 90 routines for the six teachers. Similar statements were grouped and those mentioned by two or more teachers were taken into account. This led to a typology of 12 routines. Table 3 presents these routines.

TABLE 3. *Typology of professional routines among six experienced primary-level teachers*

Routine Names	Teachers
Brainstorming new words with ABCs ( <i>Tempête des lettres-syllabes</i> )	1-6
Individual reading	2-5
Reinvestment	1-4
Instructions	4-7
Reinforcement	1-2-6
The work method	2-4-5
Adaptation of teaching	1-4-6
Checking understanding	4-5-7
Materials	2-5-7
Implementation of attention-listening	1-2-4-6
Transition	1-2-4-7
Reminder	2-5-6-7

Table 3 confirms the results of other research according to which teachers control the organization and sequencing of events in interaction, while the students contribute to defining the work and expert teachers have three to four variants per routine. The first two routines are specific to the teaching of French, while the ten others are common to a number of disciplines. It can be seen that three routines, namely attention-listening, the transition, and the reminder are common to a larger number of teachers (four). We can observe that six of the routines are comparable to those identified by secondary-level student teachers: 1) the *tempête des lettres-syllabes* or brainstorming new words with ABCs (vocabulary), 2) reinforcement (feedback), 3) instructions, 4) management of materials, 5) establishing attention-listening, and 6) the reminder. This observation offers a glimpse of the feasibility of developing a common language to describe professional routines in education.

Analyzing the corpus of primary-level teacher discourse enables improvement of the analytical frame used in the doctoral research in terms of the functions of routines. The three basic functions (teaching, spatio-temporal, and communication) could be supplemented with the “socio-affective management function” developed by primary-level teachers to support child development. Socio-affective management considers the relation to emotions, feelings, values, the need for security and motivation.

## CONCLUSION

This article has explained the meaning here given to the term “construct” to meet the dual objective of advancing a frame of common understanding and to explain how we can then infer the process by which student teachers and in-service teachers construct professional routines. As recognized in this paper based on the knowledge formalization/investment theory of Malglaive (1990),



the process of constructing a professional routine can be described as follows: 1) to be able to verbalize the procedural knowledge that constitutes a routine, 2) to be able to invest procedural knowledge in action, and 3) to adapt action by means of variants as incidents are encountered. This construct brings the process of constructing professional routines out of the shadows, out of what is imperceptible and tacit. It touches on the potentiality of human intention in all situated action.

The results of the corpus of research data concerning student teachers at the secondary level show that the construction is a non-linear process of knowledge investment/formalization undertaken by the individual. The results of the corpus of research data concerning primary-level teachers confirm the adaptive integration of routines among experienced teachers, and serve as a reminder that functional professional routines are both adaptive and creative.

Finally, this paper highlights the help student teachers and in-service teachers can receive to identify the construction of their professional routines using two of the methodological tools: semi-structured interviews and video recordings. The results also point out the need to develop a professional vocabulary and to establish relations with the professional induction of beginning teachers and continuing education.

#### NOTES

1. La construction des routines professionnelles chez des futurs enseignants de l'enseignement secondaire : intervention éducative et gestion de la classe.
2. SSRHC Standard Grant 410-2004-1887 (2004-2007). Contribution au développement d'un référentiel basé sur la pratique enseignante : à quelles compétences professionnelles les enseignants du primaire recourent et disent recourir dans leur pratique?
3. "Référentiel professionnel," Contribution au développement d'un référentiel professionnel basé sur la pratique enseignante (contribution to developing a professional framework based on teaching practice).
4. Tochon (1992) describes teachers according to three research orientations. First, expert teachers are those who are able to solve complex problems specific to their field (in the research, expert teachers are often consulted regarding their action plans and practices). Second, effective teachers are those whose behaviours and relationships with students enable the latter to attain superior results. Third, good teachers appear to be more human in their relationships with students. Very much at ease with their subject matter, these teachers are able to free themselves from the content and to adapt it to students. Research uses autobiographical narrative and other ethnomethodological approaches to learn about the ways good teachers think.
5. Malglaive cites Bruner's 1987 book, but this information can be found in pages 118-121 of Bruner (2002).
6. REFEPFOP: Research on the professional frameworks of teachers, funded by the SSHRH and directed by Yves Lenoir, Université de Sherbrooke.

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