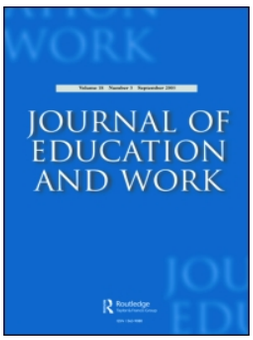

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Early stages in building hybrid activity between school and work: the case of PénArt

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ABSTRACT

This formative intervention documents the emergence of a hybrid activity aiming at student engagement and academic achievement. In this context-bound study, early stages of this activity consisted in establishing PénArt meant to enable high school students with difficulties to start up their own business at school. It involved reaching agreements between a high school and a youth centre so that high school students engage in the production and selling of their branded t-shirt. At the frontiers of their respective activity system, students, youth workers, special education teachers and members of the school board took actions to cross boundaries and redefine their interrelations. Cultural historical activity theory was fruitful to document the development of a new object-oriented activity. Tensions and contradictions revelaled to be the key moments in the emergence of the hybrid activity. Expansive learning led us to understand that, in a conflicting situation, a collective's agentive actions create an expansive form of learning and leads to a successful entrepreneurship experience. Change laboratory capacity to foster change for cooperative education in Quebec was successful. The students enrolled in a regional entrepreneurship contest and won it. That was a significant event for students with low self-esteem linked with their performance at school.

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Boundary crossing; cooperative education; cultural historical activity theory; school and work; trajectory

Since 2002, the International Labour Organisation has viewed partnership between the education world and the world of work as one of the basic principles that should guide the education and training policies of all countries. UNESCO (2002) stressed that educational institutions have a vital role to play in facilitating career development. Miettinen and Peisa (2002) stressed that vocational school education is one way to better connect learning to real life. Meanwhile, Quebec (Canada) educational policy makers examined new ways to develop a variety of projects, and focused on student exploration of the working world to build their awareness of entrepreneurship (Government of Quebec 2002). Cooperative education models also began to develop in postsecondary education. Since 2002, however, at the secondary school level, only students with severe academic difficulties have had access to cooperative education through a special branch of vocational education (Hardy and Ménard 2008). There have been curricular moves to increase pedagogical differentiation in the teaching of science and technology in the Quebec's national school curriculum. Since 2006, three educational choices corresponding to three possible paths for students enrolling in 10th grade have been proposed: (1) a General Education Path; (2) an Applied General Education Path and (3) a Work-Oriented Training Path consisting of either prework training or training for a semiskilled trade. Each of them was to offer different sets of electives depending on students' interest to broaden their range of choices (Government of Quebec 2006).

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International testing is an external factor that could challenge the status quo (Government of Quebec 2006). According to Wheelahan (2015, 129), 'reforms are always mediated by institutional logics which reflect the economic and social interests of different constituencies as well as the construction of education sectors and the institutions within them'. University-school partnerships constitute a 'move from within' that can be instrumental in exploring new ways of teaching and learning. Such partnerships may take a variety of forms and shapes, one of them being 'formative intervention' (Engeström [1987] 2015).

This paper documents how a formative intervention conducted in the context of cooperative education targeting 9th–11th graders enrolled in a general education program, led to students experiencing successful entrepreneurship during the first year of the FAST project.[1] This study describes the experiential trajectory of the building of a hybrid activity between school and work. The narration highlights turning points in the form of tensions appearing over that year. Broader interpretive devices such as contradictions and expansive learning add to the understanding that, in a conflicting situation, agentive actions by a collective create an expansive form of learning and, in the case of the first year of the FAST project, led to a successful entrepreneurship experience.

The FAST project

The FAST project was a response to a call for proposals made by the Quebec Government stressing joint action and collaboration between researchers and school partners to increase student school persistence and academic achievement. The design of the FAST project also involved agreements between schools and businesses so young people can alternate between classroom time and some time spent in the workplace. It also entailed negotiations between school administrators and youth intervention centre managers to enable students with difficulties to start up their own business at school under the guidance of adult youth workers.

Table 1 presents the 23 participants distributed in four teams who took part in the first year of the FAST project in one of the three settings namely setting A.

Having such a variety of participants represented a challenge at the outset of the FAST project. At the beginning in the summer of 2011, each team had its own understanding of the problem to be addressed. The challenge was a palpable and sizeable one. CRI_SAS' researchers began documenting how a more flexible path for high school students, enrolled in the general education program but manifesting lack of interest, could enhance their engagement and level of success. The object-oriented activity of the school team, in collaboration with the research team, was to put in place an educational model to increase student motivation and engagement and improve their academic performance.

The setting up of a new organizational model that allies businesses, social workers, school administrations, researchers, teachers and students implies that special focus is placed on the way the process will be co-developed (Edwards and Kinti 2009). The three CRI_SAS researchers were very much involved

Table 1. The participants in the FAST project (setting A, 2011–2012).

Teams	Participants
Student team (11)	20 targeted 9–11 grade students with low scholastic motivation (14 participants enrolled, 11 completed)
School team (6)	• Vice-principal • Guidance counsellor • Secretary • Three special education teachers
Project team (4)	• Youth worker from Youth employment network • Technical expert from Youth Fusion • Youth entrepreneurship worker from Youth employment network • CRI_SAS graduate student
Research team (3)	• CRI_SAS graduate student • Two CRI_SAS researchers

from the beginning to the end of the first year of the formative intervention. The FAST project might have appeared to some participants or observers as a top-down approach coming from the research team even if the school had opened its doors to the project by involving special education teachers and guidance counsellors wanting to find ways to make schoolwork more meaningful to students. A project team, inclusive of members of a Youth Employment Centre,[2] was formed. The youth centre's object-oriented activity is to support young adults aged 16–35 in the development of work abilities. Aiming at lowering high school dropout rates, its members are active in establishing innovative partnerships with schools. Some of them were already present in the school at the beginning of the FAST project but were intervening after school hours.

Twenty students were targeted as potential candidates given their low school engagement and poor academic results. At the beginning of the school year 2011–2012, they were given the option to participate in FAST. Fourteen decided to join the project, and their parents gave consent. During 32 weeks, and under the guidance and support of three youth workers and a graduate student, students were to have the opportunity to model an enterprise-based school activity. That also meant having the privilege to miss their subject classes on Wednesday afternoons while remaining responsible to catch up with lectures and homework. Students had the will to shake themselves up and engage. Most ended up finding more meaning in school activity.

At risk high-school students and educational professionals met together during the FAST project. That particular trait of the project suggests that the knowledge expected to be created during the school year, although of a professional nature, was to be tinted with emotions and shaped by personal motives in a fluid situation (Edwards and Daniels 2012). Cultural historical activity theory (CHAT) framework and analysis is fruitful in such a context since it goes beyond mere actions taken by the participants and reshapes those actions as the context evolves. A new object-oriented activity is created. The argument this paper puts forward is to look not only at actions taken by participants but also at their motives and key turning points in the development of the 'new' activity. As we will illustrate the development of the activity, we will highlight the strong intertwining we observed between motives, actions and the transforming roles and identities of the participants coming from the four different teams. The FAST project, which called for joined responses from the different participants, raised our interest for the expression of multiagency practices (Daniels et al. 2007). Therefore, the case we present is not focused entirely on the professional participants that came from the workplace but on how, in a new kind of work-school settings, new professional practices could foster the motivation of at-risk high-school students.

The conceptual framework

CHAT proposes that learning activities are human activities socially situated (e.g. in the world of labour or in the world of formal education) (Parks 2000). CHAT focuses on new forms of learning and social practices that develop beyond the activity of locally situated individuals. Activity is its central point of interest (Engeström [1987] 2015; Vygotsky 1978). CHAT explicitly incorporates the mediation of societal activities, which means that it sheds light on objects normally independently examined by sociologists of education and (social) psychologists (Roth and Lee 2007).

Drawing on Vygotsky's (1978) and Leont'ev's (1978) works, Engeström has depicted a triangular model for better understanding and analysing social transformation as an activity system in which actors like the members of an extended school community (e.g. teachers, students, parents, etc.) are confronted with primary contradictions. CHAT emphasizes that contradictions, which are part of any human activity, are necessary to foster an expansive form of learning. This is at the core of CHAT. Tensions are manifestations of contradictions. They have an important role in the transformation of human actions and are either driving forces or obstacles to change development. Engeström and Sannino (2013) pinpoint the process of identifying contradictions as the first element of the expansive learning cycle aiming at transforming an activity system.

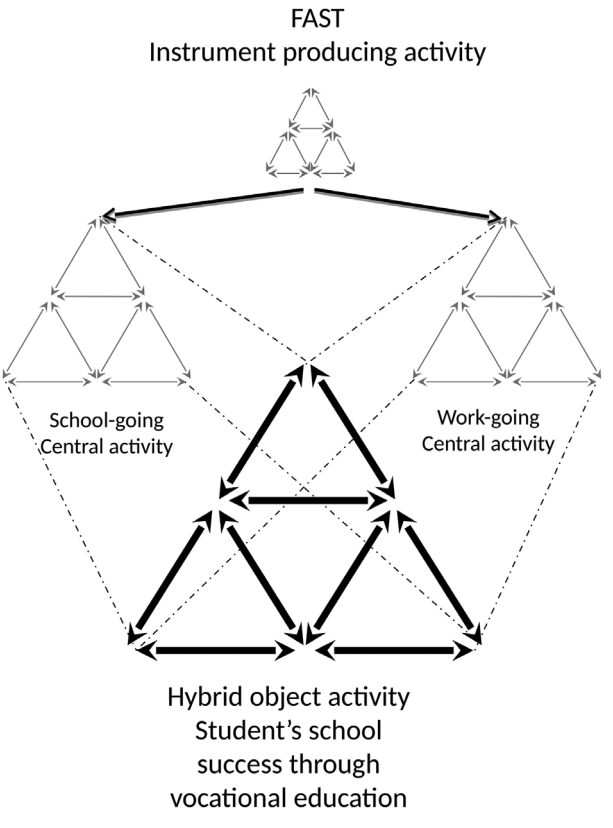

Figure 1. The action of aiming at students' school success at the boundaries of school and work through vocational education.

In CHAT, an activity system as a whole is the unit of analysis, thus acknowledging that human activity is goal-oriented and tool-mediated, not only by individuals but also by collectives (Engeström [1987] 2015). The generalised object of an activity system is rooted in its historicity and the situational, the constructed object is what gives direction to the actions and interactions that are to take place during the development of the activity (Jahreie and Ottesen 2010). Actions are goal oriented and often found to redefine the interrelations between the actors who share a new activity (Sannino 2008).

Boundary crossing zones, agency, double stimulation and hybrid spaces in the FAST project

The motives of the different teams of participants involved in the FAST activity were diverse. In order to understand the object under construction (the school-work activity), the concept of boundary is key. Kerosuo defines boundaries as 'established distinctions and differences between and within activity systems that are created and agreed on by groups and individual actors during a long period of time while they are involved in those activities' (4). Phelan, Davidson, and Cao (1991) had previously suggested the following definition for boundaries: 'real or perceived lines or barriers between worlds' (225). Agency is another key concept here. The formation of an expanded object and corresponding new pattern of activity requires and brings about collective and distributed agency, questioning and breaking away from the constraints of the existing activity and embarking on a journey across an uncharted zone of proximal development (ZPD; Engeström and Sannino 2013, free translation). The construct of a hybrid space in the form of a new activity implies that multiple levels of activity systems expand their own activity to establish a ZPD.[3]

The research team also made use of Vygotsky's principle of double stimulation to elicit agency with participants (Virkkunen and Newnham 2013). To trigger agency among the FAST participants, these premises led us to adopt the Change Laboratory methodology (CL) an interventionist research approach issued from developmental work research. The CL stood out as allowing our research team, in collaboration with project participants, to bring to light the origins and systemic causes of a problem by CL members raising questions about it, reformulating it and envisioning a new form of activity. As explained by Virkkunen and Newnham (2013), the concept of intervention refers to the Latin etymology of the word and means 'to come between'. The role of the interventionist researcher is to come 'between an actor's actions so that the activity finds a new direction'. It is with that in mind that the members of the research team introduced the CL methodology applied in Finland to the Quebec participants. At the outset, none of them had heard about it. Neither were they ready yet to engage in audio and videotaped sessions to start questioning and facing the disturbances they were able to voice to us on an informal basis. Given that, it was necessary for the research team to negotiate the type of investigating tools it could use. In other words, adaptation to the local culture was necessary while applying some basic CL principles. For instance, in a typical formative intervention five to twelve sessions are conducted early in the process. Historical and empirical analyses of the object of the activity occur, and results use as first-hand mirror data for representing the current practice (Virkkunen and Newnham 2013). In the case of the FAST project, we started with meetings, audiotaped interviews and ethnographic observations. As the school year progressed, participants became more at ease with the interventions of the three research team members. Having gained participants' confidence, two change laboratory sessions were held in May and June 2012. The mirror material presented during the two sessions promoted reflection and participation between the participants. Moreover, 'development' meetings took place, formally and informally, between the project team, the school team and the research team, sometimes at school, and other times at the vocational centre. Furthermore, the project team had weekly planning meetings to clarify the objectives for the forthcoming sessions of the entrepreneurship project within which students were engaged, and provide them effective support. Weekly accounts via email were sent to the school team and to the research team.

Facing the demotivation of high school students as first stimulus, FAST participants engaged in co-designing a school-work activity by building second stimuli. Edwards describes such stimuli as 'conceptual tools of activity theory provided by the workshop facilitators' that enable 'participants in analyzing and interpreting their practices, the objects of those practices, and the organizational features that shape them' (2009, 204, 205). Double stimulation was a challenge the group faced when applying this principle for understanding how schools collaborate with the workplace. Mastering socially constructed tools, participants were to create new meanings and model new social structures around them. The CL was an opportunity for participants to collaborate.

Results emerging from an ongoing analysis were provided in order to enable them to model a different relation between school and work. Participants questioned and positioned themselves to move in a specific direction. At the frontiers and across the boundaries of their respective activity system, students, youth workers, special education teachers and other participants brought their individual resources and expertise (see also the study of Morselli, Costa, and Margiotta 2014). From a CHAT perspective, if the FAST project were to lead to the emergence of a hybrid activity, all teams would have had to find common grounds by making sense of their diversity and multivoicedness.

But for boundaries to be crossed and innovation to really happen, disagreements and tensions raised during the early stages of its occurring had to be resolved. During and between participants' actions the research team's interventions were directed at moving beyond the tensions, which arose on a regular basis, and getting the activity moving. More concretely, FAST as an entrepreneurship project, had involved participants coming from diverse settings, thus making ground fertile to the rising of different expectations. Gutiérrez, Baquedano-López, and Tejeda (1999) illustrated how apparent conflicts and differences in learning organizations can be transformed into collaborative and productive 'Third Spaces' which can also be understood as hybrid spaces or expanded activities (Engeström 1999).

As Gutiérrez, Baquedano-López, and Tejeda (1999) illustrated, a classroom in itself is a polycontextual environment and 'is constitutive of multiple and connected activity systems, the official and unofficial spaces of learning contexts' (288).

The addition of the work dimension to the school-going activity and fostering vocational education challenged the dominant model of schooling. However, the bottom line was that school-based education is a form of human activity that cannot be reduced to contents or pedagogical methods to foster learning (Engeström [1987] 2015; Yamazumi 2008). Transforming school activities by expanding them through the building of hybrid spaces is an idea coming from third-generation activity theory. As this process occurs, participating subjects' expansive learning is also likely to occur when teachers and students move away from an established form of dominant pedagogy (e.g. ones centred on performance models where students are graded and compared) to competence models where pedagogical discourse is focused, for instance, on themes or experience possessed by the learners (Yamazumi 2006).

Another challenge for the group was that of minimising the tensions between theory as studied in school and real life context (see also Miettinen and Peisa 2002). In Quebec, the activity of teachers is somehow attached to student performance at provincial standardised tests and other forms of assessment of disciplinary content (Barma, Power, and Daniel 2010). Yamazumi (2006) stressed that projects at schools ought to teach content with reference to their social and out of school context. Students should rather be offered a broad variety of situations conducive to active participation inside/outside the school. Keeping with their own interests while offering them the possibility of learning in a workplace was what the FAST project wanted to offer. The metaphor of expansion was found fruitful as well as the theory of expansive learning that puts primacy on communities as learners when they learn 'something that is not yet there' (Engeström 2001).

Applying Gutiérrez and Calabrese Barton's (2015) notion of building a Third Space or a hybrid space, the FAST project has been a case of organizational, pedagogical, and 'social imaginaries'. Figure 1 illustrates how FAST could possibly act as a new instrument both in the school- and work-going activities and blur the lines and barriers between them. Theoretically, with some guidance from the project team and the school team, students were to manage to navigate both worlds and allow boundary crossing to happen.

In the following analysis FAST-as-an-instrument-producing activity is explored by asking three questions:

(1) What were the actions taken and by whom?
(2) Which key moments can be considered turning points in the emergence of the hybrid activity?
(3) How were those key moments instrumental in the emergence of the hybrid activity between school and work?

Methodology

Several types of approaches and intervention methods are open to the researcher studying empirically the challenge of school transformation and inter-institutional collaboration (Virkkunen and Newnham 2013).[4] Our choice of methodology had to take into account that FAST settings were characterised by a diversity of participating groups and the complexity of imagining new pedagogical scenarios to foster student engagement and school success. Therefore, methods had to respect (1) the complexity and multivoicedness of the different teams in the various settings and (2) their mutual desire to contribute to inducing changes.

Two CL sessions were conducted in a setting that could be described as reflecting three horizontal dimensions, and different levels of abstraction and integration of the present, the future and the past of the emerging hybrid activity. While the mirroring (presenting data) of the past provided observations to reflect on the historical changes in the activity, the mirroring of the future was very

helpful to discuss the follow up data and envision the second year of the FAST project. A typical CL is divided into six main phases, and is therefore in coherence with Engeström's (1999) expansive learning cycle:

> An ideal-typical sequence of epistemic actions in an expansive cycle consists in action of questioning, criticizing or rejecting some aspects of the accepted practice and existing wisdom. A second action is that of analyzing the situation and involves mental, discursive or practical transformation of the situation. The third action is that of modeling the newly found explanatory relationship in some publicly observable and transmittable medium. This means constructing an explicit, simplified model of the new idea that explains and offers a solution to the problematic situation. The fourth action is that of examining the model, running, operating and experimenting on it in order to fully grasp its dynamics, potentials and limitations. The fifth action is that of implementing the model by means of practical applications, enrichments, and conceptual extensions. The sixth and seventh actions are those of reflecting on and evaluating the process and consolidating its outcomes into a new stable form of practice. (Engeström and Sannino 2013, 9, free translation)

Our adaptation of the Finnish methodology reflected enough of the original model to allow us to study learning actions taken by different participants all along the first year of the FAST project but not with the intention of documenting a whole expansive learning cycle. Building on the idea that actions and their interrelations are future-oriented, we reconstructed the development of the school-work activity (see also Engeström, Engeström, and Kerosuo 2003). More specifically, on the one hand and since 2011, we had gathered ethnographic data to document the context and participants' actions and, on the other end, we had gathered meeting transcripts. Therefore, we had discourse to analyse for giving meaning to the interrelation between practice and talk (see Tables 2 and 3). Table 2 presents the audio and video data that was transcribed and the corresponding 540 speaking turns showing the participation of each member attending the CL sessions.

Table 3 details the ethnographic data that were used to prepare the meetings and sessions[5] and reconstruct the development of the hybrid activity in addition to the analysis of the 540 speaking turns.

The collected ethnographic data involved more than 500 h of on-site presence and resulted in 30 ethnographic vignettes, nine audio and visual recordings of meetings and sessions converted into 6 h of verbatim transcripts and 200 photographs within which to immerse ourselves in the culture of the setting and the organisation of work amongst the different partners. Student's mid-term reports were consulted to follow closely their academic progress. Students also completed surveys at the beginning and the end of the first-year of the FAST project. We pooled all the data gathered (audio, video, text and photos) throughout the year and analysed them with a focus on the actions taken by the participants. In other words, there was a continual back and forth movement between the ethnographic data and analytical tools of activity theory to identify actions taken by the participants and search for evidence of an emerging hybrid activity between school and work. Our efforts to implement a CL methodology intended to render justice to the complexity it addresses and to enhance the rigour of our qualitative study.

As regards boundary crossing at the frontiers of activity systems, some principles of data selection applied during analysis: (1) data that would delineate the diverse interrelationships produced by the emerging hybrid activity; (2) accounts that could help understand the cultural and historical contexts in which the activity took place; and (3) data that would reflect the multiple perspectives of individuals as well as their intertwining. As proposed by Engeström, Rantavuori, and Kerosuo (2013), when analyzing the 540 speaking turns and triangulating results with other ethnographic data, we focused on the following learning actions: (1) questioning, which often translated into criticizing the dominant activity or resisting the proposed changes; (2) analyzing the current situation in trying to understand and explain the situation in its current form, i.e. the lack of motivation of students; (3) modeling a new form of school-work activity for the benefit of the students; (4) examining the new model, (5) implementing it with the idea of enriching it and (6) reflecting on and evaluating the process.

Table 2. Audio and video documents data transcribed.

Date	Types of documents	Duration	Participants	Speaking turns (% participation)
20 September 2011	Audio recorded meeting	17 min 45 s	Vice-principal	29 (50.9%)
	(57 speaking turns transcribed)		Graduate student	28 (49.1%)
06 October 2011	Audio recorded meeting	47 min	Vice-principal	43 (43.4%)
			Guidance counsellor	7 (7.1%)
			Special education teachers 1	13 (13.1%)
			Special education teachers 2	10 (10.1%)
			Special education teachers 3	5 (5.1%)
	(99 speaking turns transcribed)		Graduate student	21 (21.2%)
02 May 2012	CL session	1 h 7 min	7 students	94 (24.5%)
			Researcher	140 (36.4%)
			Graduate student	29 (7.6%)
			Youth employment workers	33 (8.6%)
				22 (5.7%)
			Youth Fusion worker	66 (17.2%)
	(384 speaking turns transcribed)		Guidance counsellor	

Table 3. Ethnographic data collected in 2011–2012 and used to prepare meetings and sessions with the participants.

School year	2011-2012
Written ethnographic data	Written accounts • school team (14) • science component (12) Annual report of school board (1) Reports written by guidance counsellor (16) Student mid-term academic reports (11) Ethnographic notes by research team (30) Planning documents of the sessions (4) Weekly schedule of the Project team (21) Surveys completed by students • At the beginning of the project (11) • At the end of the project (11)
Photo, audio and video data	200 photographs 9 audio-video recordings 540 speaking turns transcribed

Results and discussion

Establishing a partnership between school and work to support students' in-school business enterprise

While each team had its own goal-oriented activity in mind for putting conditions in place, all teams agreed that students' engagement and academic achievement should be their main focus. For instance, it was agreed that the school schedule would be flexible on Wednesdays so that 14 students, three members of the project team and the graduate student would gather together in a dedicated space to co-model an entrepreneurship project. It was also agreed that because FAST was to address the problem of demotivation of adolescent students, it was central that the school-work activity had to be decided by students themselves.

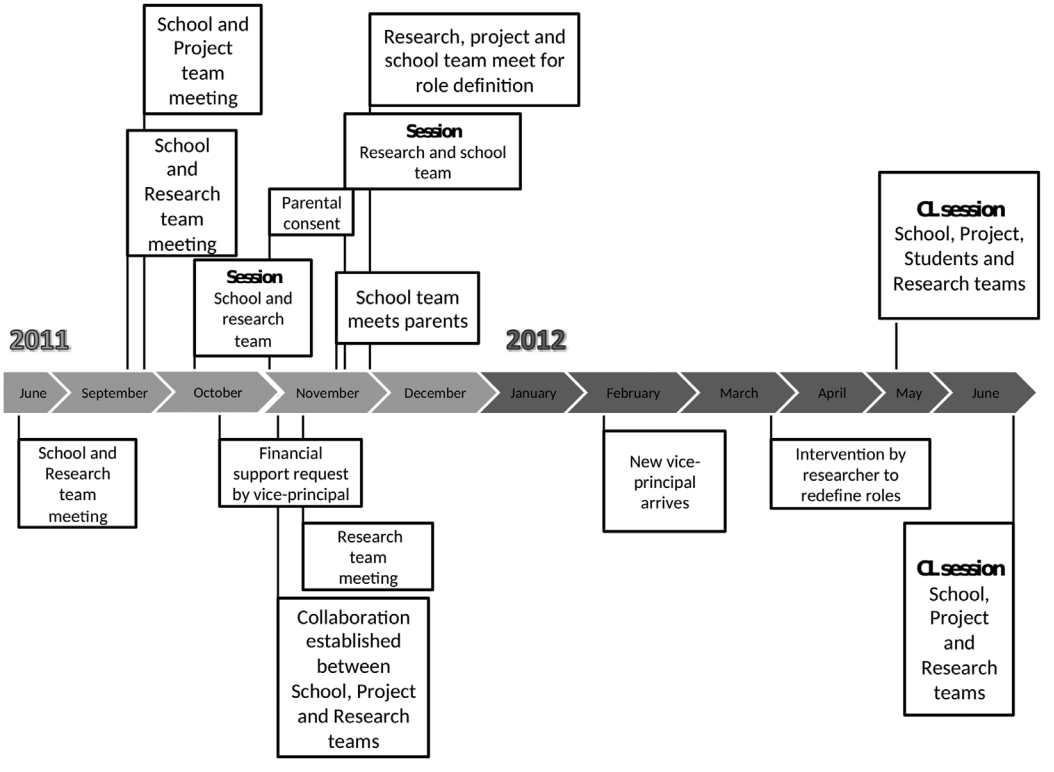

Figure 2. Timeline: school, research and project teams' collaborative efforts.

The research team went to the school, the vocational centre and the office of the Youth centre to meet participants (e.g. youth workers welcomed the research team in their office for planning and debriefing meetings; on a weekly basis, the project team and some members of the school team held planning meetings in the offices of a Youth Employment Network to debrief on the ongoing activity). Once the students had decided upon the nature of their production, which was a T-shirt bearing the logo representative of their group, which they named PénArt, a centre's silkscreen printing department was made available to them.

Based on the ethnographic data collected (written documents, photographs, researcher's notes, audio and videotapes recordings and other artefacts), the following timeline was created (Figure 2). It represents the main phases of the development of the formative intervention between September 2011 and June 2012, and illustrates the key moments, meetings and sessions related to the project, school and research teams.

To understand how a new form of collective activity took form, the interrelations between actions are key. As decisions were made during the school year, new roles were established, new spaces were occupied, and some tensions rose. Next, a narration of the development of the school-based business will highlight some of the key moments. We will focus on turning points in the form of tensions and conflicts to explain why and how they became central to the expansion of the activity in a space where new forms of collective participation took place.

Documenting the experiential trajectory of building PénArt: the emergence of a hybrid school-work activity

Meetings between the research team and the school team happened prior to the set up of the project team and the student team. Concerns about the logistics related to the organisation and the

administration of the FAST project had first to be addressed. To get a sense of students' low motivation at the onset, let's go back to a discussion that took place during a CL session in May 2012 when the researcher asked students to reflect on their scholastic motivation at the beginning of the school year and on their motives for becoming involved in the FAST project:

A: Yeah. Wednesday afternoons, well, you know, at first when Dave came to see me, well, it's going to be a project that you'll do every Wednesday afternoon. At first, I wasn't too sure. So, I'm going to go to the meeting to see … And like, it did interest me … So, I stayed.

Researcher: Okay, what year are you in?

A: 11th grade. Well, you know, for sure we were selected, on the one hand. I had to put together a letter. But the reason why I wanted to sign up was, you know, it would allow me to really do something at school, because I have no feeling of belonging to my school. I really could not give a good goddam.

C: It gives me a kind of feeling of belonging, instead of being at school and not wanting to go to school.

D: I'm there because I felt like being there. Yeah, I'm a particular case. Because, when you get down to it, there was computer graphics software; at first, I came for that.

E: You know, it was to give the experience a try. To do something new.

Researcher: Compared to C, who also had a bit of difficulty with her feeling of belonging at school, was that your case, too?

E: For me, it was lack of motivation.

Researcher: Okay, you too. Okay, pretty much everyone?

E: Yes, that's pretty much the reason we were selected at the beginning. They told me I didn't have enough motivation.

Researcher: Okay, this is something that brings you together?

A: Yeah, because we all have something in common: a lack of motivation at school.

Students were not happy with their school-going activity but they were also questioning the purpose of the FAST project and were aware that they had been selected to participate because of a lack of motivation. But at the same time, they had been given an opportunity to extricate themselves from an uneasy position.

The school team sought support from parents for the FAST project as a way to address the issue of their adolescent's lack of motivation at school. The idea to withdraw teenagers from regular classes ran counter to parents' expectations. Some of them didn't share the perception that the school team had about their kids. In a meeting held in September 2011, the vice-principal used the following expression to demonstrate how many parents took it: *We've picked your child out as a future drop-out*. Parents were worked up: *My child isn't dropping out – come on. You're taking him out of his classes and, on top of it all, nothing's working*.

The vice-principal thought that some new awarenesses were starting to kick in for some parents as well as for school personnel: *Like, no, it's not a question of him being a future drop out; it's a question, for him, of how the school model he is currently experiencing* (Interview with the vice-principal, September 30, 2011).

The initial profiling exercise laid the basis for meetings with special education teachers and students for the purpose of addressing other students that could benefit from participation in the project. By the end of September, the vice-principal, special education teachers and regular teachers met to identify students who had already begun to present a certain profile of disengagement in the classroom, and who were withdrawing little by little from the educational context, disengaging themselves from the pursuit of achievement.

Those that show interest in the FAST project were, however, somewhat distrustful. In his ethnographic journal, the graduate student documented their perception of the opportunity they were offered to participate and their hesitations about getting involved in the project: *Even at the first meeting last week,*

the students' concerns related primarily to the realism of the project. We'll really do a project? We'll really take photos? Will we make money? Will we be outside of the school? (November 7, 2011). Moving beyond their initial hesitations, students proposed to focus on the development of skills that could be of use to them in their lives, thus challenging the basic ongoing pedagogical model at school. Here is a telling excerpt:

> It's not skills that are necessarily school-related [that we need] but skills that can be used in everyday life – the essential thing is more along those lines. Because, school skills, the teachers show us everything in order to find out what we like. But we know that already! We're already working on that in school. Getting skills for everyday life and that aren't related to school – that aren't just skills that you have to learn … At any rate, it's better than learning stuff related to school. (Student, CL session, May 2, 2012)

During a meeting with the graduate student, the vice-principal expressed the school's needs and expectations more clearly, and put forward ideas regarding students' education during the project periods.

> I'd like that these young people do French and math another way on Wednesdays … link them up with everything there is in the way of online resources, give them tools so that they can progress academically, and progress in their academic subjects in a different and autonomous way. (Vice-principal, October 6, 2011)

Wanting to test out youth workers, students questioned them to make sure they would be enabled to really explore career choices. *I think it's to help us not drop out of school and to motivate us. In addition, it could give us other career choices. The project mentions a company and technology* (Student response, project application questionnaire, October 2011).

For eleven of the fourteen students enrolled in the project, peers with little motivation did not fit well in an entrepreneurship project – a synonym of personal responsibility, ambition and creativity. This was a source of tension between them. Another source of tension was brought to light by one of the youth worker and a student. The student believed that even though the project team wanted students to become involved in a project and to let their needs drive its development, it would nevertheless take more for them to demonstrate agency. He said: *I don't know, but the people who didn't work before aren't going to work more here.*

Interestingly enough, students sought supervision and support. They considered the presence of youth workers to be necessary for structuring and supervising them during the time they had been allotted on Wednesdays. These workers exercised leadership at the onset of the project for establishing the group's mode of operations – meaning also the structure of committees.

Participating students were not freed from the school's own code of living, rules and objectives. The project team and the student team sat together and thought about a way that social behaviour would remain within the school's expected behaviour when the group held its activities at the vocational centre – the place where they learned about technical aspects like printing, photography and software editing.

Soon enough, students identified the division of labour between them as an important factor of success for their project. But defining the project proved to be difficult, and teams' respective roles were put to test: *I think that the graduate student had expectations that I was unaware of at the beginning. Then, the school had expectations. So, it was complex for me. And I think the students noticed it. I didn't know* (Youth worker, May 2, CL session, 2012).

In November, two important meetings took place but were not recorded. At that point, tensions were very high. The research team met with the school team because students were disengaged. As the youth worker and the graduate student expected them to demonstrate agency and take the lead to decide what the nature of their business would be, no shared ideas were identified and no actions were taken during the Wednesday activities. Some parents were informed of the lack of motivation and personal problems of their adolescent(s). Three out of 14 students ended up being kicked out of the project by the students themselves. One of the elements that revealed to be crucial for mobilising them and make them start working with one another was the negotiation of a code of living. *Discussions focused more on the internal norms of the group and the expected behaviour,* via *an activity based on the creation of a code of living stemming from students' recommendations* (Ethnographic note, November 13, 2011). As illustrated in Figure 3, all students signed the code of living to show they were committed to complying with it. For the non-Francophone reader, here are the key ideas that were collectively

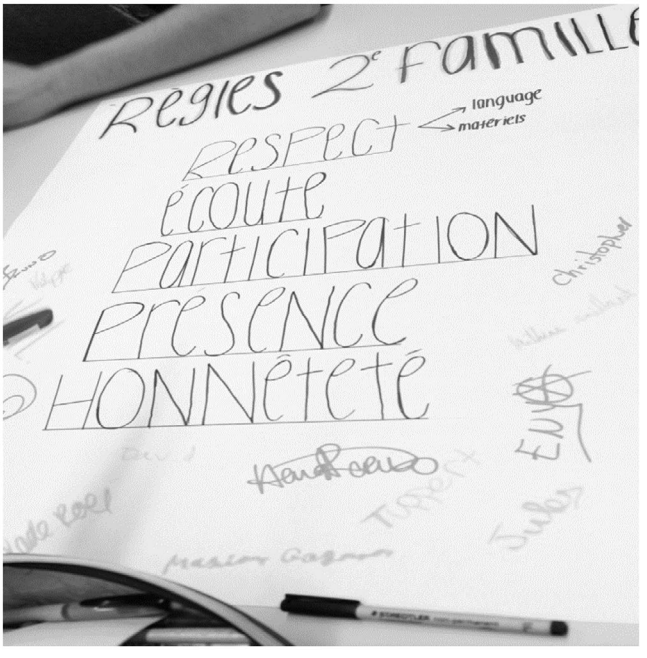

Figure 3. Elements of the code of living. Source: Photo taken on 16 November 2011.

negotiated by students and the project team members: respect, attentiveness (listening ability), participation, attendance and honesty.

By December, a meeting between adults involved in the project was felt necessary as there seemed to be a divergence in the way the youth worker team and the research team viewed their respective roles. At the meeting, animated discussions took place in an effort to build a shared representation of each other's role. The research team showed the project team, on the basis of ethnographic data gathered by the graduate student, that the potentially shared object had lost its meaning. The youth workers came to realise that they did not share the vision of the research and the school teams and, worse still, did not respect the school team expectations' regarding the role to be played by the others.

> Today, I think we had a particularly worthwhile planning meeting – not in terms of the advancement of the project on behalf of the students but in terms of bringing out a problem that I had sensed from the beginning and that was mentioned by the other youth workers. I was really surprised. It's the problem of the roles of each agent in the project. I had sensed from the beginning that one of the major difficulties of getting the project to move forward was that we had established roles at the start that I thought were clear, but the youth employment network wasn't yet aware that the research and school teams had initiated this project. The youth centre thought it was their project. (Ethnographic note, December 5, 2011)

From that moment on, things started moving faster. There was a brainstorming session the next Wednesday and the nature of the school-based business began to delineate. Regarding the business context, the modelling in Figure 4 shows that the mission of a company is, first of all, to fill a need (*besoin* in French) on the part of either the entrepreneur or clients. This need was identified as possibly being a good (i.e. product), a service or an event. Then, as shown in the French illustration, different motivational elements were behind the company's undertakings (need, goods, service, value, creativity, pride, motivation, us as students).

The week after was productive: the student team focused on producing a t-shirt that represented them, and decided to sell it to the extended school community. Figure 5 captures the decision-making process of producing a t-shirt, which became the goal-oriented activity of the students. They later qualify it as a real life context.

Figure 4. Defining the basis of the school-based business. Source: Photo taken 7 December 2011.

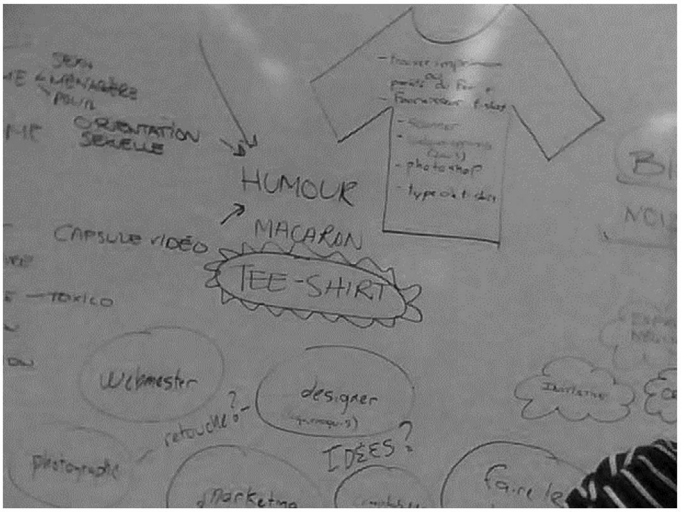

Figure 5. Deciding to produce a t-shirt. Source: Photo taken 14 December 2011.

By the end of January 2012, each team had adjusted their respective roles in coherence with the actions to be taken for the production of the t-shirt. Four project team members took turns playing the 'first violin' role during learning activities every week, based on their areas of expertise, and chose diverse teaching strategies in response to the needs of students and educational aims. A lasting challenge was to integrate disciplinary content to the activity of producing a t-shirt.

Up to that point, students had not given a name to their school-based business. Following democratic deliberations, they decided to refer to their business by the name of *PénArt*. This word is both a neologism and a pun based on the informal French word *pénard* – meaning easygoing, peaceful, but with a dash of art. Soon after, a logo was designed by some of the students and adopted by all of them: it became their trademark.

In March, the graduate student met a few times with the vice-principal to discuss the science and technology contents that had been targeted and worked on within the context of the FAST project. Afterwards, the graduate student experienced conflict situations as he became more active in his attempts to adapt math-science segments to meet students' educational needs, thereby linking PénArt to curriculum contents. *We are going to try to produce some math-science segments to meet the company's need, for example, for accounting and use of the camera (lenses). I mentioned that this would involve taking a back door approach* (Ethnographic note, January 11, 2012). Nonetheless, the structure of the learning activities was allowing for joint attention to students' educational needs by project team members.

> Personally speaking, the ST concept overviews at the end, I found that really interesting, especially because the graduate student/interventionist delved into notions that had been examined the week before or that same week. So he perhaps used a different lens from the one we had in action. I find that approach to be really valuable. (Youth worker, May 2, 2012)

As participants were reflecting on the creation of PénArt during the CL session in June 2012, they agreed that school community actors' expectations and roles had an impact on how the project evolved, notwithstanding the absence of the entire set of teachers affected by the project. Given that the entrepreneurship project was considered an add-on, the teachers responsible for the general education of students had not been included in the school team. Their level of involvement in PénArt was low. Project team members sent summary reports to the school team in order to secure the support of teachers. However, to show results that teachers would care for proved to be difficult:

> Because, at the same time, in terms of teaching methods, the three of us can't necessarily help students to make progress or improve their grades. And then, the school persistence aspect means that … you know … there are a lot of things … So, at some point, you can't see the result. It isn't tangible, you know. (Youth worker, May 2, CL session, 2012)

That youth worker wanted to mobilise students and was also preoccupied by the discrepancy in the way the school team and the project team were communicating: *Whenever we send recommendations or a short report, we don't get any feedback from them*. The graduate student expressed: *I agree there's a lack of communication between the school, the Youth centre and the research component* (Ethnographic note, February 29, 2012). He also mentioned that the youth worker would have liked to get more support from the guidance counsellor. Reflecting on the testing of the new model, the guidance counsellor mentioned that *they were learning about their own work* (May 2, 2012).

The role that the general academic teachers could play in the activity as well as their level of involvement created tensions. The following student comment captures his expectations (double bind) regarding the presence of teachers during the time periods devoted to the project: *When you get down to it, if, say, it was a teacher, he shouldn't play the teacher too much. He should be acting more like the youth worker* (Student, May 2, CL session, 2012). By his comment, the student was pushing the boundaries of the teaching model. Moreover, the guidance counsellor wanted that general academic teachers, whose students were participating in the project, be kept informed from the start of the second year of the FAST project.

Between March and April, students got to be very busy. They adopted a timetable to make sure the t-shirt production would be done before the end of the school year. With the support of the youth workers, they enrolled in a regional entrepreneurship contest and PénArt won it. That was a significant event especially for students who so far, had had a low self-esteem linked with their performance at school. To boost the t-shirt sales, a Facebook page was created and a publicity capsule recorded. They were proud. That video was played all over the school to promote PénArt. In June, parents were invited to share their success. Figure 6 reifies their experience and Figure 7 pinpoints the key moments of the building of PénArt.

Figure 6. Reification of students' participation in PénArt.

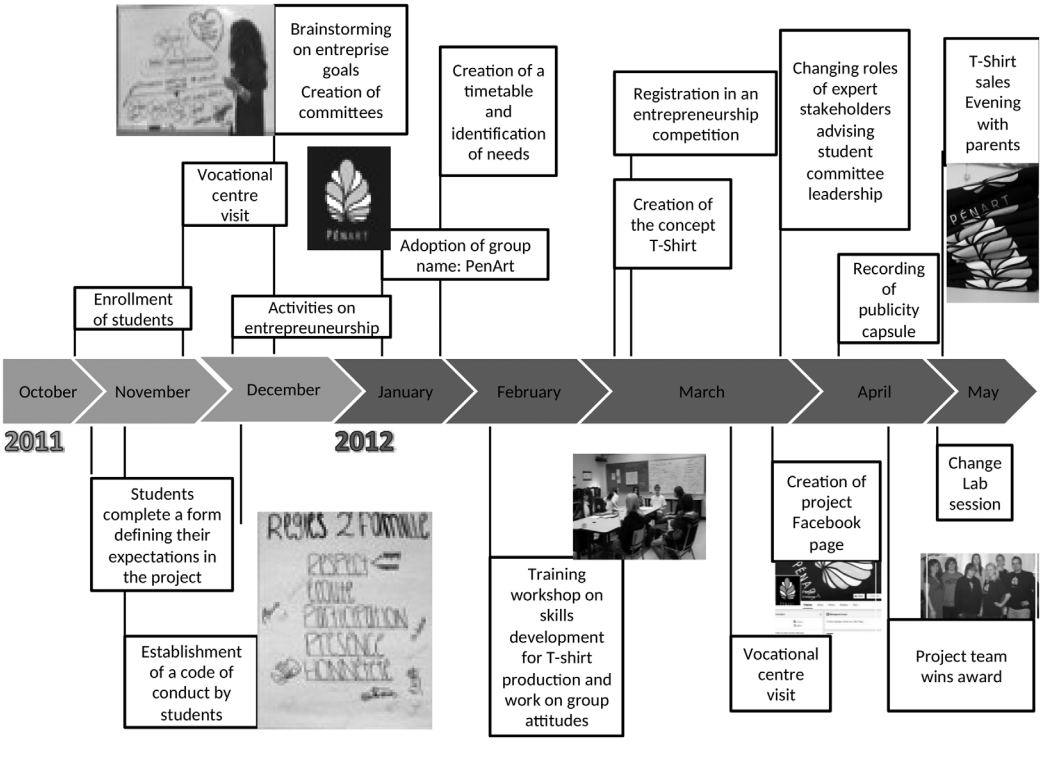

Figure 7. Timeline of some key moments in the building of PénArt.

Emphasizing that tensions and contradictions were key moments in the emergence of the hybrid activity

The expansive cycle's six types of learning actions have been useful to understand how the FAST project became a catalyst that triggered the development of a shared object between the school team, the project team and the student team. Having in mind student school persistence and academic engagement, participating adults' actions created a fertile setting for students to engage in an entrepreneurship adventure. However, there were hesitations, interrogations and tensions at the merging frontiers of each of the teams' activity systems involved in PénArt. As we disclosed its experiential trajectory, we showed how some actions were articulated around individual and collective short-term goals. Reconstructing the emergence of the hybrid activity through the analysis of discourse, graphic representations and other artefacts, some learning actions stand out: questioning, especially on the part of the students as they were challenging the object of their school-going activity, and criticizing or rejecting some aspects of their teachers' practice. Adults' awareness of student's lack of motivation or emotional paralysis, which raised in November, appears to have been an important turning point, a key moment in the emergence of the hybrid activity. The mirror material presented during the two sessions promoted reflection, participation. Students' discursive expressions brought to the surface tensions regarding teaching strategies, rules and division of labour at school. A tension also emerged regarding the object of learning itself, namely learning skills to get ready for real life versus learning to the test only. This latter tension was exacerbated that the fact that on Wednesdays they could adopt their own code of living, delineate the object of their school-based business, and demonstrate agency as they were hoping to create and learn something related to a real life context.

Another turning point was likely the leadership struggle (December–February) for the ownership of PénArt. When project-team and school-team participants analysed their respective roles and the division of labour put in place, secondary contradictions appeared between the new model FAST had induced in contrast to prevailing ways of teaching and learning. For a while there was confusion before roles transformed and new instruments appeared (e.g. PénArt's logo representing the identity of the student group). In March each neighbouring activity system (school team, student team, project team) had successful exchanges with one another during brainstorming or modelling sessions.

These key moments or turning points were necessary for PénArt to develop and contribute to the emergence of a hybrid activity between school and work. Through dialogue and negotiation between participants, a ZPD was established, one that led to a successful first year. FAST as an instrument was proving helpful in allowing the research team, the school team and the project team to foster vocational education for students with low motivation regarding their schooling. Although it was a success, the actions of reflecting and evaluating PénArt did not lead to a consolidation of the model. During the 2nd CL session, held in June 2012, the school administration modified the model in response to the teachers that had voiced feeling left out. Youth workers ended the year not knowing what their involvement would be in the second year of the FAST project.

The insights afforded by a year of collaboration and intervention led to a better understanding of the developmental trajectory of the emergence of such an hybrid activity, including the inevitable tensions and contradictions as well as turning points necessary for its expansion. In short, the collective negotiation of roles (division of labour) made it possible for PénArt to meet conditions and lift constraints. For students, the target outcomes had been to increase their motivation toward school, but also to explore career choices and find meaning in pursuing schooling. The multivoicedness expressed in PénArt had an impact on the school organisation.

The research challenge was to reconstruct the narrative of the formation of a new learning space by bringing together teams' actions. We also documented the creation of smaller student's teams, a business 'code of living' within the school, the reorganization of daily class schedule, and changes in the learning locations (i.e. away from formal classrooms to other areas in the school or in work settings). 'Schools need network collaboration in addition to the building of classroom communities' to make 'school studies sensitive to changes in working life' (Miettinen and Peisa 2002, 303).

In retrospective

Although FAST materialised differently the 2nd and 3rd years, a common desire to better merge school contents to the workplace reality was perceivable among adult participants. During our collaboration with the school, we noticed that even if the same model (Penart) did not materialise the 2nd year, its success created a momentum on which new teams built. Teachers got more involved with at-risk students and accepted to be more flexible regarding teachings strategies and collaboration with other school educators. The strong intertwining we observed the first year between motives, actions and the transforming roles and identities of the participants led to another work-school activity. The 2nd year, at-risk students produced and sold a 'healthy fruit juice' that they had created in the science laboratory. It was again a fluid situation that required multiagency but the principal, youth workers, teachers, counsellors and students found a meaning to a new form of activity. FAST is now in its 4th year and even though the research grant has ended, we continue this ethnographic work given the fact that the school team is active in bringing closer school and work. Some teachers carry the flame and strongly believe in its positive repercussions.

The CL methodology is now an approach accepted by the school and the research team is welcomed to show up with audio and video equipment as principal, special education teacher, guidance counsellor and students feel comfortable about it. In light of the results, we are optimistic regarding CL's capacity to foster change in the context of cooperative education in Quebec.

Notes

1. The project *Formation en Alternance Science et Technologie* (FAST)/Development and evaluation of an alternance education program in science and technology was designed for students with learning difficulties and from underprivileged homes (2011–2014). The Centre of Research and Intervention for Student and School Success (CRI_SAS) documented the positive effects of entrepreneurship projects on students and the facilitation of career choices (Lafferrière et al. 2014). This research was supported by a Quebec grant to CRI_SAS members (CRQ-SC, 2012-RP-145079).
2. A non-profit organisation (http://www.cjecn.qc.ca/sgc/ [in French only]).
3. Originally, Vygotsky (1978) defines the ZPD as 'the distance between the actual developmental level [of a child] as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers' (Vygotsky 1978, 86). For a particular task, providing the appropriate assistance will give the student the possibilities to resolve the problem or accomplish a given task.
4. CRI_SAS researchers are highly conscious of the influence of context in the production of knowledge.
5. Meetings were not formal CL sessions.

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Marie-Caroline Vincent Vincent work focuses on how high school science teachers can better integrate mathematical strategies to solve complex problems in their classrooms.

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