School Community Involvement to Address Student Decision-Making Regarding Personal Health

Sylvie Barma, Rollande Deslandes, E. Alexander Cooper, and Samantha Voyer

Abstract

This article discusses how the key players' multilayered collaboration may be enacted by the Change Laboratory methodology in the footsteps of Virkkunen and Newnham (2013) to address a complex issue for the benefit of adolescents. It can be defined as a group processing approach used by a group to solve a problem of its own defining. Over six months, members of a school community played an important role in participating in the modelling of classroom lessons with adolescents facing the new guidelines of the Canadian Cannabis Act in 2018. Drawing on the theory of expansive learning and the cultural–historical activity theory (CHAT), we used the Change Laboratory approach to dialogue on the problems and solutions to be implemented. The results examine specifically how some of the school community members contributed to the co-modelling of these lessons, taking into account the adolescents' needs in two schools. The collaboration between the members evolved over time. The vertical power hierarchy usually present in schools was modified as parents, grandparents, a medical doctor, a special education teacher, two teachers, and five students agreed to sit together to address the health issue. The qualitative analysis brings to light how the participants shared their needs and engaged in taking transformative actions to intervene directly in two high school classrooms.

Key words: activity theory, cannabis legalization, complex issues, change laboratory, expansive learning, school community involvement, student health

Introduction

The article discusses how some members of a school community can play an important role in participating in the co-modelling of classroom lessons that are aimed at adolescents facing a complex issue regarding their health. According to some authors (Deslandes & Bertrand, 2001; Redding, 2011), members of a school community may be characterized as an educational community when a group of partners are committed to the success and development of students' full potential, sharing a common vision and values, and demonstrating caring, warmth, and support in their interpersonal relationships with other members of the same community. In other words, a school community may be composed of different stakeholders or players such as students, members of a school team, and members of the broader community, including parents, grandparents, and health professionals concerned with the well-being of these students (Barma et al., 2017). All these actors are potential participants for engaging in a social collaboration and formative intervention like a Change Laboratory. As Barma et al. (2017) document, "several types of approaches and intervention methods are open to the researcher studying empirically the challenge of school transformation and inter-institutional collaboration" (p. 674). In their book *The Change Laboratory*, Virkkunen and Newnham (2013), who present the founding principles of the methodology, describe the essence of the Change Laboratory in this way: "The Change Laboratory is a formative intervention method for developing work activities by the practitioners in collaboration with researcher interventionists. It is also a toolkit for envisioning, designing, and experimenting with new forms of work and a social setting in which this can be done" (p. 15). Our choice of methods had to take into account a diversity of participating groups and the complexity of imagining new pedagogical scenarios to foster student engagement in the decision-making process regarding their own health. When setting up a Change Laboratory, a research team and the participants work together to address the problems encountered and to create new tools (ideas or artifacts) that will make it possible to overcome and solve the initial problems.

Problem Statement

The complex issue discussed in this article is the legalization of cannabis for adults that took place in October 2018 in Canada and the challenges it has been presenting to school boards and teachers. A complex social issue involves

competing values and interests, it is politically sensitive, it arouses strong emotions, and the issues involved are multifaceted and hot topics. In the same line of thought, dealing with complex topics can be difficult especially when addressing health education issues, as they are distinguished from mainstream disciplines by the absence of an academic referent and a clearly defined curriculum (Pizon & Jourdan, 2009). Researchers and school officials in several countries have become aware of the importance of including the study of socio-scientific issues in school curricula, stressing the importance of considering environmental and health uncertainties and crises (Barma, 2011; Méheut, 2006).

A UNICEF report released in 2013 places Canadian youth at the top of the list of 29 developed countries for illegal cannabis use, with 28% of 11 to 15 years old having used it in the preceding year. In 2018, the Canadian Government legalized recreational cannabis usage for people aged 18 and over. Recently, the Quebec Government increased the legal age to 21. The Cannabis Act created a strict legal framework for controlling the production, distribution, sale, and possession of cannabis across Canada. As for the situation in the province of Quebec, the Institute of Statistics reported that one-quarter of high school students had used cannabis in the preceding 12 months, making it the most popular drug (Gouvernement du Québec, 2016). This consumption is worrisome because it can open the door to harmful habits such as drug addiction and criminal drug use, which can in turn lead to problems in personal and family relationships as well as difficulties at school such as worsened academic exam results, class participation, time allocated to study, attitude towards school and graduation (Patte et al., 2017), and even increased dropping out (Gouvernement du Québec, 2012). In addition, chronic cannabis use can lead to cognitive impairment damage to developing brain regions, depression, and suicidal ideation in adolescents (Durkin, 2014; Golub et al., 2010). Equally alarming is Uruguay's experience with the legalization of cannabis which has shown an increase in adolescent cannabis use (Marsiglia et al., 2017). One explanation for this could be the misinterpretation of the new laws (Meyer & Rosen, 2014) and the fact that legalization may fuel the perception that cannabis is socially acceptable, even for young people (Hall & Lynskey, 2016). Educating youth about the intent of the law seems crucial to prevent widespread use by minors (Marsiglia et al., 2017). Prevention is also imperative to reduce adolescents' perceptions of the social acceptability of substance use and to highlight the risks and consequences (Estoup et al., 2016). Therefore, the problem we are addressing is about how schools can support students in making healthy choices.

The Role of School: Possibilities and Limits

As recognized by the World Health Organization (1986), school can play a key role in developing skills that enable young people to make choices that promote health. For instance, an intervention by trained teachers and teaching life skills, risk assessment, and decision-making was implemented in two tuition-free schools in Montevideo, Uruguay. Findings were reported regarding declines in alcohol frequency and cannabis frequency (Marsiglia et al., 2017). However, most teachers struggle with the fact that they have to integrate aspects such as drug or alcohol usage into their teaching while they move away from a disciplinary teaching area to an integrated one as proposed in the Quebec education program in Canada (Barma, 2008; Quebec Ministry of Education, Leisure, and Sport, 2006). Indeed, according to the prescriptions of the Quebec education program (PFÉQ), all disciplines and all school players must take charge of health education. To actually put into place these practices in a classroom represents a challenge to the majority of teachers as their university teacher preparation did not prepare them for such an activity. Their training is traditionally focused on disciplinary content and centered on the evaluative process (Barma et al., 2010; Urgelli, 2008). In the same line of thought, Lange and Victor (2006) report that high school teachers frequently express a feeling of incompetence regarding health education, as, according to them, it seems to belong more to the medical or social field. It seems that teachers fear that health education will add to already heavy teaching duties and, because the subject is complex and sensitive, that they are not sufficiently equipped to do so (Manidi & Dafflon-Arvanitou, 2000). Different factors—such as the fact that students are at an important stage of their personal development, the possibility of implementing a range of pedagogical approaches, the presence of a competent team, the possibility of reinforcing what is learned in class through a supportive school environment (Green et al., 1996), and its strategic position at the interface of society and families—make the school a very appropriate place to proactively intervene with young people (Guiet-Silvain et al., 2011).

In spite of all the efforts made, traditional teaching approaches aiming to reduce risk behaviors focus on the dissemination of information. Such programs put forward through ad hoc thematic activities do not demonstrate the desired results (Quebec Ministry of Education, Leisure, and Sport, 2006). These approaches, called informative (Manderscheid, 1994), biomedical (Piperini, 2016), traditional (Grenier et al., 2010), or rational (Jourdan, 2004), emphasize the transmission of knowledge that is considered neutral. It aims to guide students' health behaviors by appealing to reason and common sense.

According to this vision, it is not enough to apply the guidelines to be healthy (Jourdan, 2004). Moreover, informed people do not necessarily change

their health behavior (Bury, 1988). The educator seeks to teach appropriate behaviors in an environment that is implicitly considered homogeneous, whereas it is composed of individuals with a wide variety of experiences and perceptions depending on the environment in which they live (Piperini, 2016) and other factors. We know that coercitive measures have too often had the opposite of desired effects (Craplet, 2006; Paglia & Room, 1999). Addressing this issue with adolescents appears to be important because there may be an inverse relationship between cannabis use and risk perception in this age group (Volkow et al., 2014). Approaches that attempt to limit access to illicit substances are at odds with those that promote the development of adolescents' ability to make informed choices (Laventure et al., 2010).

The Role of Families

A promising way to introduce pedagogical innovations in schools is to reach out to families, because it is by now well-known that families have a major influence on the academic success (Deslandes, 1996, 2020a; Deslandes et al., 1997; Epstein and Associates, 2019; Simon, 2019) and resilience of young people (Deslandes & Bertrand, 2001) as well as on their lifestyle (Czaplick et al., 2013). Adolescents who describe their parents as warm and encouraging them to develop their independence while interacting with them on a daily basis tend to have better academic results and a greater sense of responsibility (Deslandes, 2005, 2019; Deslandes & Barma, 2016; Jeynes, 2005). In the same line, grandparents, as members of the extended family and of the community, are key players in support of parenthood. They can offer stable benchmarks to children in the context of family difficulties. Most grandparents want to share their experiences, their knowledge, their values such as tolerance and respect, and to enhance the dialogue between the generations (Coutrim & Silva, 2019; Parent, 2013). While promoting adolescents' self-determination and critical thinking is important (Steinberg, 2014), the involvement of parents, grandparents, and other members of the community in helping youth to make choices regarding their health is crucial. Through support and dialogue, these key players are also likely to support teachers in their work with adolescents in the context of cannabis legal changes (Barma et al., 2019). Studies also show that the school community, through its values, norms, and resources such as physicians and psychosocial workers can promote youth development and contribute to the school's mission (Barma, 2008, 2011; Deslandes, 2020b).

The purpose of this study is to document and analyze an intervention by a research team with members of a school community (assistant principal, science teachers, special education teacher, parents, grandparents, a medical doctor, and the adolescent students themselves). The goal of this intervention

was to engage students and their peers in making sound decisions concerning matters pertaining to their health. The following research question is addressed: How can members of a school community collaborate to better support adolescents' decision making regarding their health in the context of the legalization of cannabis?

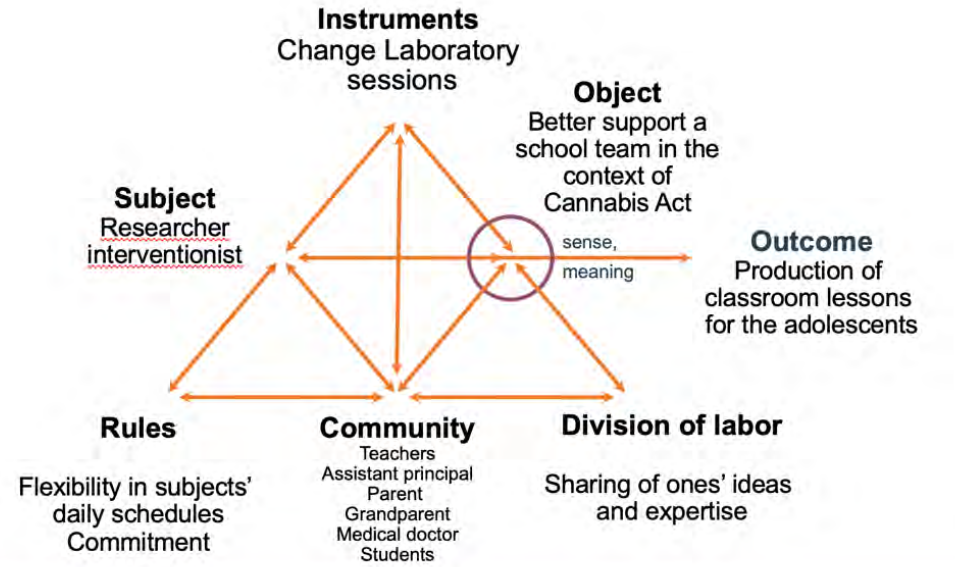
In this article, we describe eight Change Laboratory sessions that we conducted. The outcome of these Change Laboratory sessions led to the implementation of five participatory classroom lessons in two school settings. The intervention lasted six months. We examine more specifically how the school community contributed to the co-construction of these lessons, taking into account the adolescents' needs in each setting. We also examine how the collaboration between the members evolved over time.

Theoretical Approach

In the study, we rely on the theory of expansive learning grounded in cultural–historical activity theory (CHAT). In the 1970s, Western researchers brought sociocultural theories like CHAT to the forefront, and these have gained interest ever since (Bracewell & Witte, 2003). Engeström (1999), who developed third-generation CHAT which is described further below, proposed a systemic model in the form of triangular representation integrating the individual and the collective dimensions of a goal-oriented activity leading to the production of a new form of activity. The triangular representation of individual / social mediation has six interconnected elements or poles: *subjects, objects, tools, community, rules,* and *division of labor* (Engeström, 2015). This representation is considered the minimal unit of analysis required to understand how an individual participates in a collective endeavor. The originality of CHAT lies in approaching problems in a different way from behavioral theory, given the central role played by instrumental and cultural mediation guiding the pursuit of an activity (Vygotsky, 1987). Using CHAT analytical tools helps to highlight the poles or the elements where changes need to be addressed (Engeström & Sannino, 2011). The actions of the members participating in an activity are diverse, distributed, and are part of the pursuit of a collectively shared activity.

Figure 1 illustrates how a subject (researcher) can engage in an agentive way in an activity system aiming at supporting a school team in the context of the Cannabis Act. Tools like the Change Laboratory sessions can mediate a collaborative activity by gathering together some members of a school community to work together at designing innovative pedagogical strategies for the adolescents to discuss a health issue.

Figure 1. A Researcher–Interventionist Engaging in a Change Laboratory



Note. Based on *Learning by Expanding: An Activity–Theoretical Approach to Developmental Research*, by Y. Engeström, 1987 (http://lchc.ucsd.edu/MCA/Paper/Engestrom/expanding/toc.htm).

Third generation CHAT refers to expansive learning that takes us beyond the limits of a single activity system and expands the unit of analysis to multiple activity systems interacting and potentially sharing a common object (Engeström, 2001). As for Miettinen (2006), he refers to expansive learning as "a process of shared construction of an object, a mobilization of mutual resources, as well as a process of mutual learning" (p. 176). In other words, CHAT provides a valuable lens to assist subjects engaged in a task toward an objective and who are influenced by the rules and norms (guidelines, policies) of communities they are in and ways of how division of labor should occur. In any system of human activity, the subject who acts within a community is organized by rules and division of labor and uses artifacts or tools to accomplish, with others, the object of the collective activity.

The actors in activity systems are subjected to contradictory forces. These forces can induce a significant transformation in the object of a collective activity. In the context of this study, the theory provides the basis of possible expansive creativity as the school community (the assistant principal, the teachers, the parents/grandparents, and other professionals from the community like a medical doctor) interact and collaborate, undergoing collective transformations as they discuss the problems and solutions to be implemented (Engeström, 2001, 2015).

In order for a transformation to become collective and follow an expansive cycle (Engeström, 2015), a typical sequence of enacted or learning actions comprises seven phases and provides a framework for analyzing organizational practices: (1) question the situation and identify a need; (2) analyze the way we intervene, and consider how a new activity will have an impact on the environment; (3) model new tools to solve your problem; (4) model the new activity; (5) implement it; (6) adopt a reflexive attitude; and (7) consolidate the practice by carrying out reflexive feedback on everything. Through these different phases of the cycle, participants confront and share their expertise to develop a common vision, the potentially shared object being the production of classroom lessons.

The Change Laboratory Approach

The Change Laboratory rooted in expansive learning was used as a means to foster expansive learning actions to construct a new form of activity (Engeström, 2001; Virkkunen & Newnham, 2013). "Change Laboratory" refers to a mode of collective problem-solving in an intervention facilitated by at least one researcher interventionist, bringing together a small group of participants. The participants examine origins and systemic causes of a problem by raising questions about the problem, reformulating the problem, and envisioning new forms of activity aimed at solving the problem (Virkkunen & Newnham, 2013). Even though the typical change methodology comprises 5–12 sessions, in many instances, it becomes necessary to adapt it to the local and cultural settings while still respecting its principles (Barma et al., 2017). The objective of our Change Laboratory activity was to improve collaboration between members of a school community to better understand and to better address the needs of two different school teams in approaching the new socio-political environment of cannabis legalization.

A Change Laboratory is based on the principle of double stimulation (Barma et al., 2015; Vygotsky, 1987). The problematic situation constitutes what is called "the first stimulus" and is a necessary element to trigger transformative agency (Engeström & Sannino, 2013). The starting point of any Change Laboratory happens mostly during the first sessions (1–3) when the researcher interventionist identifies what the problem situation is. This is the "first stimulus" expressed in the participants' discussion. It will often take the form of expressions of impossibility, and it will bring to light the opposition of various divergent needs, motives, and pressures (Virkkunen & Newnham, 2013). At the heart of any activity system lies an inner basic contradiction that has to be revealed in order to understand the complexity of the object pursued by

the participants. In our case, despite the fact that the government seeks policy that promotes adolescent wellness and provides for safe use with the Cannabis Act, a possible basic contradiction is identified: on the one hand, we find a taboo when it comes to addressing the complex issue in the classroom with adolescents, and on the other hand, we find the possibility of a multilayered collaboration within the school community that can address the issue (Barma et al., 2020). It is important to document contradictions that generate disturbances but also efforts at changing the activity. According to Engeström (2015),

> the essence of [an expansive] learning activity is production of objectively, societally new activity structures (including new objects, instruments, etc.) out of actions manifesting the inner contradictions of the preceding form of the activity in question. [Expansive] learning activity is mastery of expansion from actions to a new activity. (p. 174)

However, contradictions are often not directly accessible. They are manifested through the discourse of the participants in the form of tensions that have accumulated over time (Engeström & Sannino, 2011). Four types of tensions based on linguistic criteria are possible, namely dilemmas, conflicts, critical conflicts, and double binds. Dilemma directs us to incompatible expressions or exchanges of evaluations, and it is usually expressed through hesitations, such as "yes, but" or "on the one hand" and "on the other hand." Conflict is synonymous with argument, criticism, and disagreement. Discursive expressions are "no," "I disagree." Conflict calls for compromise, intervention, and so on. Critical conflict refers to conflicting motives that paralyze social interaction, such as having the feeling of being guilty. To be solved, it requires negotiating a new meaning for the initial situation. Double binds mean that individuals have to face alternatives as nonwinners in either case. The impossibility is expressed as: "What can we do?"

Once these tensions are brought to the surface, it is the role of the researcher interventionist to bring them to the attention of the participants. Exchanges and collaboration between the participants ideally make them share a common understanding of the nature and the causes of the problem. They become better equipped to build the second stimulus by sharing new ideas, finding solutions, moving on to envision, and committing to actions and taking actions (Haapasaari et al., 2016).

In the context of our research, the objective of the Change Laboratory sessions that we established targeted the development and monitoring of classroom lessons aiming at increasing adolescents' capacity to make enlightened choices in the context of the legalization of cannabis. According to CHAT, the

introduction of new elements, such as the 2018 law on Cannabis in Canada, is followed by a questioning of the rules and the division of labor of a community that regulates the activity. The originality of the process was the inclusion of active participation of some members of the school community (assistant principal, parents, grandparents, medical doctor, teachers, and students) working together and listening to the adolescents' voices and needs, all while considering their own needs and preoccupations as participants. The expected outcome was thus classroom lessons that would lead to better informed decision-making by adolescents.

In this article, we focus closely on the intervention itself and the ways the Change Laboratory method made it possible for a variety of participants to produce new classroom activities respecting the needs of the adolescents as well of the needs of the adults. The vertical power hierarchy usually present in schools was modified as parents, grandparents, a medical doctor, a special education teacher, two other teachers, and five students agreed to meet together to address the issue of cannabis legalization in two schools.

After receiving approval of the Laval University research ethics committee, the project was first presented in the two high schools that agreed to participate. In terms of a preventive perspective, the Secondary 2 level was chosen because teachers and school professionals often find a gap in the students' maturity between Secondary 2 level (freshman year in the U.S.) and higher level students (sophomore and junior years in the U.S.), ages 13–14 compared to 15–16. School 1 is an urban private secondary school in the Quebec region with 723 students, while School 2 is a suburban public school attended by 945 secondary students. In each setting, a planning session was held in order to present the research project and negotiate the timing to implement the Change Laboratory intervention.

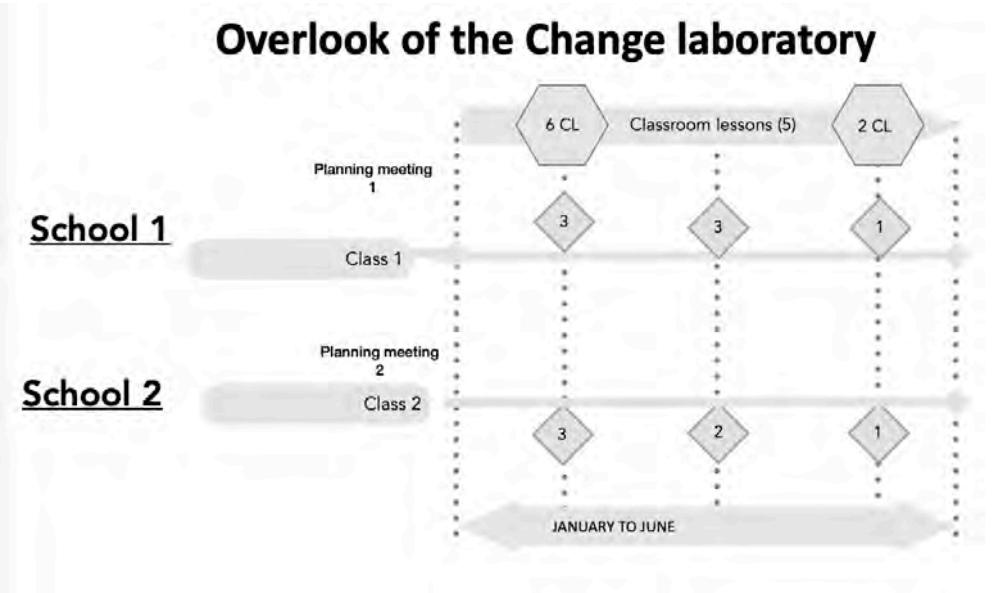
Research Methods

Data Collection and Analysis

Two preparatory meetings followed by eight Change Laboratory sessions were conducted between January 2018 and June 2018 (see Figure 2). The composition of the groups of participants varied according to the schools. The School 1 Change Laboratory group comprised one ethics and religious culture teacher, one special education technician, two Secondary 2 students, one medical doctor, one mother, and one grandfather (from different families), while the School 2 Change Laboratory group was composed of one science and technology teacher, three students, and the medical doctor. Both groups had in common two researcher interventionists, four research assistants, and

the medical doctor as a collaborator in the research project. As for the research assistants, their knowledge of the method was an asset when it came time to transcribe and analyze data across the sessions. They were helpful in building the mirror data and preparing the technical aspects required to conduct the Change Laboratory sessions. An invitation to participate in the research activity addressed to all parents of the Secondary 2 level students in both schools, as well as other members of the extended family, was sent by the two school principals. In School 1, one parent and one grandparent committed to the Change Laboratory sessions, but only 17 out of 34 parents gave consent for their adolescents to participate in the research project lessons. As a consequence, half of the group participated in the research project; the other half were given study periods. In School 2, all parents consented to their adolescents' participation, but none of them volunteered as participants in the Change Laboratory. The five students considered leaders who would participate in all the Change Laboratory sessions were chosen by their peers and teachers in each school. All of the participants therefore chose to participate on a voluntary basis. They all signed the ethics form adopted by the ethics committee. The form was designed to ensure a climate conducive to the exchange of ideas while respecting the opinions of others in a constructive spirit of collegiality.

Figure 2. Overlook of The Change Laboratory in the Two School Settings



In each school, the first two sessions sought to introduce the Change Laboratory approach to the participants and to present evidence-based mirror data in order to foster individual and collective reflections about cannabis use. The research team gathered the reactions of the students, as described by their parents, in a questionnaire previously administered (Voyer, 2021). Then, exchanges between students and the other participants focused on the new cannabis law. This was followed by brainstorming in subgroups regarding ideas for classroom lessons to be conducted (defining the need state for classroom lessons). The third Change Laboratory sessions could be referred to as the keystone of the co-modelling of the classroom lessons. These lessons included a legal info-message, a power point on medical information, and a Kahoot quiz (very much like a Jeopardy TV show), all on the subject of cannabis legalization, plus kiosks in preparation of a trial simulation. The fourth Change Laboratory sessions occurred after both schools experienced the classroom lessons. The participants reflected on the classroom activities with respect to what was learned, which experiences were preferred as well as why, and what could be improved or added in order to better support the school team in helping adolescents in decision-making regarding cannabis.

The eight Change Laboratory sessions were videotaped, and each one lasted for about 90 minutes. The verbatims were then transcribed giving a total of 105 pages for School 1 and 117 pages for School 2. Notes were also collected in the researchers' journals. Ethnographic field notes were also collected in the researchers' journals to triangulate the qualitative analysis of each session. The data were first coded in terms of dialectical units or segments of meaning according to the forms of tensions (dilemmas, double binds, critical conflicts, conflict) as discussed previously (Engeström & Sannino, 2011), and then, according to the poles of the activity system to which the discursive expressions were directed. Based on Haapasaari et al. (2016), the expressions of transformative agency were also identified: resisting, criticizing, explicating, envisioning, committing to action, and taking action. Both types of analysis help describe the development of the object of the activity put in place by the school team in collaboration with school community members as they address the need state and model and implement classroom lessons with the adolescents participating in the Change Laboratory. The excerpts reported in this article were translated from French to English by the two researchers who are both fully bilingual.

Research Findings

This section presents the results of the analysis in line with the unfolding of the Change Laboratory aiming at addressing the research question: How

can members of a school community collaborate to better support adolescents' decision making regarding their health in the context of the cannabis legalization? Firstly, our findings present why some members of the school community were saddled with another social problem such as the Cannabis Act. They illustrate the expanded roles that the mother, the grandfather, the medical doctor, and some educators played as they started a new form of collaboration with the adolescent students. Secondly, the findings show the concrete co-modelling of the classroom lessons that were experienced by two eighth grade classes and the reflective exchanges that took place the week after.

Meaning Given to the Expanded Roles of Some School Community Members

In January 2019, a planning session was held in School 1, gathering the assistant principal, a special education teacher, and four members of the research team. During the planning session that would define more precisely conditions related to the beginning of the Change Laboratory, the assistant principal—who was present only at this activity—clearly expressed a tension in the form of a conflict regarding the results of a questionnaire that 253 parents had previously completed in order to express their concern about the Cannabis Law: "Education has become little more than a mercantile affair nowadays. Once again, it's the school that has to take responsibility." It became clear that the parents expected the school to take over the discussion about the new cannabis law. Soon thereafter, the assistant principal expressed another tension in the form of a dilemma as he felt compelled to take action: "It seems that parents have taken for granted that society will take care of it." For the research team, what the assistant principal expressed was key in justifying the importance of aiming to develop a sense of autonomy and decision-making skills amongst the 13–14-year-old adolescents. As he was questioning the relevance of a possible intervention, the assistant principal seemed frustrated that the population in general did not address the health issue in the context of the forthcoming legalization:

> I think it's a societal problem; every time there is a problem in society today, people will say: let's ask the government, let's ask the government, and this, regardless of their level of education. The thing is that WE are the government.…The decision is ours, but it seems as though people have taken for granted that government will take care of everything.

He continued by expressing, in the form of a double bind, that "parents think that when they buy a product, everything is ok! I buy something that is legal, there is no problem! Yes, but do you know exactly when your child smokes? The parents don't think about that." Right from the beginning of the

intervention, participants engaged in the Change Laboratory sessions manifested a high degree of emotivity. It was clear the special education teacher, the mother, as well as the grandfather were aware of the fact that some adolescents had declared that their parents were cannabis consumers. The teacher expressed real, conflicting concerns over the family conditions of some of her students: "These young people have parents [smoking]; we won't hide it. I don't know how many parents smoke, but there are a lot of parents in line to buy some legal cannabis nowadays." The school team was facing a real dilemma as to how cannabis legalization would impact the way this complex issue had to be addressed by the school.

In line with the assistant principal's comments with respect to the school responsibility of informing and educating the students, the mother, imitating her youngster's discourse, brought up another pertinent element to the discussion. The mother expressed genuine concern about protecting her adolescent from an influential "best" friend when she stated: "After three, four times that you say no to your adolescents, they go to the party, and finally everyone has it [cannabis]."

Other excerpts exemplify a dilemma regarding a teacher's doubt with respect to her knowledge about cannabis. During the first session, the conflicted mother's comments led to the teacher addressing her own credibility in that matter: "Is it true that everyone has already tried cannabis, or is it false? Are there adults who can tell you about it…but I haven't tried it. Are we losing our credibility if we haven't tried it?" The mother replied: "Is there any discomfort in admitting it or not saying it?" The teacher went on, saying: "We know that we have some students whose goal is precisely to try to trap us. Of course, we will be asked the following question: 'But you, madam, have you tried it?'"

It seemed that the members were hesitant to have an open discussion regarding the health issue, and they did not know how to present it to their adolescents. Their comments referred to the rules and division of labor poles in the triangular representation at each pole illustrated (see Figure 3), since they seemed to express doubts about their expected roles in the intervention. On his part, in line with the mother's statement, the grandfather expressed a conflict about the rapidity of the implementation of the Cannabis Act:

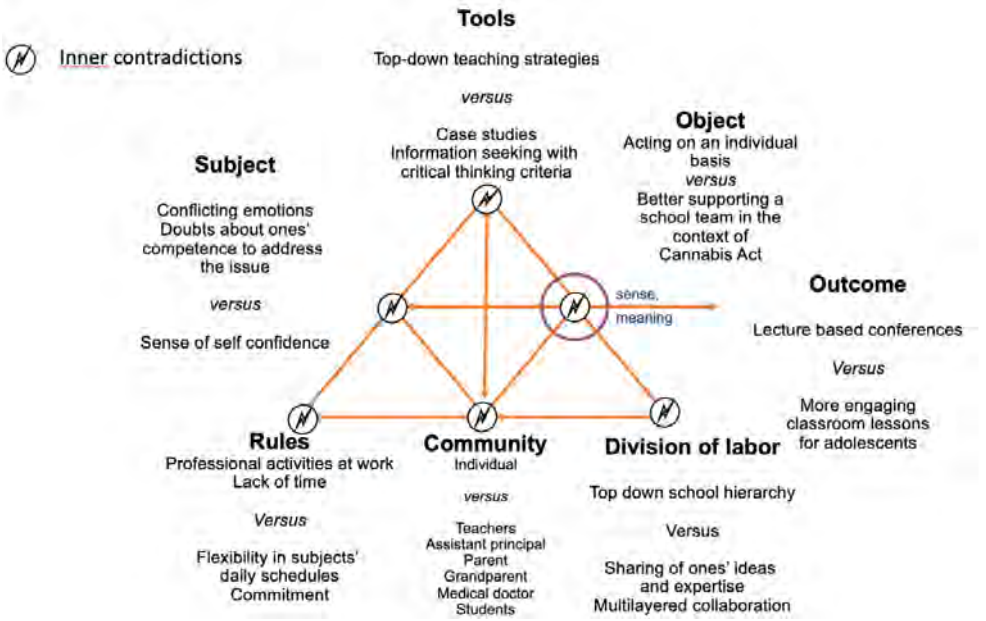
> What I find is that it was legalized very quickly. Not, that I'm against legalization, because sooner or later it had to get there. We remember alcohol prohibition at the time, we had to go back to legalizing alcohol because it created more problems than anything else. Now, I found that it was too quick and that there was not enough information to prepare for the legalization of cannabis.

The special education teacher expressed doubts as to whether students remembered previous information provided to them in the form of a dilemma:

> At the Secondary 1 level, they are offered lectures, and they see different types of drugs, nicotine and all that. We showed the impacts, we showed them cases and how to intervene with someone who was insistent, and how to react. It worked really well. But, do they remember?

All the participants agreed on the inefficacy of "bare facts" presentations to adolescents. For that reason, they decided to work together with the students participating in the Change Laboratory to co-model a new form of more engaging classroom lessons likely to foster adolescents' agency and interest regarding their health. The results document Phase 1 and 2 of the expansive learning cycle: questioning and analyzing.

Figure 3. Activity System (inner contradictions at each pole)



Indeed, some students seem to forget the information as time goes on. In search of more efficacious actions, a teacher, after summarizing the lessons that have been done the previous year at school, suggests that facts presentation is not enough and that content must reach the students in their emotions. As the discussion progressed during the session, the medical doctor expressed some tensions in the form of a double bind in the following terms:

> I'm trying to get inside the brain of a 15-year-old or a 14-year-old. Yes, it's fascinating to hear their stories, but they're often dramatic and

> negative stories. So, you also have to be aware of what makes someone try [the doctor then referring to the parents' own experience with drugs]. I think the situation in our social environment is that it is often your own friends who will say, 'well, I remember in our younger days;' it's people we knew that have tried it.

One of the repeated dilemmas (characterized by hesitations) in both schools reflected tensions regarding the rules pole in CHAT. It had to do mainly with tensions expressed in the form of a double bind about lack of time in the teachers' schedule, as demonstrated in the following excerpt with regards to the classroom lessons to be implemented in their respective schools:

> My students, they are working on a project, but we already lack some time. I would have had some space, but we had a conference on fake news. I have extra courses for the other groups but not with this one. (Teacher)

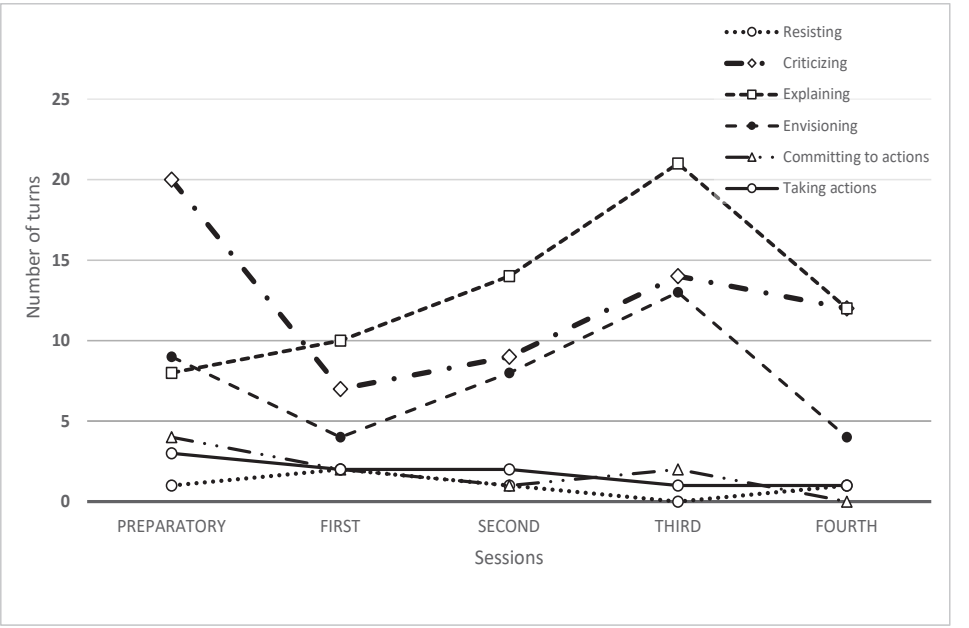
In brief, reflecting back on the analysis of the tensions in the form of discursive manifestations of contradictions highlights the need state to address in both settings: a lack of information, a low retention of the information, the effects of cannabis on health, the need to present real case studies, and the competence to look for scientifically based information on the web by students. The need state corresponds to why some members of the school community decided to expand their usual roles as parents or educators in a new form of collaboration with the adolescents.

Co-Modelling of the Classroom Lessons

Starting from the third Change Laboratory session, significant progress was made on the possible classroom lessons to be delivered experimentally. In order to better understand the development of a possible expansive learning cycle, we analyzed expressions of transformative agency. Their identification revealed that, over the sessions, the recurrence of resisting and criticizing actions decreased during the third Change Laboratory session and led to more actions like visualizing the future and planning for action. In line with Haapaasari et al.'s (2016) work and as shown in Figure 4, the recurrence of criticizing is high at the beginning. Note that the first phase on an expansive cycle is related to questioning the current activity. It is expressed discursively among other things as criticisms welcomed by the researcher interventionist. Surprisingly, criticizing is still high in the third session, probably because the school community members participating in the process of modelling classroom lessons were arguing about the type and the content. Likewise, the number of criticisms remained high during the fourth session. It highlights a challenge that

School 1 faced with regard to the fact that only half the parents had signed the consent forms for their child. It also may indicate that half of the parents were not comfortable with their child participating in the research project. The management of the classroom involved dividing the class into two subgroups and an increased workload for the teacher and the special education teacher.

Figure 4. Transformative Agency Expressions in the Four Change Laboratory Sessions of School 1 (all participants except the students)



An important role of the researcher interventionist is to foster innovative ideas by the participants as he/she invites them to imagine new forms of actions. As for explaining numbers of expressions of transformative agency, we observed an increase as the Change Laboratory progressed. The frequency of envisioning increased during the third session as the grandfather, the medical doctor, and the special education teacher engaged in co-modelling new tools for the classroom lessons. This is a clear sign of their active collaboration and their will to get involved in the lessons themselves. The medical doctor proposed to gather the questions from the adolescents and address them directly later on with them. The grandfather, a former policeman, mobilized a lot of information that he would present during the second activity in School 1.

During the second and third Change Laboratory sessions, the participants expressed clearer ideas related to the possible classroom lessons (visualizing the future). Note that some expressions of transformative agency can be readily

identified as early as in the first session. For example, here are a few narrative excerpts of the participants over the sessions to support the expansion of their respective roles over the four weeks. The participating mother in School 1 expressed the will from the start to change the perceptions of the adolescents regarding cannabis:

> I told myself that it was the opportunity to come and talk about it, discuss it, and maybe even set up actions that would be more concrete—changing perceptions versus reality. In any case, I'm a little…I am very interested in doing my part as a parent.

At the beginning of the second session, the mother explained her motivation to get involved:

> We had to find an idea, a way to present the issue to students, so that they could make informed decisions…the impacts, whether they are positive or negative, or whether they know where they stand, so that they can make an informed decision. So, I realized that the Change Laboratory was really the project.

The medical doctor, on his part, shared an idea with the grandfather and the mother that would inspire the two participating adolescents. It revealed a key to envision the main content of one of the classroom lessons and the importance of being equipped to make an informed decision when taking action in the context of this era of social media. As a practitioner, the doctor was concerned about the impact of social media on adolescents:

> There is a growing whistleblowing phenomenon now with smartphones, cell phones. People putting things, posting things on social media…and people aren't going to go knock on the door or call the police, they're going to publish, they're going to do a kind of public lynching right away.

The medical doctor, the mother, and the grandfather (former policeman) collaborated by agreement to combine their respective contributions for the planning of the kiosk information day. The collaboration was also reinvested in School 2 in the form of medical and legal information presentations. The researcher interventionist then presented the suggestions to the Change Laboratory participants at the beginning of the third session. In School 1, the grandfather played an important role in defining key elements that would characterize the classroom lessons. He proposed various ways to seek information about the legal and medical aspects of the cannabis law:

> I think that there are ways to create simulations or classroom exercises, laboratories, which would allow young people to do an exercise beforehand, to get information from different competent people. Then, they

> would come back to the classroom and exchange ideas, perhaps through a simulation. I don't know, because that's a proposal I would make, but it's clear that you need information to make a decision.

This grandfather's ideas oriented the development of the classroom lessons in the form of information kiosks where experts would share information with the Secondary 2 students. It is through the evolving collaboration between the participants that the first classroom lessons were created to respond to specific needs that were identified: *lack of information on the legal issues and the effects of cannabis on health and research done by the students to retain the information.*

The third Change Laboratory session was dedicated to finalizing the co-modelling of the classroom lessons and comprised envisioning transformative expressions. It corresponds to Phase 3 of the Expansive Learning Cycle (modelling). The fourth session corresponded to the fourth and fifth phases of the Expansive Learning Cycle, that is, the implementation of new classroom lessons and the reflection over the whole process.

The first classroom lesson, which was identical in the two schools, was comprised of two workshops: one legal info-message (Kahoot style, like a TV quiz) on legal age for usage, purchase, possession, and sanctions. In school 1, only two lessons took place. The second lesson aimed at responding to the students' specific needs as expressed by the Change Laboratory participants: special interest in debates, exchanges of ideas and sharing of viewpoints, and information kiosks and testimonies based on prior experiences, with the creation of a scenario to engage students. A scenario implying sale of cannabis at school was presented to the class. Subsequently, each team of four students was assigned a different solution to the scenario. Each team analyzed the advantages and disadvantages—regardless of their personal opinion on the issue—and then presented them to the class. Finally, one member of the research team monitored a collective discussion. After hearing the arguments for every scenario, the students could share their personal opinion on each and explain which solution they would favor.

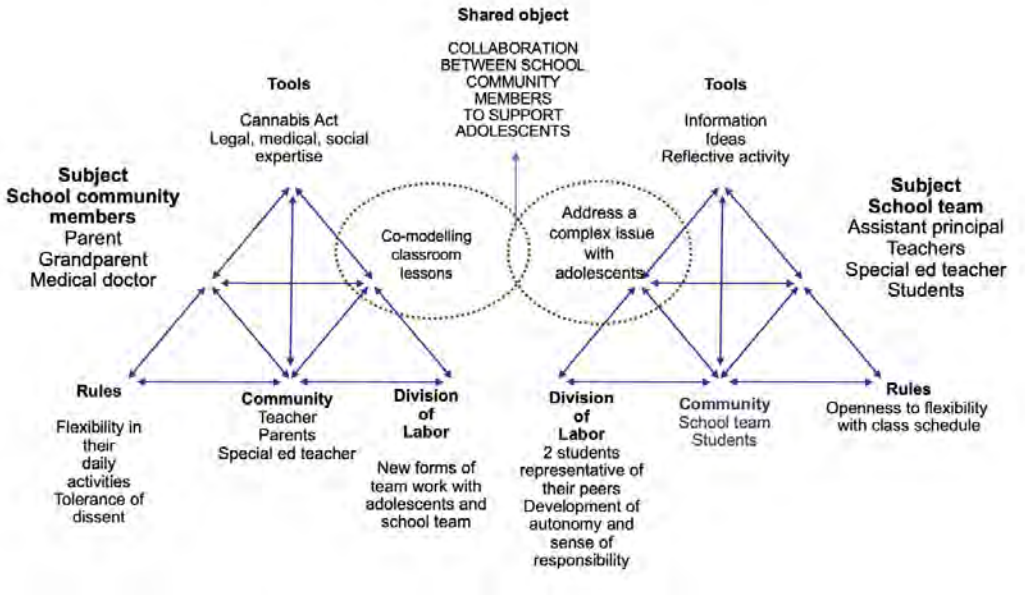
In School 2, the second activity was different than the one in School 1. As for School 2, the second classroom lesson included, besides the analysis of a scientific article using a grid on critical thinking, a problematic scenario to solve. For this scenario, the students had decided to accuse one of the students in the class and organize a mock trial. Therefore, information stands (different stations in the room) were aimed at preparing students for the proceedings of a mock trial. After those two classroom lessons, the students in School 2 had enough information to prepare their pleadings for the coming trial during the third classroom lesson. Every team had a different role at the trial and had to plead their case based on their role. At the end, the team of student judges pronounced their sentence and justified it.

Conclusion

In retrospective, the Change Laboratory sessions gave the opportunity to the participants to better support adolescent decision making regarding their own health in the context of cannabis legalization. The findings revealed a shared goal to expand their roles in co-modelling new formats of classroom teaching. These findings offer solutions to the powerlessness felt by parents and the role confusion felt by teachers and their institutions regarding policy implementation. The unfolding of the Change Laboratory sessions enhanced the collaboration with stakeholders, the research team, and some members of the school community, while allowing a great experience for students to examine a complex issue. Over the six months of Change Laboratory intervention, members of the school community in the two settings engaged actively with the research team and the participating students in sharing their opinions, ideas, and insecurities regarding the Canadian Cannabis Act and its possible impact on the adolescents.

As illustrated in Figure 5, a shared object was identified as two activity systems emerging from the Change Laboratory intervention. After the analysis of parents' responses to the survey that was conducted in School 1, the assistant principal understood that parents were expecting the school to engage in some form of action with their adolescents. This created a tension in the division of labor at the school since the school team had to bear the full responsibility of acting. When the research team presented the project to the assistant principal during the planning session, it was agreed that the recruiting of members of the school community should start. A grandfather, a mother, a special education teacher, and other teachers joined with volunteer students during the sessions that would reveal key moments of sharing, analysis, and building classroom lessons for the benefit of the Secondary 2 students in both school settings. Tensions identified at the subject pole were mostly related to the individuals' own representation of the coming Cannabis Act and their inner conflicts related to their own sentiment of competence when it came to intervening with their child or students. At the tools pole, the way information was to be provided to the adolescents became a crucial issue that led to preparing the classroom lessons with the information kiosks put together by the medical doctor, the mother, and the grandfather and the cases that were being presented. The members of the school community demonstrated a high degree of flexibility in their daily schedule since their daily routine at work was disrupted many times related to either the Change Laboratory sessions themselves or their participation in the classrooms during the lessons with the Secondary 2 students.

Figure 5. Two Activity Systems in Interaction and the Shared Object: Increase Adolescents' Capacity to Make Choices Related to Cannabis



Overall, the participants' interactions began to lead toward a common representation of the nature of the classroom lessons that would be modelled and implemented in each school setting. These results are coherent with Rantavuori et al.'s (2016) findings stating that as the participants interact together in Change Laboratory sessions, the shared object gets more precise as new tools are conceptualized to support the development of the activity. As Virkkunen and Newnham (2013) documented, Change Laboratory interventions are put in place to support the development of the participating practitioners' transformative agency. The instrument-producing activity that was envisioned and implemented in the form of five classroom lessons alleviated tensions and addressed the school community members' as well as the school team's concerns. Reflection on the Change Laboratory approach suggests it gives space to improve collaboration with a school team and also gives space for the significant participation of some school community members interested in making a difference amongst young people and could be used to address other related complex health issues such as alcohol use, eating disorders, and smoking.

Endnotes

[1]Vygotsky's principle of double stimulation refers to the way individuals may deal with conflicting situations presented to them in the form of mirror data. The mirror data constitutes the first stimulus and is necessary to trigger transformative agency. The second stimulus is built

by the participants who envision to resolve the problematic situation. For example, a teacher might employ a different pedagogical strategy as a second stimulus, investing it with a new meaning in order to get his/her students' attention (Barma et al., 2015).

[2]Out of 34 students, 19 got the consent forms signed by their parents.

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