Abstract

This article aims at describing and analysing the way in which pharmacy students work together in the context of an innovative course on community health. The article uses content analysis of two focus groups held in 2015 with 14 students from the Faculty of Pharmacy at the Université de Montréal. The course included the problematisation, design and completion of an intervention project, and offered an interesting lens to explore team-based learning and project-based learning. More specifically, this article allows us to describe and understand the ways students collaborate together: collective work, task distribution, applied work strategies and their justifications. This study also allowed to discuss factors both limiting and promoting the development of skills to work in a team, the specific added value of a community health course for developing skills associated with teamwork for future health professionals. Finally, the pharmacist's community role as health professional seems to be revealed and even reinforced by completing such a course. Indeed, this course allows for the learning of fundamental values of professionalism for students, such as leadership, equality and responsibility.

Keywords: Pharmacy; Education; Community health; Project based learning; Team based learning
and the prevention of illnesses (Crawford, 2005). This training aims at better adapting and reacting to the pharmacist's role in public health which requires them to get involved in the community. This article aims at describing and understanding the process of collective work in a course called "Service in the Community" which aims at the promotion of health in a community context.

The "Community service" course was first offered for the 2011-2012 school year in the under graduate Pharm D degree at the Université de Montréal. It is open to students in the first year (PHA1415) and second year (PHA2415) of pharmacy studies. Teams of 8-10 students from both first and second year are randomly created at the start of the semester. The objective is to provide better service to the community through learning about the development of a community intervention plan in order to meet a community health related issue. Basically, a community service course requires a social commitment which can also have an impact on collective work. Indeed, the community health course promotes i) a conception of health through community practices and ii) the development of intervention projects in collaboration with community partners (David et al., 2016).

Collective work between project-based learning and team-based learning

The literature shows that collaborative work includes a wide range of approaches (Davidson and Major, 2014): small-group learning, collaborative learning, cooperative learning, problem-based learning, peer instruction, peer tutoring and team-based learning (Hrynchak, P., & Batty, H. (2012), to which we can add project-based learning and evidence-based learning. These collaborative approaches are not mutually exclusive and can be combined, specifically in the approach by problems and by projects (Frenay et al., 2007, Bédard et al., 2012).

Team-based learning has gained in popularity in the health sciences since the middle of the 2000s (Haidet et al., 2014) and represents an opportunity to increase the level of learning specifically in pharmacy (Persky, 2012; Allen et al., 2013; Gallego et Peeters, 2013; Johanson et al., 2014). However, apart from few exceptions, little research has been completed examining the precise methods used in this teamwork (Gullo, C., Ha, T. C., & Cook, S. (2015). This article will contribute to fill this gap leaning on the experience developed in Canada. The Service in the Community course developed at the Université de Montréal aimed at combining two types of complementary collaborative learning: the first is team-based learning, which is a priori more formal (Parmelee, 2012) and which uses precise indications, found in our particular case in a course guide. The second is "project based learning", as the course is constructed along a project: conception, implementation and evaluation. Indeed, this course is unique by associating project-based learning with team-based learning (Thomas, 2000), but this was not formally identified as such at the beginning of the course. Even though the course received the 2014 innovation price from the Association of Faculties of Pharmacy of Canada (AFPC) and the Excellence in Teaching Award from the University of Montreal in 2015, it has not been analysed and discussed.

This article is hence interested in discussing this experience from a learning point of view. How these two approaches (team based and project based) combine in the course and what are the strategies adopted by students to bring their project to term were the main research questions. More specifically, this study aimed at examining three main issues vis-à-vis the course: 1) the benefits of the peer mentoring experience between the 2 cohorts of students involved (first and second year in pharmacy); 2) the identification of factors both limiting and favoring the development of skills and competencies to work in a team, and 3) the specific added value of a community health course to develop teamwork in future health professionals.

Methods
The methodology used in this study is qualitative in nature and relies on the examination of answers that students provided during a focus group session about factors affecting their teamwork during the Service in the Community course. In its hypotheses, the article relies on the observations of the first three authors who supervised the student teams during this course. The research was approved by the Ethics Committee for Health Research at the Université de Montréal (Project 14-152 CERES-D). The interviews with partners with whom the students interacted in the context of the course are also a part of the project and allow for a better understanding of partnership methods. They will be analysed separately with a specific focus the academic / community relationship.

Two discussions groups were organised with students from the first year (1415 group or cohort) and from the second year (2415 group or cohort) who attended the course. The students were contacted by email and offered to participate in the study. 14 volunteers accepted. There were 6 students from first year (3 women and 3 men) and 8 students from second year (3 women and 5 men); they all signed an information and consent form. The group discussion sessions were completed in 2015 and lasted for about 90 minutes.

A semi-structured discussion guide was developed (Appendice 1) to lead each of the discussion groups based on three main themes: 1) the completed intervention projects; 2) the production of deliverables and teamwork; 3) the relationship with community partners that contributed to the development of their intervention projects. The thematic content analysis was done using an iterative process to generate codes. The analysis was developed by each of the three first authors and then examined during two group work sessions.

### Results

1. Collective work practices

   a) Working together

   The first collective work lesson was noted in a very concrete way in the focus group, and was based on the difficulties noted while working in a team of 8-10 students. The difficulty was being able to perceive the challenge found in the fact of having to collaborate, before even starting to think about the content of the work. This challenge is even less evident for students as they are often times individualised in their learning processes in the context of other courses, specifically through the use of self-learning guides.

   **2415-E4-L124-127** I think that is really the challenge (…) being able to produce written work with a lot of people. These are teams of 10 people. I think that is the major challenge. It's being able to develop the content, work that is coherent, that reads well, that is fluid. With ten people, it's not really easy.

   The difficulty of working together in a demanding program, such as the Pharm D., is what was generally noted in the discussion groups. The time used for discussion and collaboration can appear to be a wasted when their overall available time is limited, semesters being dominated by individual learning guides and various exams. As such, thinking about how to work collectively can be a difficult stage to overcome.

   After this stage, the students must find concrete solutions to interactions and communications in a context characterised by strong individual requirements. How can one communicate and interact efficiently?

   **1415-E5-L89-93** ... what I found the most difficult in the deliverables was the meetings, because we have assigned schedules for the green course [community service], and what is difficult is that everyone has tennis lessons, dance lessons, which means that we are never able to meet as a full group. I found this difficult, and not
The difficulties of collective work are also found in the fact that the team also had to interact with community partners in the "real world", outside of the defined academic framework.

b) The Importance of Tools

Information technology tools are available to help students and to facilitate group work. The teachers recommended that students use an electronic document exchange platform (DEP). This sharing program allows teachers to follow the evolution of work and promotes exchanges between teachers for constructive feedback provision. These tools allow for the facilitation of collective work:

*2415-E2-L61-63* When it was time to complete our deliverable, in our DEP document we will like rewrite all the points, and then each person writes their name beside the part they want to do.

*2415-E8-L74-76* We also used the DEP. I think pretty much all the teams functioned that way, by marking subjects and then we can see which parts the people are doing.

But most of the teams also preferred to use other tools, such as social networks. These tools were almost imposed on the individuals in the team. Those who didn’t comply found themselves somewhat marginalised.

*2415-E5-L230-237* ... for my team, at the start of the year when a team member chose to not join in the way that rest of the team wanted to communicate. As a team, the rest of us chose to communicate via Facebook, but one person didn’t want to use Facebook. I think that this person was set aside immediately. (…). It sort of chilled relations. Given that it was someone who invested a lot, she was able to catch up a bit. But it still remains that it was really detrimental to our work, to the way the team functioned.

As such, we can understand that collective work is determined both by structural elements of the course and by the contingent construction of work dynamics within the team. The question of the division of tasks, essential for collective work, allows us to better understand the operation of this collective work.

2. The Logic of Dividing Team Work

The methods used for dividing team work are many, and include elements both associated with the team dynamic and with more structural elements such as the distribution of points based on the structure of the course.

a) Logic associated with the course structure

**By Cohort**

The division of work could be completed based on cohorts within the team: first and second year.

*1415-E3-L109-112* This wasn’t 10 person teamwork. I would say it was more teamwork with six, sometimes seven people, and I find that there is really a huge division between the first years and second years.

Beyond the administrative distinction of the two cohorts, the fact of having already completed a project the previous year lead students to divide tasks based on this experience.

*2415-E6-L327-333* I noticed this, but just at the start of autumn, they (first years) don’t know the project, we
(second years) are almost like project experts, so we take up a lot of space and we leave them a little less. But just before Christmas, they were able to take their place and that developed. I think that this is just fine like that.

Apart from this difference in experience, the structure of the course reinforces this cleavage. Indeed, the two cohorts did not have the same coefficients for the grades based on deliverables.

1415-E1-L124-130 ... the second years and the first years don’t have the same weighting with regards to deliverables for their grades...I heard comments from my friends who experienced this and that it happened that the second years work at the start of the deliverables at the start (sic), because they are the ones who are responsible. Subsequently, given that they had earned a lot of points because it went well, they let the first years work because they are less responsible for that.

Finally, this division of tasks does not really resemble mentoring, which had been initially envisaged for this course. One of the reasons for the creation of work teams including two cohorts was the development of natural mentoring between the second and first years. The discussions show the limits of this kind of mentoring. Leadership on the part of the second year students was not necessarily productive, and their previous knowledge of the course is less a chance to deepen the subject than to benefit themselves in the sharing of tasks. While this is not always the case, this reality or this impression held by first year students seems to be an obstacle to deeper involvement.

By type of task

An expected way to share work was based on the specific requirements of the course, on the work to submit, meaning by deliverable. Two possible strategies were available: share the sections of each of the assignments or share the assignments throughout the year.

E1 –L57 In my team we functioned somewhat like the others. We separated the sections of the deliverable (milestone), then each chose the part they wanted to do.

Other teams distinguished the different production stages for a text, including proofreading and revision.

1415-E1-L51-53 ... we have a deliverables team made up of 5-6 people who basically take care of deliverables. We acted a bit like proofreaders in the process.

As such, the tasks to complete in the project are important elements structuring the collective work of students, as was expected.

b) Logic associated with team dynamics

After the logic associated with the course structure, certain teams were able to create a sense of freedom and divide the work based on the dynamic within the team, a dividing method encouraged by the teaching team.

Leadership

The first key element to develop a work strategy based on the team dynamic is that someone takes this responsibility. Leadership, even if it is a skill looked for throughout the course, is often revealed at the time when team strategies are established.

2415-E7-L27-31 I realised during the two years that frequently there is a person who will become more and more the team leader and will really initiate the movement to complete the deliverables and who will bring
together their team and will somewhat separate the tasks. Then after that, each person will decide a bit which section they want to do. This is somewhat how it works.

2415-E5-L33-37 In my team I took charge of the role of the person who would somewhat divide the work during the teamwork when we would meet. The others will then choose a portion of the work they would like to do. Often there is also another person in our team who took the position of leader, who will sometimes distribute and then ensure that everyone does the work equally.

Beyond the question of leadership, valued in the Pharm. D. program as a transversal skill, it seems that certain students learn collective responsibility vis-à-vis the work.

1415-E1-L291-495 ... we were somewhat left on our own, in the sense that people have to learn to take their own responsibilities. Yes, this is a framework that allows for this. The problem is that if people don’t take their responsibilities, it’s difficult…

Focus groups have led to recruiting people that consider themselves as leaders. This is also normal for voluntary recruitment, but we have to take this into account. But the rules governing the sharing of tasks are at the heart of the group dynamic, both as a motor but also as a consequence. Equality seems to be a guide used by students during the division of tasks.

Equality/Equity

This equal sharing implies strategies, for example the respect for proportionality:

E1 – L57: we try to ensure that it is proportional a bit in the work. Someone who has to do a large section may not do two, they’ll only do one. The person that writes the introduction will often write the conclusion too. We try to make sure it is as proportional as possible.

1415-E2-L62-64 ... I know that in my personal team, there was really good chemistry, and everyone worked equitably and in a rather equal way with regards to deliverables.

1415-E2-L38-42 In fact we divided the deliverables in an equitable way, then after we come back together 1 week before the delivery of the assignment to discuss each of our sections, bring it together, ensure that there is a core flow with regards to the work, then after than when everyone agrees with the final product, we hand it in.

Equality sometimes combines with the interests of all parties, also revealing types of more comprehensive leadership and teams that integrate individual interests.

2415-E2-L63-68 For sure there are always people that it will be really like voluntary, there are others who won’t write their name anywhere. So when that happens I ask that person what are you interested in, what would you like to do? They have to be pushed a bit more than others, but we always ended up dividing the work in the way…We try to ensure that it is as equal as possible. It’s not always the case, but we try.

"We try", and this is perhaps one of the most important lessons from collective work, this attempt to respect a certain level of equity in the division of work, which is without a doubt very difficult to reach or even quantify. This is one of the important lessons for future health professionals who will end up working in teams during their professional career.

3. Other factors influencing teamwork
a) Self-assessment

An important element that influences collective work is what is known as 360 degree assessment. This evaluation is completed by students themselves at the end of each semester. They evaluate each other. The person with whom the students collaborate is also their future evaluator.

2415-E7-L290-297 But what I find in the team relationship is that there is a lot of diplomacy because people are afraid of the 360 evaluation. But we’ve been told that 360 degree assessment is anonymous, but that it really isn’t. Basically, I think that if you get a good grade, we can know who gave us a poorer grade because we can see it a bit in the team. So I think that the 360 degree assessment is a good idea, but at the end of the day what we’ll write will be influenced by the dynamics in the team.

But the students bring out unintended impact of peer and self assessment process.

E3-271: For the 360 degree assessment, I find that it is also a concept that leads to competition in the team. I find that there is competition in the team and I find it unhealthy (...).

There is really a notion of competition due to it, because we could say that there are those who always want to do everything to ensure that they get the best grade possible in the 360 degree assessment.

While it allows for self-assessment of the students, this participative evaluation for some also plays a counterproductive role in the functioning of the collective work, something which had not been noted since the start of the course.

b) The relevance of the community project

Many statements during the focus groups allowed for the expression of a general feeling towards the course. The focus group was seen by certain students as a means to suggest changes that they would like to see in the course, or more generally to express an opinion.

2415-E5-L1168-1175 I find that this course provided me with the skills to put together a project that made a difference, a project that community organisations appreciated, that communicated important knowledge to the population and which helped promote the role of the pharmacist.

2E5-565 I find that it is really important, first for pharmacists to know how to work in a team, then for the long term. For me that is the difference between lab work and green course. The green course it gives us…first we work over the long term, 1 year, 2 years with the second years, 1 year with the same team. Then we have the objective of developing a complete project.

As such, teamwork and interactions with their peers seem to be important elements that structure the student learning experience. This is an analysis that fits with the one made by Hämeen-Anttila et al., (2010) which showed that after obtaining a pharmacy diploma, the skills that students declare having acquired were teamwork and social interaction skills. A course like the one offered at the Université de Montréal, combining team-based learning and project-based learning seems to contribute to this. As a consequence, the community project seems to also have pedagogical virtues in taking greater responsibility as future health professionals, as experienced with other health professionals (Gottin et al., 2016).

All vertabim are translated from the French.
Conclusions

Finally, the main elements that come out from the discussions on collective work are at the intersection of the course structure and the team dynamic. This results show that team-based learning takes place in synergy with project-based learning. Indeed, the team dynamic is created largely based on the project itself. As such, the community oriented nature of the project is an educational challenge for academic programs generally based on individual, technical and scientific learning. The community dimension of the pharmaceutical practice of the pharmacist as a health professional seems to be highlighted and promoted by this kind of course. Indeed, this course allows for the learning of fundamental values for future health professionals, such as leadership, equity and responsibility. These are skills that are often affirmed and listed in the program but may be harder put into practice and assessed in other courses. This makes this course unique. Other aspects of the Service in the Community course are currently being analysed and will reinforce this first research effort on collective work.

Take Home Messages

Notes On Contributors

Pierre-Marie David¹,², Aude Motulsky¹,², Caroline Robitaille¹,⁴, Daniel Cortès Vargas¹, Gilles Leclerc¹, Marie-France Beauchesne¹, Johanne Collin¹

¹ Faculty of Pharmacy, Université de Montréal, Montreal, Canada
² Research Center, Centre hospitalier de l’Université de Montréal, Montreal, Canada
³ Laboratoire SPHERE, Université Paris Diderot, Paris, France
⁴ Social and preventive medicine, Université de Montréal, Montreal, Canada

Acknowledgements

The authors thank the Cercle du doyen for financing the project, Faculty of Pharmacy, University of Montreal.

Bibliography/References


https://doi.org/10.3109/01421590903548539


https://doi.org/10.5688/ajpe776115

https://doi.org/10.7771/1541-5015.1355


https://doi.org/10.1016/j.cptl.2010.10.004


https://doi.org/10.3109/0142159X.2014.1001729


https://doi.org/10.5688/aj7406110


https://doi.org/10.3109/0142159X.2012.687120


Appendices

GUIDE DE GROUPE DE DISCUSSION POUR LES PARTICIPANTS-ÉTUDIANTS

**Introduction/contexte** (5 minutes) **11 : 30 – 11 : 35**

*Bienvenue aux participants.*

*Objectif et fonctionnement du groupe de discussion*

**Bloc 1** (3 minutes) **11 : 35 – 11 : 40**

*Présentation*

*Question :* Avant de débuter, pouvez-vous vous présenter (prénom) et dire en une phrase sur quel projet d'intervention vous travaillez ?

[Aide-mémoire pour l'intervieweur : remercier à chaque participant son intervention; identifier combien de sujets mentionnés dans cette première réponse sont reliés entre eux pour les reprendre pendant la discussion]

**Bloc 2** (30 minutes) **11:40 – 12 :10**

*Production des livrables*
Question 1 (PP1): Dans cette première partie de l'entrevue, j’aimerais vous entendre sur votre propre position et rôle au sein de votre équipe pour la production des livrables : comment fonctionne-t-elle? (Continuez par la suite avec les autres questions).

Questions de relance :

• (PP1a) Comment auriez-vous aimé que ce soit autrement?

Question 2 (PP2): Comment votre façon de travailler en équipe dans ce cours de service à la communauté se distingue-t-elle des autres travaux d'équipe en labo, dans d'autre cours ?

[Encadrement conceptuel: implication, collaboration, méthode de travail, compétences, enseignant-instructeur]

[Aide-mémoire pour l'intervieweur : Méthode de travail, utilisation de groupes Facebook, tâches divisées, relectures; relation avec les autres étudiants: comment vous vous sentez vis-à-vis les autres étudiants; RFP; quelle est le climat de l'équipe – confiance, agréable?]

Bloc 3 : partenaires et projet (35 minutes) 12:10 – 12:45

Partenaires

Question 3 (PP3): Comment votre équipe s'y est pris pour entrer en contact avec des partenaires et experts ?

Questions de relance :

• (PP3a) Qu'est-ce qui a bien marché ?
• (PP3b) Que feriez-vous différemment?
• (PP3c) Que recommandez-vous aux autres équipes ?

[Aide-mémoire pour l'intervieweur (thèmes à aborder) : introduire sur l'importance de trouver de partenaires; stratégie (téléphones, courriel, etc.); répartition des tâches entre les membres; une personne responsable ou tous contactent des partenaires ?; Méthode de travail, utilisation de groupes Facebook, tâches divisées – ce qu'ils ont fait – modalités de contact, observation ou communication, discussions informelles; relation avec les partenaires et experts (comment vous sentez-vous vis-à-vis vos partenaires, dans vos interactions avec les partenaires et les membres de l'équipe – toujours la même personne?)]

Question 4 (PP4): Comment la relation avec le partenaire a contribué à la construction de votre projet?

[Aide-mémoire pour l'intervieweur (thèmes à aborder) : choix de l'intervention; production du contenu / expert; réalisation de l'intervention / contenant (aides techniques); événement : logistique, préparation]

[Encadrement conceptuel: éthique, partenaires, compétences interdisciplinaires]

Bloc 4 (6 minutes) 12:45 – 12:55
Question de clôture

Question 5 (PP5): Pouvez-vous nous dire en une phrase pourquoi avez-vous souhaité répondre à l’annonce ?

Question 6 (PP6): Est-ce qu’il y a d’autres informations ou éléments qui n’ont pas été abordés et dont vous aimeriez faire part ou des clarifications que vous aimeriez apporter?

[Aide-mémoire pour l’intervieweur (thèmes à aborder) : précisions sur d’autres éléments pas abordés dans l’entrevue ou des clarifications à apporter; répondre à l’annonce pour améliorer le cours, critiquer le cours]

Je vous remercie pour votre implication, vos commentaires et le fait que vous vous avez déplacés.

MERCI pour votre présence!

Declarations

The author has declared that there are no conflicts of interest.

This has been published under Creative Commons "CC BY 4.0" (https://creativecommons.org/licenses/by-sa/4.0/)

AMEE MedEdPublish: rapid, post-publication, peer-reviewed papers on healthcare professions’ education. For more information please visit www.mededpublish.org or contact mededpublish@dundee.ac.uk.