

Creating a Formal Service-Oriented Curriculum in Pre-Medical Education – the QuARMS Experience

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Introduction:

In September 2013, Queen's University launched the Queen's University Accelerated Route to Medical School (QuARMS), an innovative curriculum which combines coursework and experiential learning, while providing students with faculty and peer mentorship. The QuARMS curriculum was designed based on four "pillars": role of physician, communication, critical thinking, and scientific foundations. After successful completion of the program students are eligible to enter medical school.

In recent years, many undergraduate medical programs have made efforts to incorporate service-learning into their curricula, in line with changes recommended by the Association of Faculties of Medicine of Canada (AFMC) publication, "The Future of Medical Education in Canada (FMEC)". The first recommendation in the report calls for medical schools to "Address Individual and Community Needs," pointing to social responsibility and accountability as core values of physicians and medical faculties, and emphasizing the need to train physicians to be responsive to "the diverse needs of individuals and communities throughout Canada, as well as meet international responsibilities to the global community" (p 12). McGill, for example, provides a "Partnering for Healthier Communities" course for all of its students, while the University

ABSTRACT

In September 2013, the Queen's University Accelerated Route to Medical School (QuARMS), an innovative 2-year pre-medical curriculum which combines coursework, seminars, fieldwork, and faculty mentorship, was developed. After successful completion of the program, students are eligible to enter medical school. A key aspect of this learning stream is the integrated service-learning aspect which is scaffolded across both years of study and includes in class sessions, community projects, mentoring, and assessment. This paper provides the results of a mixed-methods program evaluation designed to examine students' QuARMS service-learning experiences. Overall, students were happy with the service-learning component of the program, and indicated that the in-class and experiential service-learning sessions were beneficial. However, students also indicated that they wanted more structure and feedback while working on their projects.

of Toronto is introducing its revised pre-clerkship curriculum – now called the Foundations Curriculum – for students entering in August 2016 which will include a more integrated approach to service-learning. Queen’s Medical School has created a Service-learning Advisory Panel to understand students’ current service-learning activities, and to assess what resources the School can provide to support these students.

Educating students about the social aspects of medicine in traditional hospital settings has challenges, ones that Meili, Fuller, and Lydiate (2011) suggest can be mitigated through service-learning by allowing students to “(1) gain educational experience in multiple contexts, (2) gain exposure to concepts of international, rural and urban health, and community development, (3) experience service-learning, (4) gain language skills and multi-cultural understanding, (5) improve communication skills, and (6) gain exposure to health systems and health teams” (660). Service activities of any kind may also help to promote and protect empathy during medical school (Brazeau, Schroeder, Rovi, & Boyd, 2011). Cashman and Seifer (2008) suggest that “with its emphasis on reciprocal learning and reflective practice, service-learning can help ensure that students who pursue public health studies as undergraduates enter their adult lives prepared to make positive contributions to the nation’s health” (273). It is not only students who can experience positive gains through service-learning, but also faculty. Since service-learning promotes self-learning, faculty can become “mentors and guides, rather than enforcers and didacts” (Smith et. al, 2013, 1146).

While Canadian universities, with the exception of the QuARMS learning stream, do not have formalized pre-medical curricula, the majority of students intending to apply to medical school follow similar trajectories: an undergraduate degree, usually in health sciences, a high grade point average, preparation for the MCAT to achieve high scores, and multiple extra-curricular activities. For students in this more traditional route to medical school, the environment is often competitive, as they aim to make themselves the most desirable candidates for limited positions. Lin et al. define the ‘premedical experience’ as encompassing all the things students do inside and outside the classroom – strategizing, competing, and collaborating – to successfully master challenging academic material and satisfactorily meet requirements with the intent to construct a successful medical school application (2013). The focus on attainment, however, can come at the cost of actual development. Gross, Mommaerts, Earl, and De Vries (2008) suggest that “by the time a student reaches medical school, he or she has already learned how to learn and how to succeed, often by demonstrating character as a shortcut to developing it” (519). Students in the QuARMS learning stream must maintain a 3.5 grade point average to be considered for medical school, although the majority have significantly higher marks. The students are not required to write the MCAT, and other than five required courses, (year 1 biology, chemistry, math, English and year 2 physiology) they can select courses based on individual interest and what they feel will provide benefit to their anticipated future careers rather than selecting those that will look best on an application.

Methodology

While there are many different definitions of service-learning, Queen's Undergraduate Medical Education (UGME) curricular committee and the QuARMS learning stream, have adopted the one provided by the Liaison Committee on Medical Education (LCME). LCME defines service-learning as

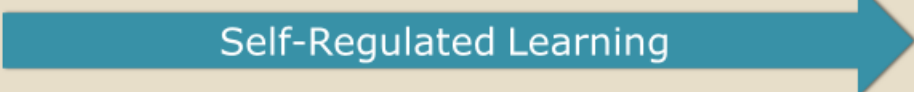
a structured learning experience that combines community service with preparation and reflection. Medical students engaged in service-learning provide community service in response to community-identified concerns and learn about the context in which service is provided, the connection between their service and their academic coursework, and their roles as citizens and professionals. (LCME Standards)

For QuARMS, service-learning is a structured experience that must meet the goals of the program, as well as the goals of the community partner. For the university curriculum, service-learning projects are intended to provide students with opportunities to develop many aspects of the roles expected of a physician including communication, collaboration, professionalism, and advocate, enhancing our existing classroom and hospital-based curriculum in the community. To ensure that the needs of faculty, students, and community partners are being met, the program creates a clear link between course objectives, reflection, progress reports, and assessment. Education and support is provided to allow students to develop skills in self-regulated learning. Students, faculty, and community partners share the responsibility for planning and leadership, assessment, and accountability for their projects. The group decides on roles, and maintains consistent communication with the stakeholders for each project.

A key component of the QuARMS learning experience is its scaffolded approach to Community Service-learning (CSL). Students move from individual volunteer service in their first year, to an individual summer project they complete and present in their second year, and finally to a group service-learning project in their second year (Figure 1).

Figure 1: Service-learning in the QuARMS Program

Activity	Year 1 volunteer work	Summer Project	Year 2 Group project
Coursework	Introduction to Reflection Communication Presentation skills Teamwork What is SL SDH sessions Group debriefing	Summer Proposal Ethics Feedback on proposals Check in with curricular leaders	Reflection SDH Ethics Research methods
Assessment	Written reflections Oral presentations	Proposal Project report Product Poster Oral presentation	Team skills Literature review Check-ins Reflections Presentations Group report



In their first year (terms 1 and 2), QuARMS students volunteer on a regular basis with a campus or community based organization that must include face-to-face contact. This means that students must interact with members of the organization, the volunteers, and/or clients on a regular, ongoing basis. The first phase of their service is undertaken on an individual basis, although it is possible for more than one student to volunteer with the same organization. Each student is expected to volunteer on a regular basis from October to April (excluding December because of academic exam period regulations), an average of 1-2 hours per week. The cumulative total for each student is required to be 24-30 hours.

Over the summer between the first and second year, students undertake a project in their home communities. The project is designed during the “social determinants of health” and the “critical thinking” sessions in the first year QuARMS curriculum. These projects can take place in a myriad of organizations, from community centres to summer camps, to hospitals or family medical practices. In tandem with faculty and community partners, the students identify a specific need in the organization, and work with the community partner to ensure that a deliverable is provided to the organization. Examples include staging an event, developing a social media tool, or producing brochures or videos. Early in their second year, students submit a report and give a presentation about their summer experiences.

In the second and final year of the program, students undertake a more extensive CSL project that includes working as part of a group. Students are required to work collaboratively with faculty, community partners, and with their peers. While students’ second year projects could produce a specific deliverable within the time

frame provided by the school term, the QuARMS learning stream is also working on developing community partnerships that will have multiple phases over multiple years with interim deliverables. This structure is intended to provide consistency for the community partners, while supporting meaningful work for students.

The data collection for our program evaluation was based on a mixed methods approach (both qualitative and quantitative) as described by Leech and Onwuegbuzie (2010) to triangulate the data, which Cohen and Manion (2000) define as an "attempt to map out, or explain more fully, the richness and complexity of human behavior by studying it from more than one standpoint" (p. 254).

In 2015 and 2016, as part of a program evaluation, second-year QuARMS students were invited to participate in a questionnaire and focus groups in their final month of the program (n=20). The questionnaire was administered online using the University's learning management system. The questionnaire included 26 questions that investigated the students' experiences in the program and their opinions about what aspects of the program were the most useful. The questionnaire responses were used to develop the questions for the focus group. In 2015, 9/10 students completed the online questionnaire and 8/10 students participated in the focus group. One student withdrew consent for research use of data for the focus group. In 2016, all ten students responded to the online questionnaire and participated in the focus group, but only 9 agreed to have their responses used for research purposes. Thus, consent was obtained to disseminate results from 18/20 survey respondents and 16/20 focus group participants. All data pertaining to participants who withdrew consent to disseminate results of the focus group was removed from the transcripts prior to analysis.

Results

Questionnaire

In the questionnaire distributed at the end of their second year, students were asked to rate their level of learning in their service-learning sessions. In both years, 2015 and 2016, students' opinions were evenly divided between strongly agree and agree, with only a few students saying that they disagreed (table 1).

Table 1: I learned a great deal in the sessions on Service-learning

	Frequency		Percent	
	2015	2016	2015	2016
Strongly agree	4	4	44.44%	40%
Agree	4	4	44.44%	40%
Disagree	1	2	11.11%	20%
Strongly Disagree	0	0	0%	0%

For the 2016 survey, a qualitative option was added to this question, which allowed students to provide additional information about their response. Those who strongly agreed that they had learned a great deal in these sessions often focused on what they learned about collaborative working relationships.

I think we all learned lots about working with organizations, taking initiative, and working both independently and in teams through our two service-learning projects.

Although one student was concerned that what while she or he “learned a lot about collaboration, management and teamwork,” this learning occurred “potentially at the cost of other skills.”

Those who agreed that they learned a lot in these sessions were excited to have service-learning included in the curriculum, although one indicated that these sessions were more productively applied to some community projects than others.

I found the Service-learning projects to be a great addition to the curriculum. Much more so for the first summer project!

One student indicated that the sessions seemed “redundant and already understood given our previous (and current) service-learning experiences.” One of the students who said that they did not learn a lot during their service-learning sessions indicated that he or she wanted to see higher outcomes and delivery of service for the community projects, with less emphasis on the “learning process.” Another student identified some redundancy in the sessions, since “a lot of the information we discussed was already known.”

While students in both cohorts thought that they learned a great deal through the service-learning sessions, there was a larger discrepancy when we asked them to rank the amount of time allocated to these learning experiences. While all of the students in 2015 indicated that the amount of service-learning sessions was “just enough,” one 2016 student said that there were “not enough” sessions, five said that there were too many, while only four said that the number was “just right” (table 2).

Table 2: Please rank the amount of each type of session

	Frequency		Percent	
	2015	2016	2015	2016
Not enough	0	1	0%	10%
Too much	0	5	0%	50%
Just right	9	4	100%	40%

Focus Groups

During both the 2015 and 2016 focus groups, students were asked what contribution if any, did participating in the service-learning project have in shaping the learning they acquired during the QuARMS curriculum. Overall, the students in 2015 thought that they learned a lot from their service-learning experiences over the summer, and their group projects during their second year. Students often mentioned learning a lot about communication as a result of their service-learning experiences, but also indicated that they would have liked more feedback from faculty, especially for their summer projects when they were not on campus. While most students enjoyed their first-year volunteer experiences, some suggested that they did not feel that they had really ventured outside of their comfort zone when choosing their organization. A few did not see the point of the first-year volunteer experience being a part of the curriculum, since they felt that they would be volunteering even if it was not required.

One of the biggest differences between focus groups, was that the 2016 students expressed a stronger desire for clear expectations from their community partners, and a clearer understanding of how to balance the commitment to their community project with their academic requirements. They also indicated that they felt “uncertain” during their summer projects.

Communication and collaboration

One student articulated that this experience has helped to shape his/her view of his/herself, as well as helping to strengthen his/her communication and collaboration skills.

I've learned a lot more about myself and how I work as an individual in a team so I think that has shaped, maybe not any of the pillars we were looking for but has more shaped myself as an individual and how I work in a group. (P7 2015)

Another student, speaking about the way that his/her service-learning experience shaped his/her learning, identified the outcomes anticipated by the QuARMS instructional team.

The challenges that we faced in my group personally with communication, not among the group but just between us and the cooperating organization; ... we definitely learned something in that aspect and it was still a great project full of very great learning but I don't know if it matched the curriculum that QuARMS had originally set. (P5 2015)

Feedback

Some students expressed a desire to have more feedback, or additional guidance throughout their service-learning projects.

I think one of the greatest challenges not only with the summer project but also more noticeable with the group service-learning project was sort of the lack of

follow up and feedback during the course of the project itself. ... before we left for the summer about regular check ins with all the students to see how the project was going and that ended up not happening. (P4 2015).

Volunteer experiences

Some of the students indicated that they did not get as much as they would have liked out of their first-year volunteer experiences. For the first stage of their service-learning curriculum, students are expected to volunteer with an organization described as outside of their comfort zones that would not be an organization with which they would normally volunteer. This stipulation was mandated because all of the students had several hours of volunteer work in multiple organizations listed on their initial applications. Although faculty discussed and reviewed student choices, some of the students in the focus group said that they did not really go outside of their comfort zones. One student said that

I think it was definitely a discussion of we should be trying to go outside our comfort zone when we were choosing different organizations to volunteer with in first year... personally I did something different that I hadn't done before, but I wouldn't say it was outside my comfort zone, so if that was one of the goals I wouldn't say it was too successful (P6 2015).

For another student, doing something different, or unfamiliar, was not the same as being taken outside of his/her comfort zone, and that making this a requirement altered his/her relationship with volunteerism.

restrictions with the time line actually forced me into something that was less outside of my comfort zone than I might have gone into normally because . . . there is this mentality of 'oh you have to do this, instead of letting us find something in our own niche . . . It actually felt really restricting because what used to be a passion and something that I did out of a genuine self-interest was now something that I was doing to fulfill a requirement and that became less meaningful for me. (P4 2015)

Expectations

As with the 2015 students, the 2016 focus group participants enjoyed their service-learning experiences, but wanted to have a stronger sense of what the expectations were.

One of the things for me that was confusing was how important it was to the program that we complete the project. It felt like a lot of the time the emphasis was on reflection and the learning process but if you had a test or if something was happening you should focus on you and academics and maybe the project does not matter as much. And I think that maybe that diluted the importance of the project in and of itself and instead of teaching us how to balance commitments and be dedicated to more than one thing, it was just well this is

something that we want you to do and we want you to get something out of it but if it does not work then that is okay. (P1 2016)

Were given a very broad outline of what was expected. I understand that is the way we were suppose to learn and to navigate through things but I think to some extent there was a little more clarification required because it took away from our outcomes. (R5 2016)

Much of the time was spent understanding roles and expectations and a lot of the time passed that way instead of actively working on the project. (R5 2016)

When discussing the service-learning projects, some students felt that what they learned from their experiences did not line up with their perceptions of the intentions of the learning stream. One suggestion for this component of the program was to integrate some professional development workshops for the students:

So I think that one of the things that could have helped with that process of, finding the way of integrating what QuARMS has in mind in how we learn, is having workshops that facilitate our learning. [...]So that's how I see it, is that there could be, I guess, programs set in place to direct or focus on what we want to be learning out of this experience. (P7 2015)

These workshops could even be chosen or planned by the students to help tailor their learning experiences. The same student mentioned that the self-reflexivity of the service-learning project she/he experienced in first year was lost in the following year:

Personally I felt in first year a lot of what I got out of the service-learning project was to really think about sort of why I do what I do and what I do while I am volunteering or while I am trying to provide a service and how I can make that better, and I feel that I don't know if that was the intended focus of the initial service-learning project, but that sort of feeling was lost both over the summer service-learning project and in the group one in second year. (P7 2015)

Additionally, the students felt "uncertain" at times during the summer learning projects:

I found personally I did not quite know what I was supposed to do. I don't think guidelines were as clear as they could have been as others have mentioned. And I think that was probably my own fault. It was 1st year and I was kind of intimidated to approach ...we were told, if you have questions come and talk to us over the summer. I had some problems with my project and I didn't know who to talk to about it. I think maybe if there was more structure in place so that we know that we have someone to advice with if we don't quite know what we are doing. That would be helpful. (P5 2016)

P4, in 2015, suggested that the check-ins would “have been quite valuable” and commented on the frustration of dealing with “scattered modules” geared towards approaching community organizations. One student pointed to the need to balance structure and flexibility for the summer project. He/she pointed out that

So like with your summer project, if you are in the summer and something goes wrong then please know that you can contact this person. And that would help. And that way it does not restrict from what you want to do in terms of your project but also allows you to have that support that you need to continue it. (R8 2016)

Discussion

The service-learning stream in the QuARMS curriculum is designed to meet the learning objectives of the program by integrating multiple objectives with each “pillar” of the curriculum including the “role of physician”, “communication”, “critical thinking” and “scientific foundations”. Across the two years of the learning stream, service-learning is taught as a formal part of the curriculum, and is scaffolded from volunteerism in the first year, to an individual summer service-learning project and subsequently to a group project in the second year. At each phase, the community experience is aligned with course work and assessments that include sessions on social accountability, community development, and critical theory. This is in keeping with research from Astin, Vogelgesang, Ikeda, and Yee (2000) who found that “service-learning courses should be specifically designed to assist students in making connections between the service experience and the academic material” (6). These service-learning projects include sessions and feedback about self-regulated learning, a necessary skill for these students’ future careers. By using a progressive model, we build on students’ individual skills and interests, thereby keeping them engaged in their projects.

Implementing service-learning in the classroom has had unique challenges. The nature of university education includes specific timelines and competing priorities that are non-negotiable. In addition, the organization and support of students and community partners is time intensive for faculty, many of whom have little or no experience in CSL. The parameters of community-engaged learning are often outside of the frame of reference of traditional education, and have the potential to produce discomfort in students when the expectations of community partners place them in roles that they have had little experience with. Our students described a need for mentorship as they progressed through their experiences to ensure they had a robust learning experience. Students also need to be guided to maintain a focus on engagement and reflection. Many students are tempted to use their CSL experiences as research projects to strengthen their resumes which needs to be balanced with the needs of the stakeholders. Community partners also require faculty development to ensure that they understand the unique role of the service-learning student within their organization. In their review of the literature on service-learning and community-based medical education, Hunt, Bonham, and Jones (2011) suggest that community members can be integrated into academic medicine in a more cohesive way by giving them “formal roles

as mentors and teachers” (249). They suggest that “community mentors can give feedback to students regarding communication skills, partnership building, and cultural sensitivity” (249). A formal mentorship may be an important aspect to consider as the QuARMS learning stream matures. The feelings of isolation and uncertainty that some students experienced during their summer projects, might be lessened if their community partner is also recognized as a formal mentor. However, this discomfort also needs to be recognized as a part of the learning process, which can increase students’ confidence (Deeley, 2010).

As part of our ongoing process of program evaluation, the feedback from the 2015 cohort was used to make adjustments to the 2016 curriculum, including having more direct discussion earlier in the learning stream about the uncertainty that students experience when undertaking a community service-learning project. We also provided more formal lines of communication for feedback and support from faculty as students worked with their community organizations. With the 2016 cohort, we ensured that we were explicit in telling students where they can access documents providing written instructions regarding expectations of students and community partners, processes for accessing support, and additional details that students should/need to know about their service-learning projects. Since some students in the 2016 cohort identified this as an area where additional support was still needed, especially during the summer project, we will continue to strengthen this aspect of the learning stream while acknowledging that community service-learning should be challenging, and should bring students out of their comfort zone. Because of this, what students may identify as a lack of clarity or structure may reflect their own anxieties at being in a dynamic, challenging, community environment.

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