Students’ Reflective Learning Within a Community Service-Learning Dental Module

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Abstract: This article aims to illustrate the effect of reflections upon students’ learning in a newly developed dental module at the University of British Columbia. Students reflected individually before, during, and after the development of their community service-learning (CSL) projects. One hundred twenty-one students provided reflections through e-mail, a password-protected intranet site (WebCT), or handwriting. Reflections were not graded, and students were encouraged to favor thinking over description in a total of at least 150 words. Eighty-two students were from two first-year classes, and thirty-nine were from one second-year class. Reflections were analyzed thematically using framework analysis. Students appreciated the community experience and also pondered their own learning as health care providers. Reflections before the CSL projects emphasized “expectations” and “feelings of belonging,” whereas reflections during and after the projects promoted discussions on “challenges and struggles” and “ongoing engagement,” respectively. A circular and bidirectional illustration portrays students’ activities in reflecting, rethinking, reconsidering, reanalyzing, reconstructing, and reacting on their CSL experience. Reflective activity helped students to better appreciate the CSL experience within a newly developed dental course. It allowed them to gain additional value from community-based education and had a positive impact on their attitudes about service, themselves, and the community members enrolled within their projects.

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Community service-learning (CSL) has gained momentum as an experiential pedagogical tool contributing to students’ education and development. The learners gain new insights and understanding about themselves and the environment, develop their critical thinking abilities, and make use of ethical and problem-solving skills. CSL combines classroom learning with the provision of mutually beneficial and sustained services that meet community needs and goals through outreach initiatives and partnerships. In the academic year of 2007–08, the Faculty of Dentistry at the University of British Columbia (UBC) formally introduced CSL incrementally into year one of its D.M.D. curriculum through the Professionalism and Community Service (PACS) module. The PACS module in year two was introduced in 2008–09 and in year three in 2009–10.

In small groups of eight students each, CSL initiatives were carried out in year one (2007–08 and 2008–09) and two (2008–09), one per group and academic year. Each group, comprised of students from the same year, was encouraged to assess its assigned community site through a situational and audience analysis. They were also prompted to collaboratively develop, apply, and sustain community projects at their respective sites, which included one of the following: a community clinic, a long-term care facility, or a public school. Each group was mentored by an experienced tutor, who was a practicing dentist, dental hygienist, or UBC graduate student. Prior to the CSL project, each group attended lectures on the determinants of health and community service-learning and critical thinking and ethics. The groups also visited their site prior to the CSL planning at least once, discussed a case or problem concerning a community health promotion activity, and presented a project plan to be approved by the community site representative and the tutor. Once their project was approved, students carried out their CSL initiatives and were encouraged to actively reflect on the challenges, lessons learned, value of their experiences, and their professional responsibilities in the community. Other forms of assessment used in the PACS module, as well as the CSL planning, are presented and discussed in Brondani et al.

Reflections have been used in health professions education worldwide and for many years at the UBC Faculty of Dentistry in particular.
Although reflection may describe a cognitive process and a structured learning activity, Hatcher and Bringle\(^6\) define it as an intentional consideration of an experience in light of a particular learning goal. Reflection enables students to gain additional value from community-based education and has a positive impact on their attitudes about services and the community itself, whereas lack of reflection may have a negative impact on overall learning, as argued by Cooper\(^9\) and others.\(^{11}\) Through reflective thinking, students interpret and construct meaning regarding their experiences and do not draw premature conclusions.\(^9\) Reflection can increase the breadth and depth of the community learning enterprise, but can also indicate which students need to further develop their reflective abilities.\(^{12}\)

Although there is no gold standard on how to properly guide reflections, various approaches exist for reflective activities. Journal writing, which has commonly been used,\(^3\) is said to enable students to process experiences and integrate them with existing knowledge to form a new, transformative meaning.\(^{14}\) Journal writing also has been reported to help students break habitual ways of thinking and develop and enhance reflective judgment, which facilitates self-exploration and personal growth.\(^{15,16}\) However, journaling should not be viewed as a diary of personal adventures or a mere log of service activity.\(^8\)

In terms of the breadth and depth of reflections, Mitchell and Coltrinari\(^5\) have proposed a hierarchical taxonomy, from simple to more complex thinking, that includes the following: descriptive, when a simple or methodical description of the experience is outlined; metacognitive, when thoughts, feelings, and values about the experience are expressed; analytic, when reasoning and thinking behind the experience are voiced; evaluative, when judgmental value, assessment, or evaluation of the experience is expressed; and reconstructive, when the experience is reassessed and ideas for change, future action, and sustainability are presented. According to Williamson,\(^7\) reflections can enable students to “fit together” pieces of a puzzle in an attempt to conceptualize how the overall “picture,” or their experience, evolves.

This article uses the term “reflection” to mean “the intentional consideration of an experience in light of particular learning objectives” (p. 153).\(^8\) It aims to illustrate the effect of reflections upon students’ learning by posing the following inquiries: 1) What does the process of reflection add to the CSL experience? and 2) Is reflection on these experiences worth the effort?

### Methods

One hundred twenty-one students were encouraged to engage in written reflections as a learning tool for personal and professional growth while carrying out their CSL initiatives. The students were from two first-year classes (forty students, academic year 2007–08; forty-two students, academic year 2008–09) and one second-year class (thirty-nine students, academic year 2008–09). Although the students worked in their own groups to develop CSL projects, their reflections were presented individually to their tutor in one of following formats: handwriting (journal), e-mail, or through a password-protected intranet site (WebCT). In the PACS module as suggested by MacEntee et al.,\(^10\) reflections were not graded\(^14\) but were assessed pass or fail. To pass, students had to favor reflective thinking over description in at least 150 words per reflection. To maintain confidentiality, only the student’s own tutor had access to his or her reflections that identified the student by name, whereas the author was given the reflections without students’ names. Reflections were prompted by specific open-ended questions posed to all students before their CSL project started, during implementation and evaluation of their proposed activities, and after their project was completed. Each reflection was presented in each time period separately, i.e., before, during, and after the CSL experience. Each student’s reflection could be handed in individually or as a journal.\(^{14}\)

The reflections before the CSL experience were comprised mostly of students’ expectations, their first impression of the sites, and their struggles and motivation in developing the situation analysis. Open-ended questions included the following: What did you observe? What surprised you the most and the least during the site visit?

The reflections during the CSL experience aimed to stimulate students’ ideas concerning changes in their expectations, their thoughts on the engagement of community participants, and the joys and difficulties they encountered while implementing the projects. Three of the open-ended questions were the following: What challenges are you facing? What is your perception so far about the project? What take-home message are you aiming for?

The reflections during the CSL experience directed students to contemplate their overall CSL experience. They reflected also on lessons learned by thinking of what went right and wrong and what could have been done differently. The students were
asked to ponder one of these questions: What would you do differently next time? Where do you go from here? How do you see this project in the long run?

All the reflections were provided as a “ready-to-read” document, eliminating the need for transcribing. Ethical approval for this study was acquired through the UBC Research Ethical Board.

Each cluster of reflections (before, during, and after) was the unit of analysis, not the year of PACS. As a result, students from the first and second years had their reflections clustered together under the themes “before,” “during,” and “after” (the CSL experience). Each cluster was analyzed separately using a thematic framework approach suggested by Ritchie and Spencer, as previously used by Brondani and MacEntee. The analysis occurred concomitantly as the reflections were read and followed a series of interactive steps: 1) an overall summary of the reflections from each cluster; 2) a more detailed constant comparative analysis of the reflections to identify their content; and 3) an interpretation of the content in relation to the two questions posed (What does the process of reflection add to the CSL experience? Is reflection on these experiences worth the effort?). Framework analysis used an initial deductive approach from the pre-existing themes (“before,” “during,” “after”) and categories of “expectations,” “challenges,” and “lessons learned.” (A deductive process was used to assign categories as broad characteristics or attributes of the particular aspect of the reflection, and an inductive process assigned codes as specific characteristics of each theme and category.) The analysis then proceeded by the identification of a thematic framework with new categories that emerged from the transcripts as they were examined sequentially and comparatively.

From the categories, an inductive process identified the essential codes (codes refer to the main concepts that emerged from the students’ reflections) using the N-VIVO 8 Software program (QSR) as a computer-assisted data managing tool. Categories, codes, and themes were then linked through maps using PowerPoint (Microsoft Office 2007) for a visual representation. Modifications to the maps were made by constant comparison with students’ reflections so that categories, codes, and themes were added and connected within the same cluster.

The comparative and interactive process of analysis was essential for considering similarities and differences regarding categories, codes, and themes within the clusters. Saturation, the point at which no new information emerges, was not an aim for this study because it is said to be difficult to attain in studies about experiences and there are no guidelines for estimating data adequacy. Hence, a complex experience such as CSL may never become saturated, and it is unlikely that the significance of its particularities would be completely elicited. Consequently, this article does not thematically compare or contrast first- and second-year students’ reflections, nor does it intend to discuss their similarities and differences. Quotations from the students’ reflections are used to illustrate their engagement in a dynamic flow of learning experiences.

Results and Discussion

Reflective learning is an important component of health professions education and of the PACS module at the UBC Faculty of Dentistry in particular. As recognized by Mitchell and Coltrinari, it aims at enhancing students’ knowledge and clinical skills while facilitating personal and professional development. All the reflections in this study were done individually, as suggested by Myers, to optimize feelings of safety and thus encourage risk-taking and self-expression. In total, there were 203 reflections grouped into three different clusters as outlined above. Some of the students combined two reflections in one document, particularly “during” and “after” reflections. The length of reflections analyzed varied from 179 to 1,083 words each. Only parts of some reflections are included in the quotes used.

Reflections Before the CSL Experience

The reflections of a first-year student going to a long-term care facility included expectations and belonging:

“The community site was closer to my home, not to the university, which was good. My first [site] visit was definitely a pleasant one, and I was curious about [it] as I [had] never been to a care facility for seniors. The walls and doors painted with warm colors gave me an easy, relaxing sensation.”

This reflection illustrated the relevance of a community site that welcomes the student at vari-
Excitement: self

Excitement: others

Relief

Familiarizing: Key ideas are relief, joy (excitement), etc.

Excerpt from a reflection

“Our group delivered our first activity today. I was excited about it from the moment I got there because they received us with such enthusiasm. I could see their excitement, and they could see mine. They were extremely impressed when we showed the working station with posters and pamphlets about diet and nutrition. I felt really good to see that all of our work was appreciated.”

Codes: Relief, excitement of self, and others (joy)

Themes assigned for codes B: During CSL

Identification: Codes include “joy and relief”; theme includes “during CSL”

Application: Quotes from the reflections done during the CSL activities are read and analyzed in light of the themes initially identified (“joy and relief”) and others that have emerged

Charting: All the quotes containing or addressing “joy and relief” related to “during CSL” are clustered separately

Mapping: connecting themes

Research questions: What does the process of reflection add to the CSL experience? Is reflection on these experiences worth the effort?

Figure 1. Example of framework analysis
ous levels, from its desirable location to its overall appearance and first impression. For a second-year student going to a community clinic, the most welcoming and positive part of the site visit was the site coordinator’s engagement:

“The thing that stood out most from the visit was the enthusiasm of our site coordinator. She was so excited for us to be there as she proudly introduced us to every person that passed by, either a staff member or even a patient; that felt good. She showed us around in a way that it really made me feel like we were wanted there and will make the project easier in terms of support from the site.”

For a first-year student going to another long-term care facility, the site visit prompted a different reflection:

“The facility featured an easy access for the residents and it was equipped with the essential safety items but a number of potential risks and hazards could still be identified. For example, most of the doors were left unlocked and were wooden doors, which could be broken easily if an intrusion was to occur.”

However, the “unsafe” observation was transformed into a positive finding as this student realized that, “If the fire alarm goes off, or in the event of any potential problem at the facility such that somebody has to rush in to rescue the residents, wooden doors would facilitate the rescue as opposed to metal or other hard-to-break material.”

The situational analysis was deemed relevant to the CSL projects in all the community sites and supported further reflective thinking. For example, a second-year student going to a different long-term care facility observed:

“The majority of the residents have dementia. It will be difficult to conduct a health care promotion intervention that relies on the long-term memory or that requires engagement and commitment. But this population needs some level of intervention as we realized while talking to some of the care aids. In fact, the project should involve the health care professionals who will ultimately assist the residents.”

These reflections illustrated that an earlier exposure to a welcoming site was of benefit for students and, according to Strom, justified the months of administrative preparation and time investment that preceded the CSL activities in PACS. The feeling of “belonging” and support from the site was emphasized by students as they evaluated expectations and gained awareness of what could and should be done in terms of a collaborative project. Although some of the reflections remained more descriptive, as Mitchell and Coltrinari say is likely, others expressed a more metacognitive process as one who mentioned the “warm colors,” as well as analytic-evaluative thinking as with the mentions of “wooden doors” and “dementia.” Particularly in these two last reflections, students rethought their previous observations and reconsidered alternative venues.

**Reflections During the CSL Experience**

Some groups’ projects targeted staff (care aids, teachers, and nurses), whereas others decided to include the family members of the residents from long-term care or of the children from schools. The reflections from this cluster represented students’ challenges and struggles, as well as joy and relief:

A second-year student going to a long-term care facility mentioned one of the challenges and struggles:

“A question came up in our presentation: how to brush teeth in elderly [residents] who refuse to open their mouths? . . . I felt a bit frustrated as I did not cover this topic during the presentation. We should have covered that topic since it is a common occurrence. My immediate response was ‘That is a very important question and we will be pleased to give you some answers next time.’”

Although challenged and frustrated, this student and the group recognized an area for improvement as they reanalyzed their experience. As a result, they had a follow-up a week later with the nurse who asked the question and answered it based on a literature review and a conversation with their dental tutor. They reconstructed the initial frustrating experience into a successful follow-up and gained skill in understanding what it means to be a professional.

For another second-year student, a challenge arose when analyzing the results of a before and after questionnaire assessing the impact of the project in increasing the knowledge of the care aides. The student realized that
“Unfortunately, the quiz results did not look too positive at the end of the day as the care aides did not seem to grasp what we had taught them. However, we found that many of the ‘wording’ of the questions was a little bit convoluted and might have explained the [bad] results we got.”

This student sought explanations regarding the quiz’s results by reflecting on the wording of the questions. For another student’s group that also applied a before and after questionnaire, there was a sense of frustration regarding their educational activities. However, this student also recognized that a possible explanation might be that “the care aides could be more knowledgeable about oral health even before our presentation, and knew all the answers beforehand and so we did not find too much of a difference before and after.” In all, the apparent frustration in either delivering (e.g., teaching) or assessing (e.g., measuring) the community projects prompted the students to think critically about their envisioned outcomes.

As discussed by Smith and Irby, students attempt to gain new understanding about themselves, their projects, and their audience and to further develop critical thinking and problem-solving skills through their reflections.

A first-year student who developed a CSL in a community clinic expressed feelings of joy and relief in the reflection:

“Our group delivered our first activity today. I was excited about it from the moment I got there because they received us with such enthusiasm. I could see their excitement, and they could see mine. They were impressed when we showed the working station with posters and pamphlets about diet and nutrition. It felt really good to be appreciated.”

A similar feeling of accomplishment was expressed by a second-year student who developed a project in a school. According to this student, the experience was enjoyable because “there was an opportunity to get out there and talk about a subject that I will encounter a lot in my future career. It was good to engage in a dialogue with parents and teachers and receive their feedback.”

Reflections After the CSL Experience

After the finalization of their projects, a poster fair at the Faculty of Dentistry provided students with the opportunity to present their CSL initiatives to other students, faculty members, and community representatives. Reflections at this stage culminated also with the end of the academic year and with the conclusion of their projects.

A second-year dental student going to a community clinic reflected on the theme of ongoing engagement:

“After months of preparation, it gave me a feeling of accomplishment as many people showed up. It was also rewarding to see what they thought and noticed about areas where we felt short and others where we did well. But having the first year’s junior students also present was very interesting. Several of them approached me and others from my group to ask about what we had done as they were going through the same process. It gave me a good feeling to witness their interest in our work.”

For this particular student, although the project was concluded, there was still room for improvement. By rethinking the areas in which the group felt short, this student allowed for a reaction in the future and expressed some evaluative and reconstructive reflection, as described by Mitchell and Coltrinari. Students valued the opportunity given to share the CSL experience with the rising first-year students as a chance for ongoing engagement.

Some of these reflections also exemplify the role undertaken by the students as teachers and health educators. The CSL projects developed in year 1 of PACS are probably the first opportunity students have had to teach others within a class project outside the dental school. As they reflected, they pondered their challenges and struggles, while critically realizing that “it will be difficult to conduct a health care promotion intervention that relies on [a patient engagement of] long-term memory or that requires engagement and commitment” should the teaching target long-term care residents with memory deficits, for example.

According to Saltmarsh, reflection on an experience can connect such experience concretely to the learning associated with it. This was the case with a second-year student who developed a CSL project in a long-term care facility:

“I think [the care aides] were not that interested in our talking. I am not quite sure how to mitigate this problem but maybe an interactive approach might be better. We
could get volunteers from the audience to show how they clean dentures and then help them along the way. That’s the way we learn in dental school, and if we learn better this way, they might too.”

This student’s reflection also represents the vital link between traditional classroom education with hands-on experience through CSL, as recommended by Eyler and Giles and others. For a first-year student who developed a CSL project in a community clinic, the time for the delivery of the health promotion activity was an issue for concern since “some of the participants casually sat through the talk . . . but seemed to be somewhat anxious to get going as they were at the end of their shift.” Once reflecting on how to avoid such behavior from the audience, the same student reconsidered the experience and suggested to “have the same presentation [done] at a different time.” These students sought alternative explanations for their observations and proposed solutions, mostly from their own experience as learners. Not only did they recognize a problem but they also considered future possibilities and solutions.

For a second-year student going to a long-term care facility, the experience of interacting with the residents reinforced an admiration for, and value of, older adults:

“I already had a great respect for the elderly. They carry so much wisdom, knowledge, and experience that one can only obtain through life or through a conversation with them. I must say two of the most influential people in my life are 68 and 80 years of age. I enjoyed every minute I spent with the residents from our site.”

In all, the reflective thinking expressed by students before, during, and after their CSL experience emphasized the need to foster reflections as key agents for knowledge formation, particularly in health disciplines. In fact, most of the students’ reflections moved away from mere description to more elaborate expressions of thoughts and feelings (metacognitive). They also expressed the reasoning behind their observations (analytic), the value and assessment of the experience (evaluative), and ideas for future action and reassessment (reconstructive).

The thematic analysis of the reflections done before, during, and after the community activities also demonstrated that students used a cyclical pattern of learning, as illustrated through the “re” terms used above and graphically through Figure 1. The bidirectional, circular, and self-sustained model in Figure 1 synthesizes students’ experiences while conducting their CSL projects. It portrays students’ activities in reflecting, rethinking, reconsidering, reanalyzing, reconstructing, and reacting on their experiences. Reflections prompted students to rethink and reconsider. However, it is unlikely that reflection would lead to reaction without first exercising thinking abilities and/or analysis. By reanalyzing the experience, students could reconsider what they gained or valued and react in a more meaningful way. On the other hand, there were students to whom the premises shown in Figure 1 might not apply, as discussed by Howe et al. For these students, their reflections represented a rather rhetorical approach presented in the third person and remained descriptive with a lack of critical analysis; they did not fully engage in their reflections and, probably, in their CSL activities.

Since most of the theories behind reflections emphasize the premise of action/reflection to understand service-learning, Figure 2 represents an alternative circular portrayal for action and reflection. For other researchers, reflective activity could be also represented by the acronym LEARN, as presented by Witmer: Look back at the experience; Elaborate in writing what happened; Analyze the outcomes; Revise the approach taken while reflecting; New trial for describing a new approach for reflecting.

No matter how they are represented, reflections in the CSL setting should enable students to examine
their experiences critically as a means of enhancing the quality of their learning and the service they provide.  

Figure 1 could be used also as a guiding tool for those disciplines or individuals interested in reflecting, particularly in the context of community service-learning. For example, it could give meaning to the learning experience as students are encouraged to exercise rethinking and reconsideration. Hence, it could support scholarly development as the instructor ponders his or her role in fostering reflective learning in general. As a lack of reflection may have a negative impact on learning and lead to premature conclusions, the circular portrayal in Figure 1 can be employed adjunctly with other means to help during the admissions process of health professions education, to gauge a student’s interest in the community, and to focus career paths. To accomplish such tasks, however, further evaluation of Figure 1 is warranted.

Conclusions

What does the process of reflection add to the CSL experience? The reflections illustrated here added positive value to the CSL experience by ultimately enhancing the learning of the UBC dental students. However, contrary to service-learning in which students rotate into the community as health care providers or volunteers, the PACS module has enabled students to develop sophisticated knowledge and awareness of the dynamics of a community as they collaboratively interact and reflect while experiencing CSL. Consequently, as stated by Cooper and others, reflection remains a precious tool for allowing students to gain additional value from a community-based education while having a positive impact on their attitudes about service and the community. By reflecting, as Scheckley et al. emphasize, students can move away from stereotyping and holding presuppositions about their experiences to a more personal exploration of their learning and themselves.

Is reflection on these experiences worth the effort? Learning is a complex and ongoing process in need of constant reevaluation. CSL places students in real-life learning experiences, with the hopes of improving their outlook on professionalism and on their position as community health care providers. Given the complex nature of these activities, reflections can inspire students to think about their communities, maximize their learning experience, and make this activity a worthwhile effort. Although worth the effort, this article agrees with the findings of Cooper, who acknowledged the need for constantly “pushing the students to think critically and to engage issues in a more critically reflective way.”

This article has focused on the use of reflections by predoctoral dental students while carrying out their CSL projects. Contrary to the idea that reflections may represent a record of service activity, the content and depth of these students’ reflections moved beyond description to a more thoughtful analysis of their experiences. This progress highlights the need for constant reflection prompted by questions that elicit critical thinking as those exemplified in the Methods section of this article. Reflections remain relevant for personal and professional learning and growth, particularly in the health professions, as used continuously throughout the PACS module at the UBC Faculty of Dentistry. Since Giles and Eyler called for further research regarding the impact of CSL on students’ citizenship roles and on institutional policies and practices, this article hopes to provide some food for thought to address this call. However, equally important, as recommended by Howe et al., is to further explore how to help students who are weak in their reflective skills.

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