CSL Integrators

Final Report

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Abstract

The MECH 410E Global Engineering Leadership course has been going on for several years. For the purpose of course improvement and creating a greater understanding of the impact of Community Service Learning (CSL) projects on students and respective community partners, this report provides a comprehensive look at the impact of CSL projects on the stakeholders of the projects.

The MECH 410E course explores the theme of global leadership and exposes students to different communities. Students engage in CSL projects and collaborate with respective community partners. This report aims to evaluate the effectiveness of the course through student satisfaction with the course, CSL impact on learning and students and documentation and stories of the CSL project experiences.

We have obtained feedback from the groups through surveys and in-person interviews and telephone interviews for the corresponding community groups. Our group has documented our progress in the form of a webpage.

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1.0 Introduction

Service-Learning and Engineering Leadership are themes that are being explored at schools throughout the world (Graham, Crawley, & Mendelsohn; Ash & Clayton, 2004). Service-Learning is a type of experiential learning method that has the intention to benefit the provider and the recipient of the service equally and ensure equal focus on the service being provided and the learning that is occurring (Furco, 1996). Graham, Crawley, & Mendelsohn define an engineering leader as an engineer with the following attributes: initiative and decision making, making sense of the world around us, developing key relationships and networks, creating a compelling image of the future, getting the job done, and grounding in the disciplinary fundamentals.

The course MECH 410E Global Engineering Leadership offers students an opportunity to explore these concepts in-depth. In this course, students learn about Engineering Leadership and Service-Learning through guest lectures, in-class discussions and interaction with the community through Community Service Learning (CSL) projects (Winkelman, MECH 410E Course Syllabus, 2012). Students learn about the available CSL projects through a brief presentation and then are able to choose the project that they are most interested in. Students are expected to write a proposal, present a presentation and compile a final report for their project, but other than these three assignments the projects are meant to be very self-directed.

One challenge that arises from this style of learning and project based work is making sure that students are actually learning what is intended for them and are satisfied with the course (Ash & Clayton, 2004); that is where our group, the CSL Integrators comes in. Currently there is no system in place for getting feedback from students throughout the course. In previous years, a feedback session was held with students near the end of the course and the community partners were sent surveys asking about their experience with the students. Both of these are just one time events and do not provide opportunities for in-depth feedback.

The lack of in-depth and continued feedback is was an issue with the course and the CSL projects. Our project addressed this issue and obtained feedback to provide recommendations to the course instructors improve the course in the future and understand the impact of CSL on student learning.

2.0 Project Purpose

The purpose of the CSL Integrators project is to evaluate and gauge the outcomes and impacts of CSL projects on MECH 410E students and their community partners. This project also seeks to determine opportunities for improvement and provide recommendations for course improvements for a more effective learning experience for future students who might be taking the course as well as the community groups involved in the CSL projects.

3.0 Project Background

As discussed in the introduction, MECH 410E is a course with the objective to educate students about the theory and practice of Engineering Leadership and Service-Learning. The course syllabus states, "The goal of this course is to provide students with leadership education, and engineering service experiences to hone their nontechnical skills and enhance the service ethic within their professional development" (Winkelman, MECH 410E Course Syllabus, 2012). These objectives are partially fulfilled by students participating in CSL projects. Our project is one of five CSL project groups, the other projects and their groups are described briefly below in Table 1.

Table 1 - CSL Project & Group Descriptions

Group A	This group consists of five members, their project is to design a lab for an engineering statistics course with the aim of combining statistical analysis with a CSL activity.
Group B	This group consists of four members, their project is to gather and present relevant information to a community group that is striving to halt the development of a mine near its community.
Group C	This group consists of three members, their project is working with a non-profit organization to map an estuary and to assist them with receiving carbon credits, this project was created and proposed by a student.
Group D	This group consists of five members, their project is to research and propose strategies to build an energy-efficient orphanage in a developing country.

4.0 Stakeholders

This project has three main groups of stakeholders: (1) current and future students, (2) community partners, and (3) course instructors and guest speakers.

The primary stakeholders for this project are the current and future students of MECH 410E. The current students are the primary information source for the project; we solicited their feedback on the impact of CSL projects on their learning and their satisfaction with the course through a series of interviews and surveys. The recommendations made will mainly benefit future students as they are intended to improve the quality and structure of the course and CSL projects; current students also benefited from the opportunity to give feedback and participate in a discussion about the course.

Secondary stakeholders include the community partners involved with the CSL projects. Community partners that have been found to have a positive impact on student learning will likely continue their

partnership with UBC. Likewise projects that have not been beneficial for student learning may be reviewed and the community partners might no longer get assistance through CSL projects.

Some other secondary stakeholders are the course instructors and guest speakers. Depending on the outcome and feedback from the CSL Integrators project, the instructors may have to alter their methods of teaching or make changes to the structure of the CSL projects. The guest speakers are also affected since if they may be invited back to speak if feedback regarding them is positive or they may not be if the feedback is negative.

5.0 Goals and Objectives

This project has three main goals: (1) to obtain an overall sense of student satisfaction with MECH 410E, (2) to gauge the impact of the CSL projects on student learning and community partners, and (3) to document the CSL project developments (Winkelman & Boisvert, 2012). Some other minor goals are to monitor how successfully each team achieve their project objectives and to connect with community groups to get feedback regarding their level of satisfaction with the project as well as suggestions for improvement. The final objective is to present all these findings and create recommendations to the course instructors.

6.0 Design Approach and Methods

Our team used three different methods to meet the goals of the project: (1) student surveys, (2) student interviews, and (3) a client questionnaire.

6.1 Student Surveys

We chose to use surveys because they are useful for collecting similar data from different groups or individuals (Advantages and Disadvantages of the Survey Method, 2012). This is especially useful for performing comparisons between groups since areas of similarity and differences may be easily identified.

Surveys were used at the beginning and end of the project. The initial survey was done in the CSL project groups and was used to assess the expectations and pre-project perception of students about the course and their CSL project[1]. This was done in to provide a basis for comparison with what students learned and how their perceptions changed as they progressed with their projects. A secondary survey was done individually at the end of the course to gauge course satisfaction and also students' satisfaction with their CSL project and team[2].

6.2 Student Interviews

Interviews are effective because they enable more detailed questions to be asked and are helpful for probing for detailed information regarding opinions, perceptions and personal feelings (An evaluation

[1] Refer to Appendix A – Initial Student Survey Results for complete survey and responses
[2] Refer to Appendix C – Course Satisfaction Survey Results for complete survey and responses

tookit for e-library developments: Interviews, 2006). Interviews also allow for clarification and follow up regarding incomplete or ambiguous answers (Ibid).

Similarly to the surveys, two sets of interviews were conducted with groups; the first interviews were conducted during the middle of the project and the final interviews were conducted at the end[3]. Three group members participated in conducting the interviews: Wee Kee Ong, Natasha Palmer, and Rouzbeh Salehipour; the interviewer asked the questions and then transcribed the students' responses. The interviews were done to gauge the development of different groups' projects and understand the possible difficulties they faced and learning that was achieved. Some of the interview questions were designed to obtain more in-depth answers for questions that were asked in the initial group survey.

Once all the interviews were conducted, all the answers were compiled and classified. This information was then compared to the initial survey results from the beginning of the project; this allowed our group to evaluate the outcome and impact of CSL projects on students and gauge their satisfaction with the projects.

6.3 Client Questionnaire

Questionnaires have similar benefits as surveys and they are a relatively fast method for information collection (Questionnaires: Advantages and Disadvantages, 1999). Using a questionnaire also allows the respondents to answer the questions when it is convenient for them, rather than trying to schedule an interview that is at a suitable time.

Questionnaires were sent out to all of the community partners that were the clients of the CSL projects[4]. This was done at the end of the projects to obtain feed regarding the usefulness of the projects and any difficulties or issues that were faced during the project. The questionnaires were also intended to establish the success of the CSL projects and the impact on the community groups. Unfortunately, only one of the clients completed the questionnaire, so we were unable to perform this analysis.

7.0 Results

In this section, the key findings from the surveys and interviews will be highlighted. For detailed results, please refer to the following appendices: Appendix A – Initial Student Survey Results, Appendix B – Student Interview Results, Appendix C – Course Satisfaction Survey Results, and Appendix D – Community Partners Questionnaire Results. We will address results from two main sections: (1) CSL Projects and (2) Course Satisfaction.

7.1 CSL Projects

The section discusses the positive aspects of the CSL projects, the negative aspects and also the group-specific feedback that we received.

[3] Refer to Appendix B – Student Interview Results for complete interviews and responses
[4] Refer to Appendix D – Community Partners Questionnaire Results for complete questionnaire and responses

7.1.1 Positive

One of the positive aspects of the CSL project was that students learnt to have better time management. Due to the short time frame (four weeks) available for groups to complete their projects, students had to be effective with scheduling and managing their time so that tasks were completed on time. This is important in helping groups stay on schedule and be able to provide effective service to their clients.

Students were also able to improve on communication skills within their groups and with their clients throughout the project. As students worked through the proposals and tasks of the project, group members had to schedule meetings as well as discuss issues or difficulties as they came up. Groups also had to communicate with their clients about project progress. All these cases gave students opportunities to improve their communication and three groups mentioned that the CSL project had helped improve their communication skills.

Another benefit that three groups mentioned was using prior engineering knowledge and technical skills for their project. An example would be Group A's lab design project as it is highly related to engineering; students were able to use some of their prior knowledge to come up with concepts and design the lab.

7.1.2 Negative

The majority of the negative feedback was that students found that there were not enough time for the project and had scheduling issues within their groups. After students were split into groups, there were only four weeks to complete the projects. Many groups found that there was a time lag when waiting for clients to reply to their questions and this added to the problem.

Some groups also found difficulty with ambiguous project descriptions. Some of the project descriptions for the projects were not very clearly defined. The scope of the project had to be set by the groups after doing some research and this process is time consuming, it was also difficult to decide on a common scope with their clients due to differing expectations.

Another issue was that some of the clients had different expectations from the groups' and the course's expectations. This problem is related to the ambiguous project descriptions; due to the lack of clarity in the project descriptions or perhaps miscommunication between community partners and course planners, the expectations that the clients had were different from the expectations of the students and course instructors.

In addition, there was insufficient information available for some of the projects. Since some of the groups are dealing with communities in the rural areas overseas, there is limited information on the communities and communication with their client was impossible. Some groups found it tedious to look for useful information for their project. This problem provides opportunities for students to hone their research and engineering technical skills.

7.1.3 Group A

Group A ran into some issues early on in their project. After having their proposal assessed by the instructor, they decided it was best to change their proposal from top to bottom in an effort to design a more practical and effective lab than they presented in their first proposal. It was also difficult for them

to get in contact with their client as there was a long delay in the response time of their client. The combination of these issues set the group behind schedule and forced the group members to put a greater amount of effort and time into their project. Aside from their difficulties, the group enjoyed the fact that they were designing a lab for students, rather than completing a lab as a student which is what they usually do. Some of the group members had even taken the lab course as a student in their previous years, therefore it was interesting for them to see how a specific lab is created and completed as a designer and a student, respectively.

7.1.4 Group B

Group B found that it was challenging to remain unbiased in their service when considering that their community client is completely against the development of a mine near their community. Their client also requested information that the group did not have the resources or expertise to obtain. They overcame these issues by focusing on providing neutral and unbiased information that is readily accessible (i.e. similar campaigns that were successful in stopping industrial development). The CSL group also found it interesting to meet some of the members of their client group because of their client group's different views and strong commitment to their cause. They also enjoyed their trip to the community of their client group where they were able to present their findings to their client group and local community members.

7.1.5 Group C

Group C got the opportunity to travel to the community near the estuary where they had planned to perform fieldwork. An amusing experience that they had from their trip was that one of their group members got stuck in the mud while doing the fieldwork and had to be pulled out. The group enjoyed meeting the community locals and were pleased to learn about the history of the community while visiting different sights. Some of the group members are registered in a separate course which requires students to travel to another country to perform community work. Therefore they felt that working together on their MECH 410E CSL project prior to leaving the country and doing more community work would allow them to serve the community more effectively because they had a chance to better know one another, developed their ability to work as a team, and gained experience in serving a community.

7.1.6 Group D

Group D had one major issue with their project, and that was that their client was located in the developing country where the orphanage potentially would be built. The area where the client was located had no power or electricity, and the only way the client could access any emails would be by visiting a camp that had power and an internet connection. This did not allow Group D to properly communicate with their client and were forced to communicate with a client representative who is located in Canada and who had less information. On the other hand, the group enjoyed researching and learning about the developing country and claimed that it is something they would not have done in their free time. Some group members stated that conducting their CSL project brought light to the fact that they take many essential things in their lives for granted and their experience helped them more appreciate the basic things that they have, such as access to clean water and power and electricity.

7.2 Course Satisfaction

The majority of the students that responded to the course satisfaction survey indicated that they were satisfied with the course and would take it again. Students found the guest lecturers to be interesting and informative. There are however a few speakers that students indicated that they did not enjoy and did not see how they related to the course: Leila Harris, Linc Kesler, Ralph Sultan, and Daniel and Bet Barrios.

In the course satisfaction survey, the students that responded indicated that the course work load was appropriate but sometimes there were too many readings to do and reading logs to write. This differs to what students said during the interviews; in the interviews, the majority of students said that the course load was too heavy. In particular, students felt there were too many reading logs for every lecture while managing the projects at the same time. Most of the students are also taking other courses in addition to the MECH 410E course and they felt the workload of the course was heavier than other courses that they are taking. This discrepancy is likely due to the fact that only six students responded to the course satisfaction survey, so the survey may not accurately represent the views of the majority of students.

8.0 Discussion

From the findings in the above results section, there are some recommendations that could be helpful for course improvement and student learning.

Firstly, two out of four teams had problems with ambiguous project descriptions. Recommendations are given below:

1. **Clearer project descriptions**

   The project descriptions given to students should be more detailed and focused so that the students can come to a proper conclusion about the projects' requirements and the type of work they will be doing. A better understanding of the project will allow students to make better decisions when choosing which project to undertake at the beginning of the course. It can also give students the advantage of a quicker and more efficient start in their project because they will have a lucid understanding of their purpose even before they contact their respective clients.

2. **Have course instructor review project descriptions with respective clients**

   Many benefits can arise from the clients being able to edit or review the project descriptions with the course instructor before the projects are introduced to the students. First of all, it will give the clients the ability to better transmit their goals and aims to the students (through the project description) who will be deciding on which project to take part in. Second of all, it will give the clients an improved understanding of the capabilities and resources of the students through the instructor's explanations. This can eliminate any unforeseen expectations that the clients would have for the students.

Three out of four teams mentioned client communication and time issues. These are the following recommendations:

3. **Start the projects earlier**

   Projects should start during the first week of the course instead of the third. Students should have the project descriptions made available to them during the first day of lecture so that they can be split into groups and start on the project during the first week. Students would then have a total of six weeks to complete their project instead of the current four weeks. This recommendation is based on the assumption that the length of the MECH 410E course remains to be six weeks and is carried out during the summer semester.

4. **Make the project scope smaller**

   Instructors of the course could narrow down the scope of the projects due to the short time frame available for the projects. The projects would then have fewer objectives and students would be able to complete them more effectively. A possible alternative is to have students define the scope of their own project so that they are clear with what needs to be done.

5. **Extend the length of the course**

   The alternative solution to give students more time for their projects is to make the course a full-term course. MECH 410E course can be offered during the fall and winter semester instead of the summer so that students not only have more time to complete their projects in greater depth, but the course could also be extended to include additional topics. This could imply that the scope of the projects may be bigger and the impact on community groups may be greater.

6. **Provide projects where clients have the resources and time to contact project groups**

   Before presenting the project choices to the students, the course instructor should confirm that the project community partners have the resources to reply to the students' questions in a timely manner. Staying on schedule and receiving information was an issue for most of the groups when considering the long amount time it took for some clients to reply back to the students. Following this recommendation could act as an alternative to the recommendation of extending the length of time of the course because the long wait times for client responses are eliminated and students will be more capable of following their schedules.

9.0 Conclusion

In conclusion, this project was very effective at identifying issues with the CSL projects, issues within the course and the impact of the CSL projects on students. Overall, students indicated that they are satisfied with the course and would take it again. The CSL projects had many positive impacts on students as well, such as improving their time management and communication skills and allowing them to use technical skills from previous engineering courses. There were a few issues with the CSL projects as well, such as a lack of time and communication issues with the clients.

This project was unable to ascertain the impact of the CSL projects on the community due to a lack of response from the community partners. Course satisfaction was also not clearly determined since only six students responded to the survey. We would recommend that these topics be further explored by either the course instructors or by a future CSL Integrators group within MECH 410E.

Overall, the recommendations for course improvement are to have clearer project descriptions and course instructors review project descriptions with clients prior to commencement of projects. Also, it is recommended for projects to start earlier, course instructors can either reduce the scope of projects or increase the length of the course. Finally, course instructors should ensure that community partners are prepared to allocate time for the project and work with students throughout the course duration. We hope these recommendations and findings will improve the course for future students as well as the community partners.

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Appendix A – Initial Student Survey Results

1. What skills/qualities/attributes do you hope to gain from this project? Explain.

Group B	We hope to gain communication skills and learn how to work in a team in a leadership position. Our group is seen as experts by the community group we are working with which is a new experience for us.
Group C	I hope to gain hands-on practice and have a deeper understanding of social change through community service learning.
Group D	We hope to gain both oral and written communication skills through our presentation, reports and daily communication within the team. In addition, we hope to develop teamwork and leadership qualities taking initiative.
Group A	Develop communication skills with the client. Develop organizational skills.

2. What does your group expect to achieve for this project?

Group B	We expect to work with the CoalWatch group and make recommendations as to how to continue their campaign.
Group C	We hope to learn more about the community and why and how they care so much about eel grass. Moreover, we want to share our knowledge and let them know what UBC does in this economy partnership.
Group D	We hope to develop a feasible, sustainable, permanent design of an orphanage structure.
Group A	We expect to develop a lab for students in the MECH 305/306 group in order for them to apply statistics in their lab and to help inform the community about the effects of CO emissions.

3. Have you participated in a community service-learning project/activity before (or similar activity)?

Group B	No.
Group C	Yes.
Group D	No. (one of us has)
Group A	No.

4. How do you feel about participating in a community service-learning project?

Group B	It seems like a great way to learn how to work with a client.
Group C	I think it is a great opportunity to learn outside of the classroom. It is also a chance to develop applicable skills: technical, social etc.
Group D	This is a very intensive program that we hope is rewarding for both our group and the community. Overwhelmed, we haven't had any previous experiences with rural community development.
Group A	It's interesting since we get to improve our project management skills while helping the community.

5. Did you have any preconceived notions about how your experience would be?

Group B	Thought it would be hard. Not enough time. Hard to communicate.
Group C	Yes, my pre-departure meetings for Mexico made us reflect a lot.
Group D	Community is rural, poor, away from city. Language barriers. Budget limitation.
Group A	It's going to be interesting because the group will have a chance to work with Dr.Mikkelsen and Aircare to design a lab that students will be using.

6. What challenges did you think your group would face before starting the project?

Group B	The pressure from the clients to work towards closing down the mine. The fact that there isn't much information available. Not enough time.
Group C	Trying to find a scope with the organization as our project started from scratch.
Group D	Budget, limited resources, limited time, limited knowledge.
Group A	Come up with a suitable idea that incorporates statistical analysis and helping the community. Maintaining a good communication with stakeholders.

7. How important is teamwork for the successful completion of the project? Why?

Group B	Very important. Not enough time means that we have to work efficiently and have things organized.
Group C	Very Important.
Group D	Very, so that everyone can work towards a common goal with a limited time and get everything done.
Group A	Teamwork is important to the success of the project because the project scope is larger than one person can handle, the ability to delegate power to others lightens the load that one person has to take during the course of the people.

8. Do you think this project is well-structured? Interesting? Why?

Group B	Not well structured because it is very open-ended. This is not a bad thing.
Group C	I don't think it is structured at all as we are free to do whatever. There are no strict guidelines, which can be hard. However, I think this is how we learn the most as we have to think more about what we are doing.
Group D	No, its interesting, no enough information or time, no structure. We can't meet with stakeholder because he doesn't have internet or electricity.
Group A	The project was not structured as our client requested a very open ended lab design that incorporated statistics (a subject that most of us don't really find entertaining.)

9. What do you think about the time frame given for the project?

Group B	Too short!
Group C	It is very short, I feel like everything is rushed, but I understand as it is a condensed summer class.
Group D	too short, our scope is too big, not well defined.
Group A	The timeframe for this project is adequate, there's no real pressure for the project we are working on as it is the design of a statistical lab and given the time frame our group already knew what to do.

10. Do you think there are enough members in your group? Why?

Group B	I think its good because more people makes it hard to organize.
Group C	Yes. We are 3 and our community work does not required a big team. I also think it is easier to work with less people that are really committed instead of delegating work to many members.
Group D	Yes, we evenly divided sections, more people will be hard to manage.
Group A	Fine members is just the right amount due to being able to properly delegate all the work to each team member. 3 people working on the design of the lab, and the other two to meet with stakeholders.

11. Did you feel prepared to start/conduct a CSL project? Why?

Group B	Some members no- because short time. Some members yes- because we can learn as we go.
Group C	Yes and no. The lack of guidelines and tight timeline makes it hard, but at the same time it makes it exciting. Also, I really like our project, which makes me ready to start.
Group D	No, see challenges in our proposal.
Group A	We didn't feel prepared to do this project because we haven't had the exact experience contacting the community and working with faculty members with regards to CSL type project.

Appendix B – Student Interview Results

B1 – Group A

1. ***Are you satisfied with the amount of information you have received from your client?***

   At the beginning of our project, there was no information given and we did not get replies from our client. The project is also very open-ended and it is hard to define the type of service that our group has to offer.

2. ***How would you rate this project in terms of learning experience (lowest being 1 highest being 10)? Why?***

   5. We are not much into the project yet. The score should increase as we progress further into the project.

3. ***Have you managed to complete all the goals that your group had set in the proposal? For what reason could you have not completed the goals, if any?***

   We had some errors with our proposal. We haven't achieved much, only 20-30% into the project. Difficult to contact many stakeholders.

4. ***Is your experience with this project what you expected it to be before starting it?***

   Didn't expect that we will need to contact so many different stakeholders. The waiting time for replies are unexpectedly long.

5. ***What difficulties/challenges have you encountered so far?***

   Difficult to meet and communicate with group members due to different schedules. Team members are not very engaged.

6. ***Do you feel you were given a proper amount of time to complete your CSL project? Did you manage to stay on schedule? Would you prefer to have more time?***

   Yes, will finish the project for sure even though we are lagging a bit on the schedule. Would prefer to have more connection with group members and partners instead of more time.

7. ***Do you feel your CSL project is equal in learning and providing service? Or do you feel what you've learned is little compared to the amount of service you have provided? Or vice-versa?***

   More service provided, beneficial to student and client. However, there is also personal learning, difficult to compare.

8. ***Did you achieve the skills and abilities you were hoping to achieve by doing the CSL project? Please list some of the skills you've developed and explain how they were developed achieved them.***

   Ability to use engineering design process outside classroom. (lab design)

   Leadership within team – team work and individual leadership

   Time management

   Learnt to use new software (gantt-chart)

9. ***What recommendations would you give improve your CSL project for students taking MECH 410E next year? (TRY TO TAKE A LOT OF ANSWERS)***

   Contact partners early (as soon as possible).

   Be persistent when obtaining replies.

   Be enthusiastic.

   Keep on schedule.

10. ***What will you take away from your CSL project that would be useful for your future careers?***

    Ability to liase with different stakeholders. (students/professors/different positions)

    Ability to work with different schedules of team members.

B2 – Group B

1. ***Are you satisfied with the amount of information you have received from your client?***

   To an extent, not completely, receive random information that might not be used or might not have anything to do with the project

   Some information asked for they have not received yet

2. ***How would you rate this project in terms of learning experience (lowest being 1 highest being 10)? Why?***

   7,8,7.5,8

   Its related to the course but not the best way to learn

3. ***Have you managed to complete all the goals that your group had set in the proposal? For what reason could you have not completed the goals, if any?***

   Some goals have been changed → got more information from the client

   Things still may change but expect to achieve the main goals

4. ***Is your experience with this project what you expected it to be before starting it?***

   Did not have too many expectations so you won't be disappointed

   Learn from other peoples perspective and see their concerns → got that (makes you an open thinker)

5. ***What difficulties/challenges have you encountered so far?***

   Time, communication with the client (different talking face to face [better]), information, they have higher expectations than we anticipated

6. ***Do you feel you were given a proper amount of time to complete your CSL project? Did you manage to stay on schedule? Would you prefer to have more time?***

   No, no, yes (want full semester)

7. ***Do you feel your CSL project is equal in learning and providing service? Or do you feel what you've learned is little compared to the amount of service you have provided? Or vice-versa?***

   Equal (therefore good for CSL project)

   Might not be learning as much as I could be, but we are not capable of giving service they want due to time frame and expertise, and available information

8. ***Did you achieve the skills and abilities you were hoping to achieve by doing the CSL project? Please list some of the skills you've developed and explain how they were developed achieved them.***

   Communication – working with team and with client

   Leadership within team – team work and individual leadership

   Community leadership

   Time management

9. ***What recommendations would you give improve your CSL project for students taking MECH 410E next year? (TRY TO TAKE A LOT OF ANSWERS)***

   Better communication with client beforehand so they know what to expect

   Longer time

   Clearer objective

   Class load is too much to do with project

   Prof talk to client to get clearer expectation

   More relevant information from the client

10. ***What will you take away from your CSL project that would be useful for your future careers?***

    Communication

    Social justice

    Consider things from other peoples perspective

    Try to maintain your own opinion when doing services

    Time management

    Getting stuff done efficiently, improve on researching skills

B3 – Group C

1. ***Are you satisfied with the amount of information you have received from your client?***

   Yes, we picked the community so we organized the trip, the scope of the project, so they understood what we would be providing to them and our role

2. ***How would you rate this project in terms of learning experience (lowest being 1 highest being 10)? Why?***

   8, because we had to brainstorm and find a good scope to help both parties, we had to organize everything in order to do our job. Working with the community for 2 days helped us learn a lot.

3. ***Have you managed to complete all the goals that your group had set in the proposal? For what reason could you have not completed the goals, if any?***

   Yes, we had to make a presentation and inform them about the progress and research that was done. Helped to do some field work.

4. ***Is your experience with this project what you expected it to be before starting it?***

   Since we had to work with the community to find a project, we didn't have any expectations at first, but once the scope was defined, then exchange of learning and service was what we expected. I did not expect their presentation would impact them so much and that they were so interested in our research.

5. ***What difficulties/challenges have you encountered so far?***

   Time, presenting next week would be hard because only three members and different schedules. Bad weather, because research involves working outdoors.

6. ***Do you feel you were given a proper amount of time to complete your CSL project? Did you manage to stay on schedule? Would you prefer to have more time?***

   Proper amount of time was given because we managed and organized well. We managed to stay on schedule so far. I would prefer to have more time to leave for writing the report.

7. ***Do you feel your CSL project is equal in learning and providing service? Or do you feel what you've learned is little compared to the amount of service you have provided? Or vice-versa?***

   It was equal because they learned about the research and we learned about the hands-on application.

8. ***Did you achieve the skills and abilities you were hoping to achieve by doing the CSL project? Please list some of the skills you've developed and explain how they were developed achieved them.***

   Management skills – organization

   Eel grass manipulation – part of work in the estuary assessment and field work

   Communication – with team members and the community

   Self and team assessment – through communication

   Presentation skills – do presentation in front of community and answer questions on the dot

9. ***What recommendations would you give improve your CSL project for students taking MECH 410E next year? (TRY TO TAKE A LOT OF ANSWERS)***

   Come up with you own project because develop more skills and do exactly what you want to do and not restrained to what was pre-set for you

   Starting early is better → stay on schedule

   Smaller groups is better because communication is easier and more effective and conflict of interests are easier to resolve

10. ***What will you take away from your CSL project that would be useful for your future careers?***

    Working with the community is important because social change can be achieved through community service learning

    Working with a firm, I will be more inclined to start CSL programs for others so that others can develop their skills and experience working with a community because not everyone gets to do this

    Take away skills in communication and time management, and somewhat biology because some members worked outside of their field of study

B4 – Group D

1. ***Are you satisfied with the amount of information you have received from your client?***

   No. Still haven't manage to reach engineer in charge.

   Scope of project is too big.

   No community aspect, can't meet with stakeholders.

2. ***How would you rate this project in terms of learning experience (lowest being 1 highest being 10)? Why?***

   6. Learned specific things (solar panels, etc.)

   Really difficult to find data.

3. ***Have you managed to complete all the goals that your group had set in the proposal? For what reason could you have not completed the goals, if any?***

   Still trying to identify goals. What client wants is different than the course objectives.

4. ***Is your experience with this project what you expected it to be before starting it?***

   No expectations. Thought there would be more community involvement.

5. ***What difficulties/challenges have you encountered so far?***

   Lack of information. No contacts. Really limited time. Budget limitations.

6. ***Do you feel you were given a proper amount of time to complete your CSL project? Did you manage to stay on schedule? Would you prefer to have more time?***

   Yes, could be much longer. On schedule with planned schedule. Either more time or less work.

7. ***Do you feel your CSL project is equal in learning and providing service? Or do you feel what you've learned is little compared to the amount of service you have provided? Or vice-versa?***

   If we do a good job then service will be more than learning.

8. ***Did you achieve the skills and abilities you were hoping to achieve by doing the CSL project? Please list some of the skills you've developed and explain how they were developed achieved them.***

   Too early to tell.

9. ***What recommendations would you give improve your CSL project for students taking MECH 410E next year? (TRY TO TAKE A LOT OF ANSWERS)***

   Definitive scope, ensure client scope matches with client. More class time for the project or less of other class work.

   Guest lectures are good, amount of reading and writing excessive. Like course > project.

10. ***What will you take away from your CSL project that would be useful for your future careers?***

    Research skills.

B5 – Summary of Responses

The following table contains the responses from the interviews divided into several categories. The numbers in brackets indicate the number of groups that mentioned the point.

Table 2 - Summary of Student Interview Responses

	Team Related	Client Related	Course Related
Positive		- Communication - Client was impacted by project	- Use engineering/technical skills (3) - Time management (3) - Communication (3) - Working within the community - Proper amount of time - Service = Learning (2) - Presentation skills - Team work (2) - Social justice - Considering other's viewpoints - Research skills
Negative	- Communication - Scheduling issues (3) - Commitment issues - Not enough expertise	- Not enough info (3) - Communication (3) - Client expectations different from the course (2)	- Project too open-ended (2) - Too many stakeholders - Service > learning (2) - Not enough time (3) - Course load too heavy (2)
Recommendations	- Communicate with client early (2) - Be persistent - Be enthusiastic - Follow your schedule (2) - Come up with your own project - Small groups are good - There needs to be more time (2) - Make sure the objectives are clear (2)		

Appendix C – Course Satisfaction Survey Results

The following tables contains the responses to the course satisfaction survey; names have been changed to keep students anonymous.

Table 3 - Course Satisfaction Survey Results Part 1

Name:	Overall, how would you rate MECH 410E on a scale of 1-5 (very poor - very good)	Why did give MECH 410E that rating?	Overall, how would you rate the speakers that came?	What speaker did you like the most and why?
Manfred	4	It was useful but tiring to be sitting through lectures most lectures. More participation between groups would be more beneficial.	4	THe speaker the formerly graduated from UBC
Danny	4	I really liked everything thing except the project part. It wasn't what I expected it to be. Furthermore, the readings where annoying yet very helpful and gave a context to the presentations.	5	They were all ballers. Very inspirational.
Carrie	3	The guest lectures were interesting but not very focused. I still don't understand the point of the course. The professor was also very confusing in his lectures.	4	Interesting.
David	3	I expected this a more technical courses before the course started as this course was on the list of technical elective rather than arts elective. Yet it turns out to be a writing course to me. Other than this, the course if fine. Course load is a little heavy for a 3 credit course but since it is a summer course I guess it is kind of ok.	4	Most of the speakers do great jobs. The speeches are all great.
Andrew	4	There are something deep and inspiring in our lectures. But some times they are just too philosophical.	4	Many concepts like four worlds of engineering, design thinking and servent leadership are benfitical to me. Yet there are still things that are not strongly connected to engineering, like female empowerment and First Nation-Federal Government conflicts.
Annie	4	I thought the guest lectures were good. It's not often that students get the chance to hear what professional engineers have done with their work.	4	The speakers were interesting and provided information that I find valuable.

Table 4 - Course Satisfaction Survey Results Part 2

Name:	What speaker did you like the least and why?	How would you rate the work-load of the course on a scale of 1-5 (too little - too much)	Why did you give the work-load that rating?	If you could go back in time, would you still take MECH 410E?
Manfred	The least was the speaker that spoke about women rights. This is because i didnt know how to apply it to the coarse and how it related to leadership.	4	A little too much reading logs made the coarse project harder to focus on	Yes
Danny	The native american one. I really dont care very much for the topic.	3	The work was enough for a 3 credit class. All of it fit into the goals of the class.	Yes
Carrie	The banker.	3	Ok.	No
David	The skype meeting with the organization in Mexico. It is kind of boring.	4	A lot of work to do for a intense time.	Unsure
Andrew	The first Nation Professor. He repeats the same concepts again and again. At least, his speech cannot make me concern any more than I already had on the First nation issue.	4	I really enjoy that fact that I can write something and get graded based on what I think, rather than the format. Just sometime it's too much to read and write.	Yes
Annie	The speaker that I liked the least is the speaker talking about the Indian act issues. He talked a lot around the problem students were asking before actually just giving a straight answer.	4	It's summer, so I thought the work-load was fine. Spent about 4 to 5 hours each on the class. The course load shouldn't be a problem for a summer term.	Yes

Table 5 - Course Satisfaction Survey Results Part 3

Name:	How likely would you be to recommend MECH 410E to a friend?	Overall, how would you rate your CSL project? (very poor - very good)	Why did you give your CSL project that rating?	Any other comments about MECH 410E?
Manfred	4	4	The good issues was that i learn how to work in a team. How to find a middle ground. The issues are that some group members wanted to take a different direction in doing the project.	
Danny	5	3	Ahh it was a little confusing and the fact that winkleman kept on trying to add a community aspect to our project even though there wasn't really any areas to add it to became a little annoying after a while. Other than that it was fine. my team was great and I really enjoyed the experience.	I <3ed it
Carrie	2	4	Got to travel. Meet new people and learn.	
David		3	Poor communication with the stakeholder.	
Andrew	4	3	Create motivation is a huge thing to accomplish. Low motivation makes my group project really hard to finish.	
Annie	4	3	I think the project would have been better if the team were able to reach more stakeholders.	The course is short and there is no tests. Also, the guest lectures are very interesting.

Table 6 - Course Satisfaction Survey Results Part 4

Name:	How would you rate the service/learning of your project? (1 only service - 5 only learning)	Why did you give the service/learning that rating?	Any other comments about your CSL project?	Overall, how would you rate your team? (very poor - very good)
Manfred	4	i think i learnt a lot from all the lectures and the reading logs allowed me to apply my knowledge.		4
Danny	2	There wasn't really a service learning aspect to our project.	Well considering what I mentioned above I really dont have anything to add here.	5
Carrie	4	Learned quite a bit.		4
David	4	I'm not sure about the service as the orphans are in Uganda Africa. I did learn a lot through the project.		4
Andrew	3	I realize some of my drawbacks. yet, I still can't visualize how to solve this.		2
Annie	4	If done correctly, I think the service/learning can be interesting for students since they can relate to the issue of transportation to campus.		4

Table 7 - Course Satisfaction Survey Results Part 5

Name:	Did you have any issues with fellow team members? Please specify	Any final comments about the course/project/teams?
Manfred	Some group members were hard set on doing the problem a certain way.	
Danny	We one of the people was late a lot and really wasn't there all of the time. His schedule was really strange.	<3 (not this survey though) http://www.youtube.com/watch?v=FWOsbGP5Ox4 enjoy
Carrie	No.	
David	team meeting is kind of difficult to set up.	
Andrew	Poor, so poor. It was not a team project, its and 2-3 people project.	
Annie	I though overall the team was good. The only issue was that there was one member who insisted on only meeting on Google Documents for most meetings because she doesn't live on campus. This caused some issues during the last stage of the project when we were making the webpage.	

Appendix D – Community Partners Questionnaire Results

Name of Project Group: Group C

1. How well did the students comprehend their project objectives?

very well, their research provided some interesting input to our project

2. Is there a lack of communication between you, the client, and the project group? (Insufficient information given from either side?)

This is a pilot project so there is a lack of data all around and the students assisted with finding some additional data. They were quite understanding when we went into the field and couldn't carry out some of the tasks because of the estuarine conditions which we had not anticipated.

3. If so, what went wrong?

4. How do you feel about the groups' progression towards their objectives? Are they on schedule and/or performing well?

They appear to be performing well and we hope that the next set of students will continue with the project.

5. How will this project benefit the student's impact on learning and experience?

This is a pilot project to determine the parameters and methodology for carbon offset potential for eelgrass meadows and their lab work aids with the fixed parts of the study while the field work they carried out here shows them the difficulty and the additional parameters that need to be considered with a project taking place outside a controlled environment.

6. Has this project had a positive impact on the students learning from a scale of 1 to 5? (5 being a very positive impact)

3

7. From a scale of 1 to 5 how well have the group performed in respect to their project objectives?

4

8. How has the CSL project benefited the community partners?

It has provided good data and created a model community that could be used to collect additional data that could be used toward our goal of developing methodologies for coastal communities to use to receive carbon offsets for eelgrass restoration projects.

9. What are the major challenges faced by the student group during this course?

For our project, the major challenge was getting the tanks set up and functioning well enough to collect the data needed. The other challenge was understanding the negative reaction of the eelgrass to being trimmed, which was one of their findings.

10. Do you feel like a lack of time was a major challenge faced by the students?

yes, there was a limited time here to carry out fieldwork and there was a lot of troubleshooting required of the tanks so less data was collected than if it had taken place over a longer timeframe.

11. Are there any recommendations you would like to add towards restructuring the course?