



## Small TLEF Project – Final Report

Report Completion Date: (YYYY/MM/DD)

### 1. PROJECT OVERVIEW

#### 1.1. General Information

<b>Project Title:</b>	The Design Charrette: Engaging interdisciplinary student groups in solving real-world problems		
<b>Principal Investigator:</b>	Cynthia Girling		
<b>Report Submitted By:</b>	Cynthia Girling		
<b>Project Initiation Date:</b>	June 1, 2016	<b>Project Completion Date:</b>	August 31 2017

#### 1.2. Project Summary

**1.3. Team Members** – (Please fill in the following table and include students, undergraduate or graduate, who participated in your project).

Name	Title/Affiliation	Responsibilities/Roles
Cynthia Girling	Professor, SALA	PI and lead instructor
Kellogg Booth	Professor, Computer Science	Digital tool set for collaboration-supervised co-op student and co-supervised Post-Doc.
Yvonne Coady	Professor, Computer Science, U. Victoria	Digital tool set for collaboration-co-supervised Post-Doc.
Moura Quayle	Director, Professor Liu Institute	Contributed to teaching course
Maged Senbel	Associate Professor, SCARP	Contributed to teaching course
Patrick Condon	Professor, SALA	Contributed to teaching course
Alix Krahn	Research Assistant, SALA	preparing digital tool set
Jessica MacDaniel	Graduate Academic Assistant, SALA	preparing digital tool set & coordinating with Computer Science researchers
Joshua MacDonald	Co-op Student, Computer Science	preparing digital tool set
Tianming Wei	Post Doctoral researcher, Computer Science, U. Victoria	preparing digital tool set
Tatum Lawlor	Teaching Assistant, SALA	Teaching Assistant
Liska Richer	Manager, UBC SEEDS Program	Coordinated relationship between course and C & CP
Scot Hein	Urban Designer, UBC Campus and	Client



	Community Planning	
Gerry McGeough	Director, Planning and Design, UBC Campus and Community Planning	Client
John Madden	Director, Sustainability & Engineering, UBC Campus and Community Planning	Client and contributed to teaching course
Dean Gregory	Campus Landscape Architect, UBC Campus and Community Planning	Client and contributed to teaching course
Joanne Proft	Assoc. Director, Community Planning, UBC Campus and Community Planning	Client coordinator and contributed to teaching course
Doug Doyle	Assoc. Director, Municipal Engineering, UBC Campus and Community Planning- Engineering	Client and contributed to teaching course
Krista Falkner	Transportation Engineer, UBC Campus and Community Planning- Engineering	Client

**1.4. Courses Reached** – Please fill in the following table with ***past, current, and future*** courses and sections (e.g. HIST 101, 002, 2017/2018, Sep) that have been/will be reached by your project, including courses not included in your original proposal (you may adapt this section to the context of your project as necessary).

Course	Section	Academic Year	Term (Summer/Fall/Winter)
LARC 582T Design Charrette	001	2017	Summer

**2. OUTPUTS AND/OR PRODUCTS**

**2.1.** Please ***list*** project outputs and/or products (e.g. resources, infrastructure, new courses/programs). Indicate the current location of such products and provide a URL if applicable.

Product(s)/Achievement(s):	Location:
Course blog	<a href="https://blogs.ubc.ca/saladesigncharrette/">https://blogs.ubc.ca/saladesigncharrette/</a>
Collaborative Design of an Eco-District on South Campus, UBC	<a href="https://sustain.ubc.ca/sites/sustain.ubc.ca/files/seedslibrary/Design%20Charrette_Final%20Report.pdf">https://sustain.ubc.ca/sites/sustain.ubc.ca/files/seedslibrary/Design%20Charrette_Final%20Report.pdf</a>

**2.2. Item(s) Not Met** – Please list intended project outputs and/or products that were not attained and the reason(s) for this.

2.3

Item(s) Not Met:	Reason:
Fewer students in the course	Unable to attract more than 24 students to the course
Reached far fewer students as visitors to the design charrette	Topic not of adequate interest to students (we advertised widely but only a few outside students came). Time of year was somewhat problematic.
Diversity of students' disciplines	Unable to attract many students outside of SALA

**3. PROJECT IMPACT**

**3.1. What were you hoping to change or where were you hoping to see an impact with this project? –** *Please list the intended benefits of the project for students, TAs, instructors and/or community members.*

**Pillar 1 Transformed teaching and learning** (Flipped classroom/student generated content/blended learning)

Objective 1: Provide a structured classroom environment for students to define and conduct independent background research in their disciplinary area intended to inform the overall multi-disciplinary project.

Objective 2: Teach students to collaborate with those outside the discipline and to communicate disciplinary expertise to broadly diverse audiences.

**Pillar 3 Improved student experience** (Enhanced experiential learning/ community engagement/ technology-enabled learning)

Objective 3: Teach design thinking— a process of projective, synthetic, iterative thinking— to non-design students in an immersive and collaborative environment.

Objective 4: Teach the theory of public engagement, and specifically the design charrette process for engaging diverse stakeholders in real-world problems.

Objective 5: Enable students to use and critique new digital technology - specifically the elementsLab touch table and personal devices to visualize and measure urban design propositions.

**Pillar 2 Expanded career and personal education** (Better access to interdisciplinary learning)

Objective 6: Develop a teaching model for reaching students in broadly diverse disciplines. The course will be open to students in diverse disciplines, attractive to students interested in applied projects, and offered in the summer in off-peak hours for easier scheduling.

Objective 7: Maintain a class blog for in-class communication, information exchange, and long term collection and dispersal of the products of the work.

**3.2. Were these changes/impacts achieved? How do you know they occurred? –** *To what extent were intended benefits achieved or not achieved? What evaluation strategies were used? How was data*



*collected and analyzed? You are encouraged to include copies of data collection tools (e.g. surveys and interview protocols) as well as graphical representations of data and/or scenarios or quotes to represent and illustrate key themes.*

**Evaluation methods:**

We of course gave traditional grades for the course. However, for this report we have referred to both the UBC Course evaluations- open ended comments, and an exit survey which we conducted. All students completed the exit survey. Therefore, this is a qualitative, discursive evaluation of the course.

Most of the student comments below are taken from an exit survey, which all students completed. The questions were:

What are the essential characteristics of a well-run of design charrette?

In what ways did our design charrette fulfill those characteristics?

Are there aspects of our design charrette that “missed the boat” (did not meet the essential characteristics of a design charrette?)

What are the benefits of collaborative design as conducted in the design charrette?

What are the limitations of collaborative designing?

How did the targets set by the Theme Research teams assist with the design process?

Did they hinder the design process and if so how?

Did UD Co-Spaces (the multi-touch table) assist with the collaborative design process?

If you answered yes, explain how.

To what extent did your Theme Research team work collaboratively on the assignment?

To what extent did your Charrette team work collaboratively?

Most of these questions were open-ended and some quotes are included below. (Additionally, there was a peer evaluation component.)

**The class**

24 students in the following disciplines: Architecture (4), arts (1), engineering (1), environmental design (2) landscape architecture (13), urban design (3). We were unsuccessful in attracting as many non-design disciplines as we had hoped.

There were three major components to the course: Module 1a) lectures by the instructor and several invited guests on the topics of the design charrette theory and practice 1b) Background information about UBC South Campus, the subject site via “Theme research” conducted by student teams to inform the design charrette, Module 2) The design charrette itself which was to do a long-range visioning plan for UBC South Campus, Module 3) The students prepared a final report summarizing the work of the class. This is a requirement of SEEDS courses. (see above)

**Pillar 1 Transformed teaching and learning** (Flipped classroom/student generated content/blended learning)

Proposed long term benefit: All students will carry direct experience and knowledge of the value and importance of interdisciplinary collaborative work into their careers. The flipped classroom model enabled



students to take charge of providing important content for the project and develop expertise in one topical area. Students frequently commented on the value of experiential learning and on the learning associated with collaboration.

- Comments from students-

(From the UBC Course evaluation) “We got to experience an actual charrette- what better way to learn about the process! One of my more meaningful class experiences at UBC.”

and

“This course was effective because it provides both theoretical and hands-on knowledge of charrette to students.”

**Objective 1:** Provide a structured classroom environment for students to define and conduct independent background research in their disciplinary area intended to inform the overall multi-disciplinary project.

**Objective 2:** Teach students to collaborate with those outside the discipline and to communicate disciplinary expertise to broadly diverse audiences.

- Small groups of students conducted background [Theme] research on the following topics, specific to the UBC South Campus area: Energy and carbon; Water; Land and biodiversity; Materials and waste; Transportation and Infrastructure; Buildings and the public realm. Each team was balanced with students from different disciplines who would offer their own disciplinary knowledge to the group.

13 of 24 students felt that their Theme research team worked very collaboratively and 8 said somewhat collaboratively. One said sometimes. Two did not answer the question.

- During the design charrette each charrette team of 5 to 6 students had representation from most of the Theme research teams, which served to model the interdisciplinary nature of real design charrettes. This team structure, whereby different “expertise” developed during the Theme research phase was then divided across the charrette teams, was effective per the student comments and faculty observations.

18 of 24 students felt that their Charrette team worked very collaboratively and 4 said somewhat collaboratively. One said sometimes. One did not answer the question.

- Both the Theme research teams and the Design charrette teams did formal presentations to a large audience including the class and invited guests. Every team put together a visual slide presentation and each member participated in the verbal delivery. Guests invited to these presentations, primarily staff from UBC Campus and Community Planning, consistently commented on the quality of the graphic presentations. Some teams did an excellent job with verbal presentations and some did less well. All students learned more about effective presentation techniques.

- Student comments-

“Having teammates from different theme research teams gave each team the opportunity of achieving the clear targets and requirements. Participants with different backgrounds provided each team with different practical and required knowledge for a charrette’s success. Working together in Theme research and pre-charrette sessions helped us to have a friendly atmosphere that led to effective communications which in turn helped us to achieve appropriate outputs.”



“Before charrette days, we separated in different six groups to finish a lot of research and propose the target, and communicate with experts and local people, letting us have a better understanding of the site and design. On the charrette days, we discussed together and proposed goals and themes, we all tried our

best to figure out the problems from each aspect, and finish each part according to each person's specialty area.”

“Other members give feedback on each others ideas; people of different backgrounds have different expert knowledge to contribute to an idea (ie. architects vs landscape architects vs engineers); members of the group feel invested in the overall outcome.”

**Pillar 3 Improved student experience** (Enhanced experiential learning/ community engagement/ technology-enabled learning)

**Objective 3:** Teach design thinking— a process of projective, synthetic, iterative thinking— to non-design students in an immersive and collaborative environment.

- One lecture covered the topic of design thinking (Quayle), however most of this learning was experiential- learning by doing and peer learning. Many students felt that they needed to have more input on best practices for urban design of sustainable neighbourhoods, as most were not familiar with area of design.

- Student comments-

(From the UBC course evaluation) “For some students who have limited design experience, it is better to give them an idea of design especially eco-district design at the beginning of the class.”

(Re benefits of collaborative design process) “It allowed us to toss around ideas and create ideas that we otherwise would not have considered individually. Sometimes it took someone's off-hand comment to spark someone's great idea. In addition, working collaboratively could (and often did) speed up the delivery of tasks.”

(Re benefits of collaborative design process) “1. get visions and thoughts open 2. learn from each other 3. take advantage of every person's strong points 4. produce more comprehensive design 5. learn to communicate.”

(Re benefits of collaborative design process) “It is motivating to be able to work as a team. It allows for new ideas, and for people not to be too stuck on their own ideas that have more resistance to change.”

**Objective 4:** Teach the theory of public engagement, and specifically the design charrette process for engaging diverse stakeholders in real-world problems.

- There were several lectures, followed by Q & A related to the theories of public engagement in general (Senbel), theory of the design charrette (Girling, Condon) and case studies of design charrettes (Condon, Proft). All students participated to some extent in the planning of their charrette by providing input in two sessions to the team primarily responsible for charrette planning. One team took the lead on charrette planning.



- Student comments-

(Re benefits of collaborative design process) “It allows the final design to be less likely to be blinded by personal preference. It also allow group members to learn from each other, from drawing skills to new

terminology. Most importantly, working collaboratively allows members to improve their communication skills and collaborating skills.”

- Students also identified limitations of the collaborative design process-

“For some people who have limited oral ability or don't know how to explain it's own opinions, their voices would easily be ignored. And the design production is a balanced results of different voices. Sometimes in order to create the balance, some good ideas will be ignored.”

“One of the limitations is that the loudest voices are often the most listened too instead of the best ideas.”

“Collaborative design could be more time consuming than design done in a hierarchy system where a chief designer is responsible of making decision. Collaborative design could also be limiting because intuitive and abstract thoughts needs to be well presented and expressed to other members before it would be further explored in drawings or other form.”

“Collaborative design is very time consuming and can be exhausting. Constantly explaining yourself and taking the time to really listen and understand your teammates can be draining. Because it is an environment where everyone should be heard, you do have to take the time to hear everyone's ideas but not everyone's ideas are great so there is some "wasted" time in that respect as well. Also, producing drawings together can be hard because everyone has different styles and since we were just getting to know each other we didn't know who was actually capable of doing what and what each other's particular skills were. Sometimes the execution can limit the extent of the original idea.”

- Students recognized that this was not a real-world design charrette despite having a real site, problem to solve and a client group:

“I think it would have been beneficial to have more diverse stakeholders and experts participating in the actual charrette. I found it could be limiting having students do the research and then the designs as I feel there were many opportunities that were missed based on our lack of knowledge and experience. With more diverse contributions from outside members would allowed for a more dynamic and more informed designs.”

“The fact that the charrette is done by students not real experts, who would have a much better understanding of the opportunities and constraints in the reality. The lack of participants from outside of the design/construction field also limits the design to a certain set values, which might not be representative of the wider south campus residents body or other people at UBC.”

“In my opinion, more stakeholders should have joined our charrette process so that we could design new plans according to their ideas and considerations. And an ideal moment should be that we created



drawings while they were talking, which was more efficient to exchange and check ideas. But in reality, we students always kept listening to their ideas without drawing.”

**Objective 5:** Enable students to use and critique new digital technology - specifically the elementsLab touch table and personal devices to visualize and measure urban design propositions.

- Through the collaboration with Computer Science faculty and students, the digital tool set called UD Co-Spaces was upgraded prior to teaching the class. Co-Spaces is an interactive urban design public engagement tool that integrates a touch-table work surface with live-updated 3D visualizations and an indicators dashboard.
- UD Co-Spaces was available for students to use during the design charrette. One Research assistant was available to the students to assist them in learning to use this tool. It was not given structured time within the agenda of any design charrette day, which in hindsight limited its use.

The Research Assistant who assisted the students to use UD Co-Spaces during the design charrette stated, “I would say that having the table was definitely an asset as most of the teams used it to generate their metrics quickly and find precedent studies to work out their design configurations. It was well used for almost all of day 3 with next to no issues, which was when they were figuring out if their designs were working and when they had time allocated to developing metrics. Generally, the students using it found it fascinating and would continue to refer to it throughout the charrette.”

Asked if UD Co-Spaces (the multi-touch table) assisted with the collaborative design process, 8 of 24 students said yes it did, 13 said it assisted somewhat, two said it did not assist and one did not answer.

•Student comments-

“It helps visioning how decisions on having different buildings on site changes the demographics, economy and consumption on site. It is also a good reference for appropriate building forms by serving as a well-arranged library of existing buildings.”

“It assisted with the collaborative design process to some extent as it gave a rough estimation of the amount of residences and jobs that our proposed design might be adding. This figure was needed to ensure that we were adding enough people to support a corner store. Aside from this, the multi-touch table was not otherwise utilized by my team.”

“Able to gather building density, population, and jobs. These are valuable metrics that assist in analyzing the designs across the targets”

“ I believe that it did for some groups. Some people used it to generate metrics quickly and test out design formations. Other people did not use the touch table at all. Some people that used the table a lot seemed to enjoy using it and could find out more about building types and metrics that those buildings could generate.”





“We used the metrics to inform the building targets. It also helped to visualize the real size of buildings.”

“It was so helpful for us to proceed the process of finding precedents which were similar to our newly proposed spaces and buildings.”

### **Pillar 2 Expanded career and personal education** (Better access to interdisciplinary learning)

**Objective 6:** Develop a teaching model for reaching students in broadly diverse disciplines. The course will be open to students in diverse disciplines, attractive to students interested in applied projects, and offered in the summer in off-peak hours for easier scheduling.

- This course was taught over 11 weeks in summer, 2017, starting June 8 and ending August 3. It met once each week, Thursdays 2:00 to 5:00 pm.

The class was open to students from many disciplines. Faculty team members inside and outside SALA worked to advertise the class to their students, however the majority of the students were from the School of Architecture and Landscape Architecture (SALA).

As a result, the class was less interdisciplinary than we had hoped. The schedule of one three hour block once each week may have been difficult for students. As well, students had to commit to four full days of the design charrette, which likely eliminated some people. This aspect needs work.

**Objective 7:** Maintain a class blog for in-class communication, information exchange, and long term collection and dispersal of the products of the work.

- The class blog was a very effective means of communicating with the students and exchanging information. Since the Theme Research informed later stages of the course, all student work was posted to the blog for reference purposes and sharing.

We did not use the blog for active discourse about the course and the project. Instead students used Facebook and Google Docs to communicate with each other and share their in-team information. In future iterations of the course we will explore the use of private groups in the blog. This will allow the instruction team to weigh in on conversations and in progress work.

### **3.3. Dissemination** – Please provide a list of ***past*** and ***upcoming*** scholarly activities (e.g. publications, presentations, invited talks, etc.) in which you or anyone from your team have shared information regarding this project.

The final report prepared by the students is a technical report addressed to the client group, UBC Campus and Community Planning, and the SEEDS program. This report will inform future planning of the South Campus area.

This course is a relatively innovative way of teaching basic urban design content to students with little background in this area. It was also relatively effective as a means of teaching students the theory and



practice of the design charrette. There is much room for improvement and both aspects will be improved in future offerings of the course. As a course that I have only taught once, it is not really ready for scholarly presentations or publications- I do not have enough content yet. I will continue to use the survey instruments in future courses to gather data.

**4. TEACHING PRACTICES** – *Please indicate if **your** teaching practices or those of **others** have changed as a result of your project. If so, in what ways? Do you see these changes as sustainable over time? Why or why not?*

The following aspects of this course are influencing my teaching practices:

- Flipped classroom- in which student teams do independent research, which is necessary background information for all students in future phases of the work. This makes sharing of the information seem more necessary to the students and they learn from each other more effectively.
- Collaboration- teaching students the values and methods of collaboration, which contributes to peer learning.
- Metrics and targets- Under certain circumstances, such as this project, involving propositions for change, learning relevant metrics, and measuring existing conditions vs proposed change is both a valuable learning tool and, as students mentioned above, helps teams to make decisions.
- Course blogs- This is not particularly innovative, but I am finding that blogs are very effective repositories of diverse course information and media for communicating with students.

**5. PROJECT SUSTAINMENT** – *Please describe the sustainment strategy for the project components. How will this be sustained and potentially expanded (e.g. over the next five years). What challenges do you foresee for achieving the expected long-term impacts listed above?*

This course was taught as an elective summer course in SALA. We do have a necessity for summer electives, so there is a good likelihood that the course will be offered in the future. I am likely the only faculty member who will ever offer this course as it is not in the area of interest or knowledge for other faculty in our school.

We will work on outreach (advertising) and scheduling issues in the future to make the course more accessible to students outside of our school.

Our research group continues to seek funding to develop and test UD Co-Spaces, the digital tool set which we incorporated into this course. Assuming we can better integrate this tool set with the course, it is attractive to students to have the opportunity to actively use it, so it can be used to attract a broader diversity of students to the course.