



## TLEF Project – Final Report

Report Completion Date: (2018/09/30)

### 1. PROJECT OVERVIEW

#### 1.1. General Information

<b>Project Title:</b>	The new era of FNH teaching lab - Transforming lengthy lab procedure write-ups into informative online instructive video clips.		
<b>Principal Investigator:</b>	Dr. Christine Scaman		
<b>Report Submitted By:</b>	Imelda Cheung/Patricia Hingston		
<b>Project Initiation Date:</b>	Dec 1, 2015	<b>Project Completion Date:</b>	Jun 30, 2018
<b>Project Type:</b>	<input type="checkbox"/> Large Transformation <input checked="" type="checkbox"/> Small Innovation <input type="checkbox"/> Flexible Learning <input type="checkbox"/> Other: [please specify]		

#### 1.2. Project Focus Areas – Please select all the areas that describe your project.

- Resource development (e.g. learning materials, media)
- Infrastructure development (e.g. management tools, repositories, learning spaces)
- Pedagogies for student learning and/or engagement (e.g. active learning)
- Innovative assessments (e.g. two-stage exams, student peer-assessment)
- Teaching roles and training (e.g. teaching practice development, TA roles)
- Curriculum (e.g. program development/implementation, learning communities)
- Student experience outside the classroom (e.g. wellbeing, social inclusion)
- Experiential and work-integrated learning (e.g. co-op, community service learning)
- Indigenous-focused curricula and ways of knowing
- Diversity and inclusion in teaching and learning contexts
- Open educational resources
- Other: [please specify]



### 1.3. Project Summary

The goal of this project was to develop instructive and demonstrative videos for experiments carried out in the Food Science Program core laboratory courses (FNH 325/326) such that students would have a better comprehension of the laboratory procedures before attending their weekly hands-on laboratory sessions. Videos were also developed to help students in analyzing and displaying their laboratory data using various statistical and graphical techniques, respectively. Furthermore, these videos served to deepen students' understanding of Food Science concepts and laboratory procedures, allowing for more time during the lab sessions to discuss the results of the labs. All videos have also been made largely available to students in FNH 425, a course where students work in groups to develop and execute an experimental design to solve a research question/problem of importance to the food industry. During the video development stage, equipment SOPs were also recorded to provide video reviews of the proper and safe operations of instruments available in the Food, Nutrition, and Health (FNH) Program. The purpose of the SOP videos was to allow FNH staff and graduate students to learn at their own pace, and become confident in operating the various instruments available within the faculty, in addition to in person training provided by lab technicians. The collection of videos (87 in total) has been made publicly available on YouTube where they can benefit the education and research community at large. To date, the YouTube Channel has over 400 subscribers (without public announcement), and the videos have collectively been viewed over 89,000 times in two years!

### 1.4. Team Members – Please fill in the following table and include students, undergraduate and/or graduate, who participated in your project.

Name	Title/Affiliation	Responsibilities/Roles
Christine Scaman (2015 – 2018)	Associate Dean of Academic, Faculty of Land and Food Systems	Principal investigator of the project, provided consultation and reviewed project proposal, reports and videos.
Judy Chan (2015 – 2016)	Faculty Liaison, Faculty of Land and Food Systems	Provided insights and ideas for the proposed project and provided feedback on the project proposal and reports.
Cyprien Lomas (2015 – 2016)	Assistant Dean of Learning Technologies, Faculty of Land and Food Systems	Provided insights on project directions and initiated ideas for accessibility
Imelda Cheung (2015 – 2016)	FNH Teaching Lab Technician, Faculty of Land and Food Systems	Prepared project proposal and interim reports, supervised students for all work relevant to the project, and summarized survey data and analyzed results.
Duncan McHugh (2015 – 2018)	Digital Media Specialist, Faculty of Land and Food Systems	Provided consultation for media set-up and video editing.
Patricia Hingston (2017 – 2018)	FNH Instructor, Faculty of Land and Food Systems	Prepared interim reports, supervised students on all work relevant to the



		project, and summarized survey data and analyzed results.
Lauren Connerton (2015)	Undergraduate, Food Science	Compiled video list from course syllabus.
Elaine Cheng (2016 – 2017)	Undergraduate, Food Science	Prepared video scripts, set up experimental needs, demonstrated experimental procedures, recorded voice overs, prepared captions for videos
Michael Cui (2016 – 2017)	Undergraduate, Food Science	Prepared scripts, recorded experimental demonstrations, edited videos with voice over, recorded voice overs, compiled screenshots and questions for quizzes, uploaded videos to YouTube channel
Catherine Fu (2017 – 2018)	Undergraduate, Food Science and Nutrition	Prepared scripts, recorded experimental demonstrations, edited videos with voice over, uploaded videos to YouTube channel
Belinda (Pei Ran) Yang (2017-2018)	Undergraduate, Food Science and Nutrition	Prepared scripts, set up experimental needs, demonstrated experimental procedures, recorded voice overs
Amelie Zhang (2018)	Undergraduate, Food Science and Nutrition	Prepared scripts, set up experimental needs, demonstrated experimental procedures, recorded voice overs

**1.5. 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)
FNH 325	001	Since 2016	Fall
FNH 326	001	Since 2017	Winter
FNH 425	001	Since 2016	Fall/Winter
FNH 313	001	Since 2018	Winter
FNH 499	001/101/102	Since 2017	Fall/Winter



**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:
87 instructional videos related to Food Science. The videos are located on the FNH Teaching Lab YouTube Channel	<a href="https://www.youtube.com/channel/UCNKcdm-WFh6CfVnXiAfELtg">https://www.youtube.com/channel/UCNKcdm-WFh6CfVnXiAfELtg</a>
25 Equipment SOPs posted to UBC wiki page	<a href="https://wiki.ubc.ca/Documentation:Standard_Operating_Procedures_(SOPs)">https://wiki.ubc.ca/Documentation:Standard_Operating_Procedures_(SOPs)</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.

Item(s) Not Met:	Reason:

**3. PROJECT IMPACT**

**3.1. Project Impact Areas** – Please select all the areas where your project made an impact.

- Student learning and knowledge
- Student engagement and attitudes
- Instructional team teaching practice and satisfaction
- Student wellbeing, social inclusion
- Awareness and capacity around strategic areas (indigenous, equity and diversity)
- Unit operations and processes
- Other: [please specify]

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



The main goal of this project was to better prepare undergraduate students for their Food Science laboratory sessions, prepare teaching assistants for operating equipment, and prepare Food Science staff and graduate students for operating the various instruments located in our laboratories.

The intended impacts/benefits of this project were as follows:

- Have students complete the lab sessions in a timelier fashion (ie. Within the scheduled class time).
- Decrease the time needed to explain laboratory protocols at the beginning of each session to leave more time at the end of sessions for students to reflect on their results and to ask questions.
- Improve student understanding of the concepts and execution of individual steps of laboratory protocols.
- Enhance student confidence in performing experiments.
- Enhance the confidence of teaching assistants in demonstrating and assisting the laboratory sessions.
- Improve student laboratory techniques and ability to statistically analyze and visually represent data.
- Reduce the amount of time required to train graduate students and visiting scholars on how to use laboratory equipment.
- Standardize training procedures for operating instruments to avoid misuse and/or injury.

**3.3. Were these changes/impacts achieved? How do you know they occurred?** – *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.*

The outcomes of this project exceed our expectations. Many students have commented on the usefulness of the videos for the lab sessions in FNH 325/326. This is also reflected in lab completion times, the quality of data that the students have been obtaining from experiments, and proficiency in which students have been performing statistical analysis on their data. The viewership on the You Tube channel also serves as an objective evaluation tool. The channel currently has over 400 subscribers with some videos reaching over 9000 views already within a year or two. Furthermore, peak viewership time/dates coincide with the time/dates of our weekly laboratory sessions, additionally demonstrating the usefulness of the videos to students.

Other observed benefits from the outcomes of this project include:

- Students from our fourth year research project course (FNH425), as well graduate students, visiting scholars, faculty members and staff alike, have been successfully using the videos to learn how to properly operate and maintain various equipment in our food science labs. This has decreased the levels of stress surrounding using new equipment, decreased the amount of time that our lab technicians need to spend on equipment training, and has helped ensure that our equipment will work properly for years to come.



- Third and fourth year food science undergraduate students have been utilizing the statistical analysis and data representation videos to help them complete assignments and analyze their own laboratory data properly.
- We now have written SOPs for almost all equipment in our food science labs that complement the videos and help remind users how to operate the equipment properly while they are conducting the experiments.
- The course instructor for FNH325/326 recently changed and the laboratory session videos allowed the new instructor to visually observe the flow of the labs prior to the sessions which greatly helped ensure that all labs were completed successfully.
- Most labs in FNH325/326 are now completed within the class time as a result of the reduced lecture time needed to review the lab and the improved understanding of the experimental protocols gained by watching the videos.
- The addition of the laboratory session and statistical analysis videos to our FNH325/326 course has decreased the amount of questions the instructor receives outside of the class period, freeing up additional time for other course-related activities.
- The videos have enhanced the confidence of TAs who are new to FNH325/326 each year, and helped them properly assist students in the laboratory protocols.

Quotes from students and instructors regarding the videos:

“I love the videos. I feel a lot more comfortable using new equipment after watching them.”

– UBC Food Science Student

“The teaching lab videos were instrumental in helping me prepare for each lab, as they clearly and concisely demonstrated how to perform specific experiments and use specific equipment. Especially when it was my first time doing an experiment, the videos were a great learning resource and helped me feel more prepared, confident, and able to safely conduct the experiment, allowing me to learn more effectively from my hands-on experience during the lab.”

– UBC Food Science Instructor

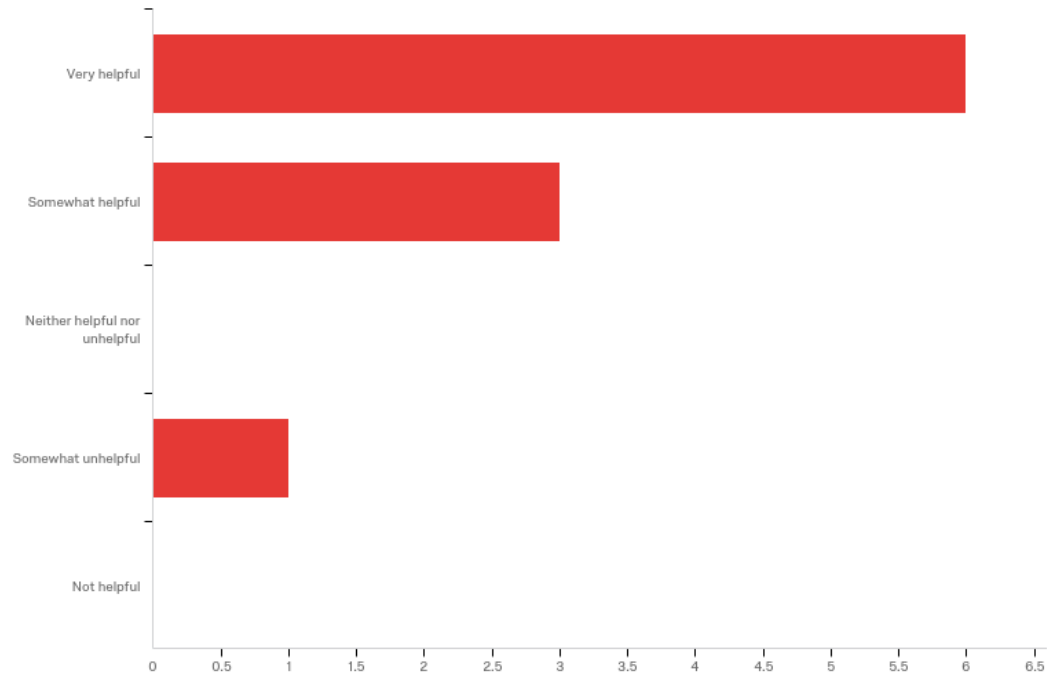
“The calculation videos greatly helped me when I was stuck with certain calculations and analysis”

– UBC Food Science student

“The videos were very clear and straightforward”

– UBC Food Science Student

FNH 325 students were asked on a course feedback survey, to choose one of five descriptions of how helpful they found the FNH Teaching Lab videos. The results from the 10 (out of 22) students who completed the survey, were as follows:



These results demonstrate that the videos are considered very helpful by the majority of students who filled out the survey.

**3.4. 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 results of this video project have been shared at two TLEF Showcases (2017 and 2018), and the posters from these showcases are currently being displayed in our Food, Nutrition, and Health building for students and faculty members alike to observe.

The FNH Teaching Lab YouTube Channel has been shared with fellow Food Science Faculty members from both our undergraduate and Masters degree programs, to share with the students in their courses. The YouTube Channel and UBC wiki page of instrument SOPs will also be advertised in the faculty-wide newsletter (LFS Today) to inform faculty and staff of these available resources that may be useful for their courses and/or research laboratories.

**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?

These videos serve as a platform for students to self-learn important laboratory procedures and equipment SOPs. Instead of arriving at the lab anticipating to learn what to do for the lab, students are instead ready to perform the procedures and as a result achieve better data and are able to focus on perfecting their lab skills as opposed to only learning them. The lab sessions have shifted from focusing on the step-by-step procedures to successfully executing the experiments and learning how technique affects data quality.



Likewise, the lecture time at the beginning of the labs has shortened from 30-60 min to 15-30 min, allowing students more time to practice their skills. Overall, the students are taking home more meaningful laboratory techniques and experience than before and the levels of stress associated with completing the labs has been greatly reduced as a result of being familiar with what to do from watching the videos. While some of our laboratory sessions and equipment may change over time, many of these videos will remain an asset to our faculty for several years to come, especially those demonstrating equipment SOPs, general laboratory techniques such as pipetting, and statistical analyses.

**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?*

Many techniques and equipment SOPs demonstrated in this project are basic, common and well-established. They can always serve as the fundamental footage for someone new to a laboratory environment. Furthermore, the operation procedures for equipment remain highly similar across versions so even if a newer version of the equipment becomes available, the bulk part of the operation procedures will remain similar, with the addition of automated data collection and analysis usually. It is expected that some laboratory sessions in FNH325/326 will be altered over time, requiring further video production and editing. We maintain a hard drive of all of the video files so that they can be edited in the future either by faculty members, students, and/or the Faculty of Land and Food Systems Learning Centre.