



Large TLEF Project Completion Report

Report Completion Date: (YYYY/MM/DD)

1. PROJECT OVERVIEW

1.1. General Information

Project Title:	2013FL1_SCIENCE_PHYS_Bonn		
Principal Investigator:	Doug Bonn		
Project Initiation:	June 2013	Project Completion:	Jan 2016

1.2. Project Summary This proposal will develop a pedagogical framework for using student-produced learning content extensively within FC courses, together with processes to evaluate and curate this content, and trial it in a several sections of large-enrollment introductory courses in Physics (over 1,000 students). Each week approximately 1/6th of the students will each produce a learning object of their choice that pertains to the pre-reading material that is set for the whole class. These learning objects may be artifacts such as a worked example, a clicker question (and explanation), a media-cast or other type of artifact. The students will be supported by a combination of course staff (instructor, TA and recent undergraduate who has taken the course) who will hold an after-hours virtual tutorial. The learning objects that the students produce are submitted through the LMS by the end of the weekly course cycle, and graded by a course TA using a simple rubric (e.g. does not meet / meets / exceeds expectations). Instructors will be able to incorporate the best student produced learning objects into the class sessions that follow their creation, using a Just-In-Time-Teaching approach.

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
Simon Bates	Prof / CTLT / PHAS	Oversaw project deployment
Firas Moosvi	GTA / PHAS	Implemented project and directed TAs, conducted data analysis

1.4. Student Impact - Please fill in the following table with **past**, **current** and **future** courses that have been or will be impacted by your project, including any courses not included in your original proposal. [Note: Adapt this section to the context of your project as necessary].

Course	Section	Enrolment	Term
PHYS 100	101,102,103	~30 (pilot)	2013 W1



PHYS 101	201,202,203	800	2013 W2
PHYS 101	201,202,203	774	2014 W2

2. PRODUCTS AND ACHIEVEMENTS

2.1. Products and Achievements - Please **update** project products and achievements as necessary. Indicate the current location of such products and provide an URL if applicable.

Product(s)/Achievement(s):	Location:
Platform for submitting, rating and curating learning objects, built on the UBC Wordpress installation, used for this project but framework also available for other adoptions.	http://blogs.ubc.ca/phys101/
Approximately 1000 student generated LOs in that system	
Strong interest from Biol 201 Instructor to implement LOs in spring term 2016, but ran out of time to do it. Will try again for Winter 2017	http://blogs.ubc.ca/biol200lo

2.2. Item(s) not Met - Please list intended project products and achievements that were not attained and the reason(s) for this.

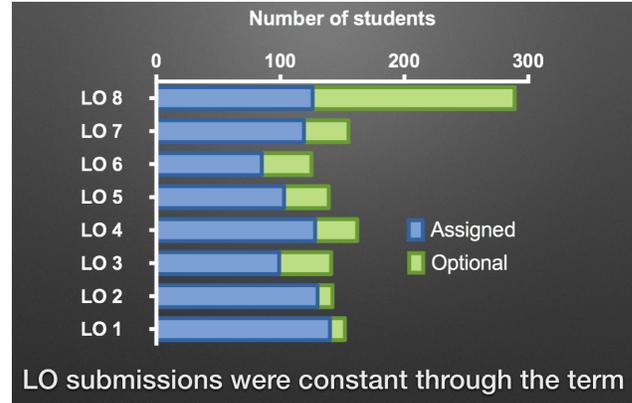
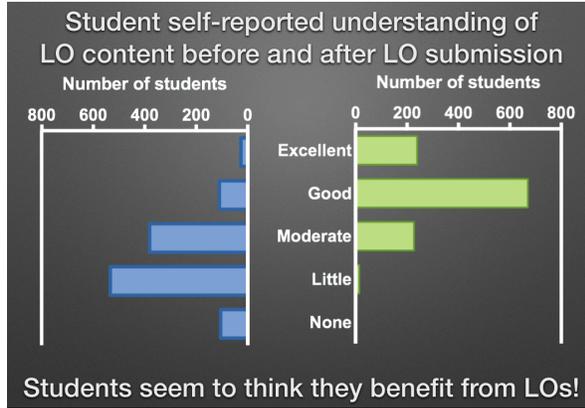
Item(s) Not Met:	Reason:

3. PROJECT EVALUATION

3.1. Project Outcomes - Please list the intended outcomes or benefits of the project for students, TAs and/or instructors.

- Students were allowed the freedom to synthesize their knowledge using any medium they were comfortable with to explain the concept to others, as part of the summative assessment components within the course.
- Other students were exposed to highly creative learning objects with a very high educational value. This offered them a chance to supplement their learning.
- Students received course credit for a highly intellectually stimulating task deployed as an effort based project
- Instructors were able to get deeper insight into which concepts were confusing or challenging for students, and how they decided to clarify their own confusions. Some of that information will be used to support students in future iterations of the course and materials used to revise / refresh courses.

3.2. Findings – Please describe the findings of your project evaluation effort: to what extent were intended project outcomes achieved or not achieved? You are encouraged to include both graphical representations of data as well as scenarios or quotes to represent key themes.



The two main findings from this project were to assess student benefit from learning objects and to assess the quality of the learning objects. The learning objects were assessed based on a rubric and the quality ranged from poor to excellent (well beyond expectations). Using the survey results captured at the point of submission of the LO, we were able to gather data to provide insights into student self-reported benefit derived from undertaking the learning objects assessment. From the data, we can conclude that (a) students were indeed choosing to create learning objects on topics that they initially experienced some difficulties and challenges in understanding and (b) self-reported understanding increased (by approximately 2 standard deviations) after creating the LOs.

3.3. Data Collection and Evaluation Methods - Please describe the data collection strategies used, how the data was analyzed, and perceived limitations. **Note: Please attach copies of data collection tools (e.g., surveys and interview protocols), any additional data or other relevant items.**

Survey data was collected at the submission point for every learning object and the questions are listed below. Because the LOs survey data was self-reported, we expect some bias in the results. Submission activity was calculated by analyzing the form submissions. Participation from students was slightly below expectation (likely because the course weight for each LO was reduced from 2.5% to 1.5%). Quality was much better than expected as students really used the activity to their advantage.

Survey questions:

How did you come up with the idea for your chosen topic and medium (presentation method)?

Will you agree to applying a Creative Commons license (BY-NC-SA 4.0) to your Learning Object?

In total, approximately how much time did you spend creating your LO?

How well do you feel you understand your chosen concept/topic before creating the LO?

How well do you feel you understand your chosen concept/topic after creating the LO?



Do you have any additional comments for us? Feel free to let us know about your experience here as well as any advice you have for improving this exercise next year.

How did you come up with the idea for your chosen topic and medium (presentation method)?

In total, approximately how much time did you spend creating your LO?

3.4. Dissemination – Please provide a list of ***past*** and ***future*** scholarly activities (e.g., publications, presentations, invited talks, etc.) in which you or anyone from your team have or intend to disseminate the outcomes of this project.

- Talk at STLHE 2014, Queen’s University
- Upcoming paper to be submitted to Physics Education Research Conference (PERC) as part of AAPT annual conference meeting.

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 quality of the best learning object submissions over the past two years is such that they can be directly incorporated into course materials (lecture notes, supplementary online resources, and some of them as part of midterm and final exam questions.) There is a sufficient number of these to be able to use a portion each year in rotation.
- Through this project we also gained a lot of insight into the motivation for students to do the assignments that are not midterms or finals, especially when they are given some choice over the nature of the assessment and the medium in which to create it. We can use the research here to guide design for assessment flexibility in other courses

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?

- The learning objects are all stored on the UBC blogs server so sustaining these resources over time should have a very low footprint.
- The largest challenge will be curation if the LO repository is added to. It takes a fair bit of time to separate the best learning objects and while we’ve tagged the LOs so far, as the repository grows, it will require a small amount of on going effort to keep the best ones surfaced.