Large TLEF Project – Final Report

Report Completion Date: (2018/07/31)

1. PROJECT OVERVIEW

1.1. General Information

Project Title:	STUDENT GENERATED ASSESSMENT USING PEERWISE: FOSTERING HIGHER-ORDER LEARNING AND CROWDSOURCING QUESTIONS IN CLINICAL DENTISTRY
Principal Investigator:	HsingChi von Bergmann, PhD
Report Submitted By:	HsingChi von Bergmann, PhD, Associate Professor & Director of Dental Education Research Lab, Faculty of Dentistry
Project Initiation Date:	October 2013	**Project Completion Date:**	July 31, 2015

1.2. Project Summary

We planned to implement and evaluate a peer-generated assessment system in a third-year clinical dentistry course to enhance student participation and learning. Specifically, we will adopt the use of PeerWise, a web-based platform where students create, answer, rate, and critique peer-generated question items in a process known as crowdsourcing. Research has indicated that PeerWise can develop students' learning at the highest level of Bloom's taxonomy by having them create, adapt and critique assessment items in a community of practice (Denny et al., 2008). In 2013, we aim to pilot this system in our DENT 430 Integrated Clinical Care (ICC) module with the expectation of expanding it to other courses in Dentistry in future years. Our goal is to better understand PeerWise's contribution to learning in clinical Dentistry, and to ultimately engage existing international faculty partners to develop a dynamic shared collaborative question repository.

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
Jude Walker, PhD	Post-Doctoral Research Fellow (2011-2014)	Dr. Walker was a project manager who oversaw the implementation and evaluation of the project.
YiDan Zhu, PhD	Post-Doctoral Research Fellow (2018-present)	Dr. Zhu was hired partially overseeing the program evaluation of PeerWise after being scaled up to full program since Fall 2015.
James Everett Richardson, DMD, MET	Clinical Associate Professor	In 2013/2014 the PeerWise was implemented in Dr. Richardson's DENT430 ICC module. It was continued implemented in 2014/2015 and in 2015 onward we scale it up and Dr. Richardson became the Progress Portfolio's module coordinator.

1.4. Student Impact – *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 impacted by your project, including any 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)
DENT 410	n/a	2015/2016	Fall and Winter
DENT 420	n/a	2016/2017	Fall and Winter
DENT 430	n/a	2013/2014; 2017/2018	Fall and Winter
DENT 440	n/a	2018/2019	Fall and Winter

2. PRODUCTS & 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:
All DMD students in the past school years are now required to take part of the PeerWise assignment, which is a part of their Progress Portfolio module in DENT 410, DENT 420, DENT 430, & DENT 440.	https://peerwise.cs.auckland.ac.nz/at/?ubc_ca
Multiple-choice questions generated by the students have been exported to a self-designed database for faculty members to rate, evaluate or choose for their own exam.	
The peer-generated questions have been utilized by various module coordinators to generate either mid-term or final exam questions.	
One intended outcome is for assessment drive learning. After scaling up to be a requirement of all DMD students instead of its initial conception, got implemented in one module/course, we now have data to support the participation of PeerWise and academic performance is positively related.	See appendix for evidence

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:

n/a	

3. PROJECT EVALUATION

3.1. Project Outcomes – *Please list the intended outcomes or <u>benefits of the project</u> for students, TAs and/or instructors.*

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.*

Due to TLEF support allowing us to pilot trial at the ICC Module 2013/2014; we have expanded the project scope to be a required learning task that all students at UBC Dentistry must participate in Fall 2015 when new DMD curriculum being introduced.

As the question bank grows since 2015, there was an increased opportunity to filter for better question examples and suitable degree of difficulty. We had our TST programmer designed a web-base form for all instructors to evaluate and review questions generated by students (Figure 1).
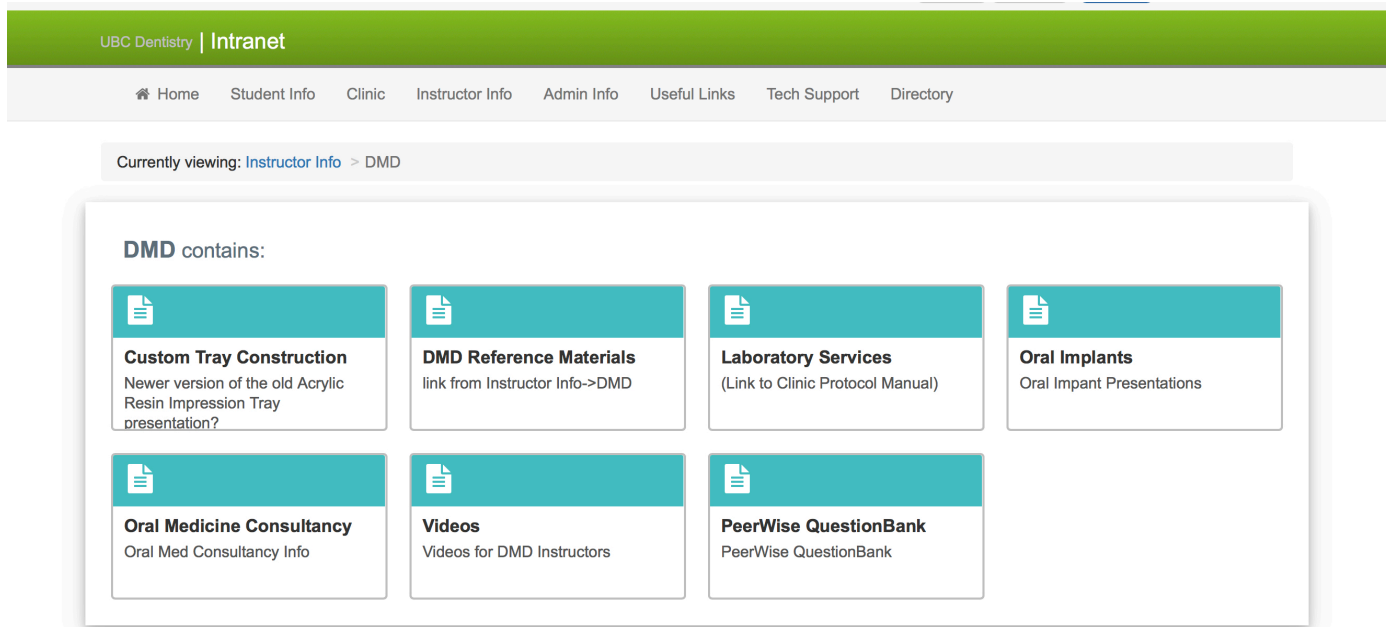
The utilization of PeerWise has been unexpectedly active by all students; students used the platform self-quiz continuously carrying forward to their subsequent year of learning. Students generated more questions that we asked them to generate, and followed their peers who they identified generating good questions.

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) and any additional data or other relevant items.**

PeerWise platform allows us to gather students' participating activity in the form of number of question generated, number of question answered and number of question feedback was provided by a particular student. We use this set of data to compare with mid-term, final learning outcomes.

We also conducted focus group interviews at the end of Winter 2014. Surveys of students were also implemented for program evaluation.

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.*

 The dissemination list is:

Richardson, J., Walker, J., von Bergmann, H. (2013). Dentistry Students Take on PeerWise. CHES (UBC Faculty of Medicine) Celebration of Scholarship.

Best, L., Black, N., Richardson, J., & **von Bergmann, H.** (2016). Building an Innovative, Competency-Based Assessment System to Support a Renewed, Small Group Learning-Based, Spiraled Dental Curriculum at the University of British Columbia. Part of a poster competition held at the 2016 Summer Meeting of American Dental Education Association (ADEA) Commission on Change and Innovation (CCI) in Dental Education in New Orleans, Louisiana, June 7-9, 2016. Awarded the First Prize among 32 teams of North American Dental Schools. http://www.adea.org/Blog.aspx?id=35074&blogid=20741

Richardson, J. (2018) PeerWise Update: Crowdsourcing Questions in Dentistry. ADEA Short Talks

von Bergmann, H., Richardson, J., Zhu, Y., Walker, J. (in preparation). Relationship between PeerWise activities and Dental Students Learning Outcomes. To be submitted to the Journal of Dental Education.

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?*

This is an assessment project where we anticipated students can be benefited from testing theory. The indirect benefit to teaching practices is that we decided that in the new DMD program we can make this learning activity be one component of a small module of the program, Progress Portfolio. Via this module, students have formative assessment opportunities and they learn to use testing to enhance their learning of dentistry.

The indirect benefit to the new DMD curriculum is that it allows the curriculum designers to perform curricular evaluation, checking which of the modules in the DMD curriculum had students spending much time quizzing each other. Such a focused activity could be shared among all module coordinators to allow review of their own module or consideration of informing instructors of the module to act according to the peerwise activity outcomes.

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?*

Due to TLEF support allowing us to pilot trial at the ICC Module 2013/2014; we have expanded the project scope to be a required learning task that all students at UBC Dentistry must participate in Fall 2015 when new DMD curriculum being introduced. We have currently include this in the new curriculum for three years now. In Winter 2019, another review of the effect of PeerWise will be conducted internally to understand whether if the learning outcomes as facilitated by PeerWise activity can help the students perform even better in the National Board Exam.