**Active Learning Opportunities Through Virtual Lab Curricular Integration**

**Interim Report**

**Nov. 19, 2017**

**Summary:**

 The Labster Virtual Labs integration project examines how web-based, 3-D virtual labs can increase opportunities for active learning for students in a variety of biology-related technology-enhanced courses undergraduate courses at U of T. In 2017-2018 a team of five instructors initiated the Labster virtual integration project for their Fall 2017 and Winter 2018 courses.

**Activities and Observations to Date:**

 Online Learning Strategies (OLS) portfolio has collaborated closely with this group of instructors to support Labster virtual labs integration into the courses. OLS is conducting a quality assurance/quality improvement evaluation to glean high-level insights into the opportunities for the use of virtual labs at UofT. The evaluation project encompasses three phases of course redesign, course implementation, and reflection and redesign.

 In the Design Phase, OLS staff met with the instructors three times between May 2017 and September 2017 to clarify how selected Labster virtual labs fit with relevant learning outcomes, course activities, and course assessments. The instructors completed an alignment template in June 2017 and later answered a survey that collected their expected integration goals with regards to students’ learning benefits, and their expected resources and support for successful virtual lab integration. OLS team met with the instructors once more in August to review their final virtual labs integration plans and to provide technical information regarding linking the virtual Labs into Blackboard and setting up students’ access to the selected Labster virtual labs. The instructors also shared their course syllabi from 2016-2017 and 2017-2018 academic years. In this mid-project report, we summarize the insights related to course design considerations in aggregate form.

 In terms of the anticipated positive impact of virtual labs integration into biology-related courses, the instructors indicated these areas of potential impact: depth of understanding (four instructors), motivation and retention (three instructors), and access (two instructors). As for resources needed to successfully integrate virtual labs into their courses, the instructors identified Labster related guides and supporting documents for the students, TA support, and tech support.

 In the design phase, the instructors also agreed to use similar language across all course to introduce Labster virtual labs, and to connect the labs to assessments and other course activities. One instructor also included an additional document with more elaborate information regarding timeline of lab completion and the relevance of labs to a lecture and an in-class lab. Each instructor selected between two to three labs. Grading policy varied as a combination of participation-based with a minimum grade obtained in the virtual labs, used in a pre-lab report, and including lab-related questions in mid-term and final exams. To integrate the virtual labs in to their courses, the instructors have slightly changed their grading policy compared to 2016-2017 academic year.

**Evaluation Update**

 The evaluation project is now in the implementation phase. OLS team met with the instructors in November so that the instructors could share their experience so far with virtual lab integration. No major obstacle or problems regarding students use of the labs were reported in this meeting. The instructors have obtained ethical approval to conduct a study on their students’ experience with Labster virtual labs. Course implementation aligned well with course design across all courses. OLS will schedule a second meeting with the instructors towards the end of the courses when all labs are implemented to collect overall information regarding students’ feedback on virtual labs and instructors’ thoughts on how virtual labs are connected to course mid-term and final exams.

*Report prepared by* *Hedieh Najafi*

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