TLEF Project – Final Report

Report Completion Date: (2018/08/31)

1. PROJECT OVERVIEW

1.1. General Information

<table>
<thead>
<tr>
<th>Project Title:</th>
<th>SoilWeb200: Open Resource for Authentic Student Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal Investigator:</td>
<td>Maja Krzic</td>
</tr>
<tr>
<td>Report Submitted By:</td>
<td>Maja Krzic</td>
</tr>
<tr>
<td>Project Initiation Date:</td>
<td>Apr 1, 2017</td>
</tr>
<tr>
<td>Project Completion Date:</td>
<td>Aug 31, 2018</td>
</tr>
<tr>
<td>Project Type:</td>
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<tr>
<td></td>
<td>☒ Large Transformation</td>
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<tr>
<td></td>
<td>☒ Small Innovation</td>
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<td></td>
<td>☐ Flexible Learning</td>
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<tr>
<td></td>
<td>☐ Other (please specify):</td>
</tr>
</tbody>
</table>

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, learning communities)

☐ Curriculum (e.g. program development/implementation)

☐ 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

SoilWeb200 (http://soilweb200.landfood.ubc.ca/) is an innovative, open access educational resource supporting student learning in 16 UBC courses and 17 courses at universities across the world. It was first developed in 2003 for UBC’s APBI 200 - Introduction to Soil Science course and has undergone several adaptations to keep it current with the latest platforms and responsive technologies. Although use of SoilWeb200 is strong and still growing, we are now at a time where student-generated content can enhance educational resources and more keenly engage students in their learning of a subject. The objective of this project was to enhance use of the SoilWeb200 by embedding open pedagogies (e.g., student-generated Newsfeeds, Wikipedia-based activities) that allow authentic knowledge creation and encourage students to connect course content with real-world applications. This approach enhanced student understanding of the important roles of soil in global issues such as food security, climate change, biodiversity, air and water pollution.

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

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Affiliation</th>
<th>Responsibilities/Roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Julie Wilson</td>
<td>Lecturer</td>
<td>Content development</td>
</tr>
</tbody>
</table>

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).

<table>
<thead>
<tr>
<th>Course</th>
<th>Section</th>
<th>Academic Year</th>
<th>Term (Summer/Fall/Winter)</th>
</tr>
</thead>
<tbody>
<tr>
<td>APBI 200</td>
<td>001, 002 &amp; DE</td>
<td>2017-18</td>
<td>Term 2 &amp; Summer (May)</td>
</tr>
<tr>
<td>APBI 260</td>
<td>001</td>
<td>2018-19</td>
<td>Term 1</td>
</tr>
<tr>
<td>FRST 201</td>
<td>001</td>
<td>2018-19</td>
<td>Term 1</td>
</tr>
<tr>
<td>APBI 100</td>
<td>001</td>
<td>2018-19</td>
<td>Term 1</td>
</tr>
<tr>
<td>APBI 361</td>
<td>001</td>
<td>2018-19</td>
<td>Term 2</td>
</tr>
<tr>
<td>APBI 401 / SOIL 501</td>
<td>001</td>
<td>2018-19</td>
<td>Term 1</td>
</tr>
<tr>
<td>APBI 402 / SOIL 502</td>
<td>001</td>
<td>2018-19</td>
<td>Term 2</td>
</tr>
<tr>
<td>APBI 403 / SOIL 503</td>
<td>001</td>
<td>2018-19</td>
<td>Term 1</td>
</tr>
<tr>
<td>EESC 456</td>
<td>001</td>
<td>2018-19</td>
<td>Term 1</td>
</tr>
<tr>
<td>GEOB 103</td>
<td>001</td>
<td>2018-19</td>
<td>Term 1</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Product(s)/Achievement(s)</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonus assignments</td>
<td><a href="https://wiki.ubc.ca/Course:APBI200/Bonus_Assignments">https://wiki.ubc.ca/Course:APBI200/Bonus_Assignments</a></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Item(s) Not Met</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

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 ________________________________

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.

By creating the technical infrastructure for students to post relevant articles about soil and its importance in a variety of global issues such as biodiversity, food security, ecosystem services, eradicating poverty, climate change and water availability, in addition to production of food, fiber and energy, we provide engaging learning opportunities for UBC students.

Short-term benefits to students:
1) Support and enhance students’ comprehension of material covered in APBI 200 course
2) Integrating online, open-access educational tools such as SoilWeb200 with Wikipedia provided avenues for direct student engagement with the course material.
Sustainable benefits to students:
1) Engagement with authentic knowledge creation as student-generated content posted in the SoilWeb200 also repurposed a number of other, similar soil science educational resources, including linking of the student-generated news feeds to the VSSLR’s Soil 4 Youth resource, which is targeted to high school teachers and students (http://soil4youth.soilweb.ca/soil-in-the-news/); hence, APBI 200 students’ work will also contribute to the learning of high school students.

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.

Evaluation was according quality check-list (shown below) based on eCampus Alberta & UBC’s quality rubrics.

Writing
✓ The level of language used is appropriate for the intended audience.
✓ The writing is free of bias relative to age, culture or ethnicity, gender, and sexual preference.

Technical Standards
✓ The learning resource multimedia has been optimized for size and use with standard computer systems.
✓ Multimedia elements do not exceed minimum hardware/software requirements.

Layout (Visual Design) Standards
✓ The content in a clear, concise, easy to navigate.
✓ A simple, consistent, and accessible structure for navigation is provided.
✓ Learning resource provides learners the opportunity to proceed at their own pace.

Instructional Design and Pedagogy Standards
✓ The learning resource is academically rigorous, relevant, current and has open access.
✓ A variety of instructional strategies are used to ensure compatibility with learners’ learning styles.
✓ The learning resource meets universal design principles.
✓ Information presented in the learning resource is accurate.
✓ Content is presented in a logical sequence based on the learning objectives.

Assessment Standards
✓ Content activates prior knowledge of the learner.
✓ The learning resource provides opportunities for practice and transfer of learning in a variety of ways.
✓ The learning resource provides background information required by the learner for successful understanding of the material covered.
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.

Several dissemination activities (i.e., 11 presentations at national and international conferences and 1 peer-reviewed scientific paper) have been carried out to inform the community of learning about this educational resource.


In addition, this educational resource was also featured in this peer-reviewed paper:

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 overall goal of this project was to enhance student engagement with course materials and their comprehension of a complex subject that builds on the basic principles of chemistry, physics, and biology. This project is part of an ongoing national initiative on innovations of the soil science curriculum, instigated in 2004 with the establishment of the Virtual Soil Science Learning Resources (VSSLR) group ([www.soilweb.ca](http://www.soilweb.ca)) under Dr. Maja Krzic’s leadership. This program has become a focal point for collaborative teaching efforts among scientists, students, and multimedia experts from 11 universities and 4 research institutes across Canada resulting in the development of 20 web-based open access educational tools, 2 online courses, 1 multi-institutional soil classification field course, 1 cross-disciplinary graduate training program, and 17 national and international educational awards.

The whole teaching team of the APBI 200 – Introduction to Soil Science course, which included 2 instructors and 7 Teaching Assistants (TAs), had an opportunity to observe students’ engagement with the bonus assignments that were developed during this project. It was particularly refreshing to observe students’ engagement with news gathering and especially with development of the soil-related memes, which often had humorous content. At the end of the course, TAs voted for the best 3 memes and students who created them were presented with awards in the class. All of this, brought a fun approach to teaching and learning, something that we will definitely continue in the future.

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?

We hope that our ongoing dissemination efforts may spawn similar teaching and learning initiatives, leading to an even greater number of students who would benefit from this project in the long term. In 2014, Dr. Maja Krzic initiated Soil Science Education Committee within the Canadian Society of Soil Science (see [http://csss.ca/education-committee/](http://csss.ca/education-committee/)), which is one of very few such committees in the world. That committee and Canadian Society of Soil Science conference sessions that our team organized in 2017 and 2018 (and is planning to organize in 2019), provided platforms for sharing our findings and will further solidify our team and UBC as leaders in innovations in soil science education.