Engaged Practices Innovation Grant Report

January 2019

Integrating Blended Learning Approaches Into the Rubenstein School Core Curriculum

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Review of the Goals of the Project

The Rubenstein School's primary goal for this project was to increase student engagement by creating blended teaching materials for use in its core curriculum. The core curriculum is the backbone of many teaching and learning efforts in the School, providing an interdisciplinary foundation for undergraduate learners. This project was conceived of as integral part of an ongoing core curriculum revitalization initiative that began in 2015, and is directly linked to a backwards design process that has included detailed curriculum mapping and the development of a rubric-based assessment approach to ensure continual evolution and innovation.

Although the core curriculum consists of eight required courses that are taken sequentially and cut across all academic programs within the School, this project focused primarily on creating blended learning opportunities for the two courses taken concurrently by second-year students, NR103: *Ecology, Ecosystems, and the Environment* and NR104: *Social Processes and the Environment*. We expanded the focus of the project to include the development of learning modules for NR 1 and 2 (*Natural History & Human Ecology*) because of the importance of thoughtfully linking and scaffolding the delivery of content in the first and second years of the core curriculum.

Blended learning is described as the combination of face-to-face learning with asynchronous Internet technology. Faculty, staff, and campus partners worked together to design, develop, and implement distinctive online learning modules that address key content areas of the core curriculum. These modules were intended to provide students and faculty with more innovative, efficient, and effective approaches to teaching and learning, with the specific goals of:

- enhancing effective use of class time
- supporting individualized learning needs in larger class sizes
- integrating engaging online educational approaches
- effectively scaffolding content
- providing continued access to educational content for future use

Description of the Outcomes

Over the course of the project year, we worked on the development of four online

modules (five were originally envisioned):

- 1. Government Module for use in NR 104
- 2. Citation Module for use in NR 103 and NR 2
- 3. Critical Reading Module for use in NR 104
- 4. Excel Module for use in NR 103 and NR 1

We established a working partnership with the Center for Teaching and Learning (CTL) early on in the process to develop effective strategies for effectively aligning the pedagogy and content of the modules with the six competencies associated with our Core Learning Outcomes (CLOs): **CLO1 Communication:** *Students will be able to employ effective speaking, writing, listening, and digital communication techniques.*

CLO2 Teamwork: Students will be able to contribute to collaborative efforts, facilitate contributions of others, and address conflict directly and constructively. **CLO3 Working Across Difference:** Students will be able to critically examine dimensions of difference and apply a nuanced understanding of power and privilege through effective communication.

CLO4 Problem Solving: Students will be able to design, evaluate, and employ appropriate frameworks in order to effect change and generate collaborative solutions to complex problems.

CLO5 Inquiry & Analysis: Students will be able to apply critical thinking skills and employ qualitative and quantitative methodologies in order to formulate questions and evaluate core knowledge areas.

CLO6 Integrative Learning: Students will be able to synthesize and transfer learning to complex situations across disciplinary boundaries through the application of critical reflection skills.

The staff at CTL also provided valuable guidance with integrating the modules into the structure of Blackboard, the virtual learning environment and course management system used extensively throughout the core. We learned how to embed multimedia content into the fabric of Blackboard, and well as develop online quizzes and assignments to assess student learning.

1. Government Module

The purpose of this module was two-fold: to introduce the Vermont State House (and adjacent forest) to students concurrently enrolled in NR 103 and 104, and to provide video-taped interviews of staff from the Vermont Agency of Natural Resources (ANR) discussing how government entities at the local, state, and federal levels interact with one another on environmental policy and regulation. With the assistance of former ANR secretary Deb Markowitz and Michael Snyder, current commissioner of the Department of Forests, Parks, and Recreation, we developed and piloted an integrated field trip to Montpelier to visit both the State House and State House Forest (located just behind). We developed an interactive web site to introduce the history and function of the setting prior to the field trip, and students utilized an online portal to upload data and photos to Blackboard documenting forest ecosystem services as a part of unit on forest policy and economics. Students who could not participate in the weekend field trip had the opportunity to tour the state house and forest virtually using materials provided online.

In terms of interviews with ANR staff, we visited their headquarters at National Life in Montpelier on two occasions with a professional videographer to interview key personnel, including Michael Snyder (Commissioner of Forests, Parks, and Recreation), Billy Coster (Director of Natural Resources Planning), and Carey Hengstenberg (DEC Planning Manager). These interviews were distilled into a 10-

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minute video for use in an asynchronous fashion on Blackboard, allowing for a flipped classroom discussion of Vermont forest policy at the state level.

2. Citation Module

This online module was conceived of by RSENR associate dean Allan Strong, and consisted of a series of three videos highlighting the importance of properly citing sources and respecting UVM's Academic Code of Integrity. The general approach was for Allan and me (Walter Poleman) to role-play three scenarios in which Allan played the professor and I played the student (who learns the hard way about the academic code and proper ways to honor the work of other scholars!). The three videos highlight the following aspects of the UVM Code:

- Students may not plagiarize.
- Students may not fabricate.
- Students may work cooperatively, but not collude.
- Students may not cheat.

The videos were embedded in a Blackboard module that can be linked to any of the course Blackboard sites in the core curriculum. Additional elements of the online module include dedicated links to UVM libraries that have been developed by Laurie Kutner for Rubenstein students, and feature tutorials on how to find and cite a range of published and web-based resources (including images, videos, and maps).

3. Critical Reading Module

Developed by for NR 104 by assistant professor Rachelle Gould, this module consists of three videos emphasizing the wisdom of learning and practicing effective reading habits. Students learn that reading efficiently and with greater engagement will benefit them in many ways, including:

- Getting more out of what they read
- Saving lots of time when revisiting readings
- Having higher-level take-aways

In the first video, students learned the four specific strategies described below for becoming a more engaged reader:

- 1. Preview
 - a. Review before digging in. Skim through the whole document, to understand how long it is, how it is structured, and what headings are coming.
 - b. Understand who wrote this, and why. Consider the author(s), what their affiliations are. What are their motivations for writing this piece?
- 2. Annotate
 - a. Summarize. As you read, take breaks to summarize paragraphs or sections in your own words. The more of your own words you use, the more you will remember.
 - b. Create lists. If authors say "there are three reasons for X," convert that text into a numbered list in the margin.

3. <u>Question</u>

- a. Ask yourself questions about content. Don't just read; think about what you are reading. Does something not make sense? Write a question about it. Do you wonder what comes next? Write a question about it.
- b. Ask about big picture ideas and why statements are made (not details). If the author writes a somewhat long story about a particular situation, ask yourself to articulate the point of the story. Why did the author tell THIS story?

4. Summarize and Reflect

- a. Describe what the article said, in 1-3 sentences. Put this at the top of the document, where you can easily find it again. This helps you synthesize and condense just a few main points from the piece, and will be extremely useful when you revisit this reading later.
- b. Reflect on what you think about what the article said. Internalize the article's message; process it. Do you agree or disagree? Do you think it's interesting? Exciting? Unimpressive?

In the subsequent two videos, one professor narrated an example of reading and note-taking on a book chapter, while another did the same for a peer reviewedarticle.

4. Excel Module

Working effectively with a database is a critical skillset that students in the Rubenstein School must master early on in their academic careers. This module was

designed by the two faculty members that co-teach NR 1 and 2, and focused on phenological indicators associated with climate change. By utilizing an online module embedded in Blackboard, students learned how to enter data into an Excel spreadsheet, how to create presentation-quality charts, and how to interpret timeseries trends from the data they entered.

The centerpiece of the assignment was a detailed Excel tutorial created using Camtasia in which students were prompted to enter detailed climate data (average temperature, annual snowfall, average precipitation) and compare it to specific phenological indicators they were studying in class (number of ideal sugaring days, ice-out dates, length of growing season, annual deer kill, and bloom date of lilac trees). Students then created properly formatted graphs using Excel, and analyzed the relationship between climate data and phenological change.

Assessment of the Impact of the Project

Although we originally intended to assess the effectiveness of the new modules during the Fall 2018, our coordinator of educational assessment and educational innovation (Margaret Burke) took a new position in Seattle during Spring 2018, and we needed to put our planned assessment on hold until a replacement was hired. While this presented an unexpected roadblock in our project timeline, a new staff member has recently been hired, and we now plan to proceed with our original assessment strategy

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during the Spring 2019 semester. Our strategy with involve both direct and indirect assessment:

Direct Assessment

• *Embedded Quizzes*: In each of the modules, students will find a quiz including performance exercises where they will demonstrate their understanding of the content provided. Quiz results can be aggregated to provide input regarding efficacy of modules.

Indirect Assessment

- *Quiz Questions* Each module quiz will incorporate two consistent questions asking, 1) if students utilized the module in its entirety and, 2) if students found this approach to be effective in supporting their learning.
- *"Track Number of Views"* In Blackboard's standard options, instructors will be asked to select the "Track Number of Views" setting. Data on the number of views will be collected to inform if students are accessing the provided materials.
- *Faculty Observations* Following the Spring 2019 implementation, faculty will discuss the integration of modules at the May 2019 Curriculum Symposium.

Current Status of the Project and Future Plans

In addition to assessing each of the new modules during the upcoming semester, we plan to continue develop new online modules for other courses in the core curriculum. We are particularly interested in "hybridizing" the core, and developing modules that feature the environmental and sustainability research of the Rubenstein Faculty. We see this as a promising way of engaging all of our faculty in the delivery of the core.