NUTRITION CASE STUDY

University of Rhode Island

Connect® Nutrition Integrates Seamlessly and Provides Personalization for High Enrollment Classes

A challenge in high enrollment classes is to give students a personalized experience, which led Larson and Missimer to integrate the course's Dietary Assessment Project (DAP) with their learning management system (LMS), D2L Brightspace and *Connect* for their fully online General Nutrition courses.

For the DAP, worth 25% of the students' grades, students record their own food and beverage intake and assess their own consumption of macro- and micro-nutrients. Students compare their personal intake to national recommendations and create suggestions to improve their own dietary and lifestyle quality. Next, students make dietary and lifestyle modifications in their lives to improve their overall well-being and reduce risks for acute and chronic disease.

Integrating the DAP into *Connect* and the University's newly adopted LMS enabled students to receive individualized assessments of their diets and facilitated grading workflows for the instructors.

Digital Product in Use: *Connect®* Nutrition

LMS Integration: D2L Brightspace

Course Name: Nutrition and Food Sciences 207: General Nutrition

Course Type: Online

Credit Hours: 3 Credit Hours

Program in Use: *Wardlaw's Perspectives in Nutrition: A Functional Approach* by Carol Byrd-Bredbenner, second edition

Senior Lecturers: Sarah Larson MS, RD, LDN, and **Clinical Assistant Professor:** Amanda Missimer PhD, RD, LDN

Enrollment: 100 students per section; 4 sections; 750 / year (university total)

Implementation Study Term: Spring 2020 (course 10% *Connect*-based) and Fall 2020 (course 75% *Connect*-based)

The integration was successful – 80% of students in the class earned 80% or higher on each component of the project while assessing the specifics of their own macro- and micronutrient intakes.

A student commented: "The *Connect* quizzes forced me to read the material to find the correct answers, and the Dietary Assessment Project required that I give myself dietary recommendations and research better choices."

Implementation

The course grade is determined by the following:

- 15% *Connect/SmartBook* assignments
- 35% *Connect* quizzes
- 25% Dietary Assessment Project
- 25% Discussions

Students use *SmartBook* to complete *SmartBook* assignments prior to lecture on the assigned chapter's material. Students have unlimited time to complete the assignments, which are graded based on completion, until the due date. One *SmartBook* assignment grade is dropped from the total grade. Students are encouraged to revisit *SmartBook* before taking chapter quizzes.

Prior to the semester, each instructor customizes sections of chapters included in the assignment to align with course content, chooses questions, and assigns point values. Larson and Missimer say, "The number of questions and point values can easily be customized in *Connect* based on instructor preference."

For chapter quizzes, each instructor uses the "Wardlaw's Perspectives of Nutrition" question bank for each chapter's material to build a custom quiz. The built-in question bank provides autograded questions for either one chapter or multiple chapters and the number of questions and point values can be customized easily in *Connect*. Students are given a time limit and

SPOTLIGHT

Institution Profile

The University of Rhode Island, founded in 1892, is located in Kingston, Rhode Island, and offers over 103 Bachelor's Degree Programs and 78 Graduate Degree programs to approximately 15,400 undergraduate students and 2,250 graduate students. Researchers at URI have earned $100.9 million dollars in grants in the areas of health, pharmacy, artificial intelligence, digital forensics, and cyber security.

Course Description

The course provides fundamental concepts of the science of nutrition with application to the individual, community, and world.

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Our biggest and most favorable outcome is that an estimated 750 students had a personalized experience around their own dietary patterns using intelligent response questions, NutritionCalc Plus, Assess My Diet, and other *Connect* tools. These individualized outcomes would be impossible without *Connect*."

– Sarah Larson, Senior Lecturer, Department of Nutrition and Food Sciences, Unv. of Rhode Island

allowed two attempts to complete these quizzes until the due date. Students may drop one quiz. Larson and Missimer say, "Due to the pivot to online teaching, these weekly quizzes have replaced cumulative exams for the Fall 2020 semester."

Students average four assignments and quizzes per week. Grades are automatically exported from *Connect* to the LMS, reducing time required by the instructors to manage student grades.

Example Assignment and Quiz

For Chapter 4: Human Digestion and Absorption, students are asked to read Chapter 4 in the text. The *SmartBook* assignment is opened on Monday at 12:00 a.m. and due Thursday at 11:55 p.m. Students are estimated to need approximately 30 minutes to complete the assignment, although the assignment is not timed and students receive full credit upon completion so long as it is submitted by the due date. Students are then asked to view the associated lecture.

Following review of the provided material and the *SmartBook* assignment, students are asked to post to the class Discussion located in Brightspace and to reply to their classmates.

The Chapter 4 quiz is opened on Monday at 12:00 a.m. and due Sunday at 11:55 p.m. Students are given two attempts to complete the quiz, each attempt lasting 40 minutes, where the highest of the scores is recorded.

In addition, students are working on their DAP throughout the semester where some aspects are submitted through *Connect* and others through the LMS.
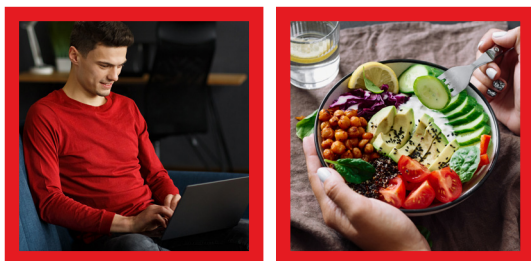
Larson and Missimer state, "Connect/SmartBook allows instructors to quickly move through basic information, such as definition of terms and allows us to dive deeper into critical course content during lecture."

"CONNECT/SMARTBOOK… ALLOWS US TO DIVE DEEPER INTO CRITICAL COURSE CONTENT DURING LECTURE."

Dietary Assessment Project

Larson and Missimer give students an opportunity to become familiar with the NutritionCalc Plus (NCP) by providing low-stakes, autograded assignments built from the Assess My Diet question bank. Students learn how to set up a profile, enter foods, modify portions, and add activity levels ensuring that students will get the most accurate results when entering food and beverage data.

Students record three days of food and beverage intake. After detailed feedback is provided by the teaching team, students answer questions from the Assess My Diet question bank specific to their personal intakes. The Intelligent Response questions prompt students to enter their own intake of a particular nutrient and those questions generate answers based on inputted student data. Larson and Missimer say, "The Intelligent Response questions, along with the autograde feature, further emphasizes the ease of personalization by using these tools."

Students compare their intake of macro- and micro-nutrients to the national recommendations and, to complete the initial dietary assessment, students begin to think of ways to modify their own diet.

The "Set My Goals" questions from the Assess My Diet question bank were adapted to enable students to write two SMART (Specific, Measurable, Achievable, Relevant, and Timely) goals and post the goals to the Discussion in

"STUDENTS COULD CREATE THEIR MOST ACHIEVABLE GOALS."

the LMS for feedback. Larson and Missimer say, "We wanted to foster a sense of community, provide detailed feedback, and give space for encouragement from peers and the teaching team, so that students could create their most achievable goals."

After revising their SMART goals, students implement the dietary changes for a defined period of time and track their progress using a provided tracker. Students reflect on their goals, note any diet modifications, and connect these changes to impacts for their overall long-term health.

For comparison, students complete the same dietary assessment in *Connect* using the Assess My Diet question bank assigned following the initial dietary record so that students can see

which nutrients were increased, decreased, or remained unchanged during the semester.

To complete the project, students answer open-ended questions in the LMS that describe their diet, the impact the project has had on their dietary patterns, and the overall Connection to their own personal health outcomes.

To help monitor students' progress, the teaching team uses the Progress Overview report in *SmartBook*. They also use Assignment Results to see the course as a whole and to identify which students are missing assignments and how many assignments students are missing.

The Student Performance report is used to see when students started an assignment and when students submitted that assignment.

Larson and Missimer agree. "Using *Connect* has significantly decreased grading time for instructors

and graduate teaching assistants. More efficient grading has also increased the outcomes of the quizzes by reducing the amount of time reviewing quizzes, allowing us to make changes to content and to adjust how we can best use *Connect*."
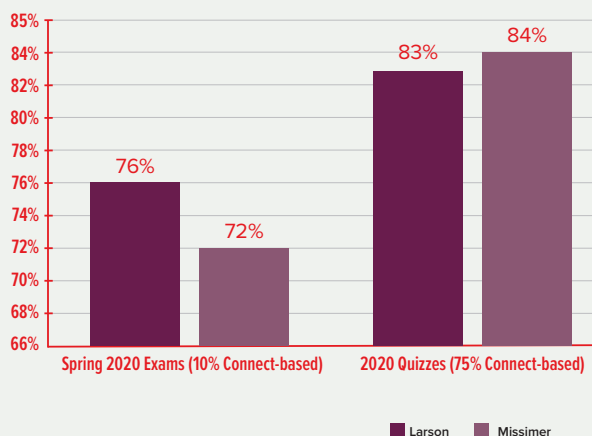
Results Achieved

From the Spring 2020 semester to the Fall 2020 semester, Larson and Missimer made substantial changes to their courses with *Connect* due to the pivot to fully online instruction in light of the COVID-19 pandemic. "We went from 10% of the course in Connect to 75% of the course having Connect-based materials and assignments."

When the course was 10% *Connect*-based, the average exam score consisted of three unit exams and one semi-cumulative final that was created by the instructor and was not Connect-based. Larson's students averaged 76% on exams and Missimer's students averaged 72% (Figure 1).

However, in the Fall 2020, 75% of the course was *Connect*-based. The average quiz score consisted of 13 weekly quizzes, with one quiz that could be dropped. The quizzes were 100% created in *Connect*. Larson's students averaged 83% for their quiz scores, and Missimer's students averaged 84% (Figure 1).

Conclusion

Integrating *Connect* more completely into the course allowed students to have an individualized experience around their own dietary patterns and created an opportunity to engage students person-ally in the course. When the course consisted of 75% of Connect-based content, students improved their assessment scores and 80% of students earned 80% or higher on each part of the Dietary Assessment Project.

Figure 1:
Average Exam / Quiz Scores

	Larson	Missimer
Spring 2020 Exams (10% Connect-based)	76%	72%
2020 Quizzes (75% Connect-based)	83%	84%

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"Students are more attuned to their overall diet due to the Intelligent Response questions in *Connect* regarding what they are eating because the feedback is completely personalized to them. The entire project is about themselves, and they are more engaged with the actual individualized information."

– Amanda Missimer, Clinical Assistant Professor, Department of Nutrition and Food Sciences, Unv. of Rhode Island

Instructor Biography

Sarah Larson earned her BS and MS in Nutrition and Food Science at the University of Rhode Island (URI). Following graduation, she completed her dietetic internship through Brigham and Women's Hospital in Boston, Massachusetts.

Prior to joining the faculty at URI, Sarah worked as an inpatient Clinical Nutrition Specialist at Boston Children's Hospital in Boston, Massachusetts, where she specialized in the nutrition considerations for children undergoing chemotherapy and hematopoietic stem cell transplantation. Sarah then transitioned to an outpatient Registered Dietitian at a large private practice of RDs, Evolution Nutrition, in Rhode Island where she worked with people of all ages, backgrounds, and diagnoses to provide evidence-based nutrition counseling and interventions.

Sarah is a Senior Lecturer and she teaches many courses for the department, including large introductory nutrition courses to first year students across the campus as well as upper-level food science courses to those pursuing degrees in nutrition and dietetics. In addition, Sarah is the Didactic Program in Dietetics Director.

Instructor Biography

Dr. Amanda Missimer began her nutrition studies at The Pennsylvania State University earning a bachelor's degree in Nutritional Sciences and completed her studies at the University of Connecticut. Earning a Masters degree and Doctor of Philosophy degree in Nutritional Sciences, Dr. Missimer graduated and completed her dietetic internship. While finishing at UConn, Dr. Missimer began instructing courses at the University of Rhode Island and Salve Regina University. Dr. Missimer has a joint appointment as a Clinical Assistant Professor in the Department of Nutrition and Food Sciences and Cooperative Extension where she teaches undergraduate and graduate nutrition courses and provides nutrition education to the Rhode Island Community.

Instructor Implementation Goals:

- Integrate a fully online Dietary Assessment Project in coordination with Brightspace, the LMS

- Provide personalized ways to engage students in high enrollment courses

- Reduce time spent grading quizzes

- Increase time for instructors to provide individualized feedback for students

Benefits to Instructor After Using *Connect*

- Individualized learning for the Dietary Assessment Project provided

- Student outcomes during online learning increased

- Grades available to students for more learning opportunities and better outcomes

- Building community among students and the teaching team, which is especially important for online learning