

Title: Inspiring Real-World Knowledge in Principles of Nutrition and Health

Author: Ashley Herda

Summary: An instructor in Health, Sport, and Exercise Sciences reformulates a traditionally lecture-based course to include more focus on application and active learning.

Background:

HSES 330, Principles of Nutrition and Health, is designed to provide undergraduate students with the knowledge and tools they need to maintain a healthy lifestyle. The course provides an introduction to the basic principles of nutrition, with an emphasis on application of these principles to improve overall health. Several sections of this course are taught in a typical semester, with some sections enrolling up to 300 students. Since I teach at KU's Edwards campus, I normally have 20 students in the class. HSES 330 is a required course for students planning to enter some Health, Sport, and Exercise Sciences programs and serves as an elective for other students. The course tends to attract students of all levels and majors, leading to a diversity of backgrounds and perspectives in the classroom. The course I am focusing on in this portfolio was taught in the fall of 2014 and had an enrollment of 16 students.

We cover a range of topics in this course, including guidelines for a balanced diet, index of nutritional quality, energy requirements and balance, weight management and obesity, nutritional quackery, sports nutrition, nutrition for children and the elderly, and eating disorders. My primary objectives for the course are to prompt students to:

- Understand the basic principles of nutrition and nutrition's relationship to physical and mental health, and
- Understand how to apply nutritional concepts to improve personal food choices and eating behaviors.

My course redesign focused on reformulating class sessions to inspire more engaged participation. Because this class can enroll large numbers of students, it has been traditionally taught in a lecture-based format. Though students in these lecture courses typically perform adequately on exams, they get less of a chance to discuss course material and how course principles can be applied to their daily lives. My smaller class size enabled me to implement more interactive activities and guided discussion. Rather than lecturing during class time, I decided to devote in-class time to activities and discussion, with the whole class and in small groups. I also added two written projects (discussed in the Implementation and Student Work sections) that focused on helping students make informed food choices in their daily lives.

By implementing this more interactive course structure, I hoped to see more engaged, critical, and active discussion and debate of important issues related to health and nutrition. I also expected this interactive discussion to inform students' written work in the class, particularly their two major projects. As I teach most of my HSES courses using a similar structure, I wanted to assess the effectiveness of this pedagogical approach in terms of getting students to apply the

knowledge they gain in the course. In my other classes (particularly those for HSES majors), we cover a lot of detailed scientific principles, whereas in HSES 330, I hope students can relate to the big picture *without* getting caught up in the little details. I want my students to be able to relate course concepts to everyday health and lifestyle nutritional choices.

Implementation:

My redesign of the course focused on implementing discussion prompts and activities to inspire critical, engaged discussion and application. Rather than simply lecturing over material presented in the textbook, I chose to focus my classroom presentations on “real-life” applications of the textbook content. I opened each class session by explaining the learning objectives for that particular lesson. This ensured that students knew exactly what I expected of them and allowed them to more easily assess what course material they did and did not understand. Students were encouraged to ask questions, and these questions often initiated lively discussion. Because so much lecture material relied on visual elements (graphs, tables, diagrams, etc.), I used PowerPoint to guide lecture and discussion. Each PowerPoint, along with an audio recording of that day’s lecture and discussion, was then posted to the course Blackboard site so students could easily refer to past lectures when preparing for assignments and exams.

In addition to whole-class discussions, I also incorporated small-group activities into class time. For instance, when we discussed artificial sweeteners, I broke students up into pairs, assigned each pair a different artificial sweetener (Splenda, Truvia, etc.), and asked them to analyze the pros and cons of each. These activities typically went well and led to engaged discussion and debate. Other activities that were implemented to inspire critical engagement and application were a food label analysis project, a recipe analysis project, and group presentations over a fad diet.

For the food label analysis assignment, I asked students to examine a nutritional label on any food item. Students studied the nutritional content and ingredient list, analyzed each ingredient using an online nutrition analysis tool ([My Fitness Pal](#) or the [USDA’s Super Tracker](#)), and drew conclusions about how often this food should be consumed and where it would fit on the FDA’s 2011 Food Plate guidelines. The recipe evaluation worksheet was similar in that it asked students to select a recipe and analyze it using one of the online nutrition analysis tools. In addition, students were challenged to take their knowledge a step further and recreate a healthier version of their recipe.

For the fad diet presentation assignment, I asked groups of two to four students to report on a trending diet of their choosing. Students also planned a seven-day menu that conformed to their chosen diet, including breakfast, lunch, dinner, snacks, and drinks. The presentations ended with a potluck, with each group providing food items that conformed to the guidelines of their fad diet. Students were assessed by how effectively they described the background, guidelines, pros and cons, and challenges of their chosen trend diet.

I also assessed students' understanding of course content through four traditional exams over the textbook material.

Student Work:

Student performance in the course indicated that, in general, most students achieved the intellectual goals I set for the course. Though this was the first time I had taught this course at KU, the final grade distribution was in line with my expectations based on my experience teaching versions of the course at other institutions (see Figure 1). The number of A's is perhaps a bit high for reasons discussed in the Reflection section.

The exam grade distribution remained fairly consistent across all four exams, with the majority of students earning scores in the B and C ranges (see Figure 2). The grade distribution for each exam was not unexpected, as the exams were relatively difficult and focused on the scientific content presented in the course textbook.

However, the grades on the written assignments tended to be higher, with most students receiving A or B grades (see Figure 3). The F's are the result of incomplete work. This suggests that students were more successful with assignments that asked them to apply their nutritional knowledge to the real world than they were with recalling the scientific aspects of the course. These observations, coupled with my students' comments, lead me to believe that students derived more value from these writing assignments than they did from the textbook. Many of these were low-stakes assignments; a few examples are discussed below.

Food Label Analysis Worksheet

This is one example of student work for the food label analysis worksheet. The student received 45 out of 50 points. Though he fulfilled most of the assignment criteria, he received a lower grade because of some factual inaccuracies.

Recipe Evaluation Worksheet

Here are two examples of student work on the recipe evaluation worksheet (Student B and Student C). Both students earned 10 out of 10 points. I believe these students' success on the worksheet demonstrates how effectively they were able to apply their course knowledge to their own lives and eating habits.

Fad Diet Group Project

Overall, my students performed well on their final group presentations over fad diets. Students seemed to enjoy this assignment, and all but one group received 50 out of 50 points.

Juicing Diet

This group received 50 points. Some of their work is illustrated by the recipes they provided. In their presentation, they explained all of the criteria for the diet and how to follow it. They provided many recipes to demonstrate that you can have variation in a week of juicing, as well as many of the challenges in following the diet. I do feel they were "pro" juicing and I disagreed because it is lacking many vital macronutrients, but they effectively justified their position that juicing was an appropriate short-term diet although not a good lifestyle choice.

South Beach Diet

This group also received 50 points. They explained their diet's guidelines, benefits, and challenges in great detail in their paper and presentation and effectively fulfilled all of the criteria presented in the rubric.

Reflections:

Overall, I am pleased with the way I restructured my course. The in-class activities and discussions were lively and animated, and students seemed to achieve the intellectual goals I set out for them. I believe the small size of the class contributed to this. Though 16 students is more than many classes at the Edwards campus typically enroll, it is much smaller than the 300-student HSES 330 sections taught at the Lawrence campus. Students attended class regularly and participated actively in discussion, building off each other's responses. I believe that using in-class time for interactive learning rather than relying solely on lecturing resulted in deeper, more engaged understanding of course content.

Students demonstrated a good understanding of the course concepts during in-class discussions and in their written work. They were excited to complete the assignments and activities (whether or not they involved bringing food). They also indicated on their course evaluations that they learned valuable information that they would use in their future lives, which was my primary goal in the course redesign. The success of this course suggests that smaller classes that emphasize active learning may be an effective alternative to large, lecture-based iterations.

In future offerings of the course, I plan to restructure the extra credit process. As noted previously, the final course grade distribution included more A's than I typically see in the course. Many students boosted their grade significantly with extra credit. During the semester, our campus did a food drive to benefit Meals on Wheels, and I offered extra credit to students who brought in canned goods for the drive. Several students took full advantage of this opportunity. Though I was pleased that Meals on Wheels received so many donations, I will limit the extra credit possibilities in the future to ensure a grade distribution that more accurately reflects the level of student understanding.

I also want to frame the class around students' interests more. I plan to ask them at the beginning of semester what knowledge they want to gain from the class and use their answers to frame course content. I also want to incorporate online Blackboard modules for students who are interested in the biological and anatomical aspects of nutrition. These modules will be optional, but they will serve to prepare the more scientifically minded students for careers in health-related fields.

Finally, I intend to use a different textbook in future course offerings. The primary textbook for the Fall 2014 iteration emphasizes the biological and anatomical aspects of nutrition. Though I believe these aspects are important, especially for students who intend to pursue a career in a health-related field, I do not feel they are as essential to an introductory course as knowing the basic information needed to maintain a healthy lifestyle. I noticed that students sometimes got so caught up in the scientific details that they lost sight of the big picture I wanted them to take from the class. I believe a book written for a more general audience would be more effective in achieving my course goals, as students in health-related programs of study cover the scientific aspects of nutrition in later courses.