

**An Interdisciplinary Project-based Learning Approach in Food Label Design**

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### **Introduction**

Project-based learning (PjBL) provides students with real-world activities where students can view different perspectives, reflect on their learning, and create and take ownership of a final product (Buck Institute for Education, 2016). At the post-secondary level, PjBL can encounter hurdles related to teamwork and time restrictions, but PjBL is often multidisciplinary (BIE, 2016) and can benefit interdisciplinary learning (Ralph, 2015). The combination of PjBL with STEM subjects can be valuable (Ralph, 2015), using PjBL to develop learners also has potential positive implications for the agriculture, food, and natural resources industries, which face complex problems that need multi- and interdisciplinary collaborative approaches (AAAE, 2023). Each fall semester at Kansas State University, agricultural communications design students and food science students collaborate on a food label design project; the professors' intentional are to introduce them to working across disciplines in a real-world scenario. In fall 2023, the two instructors implemented a PjBL approach to this activity by incorporating student reflections, using multiple iterations of student-to-student feedback, and scheduling time for student partners to meet in the food lab. The overall purpose of this innovative teaching approach was to use PjBL to create a multidisciplinary experience for both food science students and agricultural communications design students in the creation of unique food product packaging.

### **How it works**

A food science professor and an agricultural communications professor collaborated to plan the activity, which lasted seven weeks out of a 16-week semester. Students in the agricultural communications design class (n=25) were paired with food science students in a "Research and Development of Food Products" class (n=22). Students in the food science class develop a unique food product in the lab, which needs a unique food label and packaging. First, the food science professor teaches design students basic rules, regulations, and trends in food label design. Design students design a low-stakes practice label to build confidence in their skills and receive feedback. Then, design students are paired with food science students and introduced to the unique food products the food science students are developing. Design students visit the food science students' lab to view and taste the new food product they will be designing a label for. Design students have access to Adobe Creative Cloud, and food science students provide the design students with important information such as the nutrition facts panel, net weight, and ingredients list. Design students provide a draft of their label to the food science students at least twice throughout the project, receive feedback, and make edits. Once finalized, the design students submit their final label for a grade and share the label with their food science partner. The food science students incorporate the food label design into their final project for the Research and Development of Food Products class. To document and summarize student experiences with the project, design students are asked to reflect via journal entries four times throughout the design process. For this study, two authors coded the journal entries to uncover themes. To assess students' experiences working across disciplines with a partner, design, and food science students completed a Likert-scale partner evaluation at the end of the semester.

### **Results and implications**

Journal entry coding revealed themes for pre-project, during the project, and post-project: After design students were made aware of the food label project, but before implementation, their journal entries indicated they were *excited about real-life applications* in building their skills, but

they were primarily *nervous about having to collaborate with another student* (the food science student). Their concerns also revolved around *uncertainty or lack of confidence in their ability to complete the project*. During the project, journal entries from design students indicated a *combination of excitement and nervousness*: excited to learn new design skills and to learn more about food labeling, but the entries also showed concern that the project was “daunting.” After the project was completed, journal entries from design students indicated they *enjoyed the real-world experience*, they *more fully recognized the importance of communication in working with others*, and they shared the realization that *food label design is more complicated than they initially believed*. Table 1 shows students’ partner evaluation results. Most students in each class indicated an overall positive experience working with their partner, while 2-3 students in each class did not have good experiences with their partner. Though this project did not measure changes in communications and collaboration skills, other studies show that interprofessional experience in post-secondary education broadens learning experiences and improves team communication and collaboration skills (Holmes et al., 2020).

**Table 1**

*Design Students and Food Science Students’ Evaluation of Working with Their Partner*

Prompt	Design students (n=23)		Food sci students (n=14)	
	M	SD	M	SD
Responded in a professional and timely manner to communication.	4.09	1.31	4.07	1.49
Helpful in providing the content material needed to create the label/guiding the conceptualization and design process.	4.09	1.24	3.86	1.41
Provided timely feedback that assisted with improving the overall label/ Open to receiving and implementing feedback.	3.91	1.37	4.21	1.42
As the client/designer, I would be willing to work with this designer/client again.	4.15	1.36	4.14	1.41

Note: Five-point Likert scale questions: 1 = strongly disagree to 5 = strongly agree.

#### **Advice to others/Resources needed**

For educators considering a project like this, it will be helpful to understand from the beginning that students will put forth a range of efforts. Educators can adapt the project to align with the specific academic programs and curricular requirements of their institution. Departments offering courses in design, marketing, animal nutrition, or food science can incorporate elements of label design and product development into their classes, allowing students to apply their creative skills in a hands-on setting. For smooth implementation of PjBL projects, educators should emphasize effective communication, coordination, and resource placement. Establishing clear learning objectives, timelines, and assessment criteria can help keep the project aligned with academic goals and student learning objectives. Resources needed to incorporate this project: design student access to design software (already required for this course), a food product to sample in class, and access to a food science program that incorporates product development.

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