Teaching Tips/Notes NACTA Journal

Multimedia Journals: An Innovative Assessment Approach Used in an Upper-level Laboratory Course

Introduction

The Food Ingredient Technology (FIT) course offered at the University of Illinois at Urbana-Champaign (U of I) through the Department of Food Science and Human Nutrition (FSHN) is an upper-level undergraduate/graduate course that serves as an experiential learning space for students to practice applying, analyzing, and evaluating food ingredient technology theory through creating unique experiments and food ingredient communications. Drawing on the published research on multimedia learning approaches (Mayer, 2014) (Mayer, 2021) (Schnotz & Bannert, 2003), I strategically introduced a new multimedia communication assessment, the multimedia journal, into the FIT course.

Procedure

A multimedia journal, as described in the FIT course syllabus (Bohn, 2021), is a journal that utilizes a variety of artistic or communicative media to explain a concept, experience, etc. In alignment with Multimedia Learning Theory (Mayer, 2014) (Mayer, 2021) (Schnotz & Bannert, 2003), providing multiple mediums of expression encourages connection, understanding, and exploration. In the FIT course, student groups create multimedia journals in place of laboratory reports to communicate what they investigated, observed, and concluded from their group-designed laboratory experiments. Each group utilizes a multimedia approach to explain their researched introduction, materials and methods, analyzed results and discussion, and conclusion. Pictures and videos from the laboratory are required in the journal. Groups also connect their laboratory experiential learning to popular media, including blog posts, images, articles, movie or song quotes, YouTube movies, TikToks, etc. Connecting food ingredient technology theory and experiential observations to popular media commentary is important due to the fact that foods and beverages are extremely popular consumer categories that are often appreciated, and scrutinized, by most humans. All humans have an individual, and intimate, relationship with food and beverages, and those relationships drive consumer trends and conversations about food through media outlets. It is important for the food scientist to be aware of what our consumers need and want from the food supply. The overall journal post is evaluated for both accuracy as well as visual appeal.

Three multimedia journals are submitted throughout the semester: one after each Laboratory Exploration Day (LED). LEDs are scheduled after two weeks of industry speaker presentations that are related to one another (e.g., LED #1 is scheduled after the two weeks during which industry speakers present on simple carbohydrates and complex carbohydrates respectively).

During each LED, student groups arrive in the FSHN exploratory instructional kitchens with instructor-approved researched recipes that are varied using the ingredient categories explored during the previous two weeks. Student groups gather qualitative and quantitative data relative to appearance, flavor, and texture changes that result, as well as processing related changes. As noted above, rather than communicating their laboratory observations and reflections via a traditional laboratory report, student groups creatively present their theoretical applications and learnings via a group multimedia journal.

As the multimedia journal is considered an innovative assessment approach for a laboratory course in the U of I's FS curriculum, time is set aside for students to ask questions and provide comments about the assignment after the directions have been presented. After the first semester that multimedia journals were incorporated into the FIT course, example submissions have since been shared with the students in subsequent semesters in an effort to standardize submission expectations relative to both the scientific communication and the creative production evaluation. For example, here is a multimedia journal created about "Lipids in Frying Applications" during the Spring 2018 semester by (Feng, Li, Liu, Lucente, & Stahurski) (permission granted): https://prezi.com/view/dk9T7PXk2Fa7z2hlO9v7/

Evaluation

Rather than utilizing a prescriptive rubric for the assessment, groups meet one-on-one with me after the first multimedia journal is graded. This one-on-one method of feedback is strategic, as it is intended to convey a supportive, and hopefully empathetic, tone when delivering feedback. After the first multimedia journal is graded, however, the two subsequent journals are evaluated using selective assessment tools available in the Canvas Learning Management System (Instructure, Salt Lake City, UT).

Per my experience over the three semesters in which I assigned multimedia journals as a multimedia communication assessment in the Food Ingredient Technology course, I can share the following instructional observations: 1) students exhibited greater scientific excitement during the LEDs, 2) students enjoyed creating inspired multimedia scientific communications to share their learnings, and 3) students engaged with me more frequently and with improved scientific inquiry both inside and outside of class. Prior to utilizing multimedia journals as the assessment for LEDs (i.e., when the LED assessment was a standard laboratory report), students lacked enthusiasm and curiosity during the LEDs. For the former laboratory reports, students tended to gather simplified and sufficient data (i.e., only enough to write an often-mediocre laboratory report). However, in the semesters in which the multimedia journals were expected, students displayed improved attitudes to inquiry, observation, reflection, data collection, and theory-driven connections. During multimedia journal semesters, students were excited about the opportunity to creatively communicate their laboratory explorations, as well as relate their laboratory experiential learnings to popular media (e.g., blog posts, images, articles, movie or song quotes, YouTube movies, TikToks, etc.) to better understand and connect to their future consumers. In addition, students taking FIT during a multimedia journal semester were more engaged with me and each other during regularly scheduled class times, and 100% of the students in all three semesters met with me at least once outside of class to discuss the

connections they observed during their LED applications to the theory that was shared during the industry presentations. An important consideration to note is that it is essential for students to master how to write up field specific laboratory reports as a scientific communication device before considering replacing laboratory reports as an assessment approach throughout a curriculum, and thus, multimedia journals should only be considered, as pointed out, in an upper-level laboratory course.

Submitted by:
Dawn M. Bohn
University of Illinois at Urbana-Champaign
349 Bevier Hall
905 South Goodwin Ave
Urbana, IL 61801
dbrehart@illinois.edu

Key words: Multimedia Journals, Innovative Assessment, Laboratory