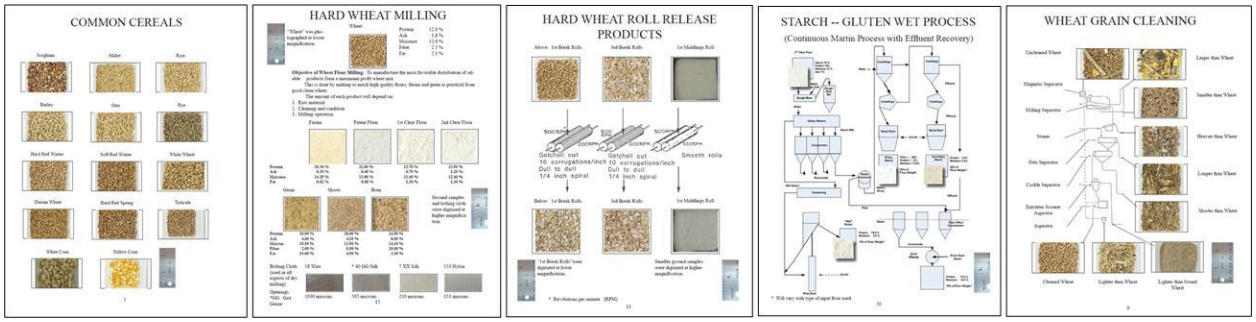
A Grain Science E-Book

A grain science instructor had used a paper-bound book with samples of actual grains in plastic bags stapled into the pages for many semesters. Putting the book together required painstaking human labor to create the bags, staple them in, and make sure the pages of the book were complete. The books were stored in a cabinet and doled out each semester to a small group of students. To save on the labor and other costs, the faculty member commissioned an electronic book. She had a digital camera mounted on a microscope and instructed a graduate student to capture the images of the various grains at several levels of magnification, with digital images of a measure to help learners get a sense of the actual size. Then she had an instructional designer (me) put together the electronic book, which has long replaced the paper one.



Pages from the Grain Science E-Book

Challenge: The instructor still wants learners to get a sense of the grains in a three-dimensional sense. This has not yet been achieved. What are some options she could consider?

What should she do?

A. She should pursue an on-campus grant source for teaching excellence. Then she should have her graduate student do 3D captures of the grains and have them delivered as part of a digital repository that students may access and use to manipulate the images.
B. She should have a separate physical set of grains that can be mailed to students. These are 3D and can be handled in a tactile way.
C. She should use words and other descriptors to give a sense of the physical aspects of these grains. Those combined with 2D images should be sufficient. The three dimensions are not necessary.
D. She should check the open-source world for full 3D captures of the various grains that she's using in her courses.
E. She should partner with another institution of higher learning and collaborate on a digital grain "laboratory" that offers high-resolution images in 2D and 3D, enabling learner immersion in the grain work. Or, she could partner with another department on campus.

Answer: A. This is the simplest solution, but if E. is possible, it should be pursued. B. has already been done and was found to be onerous. C. lacks some of the nuances of 3D perception. D. is a little idealistic. Open-source resources are many, but there are many gaps in terms of online learning.