Using Technology to Assess and Disseminate Curricular Innovation

Tevian Dray
Corinne Manogue
Emily van Zee
Elizabeth Gire
Kerry Browne

Oregon State University
•Department of Physics
•Department of Mathematics
•College of Science
•University Honors College
•Academic Affairs

National Science Foundation
•DUE-9653250, 0231194
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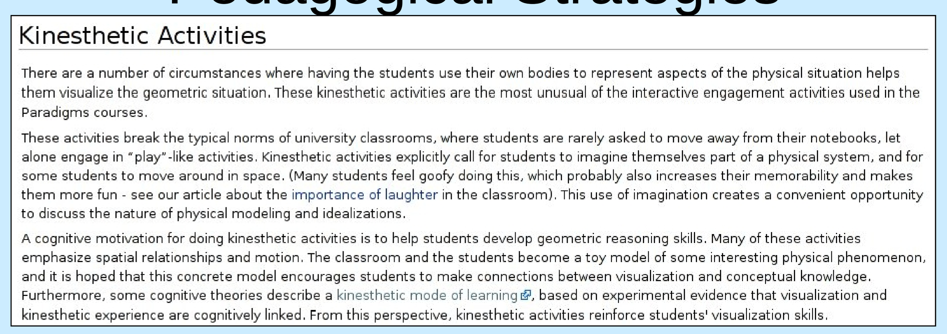
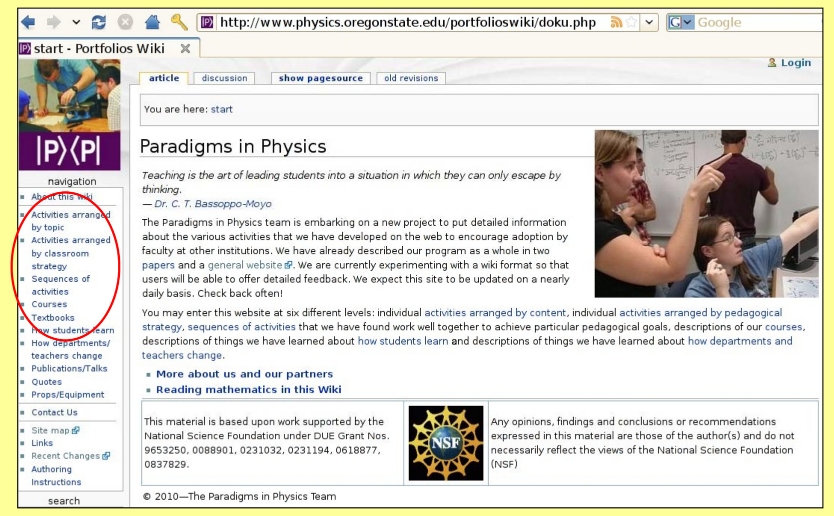
•DUE-0618877, 0837829

Descriptions of Pedagogical Strategies



Faculty may not know how to implement unusual pedagogical strategies. The wiki provides an easy way both to describe the rational and provide tips for different strategies, but also to link to classroom video and detailed narratives of specific examples.

Activities Wiki Homepage

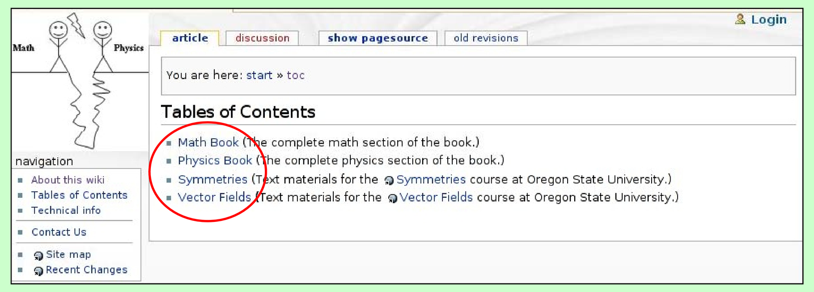


The activities wiki contains descriptions of activities, sequences, and whole courses, including instructor's guides and class materials.

Paradigms in Physics

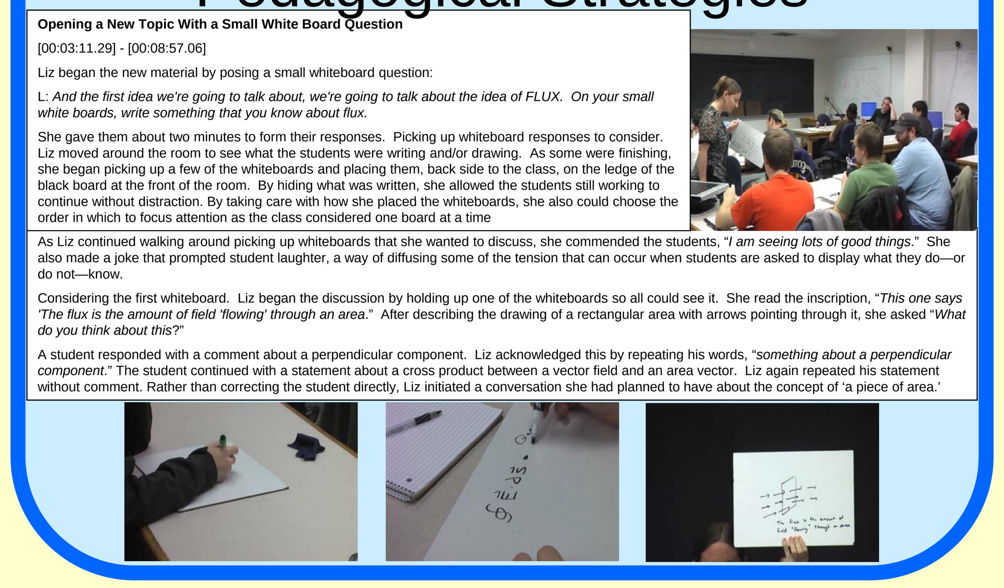
In the Paradigms in Physics Project at Oregon State University we have restructured the upper-division curriculum to be more modern, more flexible, and more inclusive. The content has been reordered to present physics the way professional physicists organize their own expert knowledge. Our pedagogical approaches now include interactive small-group learning, technology-based visualization activities, and project-based classes.

Flexible Tables of Contents

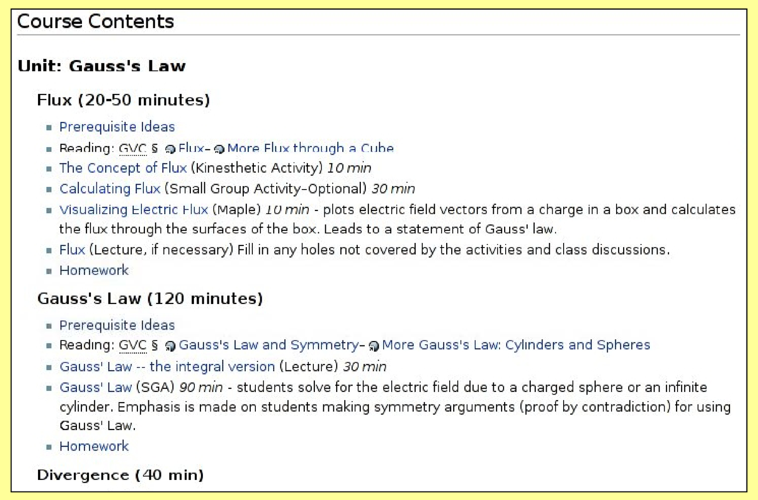


A separate wiki contains a textbook on the geometry of vector calculus with applications to physics. Short, modular sections allow the construction of multiple paths through the material. The wiki will provide sample paths, but instructors are also free to construct their own path by linking content directly to their course home pages.

Narratives Describing Pedagogical Strategies

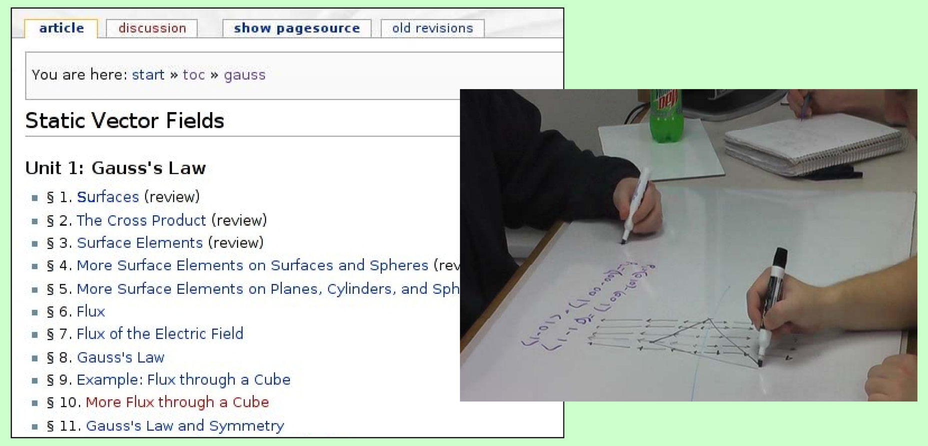


Descriptions of Courses



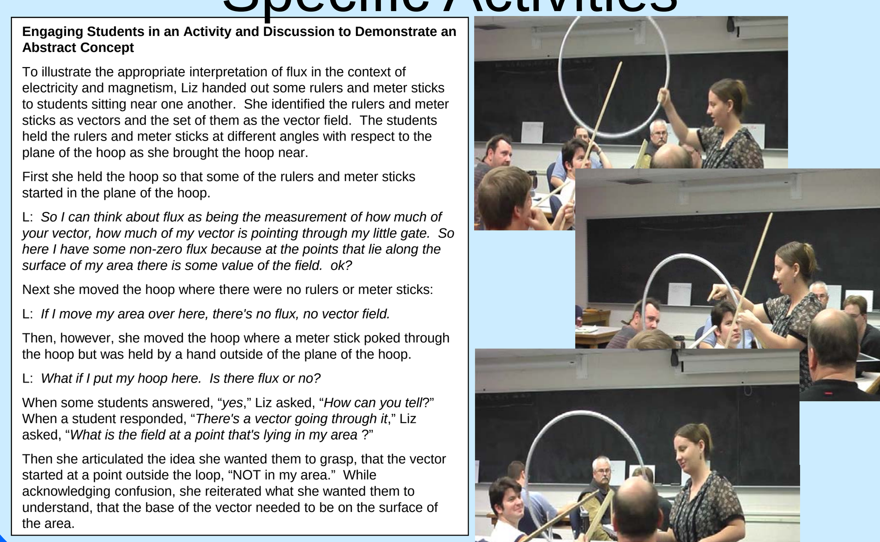
Course descriptions contain links to text materials that can be used as the basis of lecture notes, links to activities, and homework problems.

Blends of Math and Physics

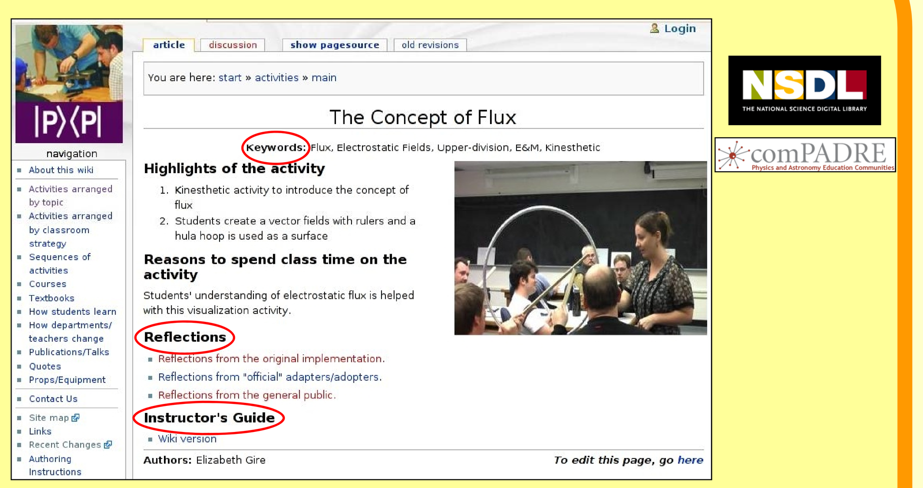


Sample table of contents from a paradigms course at OSU, showing a blend of math and physics topics. Relating math and physics often involves multiple representations, as shown on the right.

Narratives Describing Specific Activities

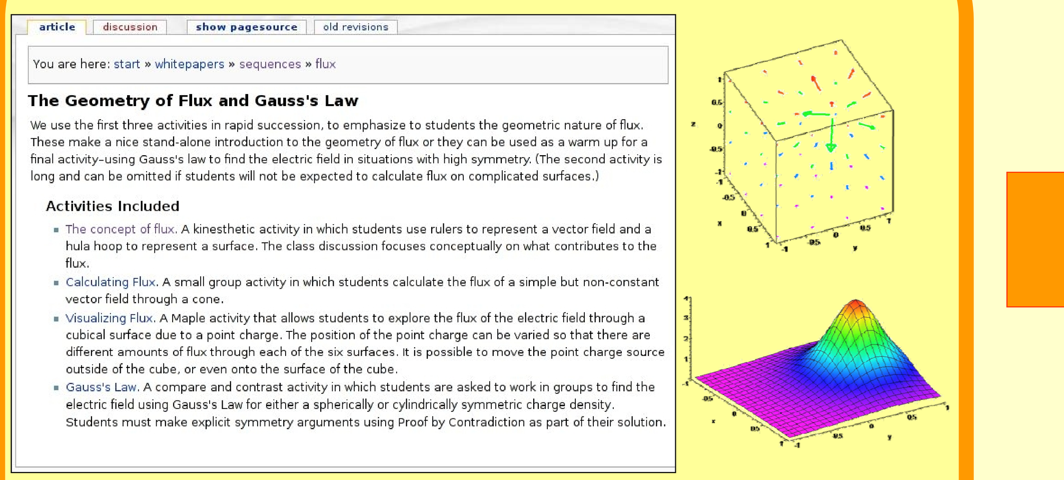


Individual Activity Pages



On individual activity pages, instructors can find links to the student materials, an instructor's guide, and reflections from adopters. Keywords allow our materials to be indexed by the NSDL and Compadre.

Sequences of Activities

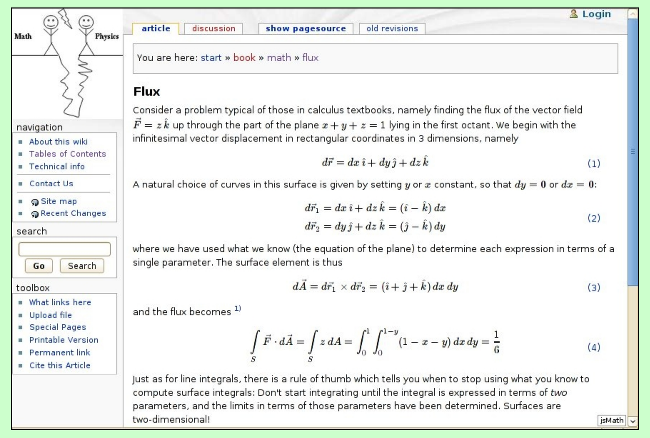


Sequences can include activities with different pedagogical strategies—kinesthetic, group problem-solving, computer visualization, etc.—to demonstrate different aspects of a concept.

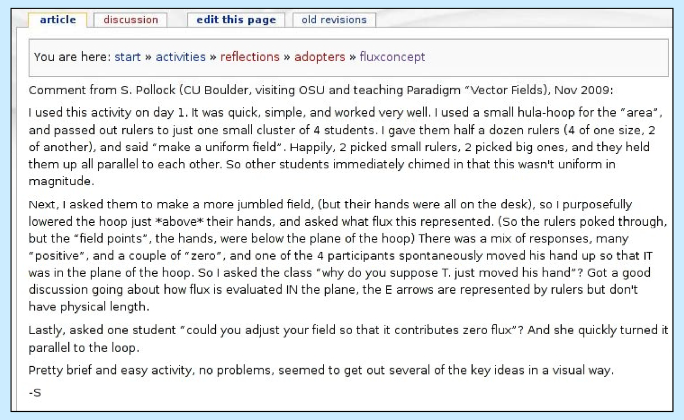
Multiple Levels

We have chosen a level of sophistication appropriate for beginning upper-division students.

In a subsequent project, we intend to add links to material at other levels, both more basic and more advanced.



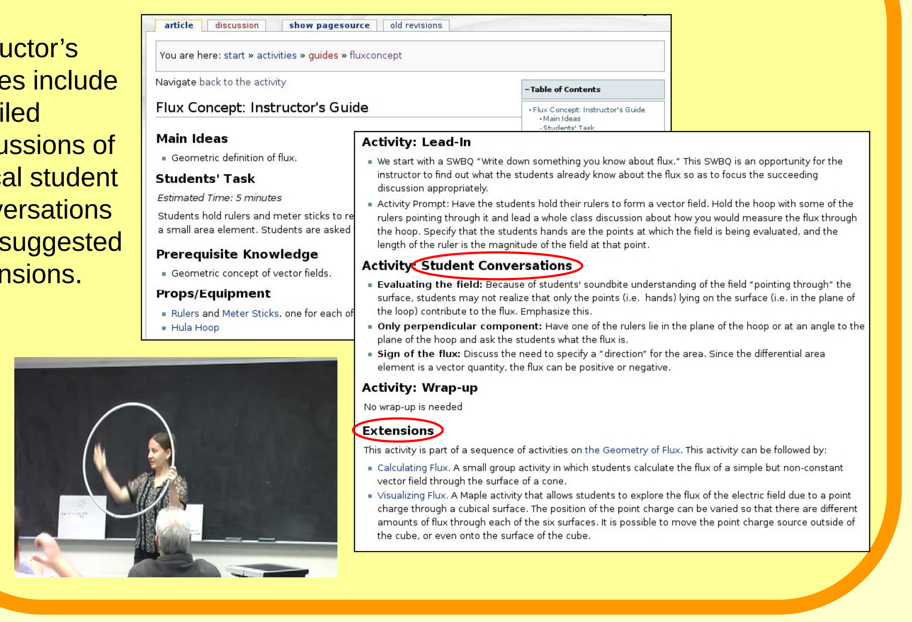
Reflections from Adopters



Adopters can easily post comments on how their adaptations of our activities have worked at their institutions.

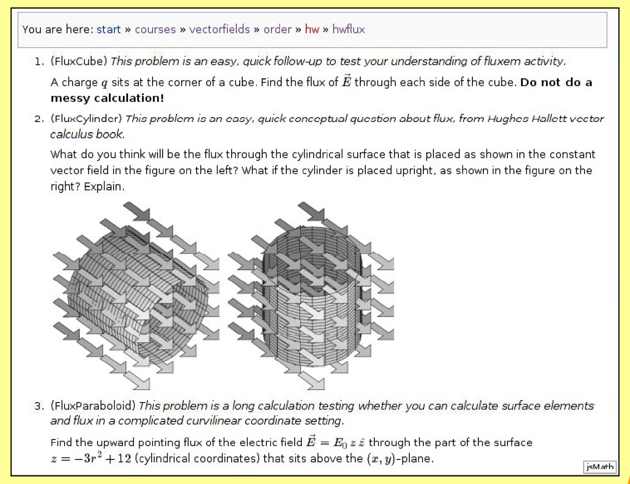
Instructor's Guide

Instructor's guides include detailed discussions of typical student conversations and suggested extensions.

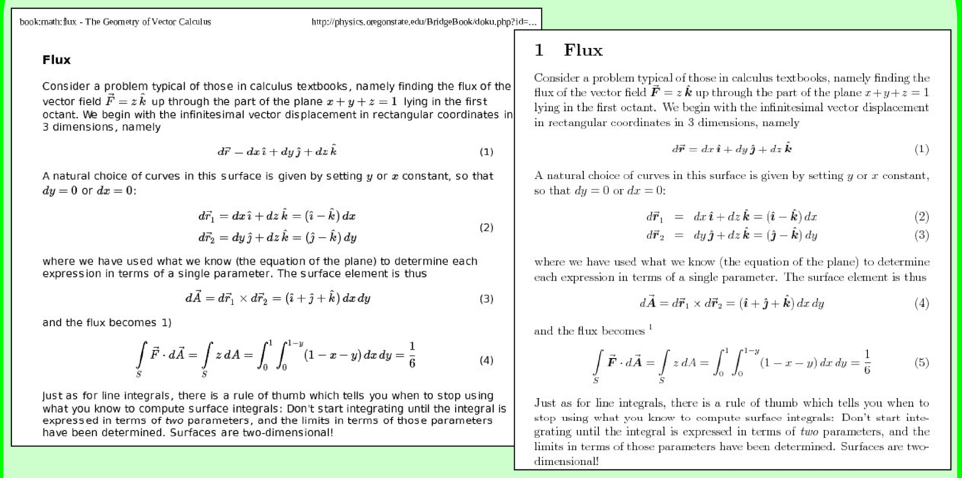


Homework

Instructors can see suggested homework problems directly as links from the Course pages. They can also access a password protected archive with solutions.



Options for Printing



Modules are written in "WikiTeX", allowing online display (previous slide) and a printable version (left) using jsMath, as well as traditional printing (right) using LaTeX and PDF, all from a single source file.