Thursday PM
Group B

1. In the future, what suite of learning resources will you need to teach well and what is the role of the textbook in this suite?

Use of text varies by discipline. Biology – texts contain facts, but faculty members are not a slave to the text (refer to resources online). Everything out of the literature at the higher level. Halliday and Resnick defines physics. For K-12, text needs to be flexible and needs to meet standards (concept map). Need to put information in context. Hard for novice teacher to determine what can/cannot be left out. Some subjects more tiered/structured than others. Earth systems – flexible, can start anywhere. Non-majors course more flexible, get more context. Textbook useful for developing skills, i.e. problem solving. Interdisciplinary course includes concepts from state science standards. Need to generate concepts from facts. Automatic problem generators/checkers; identify concepts that students are missing. Self-renewing databank? Problems that require critical thinking, undefined problem, how do we derive a mathematical expression to explain a phenomena?

2. What will this future textbook look like or what will replace the textbook?

Concept map with links, simulations, real-time data, print plus digital in concert. Portal designed by teacher, customized by individual student. What are students passionate about? Create life-long learners by playing into students' passions.

3. How will these new textbooks be created?

How do students react to content in textbooks? Publishers won't respond because students don't pick textbooks. Need mechanism to get feedback from students. Manuscript small part of text – testers, assessors, people who create interface with web.

Q1: The suite of learning resources should expand to include multimedia, simulations, hands-on minds-on activities, links, etc., but the appropriateness of traditional textbooks is highly discipline- and level-dependent. Textbooks will remain necessary, particularly for classes with inexpert teachers.

Q2: Future textbooks should shrink to concentrate on the services that they provide best: defining the curriculum and delineating foundational concepts and their dependencies. They should be designed on the assumption that they will be bundled with additional materials.

Q3: What we'd like to see, although it will require thought and work on setting up the right incentives and mechanisms for editorial control: Contributed, revised, and organized collaboratively by faculty through WIKI-like mechanisms. [We're excited about WIKI!]

Researchable Question: Can incentives and editorial control mechanisms be developed that will drive the creation of a new generation of more effective collaboratively constructed "textbooks"?

1. What suite of learning resources?
   a. Resources that promote collaboration.
   b. Textbook should integrate with a suite of learning resources and avaible with multiple formats and platform
   c. Learning goals and embedded assessments

2. What will the future textbook look like?
   a. Slim, guidebook
   b. Show overall logical structure of subject. Suggestions re: various pathways depending on the learning goals – different branching
   c. Guide to other resources
   d. Authorable at many different levels.

3. How will these new textbooks be created?
   a. Mixed economy of open source and proprietary.
   b. Created by experts in discipline.

Researchable question: What is the activation energy to effectively use these materials at a large scale? Internal and external validity.

Question: In the future, what suit of learning resources will you need to teach well and what is the role of the textbook in this suite?

- What is a Textbook:
    - Functional Roles of a Textbook:
        - Roadmap that guides someone through the learning experience.
        - Reference document to find information.
        - Continuity of expression.
    - Want some authority that says this is the body of knowledge.
    - Could move away from a "required" textbook into a set of resources.
    - Textbook is too static and does not allow an educator to customize their learning experience.
- Students want an authoritative source of what they have to learn to do well in this course.

What will replace a textbook?

- Experiential learning
    - Can students create knowledge and build collaborative work.
- Need a total package for a course with curriculum, "textbook", tests, answer sets, etc that allow a teacher to adapt and other teachers to find similar interests.

What is the textbook of the future?

- Need to start with some set of documents/curriculum, etc and then allows teachers to adapt
- Having a "branching" structure in the "textbook" that allows it to be more customized and people can adapt different versions of the branding?
- However, then how do you validate that what a teacher selects and evolves is truly a standard.

How will this evolution take place?

- Start with a text book
- Add other content that builds upon the text and moves away from the text book.
- Allow other people to build upon the contributions of the motivated individuals that build this content.
- Alternatively: Have the students create it?

Two Concepts:

- Dynamic/Experiential "textbook"
- Living textbook that adapts and evolves.

Research Questions:

- Does a more interactive "textbook" provide an improved learning experience for students?
- Given a good starting point, will teachers adapt the curriculum to their needs and then make that available.
- Will people then take these derivative works?

Testable Hypothesis
- Start with existing curriculum.
- Create a "living curriculum".
- Find the "early adopters" in different environments. See if they adapt and contribute back.
- Try the adaptation and see if it improves learning.

Group G
Afternoon Questions

1. **In the future, what suite of learning resources will you need to teach well and what is the role of the textbook in this suite?**

Textbook

Detailed teacher guide that provides opportunities fro teacher learning

Klutz-type kits (manipulative) shipped either to teacher and student

Animations to understand, simulations to design, and kits to build

Student notebooks

Assessments

Good quality lectures on the Web to free up time – it is a scary thought but interesting

Online resources for teacher learning: both content and pedagogy. Teacher interactive and multilevel environments is very important. Opportunities for teacher collaboration

2. **What will this future textbook look like or what will replace the textbook?**

Wild ideas

Textbook: Put goggles and white gloves on = virtual reality

Go back in time to listen to Lincoln, go measure shadows to determine the circumference of the Earth

Students write the textbook with wiki type technology, classroom used to organize the knowledge (in a real experiment, way out-performed other geometry students). Drawback: Model of the teacher needs to change and teacher needs to be very knowledgeable and experienced.

Not so wild ideas

Textbook needs to lay out the territory, serve as a resource, searchable

Guide to the major goals, key ideas, and connections

Social, needs to work for groups of people (some group of people need to want to use it)

3. How will these new textbooks be created?

Gerhard Salinger says NSF will pay for it.

These projects are very ambitious. Need to be collaborative. Need to get people to come together around stuff that gets traction.

Need to manage large collaborations of developers.

Testable Hypotheses

Stuff in the classroom doesn't matter. It's the teacher.

What role does the textbook take? Does it need to take a larger role?

By making the textbook include more than text, we can transform it from a teacher's aid to something that motivates student interest and learning.

Can a really good textbook make someone excited to learn a subject?