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Peer Review and Wiki Textbooks: The Good, the Bad, and the Unmeasurable

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Peer Review and Wiki Textbooks: The Good, the Bad, & the Unmeasurable

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Presentation will be uploaded to http://tinyurl.com/SoTL_Commons_wikitext
Outline

- Introduction: Why wiki textbooks?
- The administrative burden
- The process
- Results
- Reflection
- Textbooks of the future
Introduction

- Wikis are one of the premier collaborative spaces on the Web.
  - Editing in place
  - No need to “disseminate” to others

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Why wiki textbooks?

Costs of textbooks ↑ even faster than med. care!

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The claim …

Textbooks cost $900 per year for the average student

Source: Student PIRGs, GAO

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Has your school encouraged you to reduce textbook costs?

A. Yes, in general terms
B. Yes, with a specific plan
C. No/not yet
The Instructor’s Dilemma

- No traditional textbook fits exactly
- It’s all or nothing
- Students complain about paying high prices
- They complain even more if only a few chapters are used in a high-priced book
- They complain even louder when sent hither and yon for materials
- Too many resources, too little time to decide what’s fair to use and what’s illegal....

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Why wiki textbooks?

- Important for students to “take ownership” of learning
  - Need to evaluate different points of view
  - Compatible with constructivism
- No scientific evaluation of textbook effectiveness
  - No comparative studies
  - Even buying textbook doesn’t help ...
  - Contrast that with wiki textbooks, where research exists

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Why wiki textbooks, cont.

- “Writing across the curriculum”
  - Students write for an audience of their peers
  - Feedback helps them improve
  - Other advantages of prompt/peer feedback
Online textbook usage

- Have you ever used an online textbook?
  A. Yes, an online version of a commercial text
  B. Yes, an open-access (but not wiki) text
  C. Yes, an open-access wiki textbook

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Outline

- Introduction: Why wiki textbooks?
- The administrative burden
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The administrative burden

- Students are allowed to choose what they work on
  - Electronic signup gives everyone an equal chance
- Multiple deadlines needed for each project
  - Choose topic, submit, review, resubmit, etc.
  - Students must be reminded
- Data must be presented in one place, & visible in graphical format

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The Solution

- Use peer reviews for guidance.
  1. Have students review teams’ work using a rubric that includes numeric scores.
  2. Allow authors to comment on reviews, using a rubric.
  3. Allow third parties to do metareviews—reviews of reviews to assess the quality of those reviews.
  4. Have teammates review the contributions of each other to the project.

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The Solution, cont.

- Make all of this evidence available to the instructor.
  - Scores, with a precomputed average.
  - Text of each review
- Allow instructor and/or TA to do their own reviews and
  - Average their score in with the student-assigned scores, or
  - Override the student-assigned scores.
- Either way, instructor has copious evidence on each project.
What kind of review do you use?

- Review by course staff (instructor, TA)
- Face-to-face peer review
- Blind peer review (on paper)
- Web-based peer review
- Teammate review
Outline

- Introduction: Why wiki textbooks?
- The administrative burden
- The process
- Results
- Reflection
- Textbooks of the future
The process

1. Sign up for a topic
2. Submit your work
3. Review others’ work
4. Give feedback on your reviews
5. Revise and repeat
6. Metareviews
7. Teammate reviews
Step 1. Signing up

- Every two weeks,
  - students sign up for chapters
- Depending on size of course
  - There are more or fewer topics
    - 2 to 10
  - More or fewer authors allowed to sign up for each topic
    - 2 or 3
- Students encouraged to work in pairs

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Step 1 (cont.). Example signup sheet

![Signup sheet for Wiki textbook A assignment](image)

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Step 2. Submit work

- Students log in and submit their work to Expertiza
  - Upload files
  - Upload links
Step 3. Peer review

- Submissions are peer-reviewed through our Expertiza system.
  - ≈ 5 reviewers give feedback to each team.
  - Teams improve work based on feedback.
  - Reviewers suggest a grade.
    - Instructor/TAs review student recommendations, assign final grades.

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Step 3 (cont.). Choose a submission

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Step 3 (cont.). Students review submissions

- Individuals review team submissions.
  - For each question, they enter a score between 1 and 5.
  - They can also enter a text comment for each question.
Step 3 (cont.). **Students review submissions**

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Step 4. Authors view feedback

- The authoring team can then view this feedback, as shown below.
- Note that in addition to comments on each rubric question, there may be comments on the submission as a whole.
### Step 4. Authors view feedback

#### Score for Wiki textbook before

<table>
<thead>
<tr>
<th>Contributor</th>
<th>Submitted work</th>
<th>Reviewing</th>
<th>Author Feedback</th>
<th>Teammate Review</th>
<th>Final Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average</td>
<td>Range</td>
<td>Average</td>
<td>Range</td>
<td>Average</td>
</tr>
<tr>
<td>Balaji S *Iyangar show submission (2a)</td>
<td>82.86%</td>
<td>71% - 91%</td>
<td>97.50%</td>
<td>95% - 100%</td>
<td>80.00%</td>
</tr>
</tbody>
</table>

**Review 1: hide review**

**Last reviewed:** Wednesday September 28 2011, 03:56PM

**Question 1: Links**

- **Score:** 5 out of 5
- **Response:**

**Question 2: Organization**

- **Score:** 4 out of 5
- **Response:** Could have been more elaborate
Step 4 (cont.). Authors evaluate reviews

- The author can give feedback to reviewers.
  - This uses a rubric similar to the review rubric.
  - Helps insure careful reviews
Step 4 (cont.). Authors evaluate reviews

New Feedback to Reviewer

The reviewer appeared to understand the functionality of my code. It doesn't seem that he understood how the team functionality was supposed to work.

The reviewer appeared to understand the structure of my code.

Hard to tell since reviewer hardly gave any comments.

The comments of the reviewer will be helpful in improving my code.

The tone of the review was respectful.

No problem here.

Additional Comment

The reviewer must read the design document thoroughly and ask questions and I will answer.

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Step 5. Revise and repeat

- There may be several rounds of review.
  - Allows for formative assessment.
Step 6. Metareviews

- Once the review period is over, 3rd parties are asked to evaluate the reviews.
  - These can be instructors or other students (not the reviewer or reviewee).

- The metareviewer is shown the review ...
Step 6 (cont.). Metareviews

- and can view the submission ...

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Step 6 (cont.). Metareviews

- Then the metareviewer can fill out a rubric form.
- Metareviews are based on their own rubrics.
Step 7. Teammate reviews

- At the end of the project period, team members can select each of their team members...
Step 7 (cont.). Teammate reviews

- ... and review them on several criteria.
Viewing results

- Instructor’s grade report shows all scores given to teams.
- Instructor can expand the team to see its members, who has reviewed the team, and the scores they have given.
- Team members’ grades may differ, depending on their grades for reviewing and contribution to the teams.
Summary report for OSS project

Show all teams

<table>
<thead>
<tr>
<th>Team</th>
<th>Submitted work</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>o561</td>
<td>76.67%</td>
<td>72% - 80%</td>
</tr>
<tr>
<td>o562</td>
<td>93.33%</td>
<td>80% - 100%</td>
</tr>
<tr>
<td>o563</td>
<td>100.00%</td>
<td>100% - 100%</td>
</tr>
<tr>
<td>o564</td>
<td>96.00%</td>
<td>92% - 100%</td>
</tr>
<tr>
<td>o565</td>
<td>97.33%</td>
<td>95% - 100%</td>
</tr>
<tr>
<td>o566</td>
<td>100.00%</td>
<td>100% - 100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contributor</th>
<th>Submitted work</th>
<th>Reviewing</th>
<th>Author Feedback</th>
<th>Final Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simpson, William</td>
<td>100.00%</td>
<td>100% - 100%</td>
<td>93.33% show author feedbacks</td>
<td>100.00% edit score</td>
</tr>
<tr>
<td>Vinson, Mary Susan</td>
<td>100.00%</td>
<td>77.50% show metareviews</td>
<td>100% - 100%</td>
<td>95.50% edit score</td>
</tr>
</tbody>
</table>

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Interested?

- Please sign my signup sheet ...
- Feedback
  
  http://tinyurl.com/expertiza-form
Outline

- Introduction: Why wiki textbooks?
- The administrative burden
- The process
- Results
- Reflection
- Textbooks of the future
Lessons learned

- Students need guidance on organization
- Helpful, at the start, to direct students to useful sources.

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Lessons learned

- Signup sheet is very useful
  - The only reliable way to manage topics in a large class.
  - Tells reviewer if author wrote on correct topic
- Students need e-mail reminders to stay on track
  - Otherwise, there are too many deadlines to remember
  - This may contribute to “too much rating for this course.”

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## Survey results — contributions

<table>
<thead>
<tr>
<th>Question</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>I had trouble understanding what was expected of me in writing a textbook chapter.</td>
<td>2.63</td>
<td>2.05</td>
<td>2.20</td>
</tr>
<tr>
<td>I put a lot of effort into writing my articles for the wiki textbook.</td>
<td>4.13</td>
<td>4.07</td>
<td>4.23</td>
</tr>
<tr>
<td>The material I read in order to write my chapter gave me new insight into the topic I was writing on.</td>
<td>4.20</td>
<td>4.10</td>
<td>4.45</td>
</tr>
<tr>
<td>The textbook articles I wrote are credible entries for a graduate textbook.</td>
<td>3.80</td>
<td>3.78</td>
<td>4.11</td>
</tr>
<tr>
<td>I am proud of my contributions to the wiki textbook.</td>
<td>4.11</td>
<td>3.97</td>
<td>4.31</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Question</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having students write a textbook supplement for a course like ECE/CSC 517 is a good idea.</td>
<td>3.80</td>
<td>3.71</td>
<td>4.11</td>
</tr>
<tr>
<td>I clearly understood what was expected of me in reviewing a textbook chapter.</td>
<td>3.73</td>
<td>4.04</td>
<td>4.21</td>
</tr>
<tr>
<td>The chapters I read that were authored by other students gave me new insight into the material they covered.</td>
<td>3.71</td>
<td>3.74</td>
<td>4.12</td>
</tr>
<tr>
<td>The reviews I received helped me to improve my work.</td>
<td>3.49</td>
<td>3.83</td>
<td>3.76</td>
</tr>
<tr>
<td>The scores assigned by the reviewers were fair.</td>
<td>3.30</td>
<td>3.44</td>
<td>3.76</td>
</tr>
</tbody>
</table>

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Survey results — software

<table>
<thead>
<tr>
<th>Question</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>There was too much rating required for this class.</td>
<td>3.75</td>
<td>3.88</td>
<td>3.72</td>
</tr>
<tr>
<td>I had trouble determining how to carry out the assigned activities in Expertiza.</td>
<td>3.04</td>
<td>2.66</td>
<td>2.49</td>
</tr>
</tbody>
</table>

- Only the first question above received an unfavorable average response.
  - We’ve cut down on the amount of review in that class.

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Another view of results

... % agreeing (A, SA) with each statement

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Negatively phrased questions …

1. I had trouble understanding what was expected of me in writing a textbook chapter.

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Negatively phrased questions ...

18. There was too much rating required for this class.
Negatively phrased questions …

19. I had trouble determining how to carry out the assigned activities in Expertiza.
2. I put a lot of effort into writing my articles for the wiki textbook.
3. The material I read in order to write my chapter gave me new insight into the topic I was writing on.

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Constant improvement …

4. The textbook articles I wrote are credible entries for a graduate textbook

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7. I clearly understood what was expected of me in reviewing a textbook chapter.

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8. The chapters I read that were authored by other students gave me new insight into the material they covered.
Altogether, 9 of the 19 questions showed constant improvement.
Why the improvement?

- Later cohorts mostly started with existing pages
  - Could *enhance* them, rather than *creating* them.

- Better rubric
  - More detailed criteria, but
  - Less textual feedback
Outline

- Introduction: Why wiki textbooks?
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- Textbooks of the future
What we didn’t measure

- Learning gains ...
  - Students are writing, reading on different topics

- Value added each semester
  - Do our improving results mean that students are learning more, or that they are working with better materials?

- Quality of text
  - Only students assess ...

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Outline

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Commercial textbooks: a broken model

- Publisher needs to recoup costs
  - Print books: “sticker prices”
  - Printing is a small part of the cost
  - Fewer students pay full price,
    - So cost needs to be recouped from fewer students
      - \( \rightarrow \) vicious circle
  - Cost needs to be recouped before secondary market develops
  - Publishers would prefer to sell a “product” to all students at ¼ the “sticker price.”

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Solutions to textbook crisis

- Different ways of paying
- Different ways of creating
- Avoiding textbooks altogether

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Open content, open supplements

- Open-textbook movement
  - Embedded content

- Ancillary resources
  - Lecture slides
  - Testing engine
  - Videos
  - Worked-out examples
  - Test bank/homework problems

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Textbooks of the future

- STEMWiki project
Summary

- A wiki is an excellent medium for collaborative writing.
- With appropriate software support, a class can engage collaboratively in a large project.
- Students see the benefits of the approach.
- Some evidence that benefits build with repeated use.
- Opens the door to fully featured, less expensive textbooks.

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