SLAM Lecture Series

Investigating the Effect of Online Collaboration on Team Participation in Engineering Design Projects

Implemented in ENGIN 100, “Introduction to Engineering”

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Program in Technical Communication
University of Michigan College of Engineering
November 1, 2013
Many thanks to...

- Laura Alford, Roger DeRoo, Rod Johnson, Stephanie Sheffield, Julie Young
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- Erping Zhu and the Teaching with Technology Institute, also through CRLT
- Patrick and Robin Dickson
“Introduction to Engineering”

Team-taught

Team-based

Design, Build, Test

Communicate
“ONR needs a remote-operated vehicle to investigate sub-glacial life at the Ross Ice Shelf in Antarctica.”

“Oor, Dean, & Airy Products wants to investigate the feasibility of using provided motors in a mass-produced small-scale wind generator for home mounting.”
Pedagogical Challenges

• Some students heard, others aren’t.
• Decisions made w/o appropriate consideration.
Pedagogical Challenges

- Some students heard, others aren’t.
- Decisions made w/o appropriate consideration.

Participation might be “better” in electronic space: Decreased social presence, relaxed synchronicity, and text-based conversation...
Google Drawing Tool

• Single Google Doc per team
• Students access, “sketch,” and comment/critique
  – Chat
  – Comments
  – On page
Brief methods

• Teams assigned to meet online or F2F
• 232 students on 54 teams (of ~4-5)
  – 65 women
  – 31 non-native speakers of English
• 158 Ss (37 teams) met online; 73 (17 teams) met f2f
• Online survey to measure perceived participation, satisfaction
Brief methods

• Teams assigned to meet online or F2F
• 232 students on 54 teams (of ~4-5)
  – 65 women
  – 31 non-native speakers of English
• 158 Ss (37 teams) met online; 73 (17 teams) met f2f
• Online survey to measure perceived participation, satisfaction

• Transcripts separated into t-units
• Each participant assigned a “standardized participation score”
• T-units further analyzed according to rhetorical function and object-of-discussion
There is a lot of data here.

- 54 transcripts (qualitative data) with actual student conversations.
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- 7590 t-units, each coded for rhetorical function and item-of-discussion.
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- 232 speakers, with demographic and survey info as well as number t-units, standardized participation, and those additional codings.
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- 54 transcripts (qualitative data) with actual student conversations.
- 7590 t-units, each coded for rhetorical function and item-of-discussion.
- 232 speakers, with demographic and survey info as well as number t-units, standardized participation, and those additional codings.
- 54 teams, with varying distributions of talk as well as distributions of additional codings.
4 Research Questions

• How does condition affect overall participation?
• How does condition affect patterns of participation?
• How does condition affect participation of women?
• How does condition affect participation of non-native speakers of English?
RQ1: Participation seems to scale with group size in the online, but not the F2F, condition.

<table>
<thead>
<tr>
<th># of speakers</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online</td>
<td>143.21</td>
<td>170.63</td>
<td>209</td>
</tr>
<tr>
<td>F2F</td>
<td>137.58</td>
<td>139.00</td>
<td></td>
</tr>
</tbody>
</table>

- No main effects of group size or condition.
- Interaction is marginally significant (p=.078)
RQ2: Condition affects distribution of participation: Fewer extremes online.
RQ2: How does condition affect distribution of participation?

- Standard deviation and range of individual participants’ scores computed, compared via t-test.
- Both significantly different ($p<.001$).

<table>
<thead>
<tr>
<th></th>
<th>Range</th>
<th>StDev</th>
</tr>
</thead>
<tbody>
<tr>
<td>online</td>
<td>16.49</td>
<td>7.15</td>
</tr>
<tr>
<td>F2F</td>
<td>32.76</td>
<td>14.24</td>
</tr>
</tbody>
</table>
RQ3: The online condition doesn’t increase mean participation by women.

- No main effects of gender or condition or interaction of gender x condition.

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>online</td>
<td>0.98</td>
<td>1.05</td>
</tr>
<tr>
<td>F2F</td>
<td>1.02</td>
<td>0.96</td>
</tr>
</tbody>
</table>
RQ3: But it does affect the pattern: Fewer extremes online.
RQ4: The online condition increases participation by NNS.

- No main effects of language or condition.
- Interaction is significant: NNSs play a bigger role in online condition than they do F2F ($p = .005$).

<table>
<thead>
<tr>
<th></th>
<th>Native E.</th>
<th>NNS</th>
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<tbody>
<tr>
<td>online</td>
<td>1.00</td>
<td>1.02</td>
</tr>
<tr>
<td>F2F</td>
<td>1.03</td>
<td>0.64</td>
</tr>
</tbody>
</table>
Limitations

- T-units aren’t meaningful chunks
- Native speaker status treated as categorical
Pedagogical Implication: Multiple advantages to moving team conversations online

- Fewer cases of low participation
- Fewer cases of team domination
- More opportunity for members of large teams to participate
- “Window” into team thinking
Next steps:
Analysis based on rhetorical codes and topics
Qualitative analysis of transcripts?
Interviews with participants?
Other ideas?

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The Revision Project: Making and Measuring

Christine Modey
Student Learning and Analytics at Michigan
November 1, 2013
The Revision Project
Article of Faith

Feedback to students on their writing is best provided by a human reader, not by a machine.
Learning Objects

- Tools for writing
- Online handbooks or textbooks
- Handouts
- Grammar drills

Many fail to take advantage of the online environment.
Online Learning Environment

• Multimodal
• Interactive
• Learner centered
• Social
Question

How can we harness the power of an online learning environment to help student writers work on significant writing issues?
REVISION

Significant Writing Issue
Revision

I look for weak or unnecessary sentences and try to fix them, as well as attempt to find grammatical errors within my paper.

I rephrase sentences along with adding and deleting them.

I look for grammatical errors and change them, and I look to see if my draft is organized well. If it is not, I switch sentences or ideas in a section to a paragraph where they would fit better.
Goals

• Harness peer-to-peer learning.
• Use new media, and even some aspects of social media, to encourage reflection and interaction.
• To create a resource that can be adapted to classrooms and students.
• To create a resource that stands alone.
About the Revision Project

Great pieces of writing emerge in the process of revision.

One true thing about revision is this: it's an awful lot of work. In fact, it's so much work that many writers, especially new writers, often avoid it.

Revision requires the ability to look at your own work objectively, to assess its strengths and weaknesses, to shrewdly identify where the piece has gone wrong and what you must do to fix it, to consider and incorporate the feedback of others without allowing it to overwhelm your own sense of purpose.

Above all, effective revision requires taking ownership of your writing and rewriting it, not so much to fit a rubric or to please a teacher but to fulfill your own vision for the piece.
Videos

How should I manage my time? | The Revision Project

After viewing the videos on this page, please answer the following question:
Polls

How can I use sources as I develop my ideas?

Sources—the ideas and arguments of other writers—can sometimes feel unwieldy during the revision process. You might find yourself wondering how to incorporate other writers’ voices effectively, why you need to include their voices to begin with, or how to strike a balance between your voice and the voices of other writers. Zeinab talked to us at length about how the research process takes a good deal of time, and that a lot of this time gets devoted to synthesizing and collecting the ideas of others who have made their own arguments on your topic.

As you listen to Zeinab, ask yourself:

• What does she mean when she talks about synthesizing sources? What might that look like in a research paper? How do you know when you’re synthesizing versus summarizing?
• How much time does Zeinab usually allow for revision? How might this change depending...
AFTER watching this video, ask yourself: What point does Zeinab make about the role of professors’ comments? Why is so many students’ “first instinct” to look at comments from the professor, and what is the danger in this approach according to Zeinab?

What are some things you can do to get good feedback from readers? (required)
Teaching Resources

http://melodevisionproject.wordpress.com/for-teachers/teaching-ideas/

What are the strengths of their mutual processes? What are the potential weaknesses?
- Gather the student sample papers from the Student Examples page of this site. In groups, have students analyze the changes one writer made and assess whether these changes were good ones. Then ask students to examine their own papers for changes and compare their revising process to the students featured here.

And finally, a few detailed lesson plans / handouts / assignments for you to adopt and adapt — we ask only that you also attribute!

Lesson Plan 1 Materials: Exploring our Revision Processes

- Lesson Plan
- Mike's First Draft
- Mike's Final Draft
- Narrative Argument Assignment

Lesson Plan 2 Materials: Considering Professional Writers' Revision Processes

Be the first to like this.

THOUGHTS ON "TEACHING IDEAS"

Pingback: The Revision Project: A Summer of Digital Drafting — Digital Rhetoric Collaborative
Measuring: Views and Visitors

October 30, 2013, 2:39 am

Today
1 Visitor
12 Views

Best ever
95 views

All time
2,900 views
2 comments

Lines and Bars: Views and Visitors over time (October 2012 to October 2013)
Measuring: Countries of Origin

<table>
<thead>
<tr>
<th>Country</th>
<th>Views</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
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<td>United Kingdom</td>
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<td>Canada</td>
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<td>India</td>
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<td>Australia</td>
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<td>Ireland</td>
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<td>Pakistan</td>
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<td>Turkey</td>
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<td>New Zealand</td>
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<td>Nigeria</td>
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<td>Germany</td>
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<td>United Arab Emirates</td>
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<td>Singapore</td>
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<td>South Africa</td>
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<td>Philippines</td>
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<td>Slovakia</td>
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<td>Spain</td>
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<tr>
<td>Uganda</td>
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<td>Egypt</td>
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<td>Romania</td>
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<tr>
<td>Thailand</td>
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</tr>
</tbody>
</table>

[Map showing views by country]
Measuring: Searches and Referrals

1. Search engines (708 views)

2. Sweetland website (42 views)

3. York County Community College (34 views)
## Measuring: Top Posts

**Top Posts for all days ending 2013-10-30 (Summarized)**

<table>
<thead>
<tr>
<th>Title</th>
<th>Views</th>
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<tbody>
<tr>
<td>About the Revision Project</td>
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<tr>
<td>Teaching Ideas</td>
<td>294</td>
</tr>
<tr>
<td>What should I prioritize?</td>
<td>282</td>
</tr>
<tr>
<td>How do I get started writing?</td>
<td>256</td>
</tr>
<tr>
<td>What are the benefits of revision?</td>
<td>249</td>
</tr>
<tr>
<td>What's the hardest part of revision?</td>
<td>174</td>
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<tr>
<td>What's the most important thing I should know about revision?</td>
<td>148</td>
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<tr>
<td>How can I use sources as I develop my ideas?</td>
<td>139</td>
</tr>
<tr>
<td>How should I manage my time?</td>
<td>127</td>
</tr>
<tr>
<td>How should I use feedback?</td>
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<tr>
<td>How do I evaluate my draft?</td>
<td>83</td>
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<tr>
<td>What are the steps to revision?</td>
<td>61</td>
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<tr>
<td>For Instructors</td>
<td>41</td>
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<tr>
<td>About Our Student Contributors</td>
<td>34</td>
</tr>
<tr>
<td>About the Authors and Creators</td>
<td>31</td>
</tr>
<tr>
<td>For Students</td>
<td>30</td>
</tr>
<tr>
<td>Home page / Archives</td>
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</table>
Measuring: Poll Results

<table>
<thead>
<tr>
<th>Poll</th>
<th>Question</th>
<th>Votes</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>What are the benefits of revision?</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>How useful do you find peer feedback?</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>What are sources for?</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Which of the following best describes your writing process?</td>
<td>12</td>
</tr>
</tbody>
</table>
Measuring: What we know so far

• Visitors don’t spend much time on the site
  < 2 views/visitor
• Visitors don’t interact much with the site
  Few poll responses, few comments
• Visitors may be teachers rather than students
  “Teaching Ideas” second most popular page
What we don’t know

• How much time visitors spend on a page, reading or viewing video
• How the site changes the way visitors think about revision
• How the site changes the way visitors go about their revision process
• How the site changes the way visitors talk about revision
What we would like to know

• What effect, if any, does viewing the videos have on a visitor’s revision process?

• What effect does viewing the videos have on a writer’s ability to talk or think about revision in a more complex way?

• Do visitors who interact more with the site (comments, polls, activities) engage in more extensive and effective revision?
So, now that we’ve made it, how should we measure it?
Thanks to...

• Elizabeth Homan and Elizabeth Rodrigues, MELO3D Writing Team
• Nancy Kerner and Brenda Gunderson, MELO3D Founding Mothers
• My students who are learning what it means to really revise
• Student Learning and Analytics at Michigan (SLAM) and CRLT, esp. Mary Wright