Collaborative Writing Patterns in a Cloud-Based Environment

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Collaborative writing in the digital era

- In K-12 settings, the educational benefits of technology-enhanced writing platforms, such as wikis, blogs, or Google Docs, have been gaining attention.

- The Common Core Standards has classified collaboration as a communication skill that is vital for college and employment.
Feedback and revision activities can encourage a collaborative dialogue in which two-way feedback is established (Rollinson, 2005).

Peer feedback exchange is the simplest, but most frequently employed type of collaboration in K-12 settings.
Feedback analyses

• **Zhu, 2001, language functions of written comments**
  - Reader roles: pointing, advising, collaborating, announcing, reacting, eliciting, questioning
  - Writer roles: Responding, eliciting, announcing

• **Lockhart and Ng, 1995, feedback stance**
  - Authoritative (focus on problems and errors in the text)
  - Interpretive (focus on a personal evaluation of the text)
  - Probing (focus on understanding the writers’ intended meaning)
  - Collaborative (focus on negotiating intended meaning of the text)
Factors affecting Feedback

- Feedback sources (teacher vs. peer)
  Students’ preference for teacher feedback over peer feedback (Yang, Badger, & Yu, 2006); need for specific and elaborated revision suggestions regardless of sources (Tsui & Ng, 2000)

- Task type
  The role of task types and activities in facilitating the level and amount of collaborative dialogue (Aydin, Yildiz, 2014; Lund & Rasmussen, 2008)
Research questions

- How did students perceive the usefulness of feedback and coauthoring in Google Docs-supported collaborative writing environment?
- What types of electronic feedback did student writers receive from peers and teachers? Are there differences between teacher and peer feedback?
- Are there differences in students’ collaborative feedback patterns by three writing genres?
Context

- Four middle schools in a Colorado school district
- Predominantly middle income, white, suburban, English-speaking population
- A district-wide implementation of Google Apps for Education in the 2011-12 academic year
Participants

- Middle school teachers
  - N=25
- Students
  - 149 sixth grade students taught by two ELA teachers
  - A total of 435 documents written on Google Docs

<table>
<thead>
<tr>
<th>Student Characteristics</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>55%</td>
</tr>
<tr>
<td>White</td>
<td>89%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>7%</td>
</tr>
<tr>
<td>Others</td>
<td>4%</td>
</tr>
<tr>
<td>English language learners</td>
<td>2%</td>
</tr>
<tr>
<td>Free/reduced lunch</td>
<td>10%</td>
</tr>
<tr>
<td>N</td>
<td>149</td>
</tr>
</tbody>
</table>
Data collection

- **Student survey**
  - Perceived usefulness of feedback (5 point likert scale: -2 “strongly disagree” to 2 “strongly agree”)
    - “Getting feedback on my writing from others helps improve my writing.”
    - “Reading other students’ papers and giving them feedback helps me improve my own writing.”
Data collection

- **Student survey**
  - Perceived usefulness of coauthoring on Google Docs for their writing
    - “Working on a paper with multiple authors helps improve my writing.”
    - “Working on a paper with multiple authors increases my motivation to write.”
    - “Sharing my work with others increases my motivation to write.”
Data collection

- **Documents**
  - Three types of writing documents: Biography, narrative essay, and investigative report

<table>
<thead>
<tr>
<th>Genre</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrative essay</td>
<td>146</td>
<td>375.47</td>
<td>112.270</td>
<td></td>
</tr>
<tr>
<td>Biography</td>
<td>137</td>
<td>1657.40</td>
<td>639.478</td>
<td>542.644 (.0000)</td>
</tr>
<tr>
<td>Report</td>
<td>141</td>
<td>345.34</td>
<td>148.129</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>424</td>
<td>779.66</td>
<td>715.438</td>
<td></td>
</tr>
</tbody>
</table>
Data analysis

- Descriptive statistics were used to analyze surveys (student perceptions) and content of feedback.

- Chi-square analysis was used to compare the type and focus of feedback the two groups (peer vs. teacher) provided.

- ANCOVA was used to compare the feedback patterns across three writing genres while controlling for text length.
Perceptions of feedback and coauthoring

Feedback from others helps improve my writing

Giving feedback to others helps improve my writing

Working with multiple authors helps improve my writing

Working with multiple authors increases my motivation to write

Sharing my work with others increases my motivation to write

Agreement average score
Feedback received from teachers

**Teacher Feedback (N=1107)**

- **Commentary feedback**: 40.00%
- **Highlighted feedback**: 35.00%
- **Direct feedback**: 25.00%
- **Affective feedback**: 5.00%
- **Evaluative feedback**: 0.00%

*Significance levels:*** p<0.001, ** p<0.01, * p<0.05
Feedback received from peers

Peer Feedback (N=737)

- Direct feedback: 40.00%
- Commentary: 35.00%
- Highlighted: 25.00%
- Affective: 10.00%
- Evaluative: 5.00%

*** denotes statistical significance at the p < .001 level.
Focus of teacher feedback

Teacher Feedback

- Mechanics: 50.00%
- Spelling: 45.00%
- Convention: 35.00%
- Organization: 25.00%
- Punctuation: 15.00%
- Word choice: 10.00%
- Capitalization: 5.00%
- Grammar: 3.00%
- Content: 1.00%

*** indicates a high focus area.
Focus of peer feedback

Peer Feedback

Mechanics: 60.00%
Spelling: 50.00%
Convention: 20.00%
Organization: 10.00%
Capitalization: 10.00%
Word choice: 10.00%
Grammar: 5.00%
Punctuation: 5.00%
Content: 5.00%
Feedback language functions (teacher vs. peer)

- Problem identification
- Providing Solutions
- Criticism
- Advice
- Explanation
- Praise
- Question

Teacher

Peer

* * *
Revision language functions (teacher vs. peer)

- **No revision made**: Teacher > Student
- **Acknowledging**: Teacher < Student
- **Clarifying**: Teacher < Student
- **Seeking help**: Teacher < Student

**Significance**: ****
Feedback and revision across writing genres

- **Narrative essay**
- **Biography**
- **Report**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Narrative Essay</th>
<th>Biography</th>
<th>Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of contributors</td>
<td><strong>2</strong></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Number of edit sessions</td>
<td>10</td>
<td><strong>30</strong></td>
<td>10</td>
</tr>
<tr>
<td>Number of feedback</td>
<td>5</td>
<td><strong>30</strong></td>
<td>5</td>
</tr>
<tr>
<td>Number of revision</td>
<td>10</td>
<td><strong>30</strong></td>
<td>10</td>
</tr>
</tbody>
</table>

**Note**: ** indicates a significant difference from the baseline.
Feedback language functions by task types

<table>
<thead>
<tr>
<th>Task Type</th>
<th>Narrative Essay</th>
<th>Biography</th>
<th>Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem identification</td>
<td>0.06</td>
<td>0.08</td>
<td>0.10</td>
</tr>
<tr>
<td>Providing Solutions</td>
<td>0.12</td>
<td>0.14</td>
<td>0.15</td>
</tr>
<tr>
<td>Criticism</td>
<td>0.03</td>
<td>0.04</td>
<td>0.05</td>
</tr>
<tr>
<td>Advice</td>
<td>0.07</td>
<td>0.07</td>
<td>0.11</td>
</tr>
<tr>
<td>Explanation</td>
<td>0.05</td>
<td>0.06</td>
<td>0.08</td>
</tr>
<tr>
<td>Praise</td>
<td>0.10</td>
<td>0.14</td>
<td>0.15</td>
</tr>
<tr>
<td>Question</td>
<td>0.04</td>
<td>0.04</td>
<td>0.05</td>
</tr>
</tbody>
</table>
Revision language functions by writing tasks

**Revision language functions by writing tasks**

- **No revision made**
- **Acknowledging**
- **Clarifying**
- **Seeking help**

Legend:
- **Narrative essay**
- **Biography**
- **Report**
Conclusion

- Students demonstrated positive perceptions towards feedback and coauthoring in Google Docs.
Conclusion

- Three most commonly used feedback
  - Direct feedback
  - Commentary feedback
  - Highlighted feedback
Conclusion

- **Focus of feedback**
  - Mechanics
  - Spelling
  - Convention
  - Organization
Conclusion & Implications

Teacher vs. Peer feedback in cloud-based environment

- Teacher feedback involves more macro-level feedback (content, organization) and specific language functions (problem identification, question)
- Lack of revision practices upon receiving feedback
- A strong need for instructional design and tasks that require revision as a core component of writing and evaluation processes
Feedback across different genres

- Students’ feedback and revision patterns might be influenced by task characteristics, echoing findings from previous studies (e.g., Aydin & Yildiz, 2014)
- Biography attracted more number of coauthors, resulting in more number of edit sessions and feedback activities, yet revision occurred more frequently in the report genre (e.g., acknowledging, clarifying).
- Potential influence of students’ sense of ownership
Limitations and Future Steps

- High SES, technology-supportive context
- Non-experimental, naturalistic observation
- Different social and educational contexts (student competency, ethnic/linguistic composition, SES, etc)
- Different methodological approaches, measures