SWoRD Peer Review system

Using technology to improve students’ writing

CS2001 Fall 2014
• About me
  – Huy Viet Nguyen
  – 4th year
  – Prof. Litman’s lab
  – NLP > NLP Applications in Edu > Peer reviews & Student writings >
    Review helpfulness & Natural language argument

• Contact
  – 5420 SENSQ
  – hvn3@pitt.edu
  – http://people.cs.pitt.edu/~huynv
Outline

• An overview
  – Why peer review
  – Be a good reviewer

• SWoRD Peer Review system
  – Behind your screen (a.k.a teacher’s view)
  – How to’s (a.k.a student’s view)

• A little inside the system
  – SWoRD mechanics
  – SWoRD intelligence

• Live demo
An overview
An overview
An overview
An overview

• For effective peer reviewing
An overview

• For effective peer reviewing
Why peer review\textsuperscript{[2,3,4]}

• Support learning process
  – Peer authors: have feedback on strengths, weaknesses and/or tips for improvement
  – Peer reviewers: see other examples or approaches, form critical thinking

• Reduce instructor workload associated with writing activities
  – Instructors spend more time on other aspects of teaching
  – Students have more writing practice

• Concerns
  – Not always as effective as teacher’s feedback
Be a good reviewer[1]

• Be nice
  – Mention the strengths of the paper
  – Try to help your peers improve their work, not evaluate them as a person

• Be constructive
  – Give particular ideas for how to improve the work product
  – Don’t just complain about a problem; offer possible solutions for how to fix it

• Be specific
  – Follow the rubrics given to you by your instructor for each dimension
  – Be precise about where particular problems occur
  – Give examples.
  – Including the location of one instance of common basic writing problems (spelling/grammar, poor word choice, awkward sentence structures)
Be a good reviewer (2)

• Be open-minded about style
  – Unless instructed otherwise, there is no one way for each paper to be written
  – Ask yourself: did you understand the paper, did you believe the argument, and did you learn something?
  – If you say yes to all three, then the paper should be evaluated as good

• Consider what aspects of your own work you want to improve
  – What aspect of your own writing can improve as a result of your reviews?
  – What can you take away from each review that allows you to become a better writer?

• Remember, you are being graded on your reviewing
  – Your quantitative ratings are graded according to accuracy
  – Your commenting feedback is back-evaluated (graded) by authors on helpfulness and specificity
Problems in administrating peer reviews\textsuperscript{[2]}

- Student reviewers are novices in their disciplines
  - Inaccurate feedback relative to subject-matter expert or instructor

- Student are inexperienced in constructing reviews
  - They were not trained

- High workload required to administrate peer reviews
  - Select reviewers for writers
  - Exchange writing and reviewing

- SWoRD is developed to address the above issues
What is SWoRD

• **SWoRD**: Scaffolded Writing and Rewriting in the Disciplines
• A web-based reciprocal peer review system to support writing practice
  – Large content class (hundreds of students)
  – Writing is critical
  – Peer review is an essential process
  > Students gain knowledge as well as writing and reviewing skills

• Support the whole cycle
  – Writing > reviews > back-reviews > re-writings
  – Reviews are graded regarding accuracy, helpfulness
Numbers that tell

- 7: years for which SWoRD has been being developed
- 10: countries (USA, CAN, GBR, NLD, EST, HUN, SGP, KOR, CHN)
- ~160: active classes last year
- ~6700: active users last year
- ~1500: total seats since 2009
Three phrases to SWoRD

1. Upload your product
2. Make reviews on the work of your peers
3. Read the reviews on your work product and back-evaluate each review for helpfulness and specificity

• To remember:
  – Follow the instructions and prompts on the main SWoRD dashboard
  – Complete before the deadline
  – Part of your grade is determined by performing all the steps in the process
Teacher user

• Tasks
  – Create course
  – Create assignment
  – Manage reviewer-author assignment
  – Manage grade
Teacher user views: course info

About the course

Class Code: demo2010

Class Name: SWoRD Demo

Meeting days: MWF

Year: 2014

Semester: Fall

Time Zone: (GMT -5:00 hours) Eastern Time (US & Canada)

Class Discipline: 11 World Cultures

School Type: Doctorate-granting University

Institution: University of Pittsburgh
### Basic Peer Review Settings

- **Reviewing Style:** Soft Submission Deadlines
- **Grace Period for Late Papers:** Not allowed
- **Penalty for late papers (per day):** 5.0%
- **Grace Period for Late Reviews:** 1 day
- **Penalty for late reviews (per day):** 5.0%
- **Bonus review points:** 0%

### Advanced Peer Review Settings

- **Allow Form Upload Reviews:** No
- **Convert Student Paper to PDF:** Yes
- **Require Students to Confirm Their Paper After Upload:** No
- **Enable Instant Feedback:** Solution Only
- **Enable Verbose Debugging:** Yes
  
  *Beta testing only, teachers please do NOT use this yet!!!*

- **Show Feedback Tutorial:** Yes

[Update]  [Archive]
SWoRD will/not identify whether review comments have localization and/or solution idea.
Teacher user views: assignment design

Name
Observational Paper

Description
See Assignment 7 on CourseWeb for a full description.
Remember that the file uploaded here should not include the title page to maintain anonymity for the reviews.

Settings
Reviewers:
- Must do 4 reviews
- Same reviewers across drafts
- Backevaluations required
Example Document: None
Grading:
- Curved to mean of 85.0%, Stdev 10.0%
- Weights: Task 20%, Reviewing 40%, Writing 40%
- Teacher’s grade overrides student’s grade
Assignment design (2)

Drafts

Draft 1: Edit Deadlines and Settings
- Submit by 11/04/2013 + 0 day grace
- Review by 11/09/2013 + 1 day grace
- Backevaluate by 11/18/2013
- Revision planning tool is disabled.
- Thesis detection tool is disabled.

Draft 2: Edit Deadlines and Settings
- Submit by 11/18/2013 + 0 day grace
- Reviewed only by teacher.
- Revision planning tool is disabled.
- Thesis detection tool is disabled.

Advanced Functions:
- Manage Reviewers
- Release Deadline
- Re-Calculate Grades

Add a Draft
### Ratings

<table>
<thead>
<tr>
<th>Edit</th>
<th>1. <strong>Abstract.</strong> Abstract: Consider the following points when giving your rating: - All required information included? - 150 words or less; concise, specific, and accurate? - Appropriate level of detail?</th>
<th>Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edit</td>
<td>2. <strong>Introduction.</strong> Introduction: Consider the following points when giving your rating: - Central topic introduced and background information provided? - Brief high-level overview of study design and clear statement of hypotheses? - Appropriate integration of conflicting research findings into a convincing argument for at least one hypothesis?</td>
<td>Levels</td>
</tr>
<tr>
<td>Edit</td>
<td>3. <strong>Method.</strong> Method: Consider the following points when giving your rating: - Participants adequately and accurately described? - Procedures presented accurately and clearly so study can be replicated? - Appropriate level of detail that excludes inconsequential details?</td>
<td>Levels</td>
</tr>
<tr>
<td>Edit</td>
<td>4. <strong>Results.</strong> Results: Consider the following points when giving your rating: - Descriptive statistics reported either in text or table/figure? (paper should include both a table and figure) - Statistical tests reported completely and accurately? - Tables/figures correctly referenced in text? - Results worded so they’re clearly linked to hypotheses/research questions?</td>
<td>Levels</td>
</tr>
<tr>
<td>Edit</td>
<td>5. <strong>Discussion.</strong> Discussion: Consider the following points when giving your rating: - Main findings summarized? - Results clearly and accurately interpreted? - Current study put into context in relation to previous work? - Strengths/weaknesses, alternative explanations, implications, suggestions for future research discussed as needed?</td>
<td>Levels</td>
</tr>
</tbody>
</table>
Assignment design (4)

Comment Prompts

1. **Abstract.**
   Abstract: Consider the following points when giving your comments: - All required information included? - 150 words or less; concise, specific, and accurate? - Appropriate level of detail? Comment on ways that this section failed or succeeded at doing these things. Describe anything that was missing or weak and make specific suggestions for additions, deletions, or changes to this section of the paper.
   
   # of comments: 1-3

2. **Introduction.**
   Introduction: Consider the following points when giving your comments: - Central topic introduced and background information provided? - Brief high-level overview of study design and clear statement of hypotheses? - Appropriate integration of conflicting research findings into a convincing argument for at least one hypothesis? Comment on ways that this section failed or succeeded at doing these things. Describe anything that was missing or weak and make specific suggestions for additions, deletions, or changes to this section of the paper.
   
   # of comments: 1-3

3. **Method.**
   Method: Consider the following points when giving your comments: - Participants adequately and accurately described? - Procedures presented accurately and clearly so study can be replicated? - Appropriate level of detail that excludes inconsequential details? Comment on ways that this section failed or succeeded at doing these things. Describe anything that was missing or weak and make specific suggestions for additions, deletions, or changes to this section of the paper.
   
   # of comments: 1-3

4. **Results.**
   Results: Consider the following points when giving your comments: - Descriptive statistics reported either in text or table/figure? (paper should include both a table and figure) - Statistical tests reported completely and accurately? - Tables/figures correctly referenced in text? - Results worded so they’re clearly linked to hypotheses/research questions? Comment on ways that this section failed or succeeded at doing these things. Describe anything that was missing or weak and make specific suggestions for additions, deletions, or changes to this section of the paper.
   
   # of comments: 1-3
Student user

- **Three tasks**
  - Submit writing
  - Submit review on others’ writings
  - Submit back-evaluation on others’ reviews

- **Views**
  - Assignment timeline
  - Submitted document, made reviews, received reviews
  - To do items regarding three tasks
  - Grades
Student user view: account

https://arrow.lrdc.pitt.edu/arrow/
Student user view: account
AGREEMENT TO ACT AS A PARTICIPANT IN A RESEARCH STUDY

TITLE: SWoRD Project

PRINCIPAL INVESTIGATORS:
Christian Schunn
University of Pittsburgh, LRDC
3939 O'Hara Street, 7th Floor
Pittsburgh, PA 15260
(412) 624-8807
Email: schunn@pitt.edu

DESCRIPTION:
The purpose of this research study is to determine how student writing skills are improved through a reciprocal peer reviewing process. For that reason, we will be collecting student writing, reviewing and related activities in this web-based system located at the Univ. of Pittsburgh. Also we may students to complete brief questionnaires.

I understand that, by signing in this system, I will be participating a regular class for credit and also I will be participating in a study in which I work anonymously with other people on writing and reviewing tasks using this computer system. My job will be to learn the given writing and reviewing tasks. By working together on writing and reviewing tasks, I will have opportunities to learn more about how to write more effectively, to help others write more effectively, and to learn how to work together better with others over the Internet. The research being conducted using my writing and reviewing activities will help the researchers improve the system to further help students using the system in the future. I understand that my experiences are an important resource in this effort. As such, my participation in the
Course list

Your Student Courses

CS2710f10, Fall 2010, MW
Todo items
Reviewing the Kautz and Selman paper: First Draft, Draft #1 - grades are ready for viewing.
Reviewing the Kautz and Selman paper: Final Version, Draft #1 - grades are ready for viewing.

Thesis Detection Test Course current, Fall 2014, MoWe
Todo items
test thesis 2, Draft #1 - grades are ready for viewing,
test thesis 3, Draft #1 - grades are ready for viewing,
test thesis 3, Draft #2 - grades are ready for viewing,
test thesis 3, Draft #3 - grades are ready for viewing.

Thesis Detection Test Course, Fall 2014, MoWe
Todo items
test thesis, Draft #1 - grades are ready for viewing,
test thesis, Draft #2 - grades are ready for viewing.
- SWoRD does not have a built-in document viewer
Assignment view

Assignment Info

*All deadlines are based on Eastern Standard Time*

Document #: 2
Short Description: Observational Paper

Assignment Description:
See Assignment 7 on CourseWeb for a full description.

Remember that the file uploaded here should not include the title page to maintain anonymity for the reviews.

- Task Grade Weight: 20%
- Reviewing Grade Weight: 40%
- Document Grade Weight: 40%
  Review Form: [Download]

- SWoRD does not have a built-in document viewer
Grade view

Research Methods Lab
Ko

<table>
<thead>
<tr>
<th>Grade Detail</th>
<th>Review Grade</th>
<th>Accuracy Grade</th>
<th>Helpfulness Grade</th>
<th>Late Penalty</th>
<th>Writing Grade</th>
<th>Late Penalty</th>
<th>Task Grade</th>
<th>Review Task</th>
<th>Back Evaluation Task</th>
<th>Lessons Learned Task</th>
<th>Revision Plan Task</th>
</tr>
</thead>
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<td>85</td>
<td>94</td>
<td>0</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

Observational Paper, Draft #2  0/100

- Review accuracy: in comparison with other reviewers of the same writing
- Review helpfulness: regarding back-evaluation of writer
Grade view (2)

Your helpfulness score for different reviews

Your ratings of different document (on APA dimension)
Submit writing
Submit writing

Observational Paper, Draft #1
Due on 11/04/2013

(Step 1 out of 2) Upload Document P2D1

Document Short Name: 

File: Browse... No file selected.

Submit

*Don’t forget to take your name OFF of your paper. You can include your pseudonym and the document shortname in the document, but don’t include your real name in the paper.
**Maximum file size that can be uploaded is 4MB.
***All file formats are accepted.
****Your file will be converted and saved in PDF format.
***** For optimal viewing experience get latest version of Adobe Reader
Submit writing

Additional step required! You need to confirm that your uploaded document didn’t get corrupted during the upload process.

**Observational Paper - Draft #1**
Due on 11/04/2013

(Step 2 out of 2) Confirm uploaded paper Document 2, Draft #1 or reject it and upload again

Your paper was downloaded automatically.
Please review it and make sure that everything looks right.
Then, click “Confirm” button.

Confirm Paper  Reject/Delete Paper  Download Your Paper

This file claims compliance with the PDF/A standard and has been opened read-only to prevent modification.

**kicksonfire - Research Methods Lab Ko - P2D1. Total of 324**

Comments created by Teachers
Short Name Instructions
Flow dfghjhsdf
Insight
Write a comment. Detail stuff
Flow件事
Insight stuff
Organization
Contributions: Please mention any positive features of the discussion of the Contributions of the Katz and Selman paper. This type of feedback can identify a positive feature in the First Draft, or can be a complimentary comment. Positive features might include identifying the key problems that the paper solved, relating the solution to the larger
Submit review
Assignment #6 - Instant Feedback (History) - Draft

Review Document by Super Martian Robot

Assignment Description

Write a short paper (1-2 pages) that introduces possible topics for your final paper.

Comments:

#1. Did the writing flow smoothly so you could follow the main argument? Can you find the main points? Are the transitions from one point to the next harsh, or do they transition naturally?

Comment 1: (*Required)

the flow is a little choppy.

Comment 2:

Ratings:

#1. Based on your comments above, how would you rate the prose flow of this paper?

- Excellent - All points are clearly made and very smoothly ordered.
- Very Good - All but one point is clearly made and very smoothly ordered.
- Good - All but two or three points are clearly made and smoothly ordered. A few problems slowed down the reading, but it was still possible to understand.
- Average - All but two or three points are clearly made and smoothly ordered. Some of the points were hard to find or understand.
- Poor - Many of the main points were hard to find, and/or the ordering of points was very strange and hard to follow.
- Very Poor - Almost all of the main points were hard to find and/or very strangely ordered.
- Fail - It was impossible to understand what any of the main points were and/or there appeared to be a very random ordering of thoughts.
Submit review with instant feedback

Assignment Description

Now that we are seven cantos and five levels into Hell; you should be able to correlate sinners and punishments that Dante feels appropriate. Your task is to construct a well written, concise essay placing contemporaries into each level and specifically justify why each modern-day person appropriately fits...at least according to your thought process. Be certain to cite evidence from the text as needed!

Your comments need to suggest solutions:
If you point a problem, make sure that you provide a solution to fix that problem.

Comment 2: (*Required)

It was short and to the point.

#2.

Comment on whether the writing conveys ideas in a controlled and interesting manner; whether the focus is stated clearly and meets requirements; and whether clear, relevant details, directions, examples, and/or anecdotes develop and enrich the central focus.

Comment 1: (*Required)

the writer can give more examples that answer her essential question. Also stronger your thesis statement.
Assignment Description

Now that we are seven cantos and five levels into He; you should be able to correlate sinners and punishments that Dante feels appropriate. Your task is to construct a well written, concise essay placing contemporaries into each level and specifically justify why each modern-day person appropriately fits... at least according to your thought process. Be certain to cite evidence from the text as needed!

Make sure that for every comment below, you explain where in the paper it applies. For example, you can indicate where your comments apply by:
(1) specifying page numbers and paragraph numbers in the author's text to which your comment refers,
(2) referring explicitly to the specific topic that your comment addresses, or
(3) quoting the excerpt from the author's text to which your comment refers.

The review comments in red may be missing information about where the problem happens in the document.

A subset of your comments may do this already. Some examples of where you do this are highlighted in green below.

Comment 1: (*Required)

the writer can give more examples that answer her essential question. Also strengthen your thesis statement.

Comment 2: (*Required)

I like how you describe it.
Submit back-evaluation
#1 Support

Does the paper provide support for its claims? How?

**Review on your document**
Be informative and descriptive in your responses.

**Rate This Review**
Select One

#2 Introduction and Theory

**Introduction and Theory**
The purpose of the Introduction and Theory section is to describe the basic physical theory behind the experiment and how the experiment tests the theory. The description of the physical theory and how the experiment tested the theory should be completely accurate. There should be an appropriate balance of equations and theory.

- First summarize what you perceived as the purpose of the experiment and(...) More

**Review on your document**
Be informative and descriptive in your responses.

**Rate This Review**
Select One
SWoRD mechanics

• Distributes writings to reviewers

• Distributes peer reviews to writers

• Determines accuracy of each reviewer’s numerical ratings
  – Provides writers with reviewers’ weighted ratings
  – Provides reviewers with feedback on their review accuracy

• Distributes back-evaluations to reviewers
  – As review helpfulness
Review accuracy

- SWoRD uses 3 indices
  - Systematic difference
  - Consistency
  - Speed

> All depend upon a comparison of a given reviewer’s ratings to the mean of ratings
The extent to which each reviewer systematically tends to be overly generous, overly harsh, or unbiased in assessing papers (t-test)

Systematic Difference

<table>
<thead>
<tr>
<th>Rating Level</th>
<th>Your ratings</th>
<th>Group ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent(7)</td>
<td>6</td>
<td>5.68</td>
</tr>
<tr>
<td>Very good(6)</td>
<td>6.5</td>
<td>5.23</td>
</tr>
<tr>
<td>Good(5)</td>
<td>5.33</td>
<td>5.163</td>
</tr>
<tr>
<td>Average(4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor(3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very poor(2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disastrous(1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Flow    Logic    Insight
The extent to which each reviewer systematically discerns good papers from poor papers (correlation test)

Consistency on Flow

- Excellent
- Very good
- Good
- Average
- Poor
- Very poor
- Disastrous

Your score = 82.5 %
The extent to which each reviewer distributes scores too narrowly or too widely (STDEV differences)

Spread

Excellent(7)  Very good(6)  Good(5)  Average(4)  Poor(3)  Very poor(2)  Disastrous(1)

Flow  Logic  Insight

Your ratings
Group ratings
SWoRD intelligence

• Help reviewer give more helpful reviews
  – Localization
  – Solution

• Help writer write better essays
  – Thesis detection
  – Revision plan

• Our lab takes care of the NLP aspect of the above research problems
Future directions

• To support teachers
  – Currently student-centric
    • Solution, localization feedback
    • Thesis detection
    • Revision plan
  – Will be teacher-centric
    • Writing/review analytic
    • Class performance

• To support assignment design
  – Library/database that includes rubrics/prompts
SWoRD vs. ARROW

• Given its success, SWoRD™ Peer Assessment has recently become a trademark of Panther Learning Systems Inc.

• ARROW has been brought up as an alternative for research purpose at Pitt [arrow.lrdc.pitt.edu]

• SWoRD™ is now changing to Peerceptive™ [www.peerceptiv.com]

• ARROW will be renamed to SWoRD soon!
Live demo

- [arrow.lrddc.pitt.edu](http://arrow.lrddc.pitt.edu)
References


