

## Examining the Qualities of Liked Notes versus Non-Liked Notes in a Collaborative Online Learning Environment

Alexandra Makos, Daniel Zingaro, Murat Oztok\*, Jim Hewitt  
 Ontario Institute for Studies in Education, University of Toronto  
 \*Graduate School of Education, University of Pennsylvania

*Paper presented during the Poster Session*

*“Instructor-Student and Student-Student Interactions in Online Learning Environments” at the American Education Research Association Annual Conference on April 5, 2014, Philadelphia, Pennsylvania*

**Abstract:** This study explores students’ use of a “Like” button feature on community discussion boards in three graduate-level distance education courses. Three analyses were conducted. First, students were surveyed about their use of the “Like” feature. Second, the contents of Liked and non-Liked notes were rated on a cognitive complexity scale. Third, a quantitative analysis of note metrics was conducted. The findings suggest that students highly value receiving Likes, viewing them as indicators of peer support. Thus it is proposed that “Liking” served to enhance a sense of social cohesion. At the same time, liked notes appear to be more complex than non-liked notes as indicated by quantitative comparisons and a first round of qualitative analysis.

### Objectives

Distance education courses often use asynchronous threaded discussions to engage learners in discourse about course materials (Hewitt, 2005). Typically, students login to a web-based discussion board, read posts (“notes”) that have been left by their instructor and classmates, and then produce notes of their own in response. In recent years, our research team has become interested in exploring how new social media tools might be used in these kinds of environments. As part of this research, in 2012 we introduced a “Like” button to our experimental learning environment “Pepper”. Similar to the “Like” button in Facebook, students could “Like” each other’s notes. They were notified by email each time one of their notes was Liked by a classmate, and they could easily see which notes in a discussion thread had been Liked, and by whom.

The new Like button was surprisingly successful. Across all Pepper courses in the calendar year 2012, the Like button was pressed approximately 32,000 times (approximately 100,000 notes were generated over that period). Clearly students were making regular use of the Like button. However, did Like have any pedagogical value? In an effort to make headway on this question, we began with three research questions:

1. How do students experience the Like feature? How and why do they use it?
2. Do Liked notes tend to be higher quality notes?
3. Do Liked notes differ from notes that did not receive Likes (i.e. “non-Liked notes”) in terms of word length, the number of revisions, or other quantifiable features?

Through an exploration of these three questions, we hope to better understand the utility of this particular social media feature in online courses.

### Theoretical Framework

Our underlying perspective for this work is one of social constructivism, which suggests learning is shaped by context, conversation, and collaboration (Brown, Collins, & Duguid, 1989; Dewey, 1963; Vygotsky, 1978). Summarizing the importance of social constructivism for online learning practices, Swan (2005) suggests: “learning is essentially a social activity, [and] that meaning is constructed through communication, collaborative activity, and interactions with others. It highlights the role of social interactions in meaning making ... [and] knowledge construction” (p. 5). Within the online learning environment, there are many opportunities for learners to scaffold and promote knowledge construction using the facilities integrated into the system. In Pepper, there are

## 2 Qualities of Liked Notes vs. Non-Liked Notes

opportunities for students to create text-based notes and interact with these notes in multiple ways (Gross *et al.*, 2005), one of which is through the use of the Like button. Collectively, the development of user-generated content is a result of common understanding and negotiation and advancement of ideas by the learners. When social constructivism is employed as a theoretical framework, discussion becomes critical as it connects individuals in an online learning environment and motivates them to take an active role in knowledge construction and meaning-making processes (Oztok, 2013).

### Data Sources

Data were drawn from three Pepper online courses taught at the graduate level in a Canadian faculty of education. The courses were offered in Winter 2012 and had the following titles: Assessment for Instruction; Autism: Understanding Self and Others; and Psychology and Education of Children with Learning Disabilities. The total enrollment was 117 students (25, 60, and 32 students, respectively).

Research Question 1: How do students experience the Like feature? How and why do they use it?

To investigate students' understanding and use of the Like button, we administered an anonymous online survey, seeking voluntary participation from students. We received 31 responses. We focus our analysis on four questions from the questionnaire. First, we asked students whether they use the Like button and, if so, to list reasons for its use. Then, we explicitly asked students whether and how the Like button supports learning, and how it affected their social experiences during the course.

Research Question 2: Do Liked notes tend to be higher quality notes?

An analysis of note content was conducted to examine the cognitive complexity of content in Liked and non-Liked notes. We randomly selected 30 Liked notes and 30 non-Liked notes from the Psychology and Education of Children with Learning Disabilities course. A five-point coding scheme was developed to capture the cognitive complexity of the content. A score of "1" was applied to notes that contained little of substance (e.g., a simple agreement, or the statement of an opinion without an accompanying rationale). A score of "3" was applied to notes that provided new information, shared personal anecdotes, or offered an opinion supported by a rationale. A score of "5" was applied to notes that contrasted opposing ideas, synthesized or summarized perspectives, or involved some other type of critical analysis. Two people rated the anonymized notes, after which a t-test was applied to determine whether a significant difference existed between the cognitive complexity of Liked and non-Liked notes.

Research Question 3: Do Liked notes differ from other notes in terms of word length, the number of revisions, or other quantifiable features?

We conducted a series of quantitative analyses on the written contents of the three Pepper courses. Across these courses, students wrote 6920 notes and clicked on the Like button a total of 3584 times. For each student in our dataset, we calculated the following metrics for both their Liked notes and non-Liked notes:

- Mean note length (in words)
- Mean sentence length (in words)
- Mean number of times the notes are revised
- Mean Flesch Reading Ease score (higher values indicate text that is more readable).
- Mean use of Informal Vocabulary: This calculation uses a wordlist that was developed internally based on the content of public Internet discussion boards. It contains words that are used in less formal speech (e.g., "yup", "lol", "ok").
- Mean use of Academic Vocabulary (texts that are more academic in nature have higher scores): This analysis uses the Academic Word List (AWL) (Coxhead, 2000), a collection of the most frequently occurring words in academic texts. Ten to fifteen percent of the words in a typical academic journal article belong to the Academic Word List.
- Mean use of Social Vocabulary score (higher values indicate the use of more social vocabulary): This calculation uses the social wordlist from the LIWC software (Pennebaker *et al.*, 2007), which contains words representative of the social domain.

As we are interested in content-based differences between Liked and non-Liked notes, we chose these attributes as they potentially reflect the complexity and cognitive level of student discourse (Bradley *et al.*, 2008). For example, a note that has been revised repeatedly by its authors may be at a higher cognitive level or possess more reasoned arguments than single-pass notes. Similarly, a note containing many academic words may offer

more sophisticated ideas. For each of the wordlist-based measures, we calculated the total number of words used for each student's Liked and non-Liked notes, and divided by the number of notes in the category. We then performed t-tests to determine whether differences existed between Liked and non-Liked notes.

## Results

**Research Question 1:** How do students experience the Like feature? How and why do they use it?

When responses from the questionnaire were analyzed, the following thematic categories emerged:

1. Students reported they “feel good” when someone Likes their note. (e.g., “makes me feel good when people ‘like’ something i wrote”). Some see it as an indication that their writing is “on the right track”.
2. Students thought Like should be used to highlight good quality work (e.g., “...to acknowledge a peer has said something interesting, summarized a concept well.”)
3. Students Liked notes that personally taught them something new or provoked deeper thinking (e.g., “if someone writes something that I found helpful, new or interesting or furthered my understanding of something.”)
4. Students used Like to indicate agreement with a person’s ideas (e.g., “I ‘like’ a note when I agree with what the person has said in the note).
5. Some students claim they are more likely to read Liked notes. (e.g., “Yes, I am more likely to read a note if it is ‘liked’).
6. Some students reported using Like as a quick way to show approval. They valued the tool not simply for its ability to communicate agreement, but because it was convenient, fast and easy to use (e.g., “If I like a comment someone has made and I'm too lazy to write something”).

Thus, the use of Like appears to be multi-faceted. It’s important to recognize that the thematic categories are not mutually exclusive. For example, students could Like a note that they feel is high quality (theme 2) that also provoked deeper thinking (theme 3).

**Research Question 2:** Do Liked notes tend to be higher quality notes?

Krippendorff’s alpha was calculated to measure inter-rater reliability of the two raters on the 60 notes because it is a “conservative, chance-corrected measure that supports all levels of data” (Zingaro, 2012; Lombard *et al.*, 2002). The resulting alpha value of 0.805 indicates that the coders reached high levels of agreement. The two raters’ scores were averaged and the mean scores of the 30 Liked notes and 30 non-Liked notes were compared using a two-tail independent samples t-test. Liked notes had a higher average cognitive level, and this finding is marginally significant ( $p = 0.0527$ ).

**Research Question 3:** Do Liked notes differ from non-liked notes in terms of word length, the number of revisions, or other quantifiable features?

Table 1 displays the results of the quantitative analysis. The p-value column provides the p-value resulting from a two-tailed paired t-test comparing Liked-note data to non-Liked note data.

**Table 1.** Comparing Liked and non-Liked notes for various quantitative qualities (alpha set at 0.05), n=117.

Metric	Liked Notes	Non-Liked Notes	t-value	p-value
Mean Note Length (words)	183.45	135.54	9.6045	<b>2.15808</b> <sup>-16</sup>
Mean Sentence Length (words)	18.98	17.28	9.0704	<b>3.79682</b> <sup>-15</sup>
Mean Note Revisions	1.31	1.28	1.8886	0.06146
Reading Ease	53.51	54.87	3.7497	<b>2.78731</b> <sup>-4</sup>
Informal Word Ratio	0.17%	0.19%	2.1533	<b>0.03338</b>
Academic Word Ratio	7.05%	7.13%	0.8851	0.37797
Social Word Ratio	8.40%	8.31%	0.7856	0.43371

Statistically significant differences were associated with note length, average sentence length, reading ease, and less informal vocabulary. These metrics suggest that Liked notes are, on average, longer, contain lengthier sentences, are slightly more difficult to read, and have fewer informal words.

## 4 Qualities of Liked Notes vs. Non-Liked Notes

### Discussion and Conclusions

Considered collectively, the preceding studies suggest that students use Like for multiple purposes. First, and perhaps most importantly, it appears that Like serves a social function. The strongest and most consistent finding from the questionnaires was that students appreciate receiving Likes from their classmates. It causes them to feel more positively toward those classmates and it reassures them that other people appreciate their ideas. This is important: one of the frequently cited problems in the computer conferencing literature is that students often feel insecure about how others perceive their work (Peters & Hewitt, 2010). Thus it appears that Like may offer benefits in terms of community-building and strengthening bonds between students.

The academic value of Liked notes is less clear. In the questionnaire, some students (but not all) felt that it could be used to help identify “good notes”. In addition, the quantitative analysis suggests that students tend to apply Likes to notes that are longer than average, use more sophisticated vocabulary, and contain fewer informal words. Similarly, a pilot qualitative analysis suggests that liked notes are of a higher cognitive level than non-liked notes. However, the sample size for this qualitative analysis was small, and statistical significance of the cognitive level was marginal. More research is needed in this area.

The next phase of our research will expand our investigation of Like to examine how the teacher makes use of the tool, and how students respond to the teacher Liking notes.

### References

- Bradley, M. E., Thom, L. R., Hayes, J., & Hay, C. (2008). Ask and you will receive: how question type influences quantity and quality of online discussions. *British Journal of Educational Technology*, 39(5), 888-900.
- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational researcher*, 18(1), 32-42.
- Clark, H. H., & Brennan, S. E. (1991). Grounding in communication. *Perspectives on socially shared cognition*, 13(1991), 127-149.
- Clark, H. H., & Carlson, T. (1982). Hearers and speech acts. *Language*, 58(2), 332-373.
- Clark, H. H., & Marshall, C. R. (1981). Definite reference and mutual knowledge. In A. K. Joshi, B. L. Webber, & I. A. Sag (Eds.), *Elements of discourse understanding* (pp. 10-63). Cambridge, England: Cambridge University Press.
- Coxhead, A. (2000). A new academic word list. *TESOL quarterly*, 34(2), 213-238.
- Dewey, J. (1938). 1963. *Experience and education*.
- Hewitt, J. (2005). Toward an understanding of how threads die in asynchronous computer conferences. *Journal of the Learning Sciences*, 14(4), 567-589.
- Gross, T., Stary, C., & Totter, A. (2005). User-centered awareness in computer-supported cooperative work-systems: Structured embedding of findings from social sciences. *International Journal of Human-Computer Interaction*, 18(3), 323-360.
- Lombard, M., Snyder-Duch, J., & Bracken, C. C. (2002). Content analysis in mass communication: Assessment and reporting of intercoder reliability. *Human communication research*, 28(4), 587-604.
- Oztok, M. (2013). Tacit knowledge in online learning: community, identity, and social capital. *Technology, Pedagogy and Education*, 22(1), 21-36.
- Pennebaker, J. W., Chung, C. K., Ireland, M., Gonzales, A., & Booth, R. J. (2007). The development and psychometric properties of LIWC2007. *Austin, TX, LIWC. Net*.

- Peters, V., & Hewitt, J. (2010). An investigation of student practices in asynchronous computer conferencing courses. *Computers & Education, 54*, 951-961.
- Stahl, G., & Hesse, F. (2009). Paradigms of shared knowledge. *International Journal of Computer-Supported Collaborative Learning, 4*(4), 365-369.
- Swan, K. (2005). A constructivist model for thinking about learning online. *Elements of quality online education: Engaging communities, 6*, 13-31.
- Vygotsky, L. L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard university press.
- Zingaro, D. (2012). Student moderators in asynchronous online discussion: A question of questions. *Journal of Online Learning and Teaching, 8*(3).