# The value of peer feedback opportunities for students in writing intensive classes

## Lynne N. Kennette & Nichole M. Frank

*The present study was conducted to examine the usefulness of peer feedback on APA-style research papers in a writing-intensive class. Subsequent to APA training, students were asked to review and provide feedback on a classmate's APA-style research report for both content and formatting. Performance on this research report was then compared to performance on a previous semester's written assignment, where the instructor provided feedback rather than peers. No statistical differences were found in the grades of the two sets of assignments, suggesting that feedback from trained peers could be as valuable as instructor feedback. Students were pleased with the peer feedback process as it not only gave them a chance to demonstrate competency in their newly acquired writing skills, but also provided an opportunity to receive insightful feedback from their peers.*
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A CONSCIENTIOUS INSTRUCTOR should be engaged in ongoing professional development, seeking to implement new techniques and strategies to try to improve student performance. Also important, however, is to nurture non-academic skills such as student confidence in their own abilities, and to promote self-learning. Such skills will serve students well when they enter the workforce. The present paper briefly describes a peer feedback exercise that was implemented in two experimental psychology classrooms in an attempt to determine the equivalency of peer- and instructor-based feedback and whether any additional benefits were received from that feedback.

Feedback is typically given by an instructor with the goal of improving performance on subsequent assignments and to confirm mastery of the material (Higgins, Hartley & Skelton, 2002). Although an instructor's feedback is sometimes given in informal conversations with students, it more usually takes the form of written comments on assignments, especially in an age where technology is at the forefront of interactions (such as using an online assignment dropbox to collect and return assignments and email exchanges) (Higgins, et al., 2002).

Both receiving *and* giving feedback have advantages for students (see Ertmer et al., 2007, for more on this topic). Learning by teaching has a long history in the literature (e.g. Berliner, 1989; Caprio & Borgensen, 2001; Whitman, 1988) and has been used in the classroom for decades as confirmation that learning has occurred (Bargh & Schul, 1980). The peer feedback technique parallels student-teacher interactions and has been shown to benefit student learning, especially for the student in the teaching role (Weimer, 2009). Using a peer feedback assignment allows the student to share their recently-acquired knowledge with a fellow classmate and further solidify their learning.

The benefits of receiving feedback have been demonstrated in better performance in the classroom (Higgins et al., 2002). Moreover, although instructor feedback is often perceived as more valuable, students appreciate good feedback whatever the source (Ertmer et al., 2007). In addition to the benefits demonstrated by the receivers of feedback, previous research has demonstrated many advantages for the *givers* of peer-feedback.

Peer-to-peer interactions (such as that which occurs when students provide feedback to their peers) have a number of advantages. As recently argued by Bowman, Frame

and Kennette (2013), it allows a bridging of the gap between expert instructors and novice students. That is, because students have a similar knowledge network, the feedback they provide is at the level of the student, thereby helping student make additional connections and see information that they may not be able to see on their own (Bowman, Frame & Kennette, 2013). Additionally, this encourages deeper pro-cessing and metacognitive understanding (Xun & Land, 2004) as well as a number of important skills for later employment (e.g. working collaboratively; Ballantine & McCourt-Larres, 2007).

Most of the students providing feedback engage in higher-order thinking skills, such as critical thinking, that go beyond the more basic-level thinking required to complete the assignment (Lui, Lin, Chiu & Yuan, 2001). By analysing others' work, they are able to think more deeply about their own work, and subsequently achieve better learning outcomes (Ertmer et al., 2007). By providing feedback, students may get a chance to read an example of a superior paper and can make use of some of these techniques or styles in their own writing (Ertmer, 2007).

However, as Cho and Cho (2011) recently pointed out, very little attention is given to examining the benefits of the students providing feedback to their classmates. In a recent study, Cho and MacArthur (2011) examined whether benefits of the peer feedback process could be attributed to the mere fact of reading another's paper, or whether they stemmed from the act of reviewing and providing feedback. One group of students only read their peer's paper, while another group of students commented on it. The students who reviewed their classmates' assignment did significantly better on a paper later in the semester, as compared to the students who had only read a classmates' assignment. The researchers speculate that the processes of detecting problems in the original paper and proposing a solution were paramount to explaining this advantage.

In addition, there is evidence that students who give feedback may reap psychological benefits from the feeling of having helped someone, and being able to demonstrate that they have learned something, as well as feelings of competency and personal value because peers were providing significant contributions to classmates (Berliner, 1989; Caprio & Borgensen, 2001; Whitman & Fife, 1988).

The present paper examines a peer feedback exercise that was implemented in two experimental psychology classrooms in an attempt to determine the equivalency of peer and instructor feedback and whether any additional benefits were acquired from that feedback.

## Method
### Participants
This research was conducted in two different third-year university psychology laboratory classes at an American university: Learning & Memory, and Cognitive Psychology. Each class had an enrollment between 7 and 18 students. Third and fourth-year undergraduate psychology majors participated as part of their normal course activities. As such, demographic information was not explicitly-collected and gender is the only demographic data available to describe the sample. In the first semester (2008), approximately 83.33 per cent of the sample was female; in the second semester (2009), females made up 79.63 per cent of the sample.

### Materials and procedures
Each course consisted of a series of learning units that demonstrated prominent principles in their respective fields via several experiments. For example, in the Learning & Memory class, students observed classical conditioning in fish *(Betta splendens)*; in the Cognitive class, students studied the effect of word-relatedness on the creation of false memories. Students of both classes were asked to write two research reports during the semester. The first paper was an

APA-style report on an experiment conducted at the beginning of the semester. The second, at the end of the semester, was an APA-style proposal that required them to extend one of the experiments conducted during the semester (of their choosing). In the first semester, students received feedback from the instructor on their draft. In the second semester, after rough drafts were completed, students were randomly assigned a paper and asked to give constructive feedback to their peer in order to help improve their assignment. Students were given several days to exchange papers with their assigned peer, review it, and then return it to its author. They were then given several more days to incorporate the received feedback and to finalise their paper prior to submission to the instructor. Instructors then graded the final submission. To ensure consistency across sections and courses (and thus comparability) and to ensure that grades were objective, both instructors used the same detailed grading rubric for all papers involved in the data analysis.

## Results
### Quantitative results
A 2 (instructors) x 2 (semesters) ANOVA showed that marks on the final paper did differ by semester and instructor ($F(3)=5.83$, $p<.05$). Post-hoc Tukey's HSD revealed that marks did not differ by class (Learning & Memory: $p=.681$; Cognition: $p=.734$). Thus, the groups were collapsed to more directly compare the effects of the peer feedback by semester, as the peer feedback assignment was only present during the second semester. As evidenced by Figure 1, this analysis did not show significant differences for assignment grades by semester ($t(43)=.707$, $p=.483$, $d=.22$). In addition, there was no significant difference in the students' final grades (Table 1; ($t(43)=1.41$, $p=.165$, $d=.46$).

### Qualitative observations
Examination of students' comments paired with an informal reflection upon their experience provided further insight into the value of this type of assignment. Students in the peer feedback course (2009 semester) were asked to provide the instructor with feedback via email about this activity should they have comments to share. Although very few students sent instructors email, those who did had interesting comments to share.

Of specific relevance to the writing process, it is possible that peer feedback allowed students to formulate more thoughtful or insightful questions about their own papers to the instructor. This is an observation made in comparison to the previous semester's questions that appeared to be more superficial in nature, such as asking the instructor for clarification, or pointing to a grammatical error. Students also seemed to appreciate the feedback they received from their peers, as evidenced by non-elicited feedback from students. It is important to note that these are merely observations from the instructors and no formal qualitative analyses were performed on these data.

There is also evidence for additional benefits in writing-intensive classes such as the courses in the present study. It appears to be possible that students had absorbed the writing principles learned throughout the

### Table 1: Breakdown on final grades by semester.

|      | 2008 (Baseline) | 2009 (Peer review) |
|------|-----------------|--------------------|
| Mean | 86.24           | 88.71              |
| SEM  | 1.50            | 1.21               |

**Figure 1: Final assignment grades (%) by semester. This difference is not significant.**
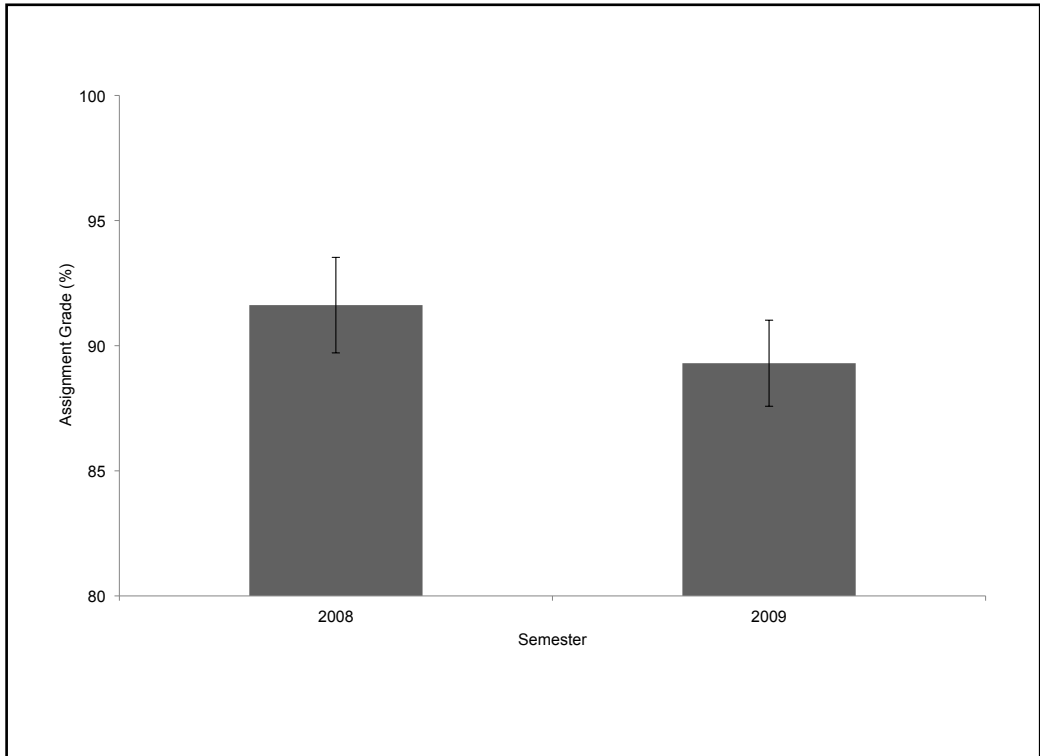


class. For example, student feedback on papers were similar in nature to the earlier comments made by the instructor on the previous paper (e.g. 'What do you mean by this?', 'Explain more', 'What about theory X?', etc.) Whether these behaviours were simply mimicked from previous feedback received or truly learned and led to a fundamental understanding of the scientific writing process cannot be speculated from the research presented here. However, comments appeared to be valuable, relevant, and not simply compliments to the writer (rarely a powerful use of feedback; Hattie & Timperley, 2007).

## Discussion

The present study demonstrates that students' writing performance benefits from having peers provide feedback on their writing as much as receiving an instructor's feedback. Research (Luttrell et al., 2010) has explored whether APA training alone could be responsible for improved writing quality because it encourages students to write logically. However, this thesis was not supported in their investigation, suggesting that it is the peer feedback process that results in the advantage shown in the present paper, and not the mere fact of learning about APA writing. The notion that the feedback process itself leads to better learning of writing is also in line with the findings of Cho and MacArthur (2011) described earlier.

The lack of differences found does not necessarily mean that students did not benefit from the activity. Peer feedback provides students with additional learning opportunities. It may also allow for the development of more general benefits, which may not be immediately evident. There is evidence for these additional benefits, however, as described in the introductory section of this paper (e.g. Berliner, 1989;

Caprio & Borgensen, 2001; Whitman & Fife, 1988). However, the authors acknowledge that more research is necessary to determine whether some (or all) of this benefit could be due to order effects because peer feedback followed instructor feedback earlier in the semester. Although this event of providing students with instructor-generated feedback occurred for all students (in both semesters), future studies could examine whether peer feedback produces an effect when implemented early in a semester.

One possible limitation of this study is the small number of students enrolled in the 2008 Cognition course. Although the present study had low statistical power, significant differences might have surfaced with a larger sample size, as suggested by the reported effect sizes (Cohen's *d*). Future studies should undertake replication of these effects and provide confirmation that peer feedback shows benefits beyond instructor feedback. It may also be interesting to employ a longitudinal design to examine the possibility of delayed benefits from feelings of self-worth associated with giving feedback to a peer. Of additional interest could have been the topic that students chose. The sample in the present study was too small to ascertain whether topic selection could mediate (or perhaps moderate) any relationship that exists between receiving (or giving) peer feedback and outcomes (grade, self-esteem, etc.). However, this would be an interesting avenue to pursue in future investigations.

Finkel (2011) recently found that through the process of peer feedback, students developed a more positive opinion of the technique, so this may be a technique that gains incremental benefits as its frequency of use increases. Future studies should examine the relationship between the frequency of peer feedback assignments and additional (or more pronounced) benefits for students.

The present study also provides some evidence that giving students the opportunity to provide peer feedback builds confidence and verifies understanding of the course material and good-writing principles. In addition, it shows that peer feedback does not squander learning opportunities or hinder student comprehension and subsequent classroom performance. These findings confirm the conclusions of others (e.g. Ertmer, 2007; Topping, 1998) and illustrate that students can both appreciate and benefit from peer feedback. Of notable importance, using peer feedback may be advantageous for educators as well, allowing the instructor to spend less time providing feedback on assignments and making better use of their time helping individual students who require more one-on-one assistance.

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