

Peer review of writing in online environments

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Research on peer feedback offers support for peer review as a pedagogical strategy in a wide variety of contexts, including introductory undergraduate courses. It has been well-known since the 1980s that feedback helps writers improve their drafts (see Straub (1999) and Beach & Friedrich 2006 for extended bibliographies of sources on this subject). In the field of writing studies or composition, much of the 20th century work on response to student writing focused on strategies for instructors to adopt to improve the way they responded to students. Since then, research on peer feedback to student writing has gained interest. It is important to understand the movement within this research. It started with feedback that leads to assessment of learning--summative assessments of student performance--and then moved to formative assessments of student learning: assessments of student learning while in the process of learning, before evaluations or grades have been assigned. As Phillips (below) notes in his conclusion, the focus currently is on **assessment as learning**: by engaging in assessment, students are actually learning crucial lessons about how to write. Peer feedback, then, helps those who receive the comments, as one might expect; perhaps more importantly, it also helps the person giving the feedback improve their writing. Performing the assessment **is** the learning.

Phillips (2016) reports on the use of peer feedback delivered online for writing case reports in an introductory financial accounting course. He notes that peer review is a standard practice for professional accountants and that this practice fits well with that cultural standard; he also cites the educational research literature on the effectiveness of peer review generally. His survey of the research shows that students find peer feedback more understandable and helpful than instructor feedback; peers provide more extensive feedback than instructors; and peers provide a wider array of feedback to drafts. This last point is important because it has the effect of giving student writers a greater sense of audience: the varied feedback demonstrates how differently readers can react to the students texts, an important and often under-developed skill for all student writers (Sommers 1980). Phillips also notes that much of the educational literature in the last 20 years focuses on the validity of peer feedback because that concern is of paramount importance to instructors. He surveyed the results of a wide range of studies shows. Those studies show that peer feedback is generally as reliable as instructor feedback, and that feedback from multiple students who are trained well is at least as reliable and valid as review from subject matter experts. Phillips concluded that students were reliable assessors of their peers; that students value peer assessment; and that peer assessment contributed to higher academic performance.

Phillips' study of introductory accounting students shares similar results with students in other introductory courses. Cho and Cho (2011) report that students in an introductory physics course improved their writing quality through the practice of online peer review. Cho and MacArthur (2011) report that students who were trained in peer review subsequently wrote higher quality assignments than students who only read other other students' drafts or did not engage in any kind of peer sharing. Cho and Cho cite Li, Liu, & Streckelberg (2010) as evidence that the key driver of quality in student writing is the quality of the response each student gives to others, not the quality of comments that they receive on their own drafts. Cho and Cho also note it is important that for student writing quality to improve students must focus on giving comments at the meaning level--what in writing studies are sometimes called "higher-order thinking skills"--rather than at the semantic or sentence level ("lower-order" level) (Bean 2011). It is important to note that the students in Cho and Cho's study were native English speakers.

While Cho and Cho studied native English speakers, Chen (2016) reported on a meta-analysis of 20 studies of peer feedback in ESL/EFL writing classes from 1990-2010. Peer feedback makes sense according to widely acknowledged theories of learning to writing: socio-cognitive, process-oriented, collaborative, and interactionist. Interactionist theories support peer feedback pedagogies by arguing that interactions with peers provide language learning opportunities. Chen cites Hyland and Hyland (2006) whose work on peer feedback helps students adopt a "reading as a reader" stance that gives them insight into how an audience will react to their writing. Chen notes that over the last 20+ years many technology solutions have been tried out in language learning classrooms. Ultimately the results are unclear simply because there are too many variables across the many studies to reach any kind of consensus about the advantages of technology-enabled peer feedback. However, in blended or hybrid courses, technology-enabled peer feedback produced more lexically complex responses with more interactive competence. The persistence of the feedback when stored online (as opposed to being delivered orally) also prompted more revisions. An early gaming programs helped low-level students more, while early computer mediated peer response suffered from distrust of peers by other students in the course. Ultimately Chen concludes that computer mediated peer feedback increased student motivation and participation; that asynchronous interaction prompted more reflection and deeper discussion; and that participation in online peer feedback environments required a suite of competencies on the part of students (enthusiasm for technology, positive attitude, technical competence).

The Game of Writing (GWrit) is purposefully within the *writing as assessment* trend of creating online peer feedback environments. With the Game of Writing we created an online peer feedback environment where students have the opportunity to both read and then comment on each other's drafts, a technique that has been shown to improve writing (Schunn, Godley, & DeMartino 2016; Ion, Barrera-Corominas & Tomàs-Folch, 2016). Reading skill is intimately

linked to writing improvement, particularly if students are using texts as part of purposeful engagement with the world (Hansen 2003). GWrit allows students to post drafts of their documents for review and comment by other students, peer tutors, and graders. The writer of the draft can respond to each comment, and they are also likely to reciprocate by reading and commenting on the drafts of the students who gave them comments. GWrit provides flexibility for students by requiring less time face-to-face time through an asynchronous environment, an environment that leads to deeper and more serious comments (Chen, 2016). Micro-networks of comments sprout up within the comments on these texts. Because students in the writing course version of GWrit have the option within each course module of working on one of three different assignments, larger, informal networks of students who are working on the same assignment also coalesce. The writing course version of GWrit has four main three-week long modules with a choice of three assignments in each module; the social networks re-form at the end of each module. Our early assessments of students and commenting in the writing course confirm what others have reported: that peer feedback is as valuable as instructor feedback (Guasch, Espasa, Alvarez, Kirschner 2013). We found that students who earn an “A” level grade write, on average, 58 comments over the term; students who earn an average of “C” in the course write an average of 28 comments; “F” students wrote an average of 4 comments. It seems clear that engagement with the course materials through commenting is related to overall success in the course.

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