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Peer feedback on writing: Is on-line actually better than on-paper?

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This paper evaluates peer feedback given in parallel writing classes using an on-line Blackboard® closed blog, and an on-paper environment. The feedback responses were coded using a modified Faigley and Witte taxonomy (1981), incorporating the hedging/mitigation elements from Ferris, Pezone, Tate, and Tinti (1997). The quantity and type of responses differed significantly in many ways, with more surface proof-reading type feedback in the paper environment, a slightly higher level of macro-structure comment in the blog environment, a much higher level of mitigation of revision comments and affirmation on the blog, plus significant style and register differences. The use of on-line environments such as classroom blogs may also raise interpersonal issues perhaps due to the overlap of such technologies with social communication media.

Key Words: academic writing; writing revision; feedback taxonomy; peer feedback; blog; computer-mediated communication; computer-assisted instruction

1. Introduction

On-line educational environments such as Blackboard® or Moodle® offer teachers a range of "bright shiny toys to add sparkle to their classroom strategies". In the early days of these platforms which made available discussion boards, wikis, blogs and other on-line "temptations", it seemed that one's pedagogy must be seen to be "up-to-speed" technologically or risk the perception of "chisel-on-rock status". I confess to initially committing to the use of a blog in my writing class with enthusiastic aims, but only a vague grasp of the technology involved. The intervening years have, however, seen a more analytical and research-based focus to the evaluation, adaptation, adoption, and even occasional discarding of on-line teaching options. This paper will investigate and attempt to measure the efficacy of one such application in which a Blackboard®-based blog is compared with the traditional on-paper classroom context for providing peer feedback in a writing class. The evaluation will consider the pivotal position that feedback and revision hold in the writing process, and attempt to codify the peer feedback responses for the purpose of comparison between the two environments.

2. Background

The seminal Flower and Hayes articles (1977; 1981) sparked a focus for writing teachers on the process by which students – or any writers – develop their ideas into a final written item. An element of this process was the conversion of writer-based to reader-based prose ideally facilitated by feedback from a "live reader" to give guidance on the comparison of "...what you intended with what you actually communicated" (p. 460). Their 1981 model described an iterative interaction of the task environment, the writer's long-term memory, and the writing

process of which revision was an important component. Revision was targeted in a follow-up article (Flower, Hayes, Carey, Schriver, & Stratman, 1986) as an activity presumed essential by teachers yet seldom performed effectively by students.

The model of revision they described (Flower, Hayes, Carey, Schriver, & Stratman, 1986, p. 24) has two parallel strands of "Processes" and "Knowledge", and is useful for identifying many points at which the writer – or anyone providing feedback for revision – might operate ineffectively. For example, the first "Process" task definition stage (p. 23) involves a decision, either conscious or subconscious, to revise at a structural or whole text level, or merely to proofread. The further stages of evaluation, strategy selection and implementation offer many possible pitfalls for the would-be reviser. A critical component of this model however is the parallel "Knowledge" strand. At all stages, writers' decisions are entirely dependent on their knowledge. The truism, "We do not know what we do not know" is critical here as, for example, revisers' evaluations can only be based on prior information. They can only identify problems for correction if they can distinguish correct from incorrect grammar, language or fact. Two further key elements of effective revision are identified. The first is the ability to have a mental model of what the total piece of writing should be; this is termed "working memory" (Flower et al., 1986, p. 32). While a short essay may pose little working memory challenge, a longer essay or report may require maintaining an active mental engagement with a complex pattern of argument development, or many unresolved points. This is an area of important current research (Adams, Simmons, Willis, & Pawling, 2010; Hayes, 2006). The second point is that even if writers experience dissonance between what they have written and some concept of what they want to say, they may not be capable of carrying out the revision. Many others have developed related models of the writing process such as the range discussed by Alamargot and Chanquoy (2001); the focus of this paper is only on the revision aspect of this process, and in particular the optimisation of peer feedback in facilitating revision.

There has been a marked increase of empirical research into revision since 1980 (Butterfield, Hacker, & Albertson, 1996), much stemming from the Flower and Hayes work; a few key items are noted here. Faigley and Witte (1981) developed a taxonomy for describing what happens during revision, classifying the changes according to a three-level hierarchy related to their surface or deeper meaning implications. Hayes (2004), in critiquing earlier writing on revision, including his own, identified gaps in previous analysis of the process, noting that revision is made not only to correct errors but to improve what was initially written. He also noted the difficulty of teaching students how to revise their own writing, and raised an issue of much contention: whether teachers' feedback to students helps this or not. In 1996, Truscott sparked much controversy by claiming that teacher feedback on grammar errors in the writing of L2 students should be abandoned as students ignored it. Others (e.g. Bitchener, 2008; Bitchener, Young, & Cameron, 2005; Ferris, 1999) responded to the contrary. Hyland and Hyland (2006a; 2006b) in their extensive review noted that the disagreements have not been completely resolved, but gave qualified support for the process. Myhill and Jones (2007) concurred with Hayes (2004) that revision is about much more than error correction, involving a range of enhancements. Treglia (2009) noted factors that influence whether or not student writers act on teacher feedback, including the difficulty of the suggested modification, and discussed wider contextual factors such as the relationship between the writer and the giver of the feedback, mitigation of revision comments, and face-saving, all of which place revision in a broader framework than simple writing correction.

Peer feedback is also a contentious issue with opinions ranging across the whole continuum. For example, Faigley and Witte (1981) cited studies which described it as a very successful strategy, and Paulus (1999) found that while students made more changes in response to teacher feedback, they still made substantial use of peer feedback: 87% and 51% respectively resulting in at least one revision. Connor and Asenavage (1994) and Berg (1999) note the need for training of both the givers and receivers of feedback. While Mendonca and Johnson (1994) identify the advantage of peer review as a way of focusing the writer on the concept of audience, they also highlight the need for parallel teacher feedback. Rollinson (2005) notes that L2 students may prefer teacher feedback, a possibly culturally-influenced attitude to both the

high status of the teacher and their own personal ability to give feedback; however he also identifies a range of related learning and interpersonal opportunities. Hyland and Hyland (2006a; 2006b) support the overall usefulness of peer response, while noting that students in L2 classes may have specific issues with it.

The introduction of computer-mediated communication systems offered interesting new ways for teachers to enhance learning, with claims that e-learning offers advantages such as deeper learning plus greater flexibility for students (Wingate & Dreiss, 2009). Selfe (1999) challenged teachers of writing to become engaged with technology, not merely as users, but as thinkers about the optimal ways to incorporate it into their pedagogy; the recent research published in this area shows there to be a significant and growing number of these thinkers. Computer-based collaborative writing environments such as blogs are often presented (e.g. Ferdig & Trammell, 2004; Seitzinger, 2006) as exemplifying Vygotsky's (1978) theories on learning as an active construction of meaning for the student, not a passive knowledge absorption process. In particular, the technology's embedded opportunity for feedback supports this approach and encourages analysis and reflection (Dippold, 2009; Richardson, 2009).

While some earlier research (e.g. Haas, 1989) had questioned the synergies of writing and technology, these studies were on writers who grew up largely with pen and paper; the world has since changed to the extent that not to acknowledge the ubiquity of technology is impossible. This is not to say that one must accept that all technology-driven options are automatically better. The effects of different writing environments have been widely reported in journals such as *Computers and Composition;* some sample impacts on the revision and/or feedback processes are noted here. Hewett (2000) focused on a comparison between face-to-face oral and computer-mediated peer feedback, concluding that the medium shaped students' writing, their feedback, and the resulting revisions; each environment could have different benefits depending on the purpose of this feedback/revision. Van Waes and Schellens (2003) noted that writing on computer involved more revision occurring during writing development rather than afterwards as with pen and paper. The computer writers in their study also did more surface-level and fewer meaning-changing revisions than the pen and paper writers. Liu and Sadler (2003) using MS Word®, and Tuzi (2004) using a database-driven website, in studying peer feedback in an L2 class found that the quantity and quality of comments were greater in the computer environment, but that the interpersonal non-verbal elements of the pen and paper environment were preferred by the students. They therefore recommended combined use of these strategies for optimal results. Buck (2008) noted that the "materiality" of writing on paper or a computer gave complex differing effects for both feedback and revision, though this type of observation is not new. Nietzsche (1882, as cited in van Manen & Adams, 2009), reflecting on his new typewriter, noted that, "Our writing instruments contribute to our thoughts" (p. 10), and the word "contribute" has a significantly positive connotation. Boyd (2008) identified also the important interpersonal element introduced by peer feedback in Blackboard® -based discussion; notably, however, though the students appreciated their peers' comments, they acted more on teacher comments. A similar response was noted when students used iPod®-based audio feedback in comparison to written feedback (Reynolds & Russell, 2008), as while the researchers' evaluation was that the former was of higher quality, students preferred the latter.

As many of these studies have shown, students' attitudes to the medium and source of feedback vary. Another factor is their apprehension about placing their writing, plus the feedback they give and receive, into an open forum. Some students may experience extreme anxiety when required to share their work with students rather than the teacher (Fernsten, 2006). A study of a Blackboard®-based tutorial blog for peer feedback found that while there was widespread approval of the environment, there was still a significant group (20%) who felt quite apprehensive (Ellis, 2010). Interestingly, although the initial purpose of the task in that study was for feedback and revision, the second-most popular use of the blog was students reading others' work in order to evaluate their own writing in comparison with the rest of the class. This reminds us that tasks designed for one purpose can have important peripheral effects.

Research Questions

In light of the majority positive student perception of the blog environment (Ellis, 2010), it was decided to analyse more closely the feedback which is given in this environment. Peer feedback given on the blog would be compared with what was traditionally done in class by swapping scripts and providing "pen and paper" feedback. To maintain the comparability of the two environments, there was to be no oral discussion accompanying the written feedback. The following research questions were posed:

1. What is the difference in quantity (word count and number of comments per script) between feedback for revision given in a Blackboard®-based classroom blog environment, and in class with pen and paper?
2. What is the difference in quality (surface or meaning-changing) between feedback given for revision in a Blackboard®-based classroom blog environment, and in class with pen and paper?
3. What is the difference in affirmation between feedback given in a Blackboard®-based classroom blog environment, and in class with pen and paper? (Affirmation means positive comments about either the writing or the writer.)
4. What is the difference in mitigation or hedging between feedback given in a Blackboard®-based classroom blog environment and in class with pen and paper? (Mitigation and hedging means a "softening" of suggestions for change by strategies such as using a question rather than a direct statement, conditional language such as "might" or "perhaps", or expressing uncertainty about the necessity for the changes suggested.)
5. What other features of difference between feedback given in a Blackboard®-based classroom blog environment, and in class with pen and paper became apparent during the research?

The incorporation of feedback into revision is the subject of a future study.

3. Method

3.1. Subjects

Two parallel classes of writing students with the same teacher were used for this study. The alternative conditions of blog-based feedback and on-paper feedback were randomly allocated to these two classes; the pass rate and grade results showed no significant difference of ability between the classes. The majority of the students were second-year Bachelor of Communication Studies students plus a few from Health, Science and Languages programmes. English was the first language of over 90% of the students, and all were competent speakers and writers of English. Feedback was given in pairs or trios. The feedback analysis was carried out on 22 samples of feedback from each tutorial (relating to 16 scripts in one tutorial and 18 in the other), and all ethical requirements were followed.

3.2. Task

The writing sample on which feedback was given was a "cold-calling" letter of application for a job which was part of a non-assessed classroom activity focusing on analysis of genre, purpose, audience and context. A one-page sample letter using full block layout was analysed for these four features, and the generic paragraph sequence and contents were identified. After writing their letters, students either printed hard copies to swap with their partner/s (the on-paper feedback tutorial) or uploaded their letter to a class blog (the blog-based feedback tutorial). Identical instructions were given on providing feedback on the letters of their partner/s using a suggested pattern of, "Some things you did well are ... / Some things you could improve on are ...". Feedback on both surface proof-reading items, and substantial content aspects was asked for, and in both contexts the feedback was only written. Oral discussion was not part of this evaluation as it would have introduced another complex variable, the analysis of which is

material for a further study. The on-paper feedback was done at the same time (synchronous), as students swapped papers in class; however, the blog-based feedback could be done at any time in or out of class (asynchronous).

3.3. Computer systems

The Blackboard® blog option was used with access restricted to the students and teacher of that class.

3.4. Coding and analysis of feedback responses

Adaptations of two feedback/revision taxonomies were used. The Faigley and Witte (1981) revision taxonomy was adapted by the addition of an iteratively developed "Affirmation" component specific to this task (see Table 1). The hedging/mitigation aspect from the work of Ferris, Pezone, Tate, and Tinti (1997) was adapted to measure the degree of this shown in the alternative contexts. Coding was carried out and cross-checked by two highly experienced writing teachers with any discrepancies resolved through discussion. SPSS® version 17 was used to analyse the coded responses.

Table 1. Faigley and Witte (1981) taxonomy adapted to accommodate affirmation feedback.

Feedback Comment Taxonomy					
Revision				Affirmation	
Surface Changes		Meaning Changes		Surface	Meaning
Formal	Meaning-preserving	Micro-structure	Macro-structure		
Spelling	Additions	Additions	Additions	Non-specific positive	Relevant content
Tense, number and modality	Deletions	Deletions	Deletions	Correct expression	Writing skill
Abbreviation	Substitutions	Substitutions	Substitutions	Format	Personal representation
Punctuation	Permutations	Permutations	Permutations		Logic and structure
Format	Distributions	Distributions	Distributions		
	Consolidation	Consolidation	Consolidation		

Explanation of Faigley and Witte (1981, pp 402-404) taxonomy terminology	
Surface changes	Bring no new information to the text or remove no old information
Meaning changes	Bring new information or remove old information
Formal	Conventional copy-editing changes
Meaning-preserving	Changes that paraphrase concepts, but do not alter them
Micro-structure	Retains the same "gist" or overall summary of the total text
Macro-structure	Alters the "gist" or overall summary of the total text
Additions	Raise to the surface what can be inferred; expansion; clarification
Deletions	Remove item/s so that the reader must infer what was explicit; remove wordiness
Substitutions	Alternative words or phrases with the same meaning
Permutations	Rearrangement of words or phrases that retain original meaning
Distributions	Splitting elements from one text segment into two, e.g. two sentences instead of one
Consolidation	Elements from two text segments are combined into one, e.g. one sentence instead of two

4. Results and Discussion

4.1. Coding and taxonomies

The adapted taxonomy proved relatively easy to use, with the details provided in the Faigley and Witte (1981) article useful for resolving discussions between the coders. The affirmation section of the taxonomy was iteratively developed as items were needed, and was originally intended to be only genre-specific, however in the interest of broader later usage the sub-category of "logic and structure" was added, though possibly due to the somewhat formulaic structure of a letter of application there were no student responses in this category. The quantifying of the hedging/mitigation was carried out to differentiate the very broad range of strategies observed, ranging from a question mark to short paragraphs.

4.2. Feedback quantity

Table 2 shows a clear distinction between the word counts, but not the number of comments given in each environment. The higher word count in the blog environment was possibly enabled by students' proficient typing speeds but was also sometimes needed to identify exactly where and what the comment related to. On paper, placement of a proof-reading or editing comment is self-explanatory, and corrections may need little extra commentary, while on the blog there might need to be a directional note added such as "the next paragraph – 3rd sentence". However, much of the higher word count on the blog was due to the affirmation, hedging and mitigation, or relationship-building as discussed later.

Table 2. Word counts of comments, and number of comments given in each context.

	On-paper	Blog On-line	Significance
Number of scripts	16	18	
Number of commenters	22	22	
Word count minimum-maximum; Mean (S.D.)	8-45; 25 (10)	35-223; 88 (50)	0.000
Number of comments per script minimum-maximum; Mean (S.D.)	3-12; 6.4 (2.6)	2-11; 5.2 (2.3)	0.120

4.3. Comment categories: Revision and affirmation

The results from the adapted Faigley and Witte (1981) taxonomy at the broadest level are shown in Table 3, with a higher overall number of comments in the paper context (though not significant as shown in Table 2), however there was a marked difference in the distribution of revision and affirmation comments. Despite the identical instructions to the two classes, it is clear that students behave in different ways when communicating through the different writing mediums. Most students began their blog entry with affirming comments and seemed to adopt a rather "Facebook register" style of communicating, talking in casual language in a generally positive way. "I really liked your first paragraph that described ....", "Good one listing your non-retail experience...".

Table 3. Distribution of comments between revision and affirmation.

Context	Number of comments (22 commenters in each context)		
	Revision	Affirmation	Total
Paper	129	11	140
Blog	54	59	113
Total	183	70	253

The distribution of these comments between surface and in-depth meaning-influencing types is shown in Table 4. There is a much higher incidence of surface revision comments in the paper context, possibly due to the relative ease with which editing comments can be added on paper. Few students would have the patience to itemise these in the descriptive way that the blog requires, a possible disadvantage of the blog environment if assistance with correct expression is a goal of the feedback process. Given the difficulty of suggesting editing changes, I had suspected that the blog might instead elicit more in-depth revision comments, but this was not the case. For the affirmation feedback, the blog context is high overall, and these are weighted towards the in-depth level, a feature very scarce in the paper context. It seems that the paper-based students are much more pragmatic about helping to fix mistakes rather than spending time on compliments.

Table 4. Distribution of comments between surface-level and meaning-level.

Context	Revision		Affirmation		
	Surface	In-depth	Surface	In-depth	Total
Paper	90	39	7	4	140
Blog	23	31	22	37	113
Total	113	70	29	41	253

The revision level can be broken down one further stage as shown in Table 5. Although the numbers are not large, the macro-structure category is an important area in which the blog feedback is stronger than its paper counterpart. This type of feedback is what I had been expecting to see more of, whereby the feedback partner could suggest truly significant improvements such as overlooked areas of knowledge or expertise, or the all-important and often-needed conversion of the letter from a "me" to a "you" focus. A teacher review of the letters from both classes on which this feedback was based showed that there were many that could have benefitted from macro-structure suggestions, as a letter of application is often critical in creating the image of the person seeking the position. Although it is outside the purpose of this study, this does flag the importance of teacher feedback alongside peer feedback.

Table 5. Distribution of comments across the revision categories.

	Definitions of four categories of revisions				
	Surface		In-depth		
Context	Formal	Meaning-preserving	Micro-structure	Macro-structure	Total
Paper	29	61	36	3	129
Blog	10	13	24	7	54
Total	39	74	60	10	183

The most detailed level of the comments is shown in Table 6 for revision, and Table 7 for affirmation.

Table 6. Distribution of revision comments at the coded level. P = on paper; B = on the blog.

Formal changes	P	B	Meaning-preserving	P	B	Micro-structure	P	B	Macro-structure	P	B
Spelling	3	2	Additions	8	2	Additions	20	14	Additions	3	3
Verbs	6	1	Deletions	9	2	Deletions	4	2	Deletions	0	1
Abbreviation	0	0	Substitutions	32	6	Substitutions	4	2	Substitutions	0	3
Punctuation	13	4	Permutations	8	2	Permutations	8	6	Permutations	0	0
Format	7	3	Distributions	3	1	Distributions	0	0	Distributions	0	0
			Consolid-ations	1	0	Consolid-ations	0	0	Consolidations	0	0
Total	29	10		61	13		36	24		3	7

Punctuation and substitution comments were strongly present in the paper context; the ease of such revision comments on paper has been noted above. The higher number of micro-structure additions also shows the ease of a simple arrow and "Add ..." perhaps being easier than the fuller explanation perceived necessary on the blog. Some of the "empty cells" are also perhaps indicative of the original purpose of this taxonomy being for teacher use and requiring skill, knowledge or motivation that a fellow student might not have.

Table 7. Distribution of affirmation comments at the coded level. P = on paper; B = on the blog.

Affirmation Surface	P	B	Affirmation Meaning	P	B
Non-specific positive	6	20	Relevant content	1	24
Correct expression	0	1	Writing skill	1	6
Format	0	1	Personal representation	3	7
			Logic and structure	0	0
Total	6	22		5	37

Ferris et al. (1997) included hedging or mitigation in their revision taxonomy, and the blog environment can be seen to markedly encourage this behaviour, whether it be a general "this is good" comment or the much more detailed "I like that you mentioned your academic achievements because this would pique the interest of the reader and make them more likely to read the resumé, it also means you are likely interested in the subject, giving your application added kudos". The differential degree of the hedging/mitigation present in the two contexts was notable as shown in Table 8. On paper the most common hedging was a simple question or placing a question mark after a suggested correction such as "capitalise?", or "contact details?". The blog lent itself to more extended comments such as this example suggesting a rewording:

> This line sounds a little funny to me just the part about reflecting your intentions maybe you could change it to like how you are interested in pursuing (...) as a career choice and how your marks reflect this ... or something ... ha sorry i'm not completely sure and I could be way of [sic] base for most of the stuff i've said.

A suggested grammar correction, rather than a directive to change, becomes, "I noticed this 'I think working for these companies have given me an insight' maybe should be has", and punctuation comments, "I have a feeling that you should put capitals for 'Social Media Advisor' but I am not 100% sure of that ... and lastly I think there should be a comma after sincerely – really small insignificant criticisms sorry, but I think it is really well done."

Table 8. Hedging or mitigation of revision comments

Context	No hedging	1-2 words	Simple question	Phrase / short sentence	Extended commentary	Total
Paper	71	11	44	3	0	129
Blog	1	6	0	25	22	54
Total	72	17	44	28	22	183

The most striking differences between the two contexts were the register that students adopted and the apparent purpose of the communication. On paper there was a clearly functional style, often using note form, and with any sentence-style comments using generally correct spelling, punctuation and grammar. The blog context , however, seemed to engender a much more casual writing style with students whose own letters were almost completely correct writing comments with punctuation often absent, run-on sentences and spelling errors as seen in some of the examples above. There were also the texting abbreviations "lol" and "haha", smiley-face emoticons, and the use of student slang, for example "That 'professional experience on YouTube and Twitter' is completely taking the piss". Beyond their assigned peer grouping partners, a few students added extra brief non-revision comments to various class-mates of the type seen on Facebook "walls". The high level of affirmation, and the extensive hedging of revision comments amongst this group seemed as much directed at building relationships as providing writing guidance. These affirmations were often quite personal: "... it really shows you're a good writer ..." and "... you seem so qualified and have so much experience!" One comment invited the person to meet on Facebook if she wanted any more help with the letter. These interpersonal aspects should not however be seen as irrelevant to the revision process, as much research has shown that accepting feedback and attending to the revision changes recommended is influenced by relationship factors (Hyland & Hyland, 2006). With the blog open to all to read, there is also the possibility that students are more inclined to post positive comments, being aware that these can be seen over several weeks by the whole class. Conversely, even when significant changes are needed, student peers may be reluctant to say so – this perhaps accounts for the high level of mitigation and diffidence in suggesting changes.

5. Conclusion

There is a clear difference between the quantity and type of feedback given in the two contexts; whether one context produces more valuable results than the other is debatable. The on-paper context was a more efficient means of proof-reading than the blog environment and while using "Track Changes" in MS Word® on individual files would enable this process to be done on-screen, the blog's simple interface and the readability of the continuous flow of documents had previously proven popular (Ellis, 2010), so remained the choice of on-line classroom technology. The blog does have the potential for students to provide in-depth feedback advice, but building skills is necessary for this to be realised. The blog environment introduces an important interpersonal element into the feedback process and further research is needed to examine the influence of relationship factors in the peer feedback process, and to determine the way that this translates into revision behaviour. Additionally, the shift in register influenced perhaps by the overlap of classroom technology with widely used social communication media merits further investigation. It is clear also that further training in writing feedback would be beneficial regardless of the context, and the adapted taxonomy could be used as a way in which student feedback might be self-evaluated as part of skill development. Optimal results for both students and teachers might result from some mixed-mode strategy with hard copy shared for proof-reading, and the blog postings used for later reflective commentary. This might also prove useful for students to differentiate between the mechanics of proofreading, and the more macro editing enhancements of clarity, structure, concepts and logic.

It is important to remember that context is a powerful influence on all aspects of the communication process. Just as Nietzsche acknowledged his typewriter, writing teachers must select thoughtfully from the modern range of supportive technologies with heightened awareness of their influence beyond a mere substitution of the blogosphere for the ballpoint.

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