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Digital Performance Learning: Utilizing a Course Weblog for Mediating Communication

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ABSTRACT

Two sections of university-level technical writing courses were given an authentic task to write an article for publication for an outside stakeholder. A quasi-experimental study was conducted to determine the differences in learning outcomes between students using traditional writing methods and those using social media to generate articles. One section was randomly assigned to follow the traditional writing process using computer-mediated writing and small group peer workshops of paper drafts, while the other section published its work-in-progress on a course blog and engaged in web-mediated online collaboration to determine if there are meaningful differences between computer-mediated and web-mediated writing as measured by learning outcomes in terms of publication rates and grades. The results of this study demonstrate that utilizing an online social network in the form of a course blog positively impacted learning outcomes; however, a close examination of the published peer review feedback on the course blog indicated a moderately negative relationship between the quality of the feedback received and acceptance scores. Thus, the value of the web-mediated workshop was not based on the outcome of the workshop, but rather on having providing feedback, which generated a higher level of engagement and more time spent on task as compared to the paper draft workshop section.

Keywords

Course blog, Web-mediated writing, Authentic task, Collaboration

Introduction

There's an old folk saying that goes something like this: *No man knows the truth about himself, only his neighbors do*. Having students publish their work on blogs is one way for them to find out the truth about their writing from their peers. Online publishing provides a motivating factor for students to improve performance as quickly and efficiently as possible, increasing their level of engagement and enhancing attention to collaboration, self-regulation, and performance. This study will compare the process and outcome of writing published on blogs to computer-generated paper drafts to determine if a web 2.0 social learning space in the form of a course blog affects learning outcomes.

Much ado has been made of the introduction of digital publishing and social networks into the writing classroom; in fact, a number of exploratory studies indicate that blogs enhance a sense of community, improve writing, increase self-reflection, and build professionalism (Lee, 2010; Frye, Trathen & Koppenhaver, 2010; Camp & Bolstad, 2011; Chretien, Goldman & Faselis, 2008; Fessakis, Tatsis, & Dimitracopoulou, 2008; Quible, 2005; Byington, 2011; Miyazoe, & Anderson, 2010; Gallagher, 2010). No experimental studies have established the effectiveness of writing instruction, which employs web-mediated writing tools and publishing. Thus, this research study was designed as a quasi-experimental study involving two nonrandomized sections of university-level technical writing classes that were given a project to write an article for publication. One group worked in a traditional classroom with paper drafts while the other worked in a computer lab and generated their work on a course blog, allowing for a direct comparison of learning outcomes and a challenge: paper versus digital media, which group would publish the most articles and generate higher grades?

Scientists and engineers, who are responsible for the bulk of technical writing, are often prepared to write academically for scholarly publications; however, many scientists and engineers end up working for public and private companies and find themselves in need of skills that will help them communicate with audiences that lack specialized training. A project to write an article for the Pennsylvania Center for the Book was ideal to train this

group of junior- and senior-level university students to write for the general public. In order to publish an article, each student had to meet standards of excellence as set forth by the editor in terms of meeting goals of engagement, readability, diligent research, and an effective visual argument.

Literature overview

Building on social constructivist theory, Slavin (1996) argued that collaborative learning ties motivational factors directly to levels of social cohesion and its impact on cognitive processes. Writing instruction combines the cognitive process of knowledge construction when creating content, scaffolding, through the generation of multiple drafts, and social interaction in the form of peer review. One way to further enhance social interaction is through the introduction of a social learning space and technologies that expand the boundaries of the traditional writing classroom to a larger, more visible online community, which ultimately enhances social cohesion and peer interactions through a web-mediated writing environment.

Furthermore, Lave and Wenger's (1991) social theory of learning argues that social participation is at the center of the learning process. In this sense, community, according to Lave and Wenger (1991), is the social configuration defined by action, which occurs through discourse. They identify this learning environment where individuals are joined by relationships that share common practices and activities as "Communities of Practice" or (CoP), or individuals joined by relationships that share common practices and activities. CoP have been integrated into the learning theory of situated cognition, which claims that all human thought or knowledge is situated or adapted to the environment. Proponents of this theory believe that learning takes place during participation in a CoP (Driscoll, 2005).

Accordingly, blogs are an interactive communication technology (ICT), which allow for the formation of CoP. With this social network platform, blog users with no technical expertise can post content, and readers can make comments. According to Minocha (2009), "Social software enables communication and networking between groups where the members are made aware of what other groups are doing and where each member of the group benefits" (p. 382).

Bower, Hedberg, and Kuswara (2010) argued that technology is "the mediator for collaboration and representation" (p. 181). They noted that the most effective use of blogs has been through the creation of a course blog, which allows students to collaborate in order to formulate expertise in a shared field of knowledge. Their theory of learning design argues that blogs are best used in situations where concepts and issues are being explained and when the immediacy of feedback is required (p. 190). Thus, learning design is a function of the content of the subject being taught and the context to which a writing response is generated, which, in turn, determines the "best practice" technology to incorporate into the design (Bower et al. 2010). Writing involves increasing interactivity with tools and their social usage, according to Shaffer and Clinton (2006); they argue that digital worlds make learning easier by creating meaningful experiences, which accomplish meaningful ends. Our study utilized a course blog to act as a mediator of activity.

Social media writing and the role of audience

Essentially blogs, or online journals, are rapidly being adopted for instructional purposes to amplify the importance of audience in the writing situation since blogs expand audience in terms of numbers and types of readers (Woo & Wang, 2009; Magnifico, 2010; Warschauer & Grimes, 2007; Lin & Chien, 2009). For example, Magnifico (2010) explored how social media environments affect the cognitive process of writing and the role of audience. A traditional writing perspective contends that writers imagine the audience is interested in the subject matter; thus, the focus is cognitive rather than social; that is, the focus is on the subject matter itself and not the audience (Magnifico, 2010). The writer's role is to act as an individual expert on the subject matter, making new connections to the audience's prior knowledge (Magnifico, 2010). With online publishing, the focus shifts to the audience, making the social, rather than the cognitive, the driving force underlying the rhetorical situation, thereby, increasing student engagement.

Blogs as learning communities

A number of studies support the development of blogs to promote learning and community at the university level (Lee, 2010; Frye, Trathen, & Koppenhaver, 2010; Camp & Bolstad, 2011; Chretien, Goldman & Faselis, 2008; Fessakis, Tatsis & Dimitracopoulou, 2008; Quible, 2005; Byington, 2011; Miyazoe & Anderson, 2010; Gallagher, 2010). For example, Hung and Yuen (2010) in an exploratory study found that blogs promoted community and raised feelings of social connectedness. In their study, Camp and Bolstad (2011) addressed the need for learning communities as an attrition tool for retaining first-year university students; however, the results of their qualitative research study were mixed. While blogs improved writing, very few students believed that the exercise had any value in terms of their future career (Camp & Bolstad, 2011). However, the bulk of the studies examining the effectiveness of weblogs have been exploratory. For this reason, this study was designed as a quasi-experimental study to test, empirically, the differences in learning outcomes between traditional and web-mediated writing processes.

Blogs develop professionalism

A number of studies have been conducted that demonstrate blogs can be used effectively to develop professionalism (Hodgson & Wong, 2011; Chretien, Goldman & Faselis, 2008; Lapp, Shea & Wolsey, 2011; Chong, 2010). For example, Buechler (2010) in a one-shot case study found that blogs could be used effectively to teach collaboration, demonstrate professional communication proficiency, and ingrain a sense of responsibility for publicly expressed opinions. Manion and Selfe (2012), through the retrospective analysis of three case studies of university students, identified the “appropriate assessment ecology” for designing digital media projects: the work should derive from students’ interests, students should be responsible for the final product, and stakeholders outside of the classroom should take part in the assessment. The Manion and Selfe (2012) study identified the idea ecology for testing blogs. Our study set out to measure this ecology’s effectiveness. Students selected topics for articles based on their research interests and were responsible for producing the content for an outside editor.

Evaluating peer review

A number of studies have established the effectiveness of the peer review process (Wilkinson & Fung, 2002; Reese-Durham, 2005; Lundstrom & Baker, 2009). Armstrong & Paulson (2008) identified peer review as being the most popular tool used in composition classes to improve student writing; however, in spite of its common use, no standardized formula for conducting peer review sessions is practiced. Peer review sessions can generate a wide range of activities from editing and critiquing, to evaluating the quality of writing. Despite the prevalence of the peer editing according to Zundert, Sluijsmans, and van Merriënboer (2010), gaps in the literature make it difficult to describe exactly what constitutes effective peer review.

Resistance to blogs

A number of studies have assessed the risks, benefits, and perceptions of using blogs in the writing classroom and have made a strong case that blogging is less effective than what the proponents of blogging suggest (Divitini, Haugalokken & Morken, 2005; Halic, Lee, Paulus & Spence, 2010; Lin & Chien, 2009; and Lin, Lin, & Hsu, 2011). For example, Lin, Lin, and Hsu (2011) examined claims that blogs were labor-intensive and that evidence attributed to their benefits was unconvincing. In a quasi-experimental study, Lin et al. (2011) found that both the control and experimental blog group demonstrated improvement and that given the labor and time implementing the blogs required, they concluded that perhaps, after all, blogs were not the most effective intervention tool. In addition, Woo & Reeves (2007) found that blogs only promote critical thinking when a suitable topic is chosen with available strong information sourcing, and without this support, information literacy training is a necessary component to improving the effectiveness of online writing in terms of its ability to generate critical thinking. Perhaps, using blogs to collaboratively construct knowledge is not effective means to this end, although in terms of peer interaction and self-reflection, blogs are relatively useful (Woo & Reeves, 2007). Sharma (2010), in two unique case studies, found that blogs promote reflective thinking only when structured guidelines are present; however, they served as an effective tool to archive information and thinking. In this sense, Sharma’s pre-experimental results suggest that blogs may not be effectively engaging learning tools without a structured environment. Furthermore, Kim (2008) found

that using shared blogs and one-size fits all customized course blogs in the university setting are no more effective than current computer-mediated communication applications. Thus, the only quasi-experimental studies that have been conducted to test the effectiveness of blogs have demonstrated weblogs to be less effective than traditional writing classrooms.

This study proposes to demonstrate empirically that a social learning space in the form of a course blog might improve writing effectively. Building on research that indicates social media writing enhances the role of audience (Magnifico, 2010; Warschauer & Grimes, 2007; Lin & Chien, 2009; Deng & Yuen, 2011; Clark, 2010), this study was designed to demonstrate that a social learning space combined with an authentic writing project and outside stakeholders will improve learning outcomes beyond what is experienced in a traditional writing classroom.

The purpose of this study is to measure and evaluate the effectiveness a course blog, which uses web-mediated writing practices combined with digital publishing, as compared to the practices of a traditional writing class, which uses paper drafts. Measurements will include a comparison of acceptance scores of articles rated by an outside editor, grades, and an evaluation of the basic components of technical writing including the following variables: the use of images, outside sources, and measures of error rates. In addition, the study will include an examination of the published feedback forums on the course blog to determine feedback relationships to learning outcomes. Specifically, the type and quality of peer review feedback, as published on the course blog, will be measured to determine its relationship to levels of acceptance for publication. The following research questions will be addressed:

- How does the publishing of writing on blogs as compared to the traditional computer assisted writing on paper affect learning outcomes in terms of levels of acceptance rates for publication?
- How does the publishing of writing on blogs as compared to the traditional computer assisted writing on paper affect learning outcomes in terms of grades?
- Does the type and quality of peer draft comments as published on a course blog relate to or predict the level of acceptance of the final article?

Method

This study was designed as a two-part study, with the first part including a nonrandomized control group in the form of a traditional writing classroom, and an experimental group that received a treatment in the form of a course blog for publishing web-mediated work-in-progress, feedback, and final drafts. The second part of the study involved a close examination of the peer feedback published on the course blog and did not include a control group working on paper.

The following null hypotheses will be tested:

- There will be no statistically significant measurable difference between learning outcomes of participants who used the blogs and those who were in the traditional classroom as measured by rates of acceptance.
- There will be no statistically significant measurable difference between learning outcomes of participants who used the blogs and those who were in the traditional classroom as measured by grades.
- The quality and types of peer review comments will demonstrate no relationship to acceptance of the final article.

A number of exploratory studies support the development of blogs to promote learning and community (Lee, 2010; Frye, Trathen, & Koppenhaver, 2010; Camp & Bolstad, 2011; Chretien, Goldman & Faselis, 2008; Fessakis, Tatsis & Dimitracopoulou, 2008; Quible, 2005; Byington, 2011; Miyazoe & Anderson, 2010; Gallagher, 2010); thus, it is likely that the null hypothesis will be rejected in all four cases.

The research took place in two separate Penn State University campus classrooms. Participants were enrolled in two sections of technical writing. Both sections were taught by the same instructor and met back-to-back in the late afternoon. The classes met twice weekly for one hour and 15 minutes. The project grade was divided into three parts: an annotated bibliography, a proposal letter, and an article.

Participants

Participants were enrolled in two sections of technical writing taught through the English Department at Penn State. The course is designed for students enrolled in the applied sciences and scientific fields and is tailored to help students prepare to write professionally rather than for scholarly purposes. Each technical writing section consists of approximately 24 students, and in the case of this study, each section consisted of predominantly male students between the ages of 19 and 22 who were majoring in engineering fields. The students were chosen from a convenience sample of two nonrandomized sections of technical writing students. Each section was randomly assigned as a control group or an experimental group. Students were informed that they were participating in a classroom study to determine the effectiveness of utilizing a course blog. Since the students formed a non-vulnerable population and the study involved normal classroom activities, the Office for Research Protections at Penn State granted an exemption for the study and subsequent publication of data.

Data collection

The data collection included the following items: the course blog peer review feedback, recorded grades, and an editorial evaluation instrument. Grades were determined based on a series of grading rubrics designed specifically to address the learning objectives of each phase of the project. In addition, tabulation of numbers of outside sources, images, and errors for each article occurred during each phase of the writing project.

An outside stakeholder, or editor, was given a rubric for scoring each article. Each article was evaluated on a simple Likert scale that measured the amount of revision the student would have to complete in order to make the article of sufficient quality to be publishable. Two additional construct variables were added to the scoring sheet to provide internal validity: ease of reading and quality of article. The editor expressed his discomfort using blogging technology and his preference for paper submissions.

A model for coding and measuring the peer review comments was designed based on models developed by Sluijsmans et al. (2002), Prins et al. (2006) and Gielen et al. (2010). An analysis of the draft workshop will categorize and compare the value of the feedback based on the following criteria:

- Judgment or evaluative statements (1 pt)
- Comments pertaining to writing style and grammar and mechanics (2 pts)
- Constructive suggestions pertaining to content and organization (3 pts)

Published draft feedback was coded and scores were recorded for each category and for the overall total score for each draft and draft workshop. Learning outcomes were evaluated and scored by the instructor, the main researcher in this study, who measured grades according to a pre-designed rubric, and by an external editor who scored and selected articles for publication.

Procedures

Both the control group and treatment group were given the opportunity to write a course project for publication, an article, written expressly for the Pennsylvania Center for the Book, an award-winning website sponsored by the United States Library of Congress. The treatment group utilized a course weblog, which functioned as an online writing mediator for the publishing and collaboration of work-in-progress as online digital files; whereas, the control group followed traditional computer-assisted writing processes, submitting all work on paper.

The participants were asked to write an article in three stages:

- I. Annotated bibliography
- II. Research proposal
- III. Article

The treatment group's utilization of a course blog and the resulting online digital publishing of work-in-progress and completion and the web-mediated peer review is the main difference in behaviors between the control group and treatment group. Participants submitted annotated bibliographies, project proposals, and the final draft of their articles to the editor of the PA Center for the Book for approval and to the instructor for grading purposes. Prior to

each submission, with the exception of the annotated bibliography, a draft workshop took place, which involved generating feedback from student peers, the instructor, and the editor at each stage of the project. Peer review among the students, as well as review, comments, and corrections by the editor were also handled through the means respective to the class section, one taking place online as web-mediated peer review in the form of comments added to the draft pages, and the other taking place through writing printed on paper and through group work. The control group had no access to the course weblog.

The treatment group published its work-in-progress on a course blog developed for the project. Online collaboration in the form of electronic feedback took place by writing feedback in comment boxes at the bottom of the each draft. Both groups received instructor intervention during the draft workshop: the treatment group in the form of projecting work-in-progress on screen during the online collaboration sessions to answer questions and model web-mediated response generation, and the control group in the form of individualized instructor intervention during the draft workshop. The control group wrote computer-assisted papers and brought hard copies to class for small group draft workshops. The editor also received paper copies and provided feedback via notes on the hard copies and discussion during the draft workshop. The editor was present during the online and paper draft workshops to provide additional verbal feedback.

Results and discussion

Part 1: Comparing web-mediated to computer-mediated writing

The null hypothesis that there are no statistically significant differences between learning outcomes of participants who used the blogs and those who were in the traditional classroom as measured by the acceptance score of the final articles of the project was rejected. The results indicate that the 25 participants in the treatment group ($M = 2.28$, $SD = 1.137$) and the 24 participants in the control group ($M = 2.94$, $SD = 1.149$) demonstrated a significant difference in performance; a Mann Whitney U test revealed that the mean ranks of the paper and blogs groups were 20.73 and 29.10, respectively; $U = 197.50$, $Z = -2.167$, $p < 0.05$; as expected, the participants in the blog treatment received higher acceptance scores than the participants in the traditional classroom. One participant was lost in the control group halfway through the project and missing values were replaced with the mean average for each missing category. Table 1 demonstrates the mean differences in acceptance scores between the two groups.

Table 1. Average Group Mean Acceptance Scores

	Group	N	Mean	Std. Deviation	Std. Error Mean
Acceptance scores	Paper	24	2.9442	1.14893	.23452
	Blogs	25	2.2800	1.13725	.22745

Acceptance scores were strongly correlated with the editor's ranking of the quality of an article, $r(49) = .837$, $p < .001$ and moderately with the editor's ranking of the ease of reading an article, $r(49) = .425$, $p < .01$. The high level of shared variance suggests that both scores, acceptance and quality, are evaluating the same item, confirming the internal validity of the results.

The social aspect of blogging initiates a level of engagement that is not experienced in the traditional writing classroom, in the sense, that writers must produce work within the framework of a community (Magnifico, 2010). Furthermore, the editor shared at the end of the course that his relationship with the blogging or treatment section was stronger. The editor was able to reach the students effortlessly through blogging communication or social media and, thus, was able to connect socially more effectively. Having a stronger relationship with the outside editor most likely instigated higher levels of motivation for the blogging group and probably led the bloggers to revise their work more fully. The paper or control group received editorial feedback through the physical exchange and transmission of notes on paper, thus, dulling the impact of the exchange.

As expected, the null hypothesis that there will be no statistically significant difference between the learning outcomes as measured by the grades of participants who experienced the course blog treatment and those who were in the traditional classroom was rejected. The results of a Welch's t-test indicated that there was a significant difference between group means for the proposal draft grade, $t(44.593) = 6.134$, $p < .05$, and for the final article grade, $t(38.566) = 6.482$, $p < .05$; the participants in the blog treatment, ($M = 95.04$, $SD = 5.76$ proposal grade) ($M =$

96.76, $SD = 4.88$ final article grade), received higher scores than the participants in the traditional classroom, ($M = 89.71$, $SD = 8.21$ proposal draft grade) ($M = 92.04$, $SD = 7.72$ final article grade). Table 2 demonstrates differences in mean grade scores between the paper and blog groups.

Table 2. Average Group Mean Grading Scores

	Group	N	Mean	Std. Deviation	Std. Error Mean
Proposal grade	Paper	24	89.7083	8.20646	1.67514
	Blogs	25	95.0400	6.76067	.35213
Final article grade	Paper	24	92.0417	7.72055	1.57595
	Blogs	25	96.7600	4.87579	.97516

Even though the hypothesis was rejected, the asymptomatic distribution of grades might indicate that grades are not a valid discriminatory measurement of learning outcomes.

Images

A statistically significant difference in the mean average of the number of images in the final article, $t(54) = 5.43$, $p < .001$ was found, with blog articles ($M = 5.40$, $SD = 1.53$) reporting more images than paper drafts ($M = 3.50$, $SD = 1.25$). No statistical differences were found between groups for the mean average of the number of images included in the proposal draft for paper ($M = 1.21$, $SD = .98$) and blogs ($M = 1.84$, $SD = 1.31$), $t(47) = -1.904$, $p = n.s.$

The results indicate that differences between the two groups were not significant until after the draft workshops, suggesting that time might be an independent variable, in terms of producing an interaction effect with web-mediated elements combined with successive drafts. In other words, the ability of the bloggers to compare their work to their peers' work may have created a competitive atmosphere and set higher standards for revision.

Sources

There were also statistically significant differences found between groups for the number of outside sources in the final article, $t(54) = 5.43$, $p < .001$, with blog articles ($M = 7.80$, $SD = 28.89$) reporting more sources than paper drafts ($M = 6.29$, $SD = 1.65$). Table 3 shows the means and standard deviations of the number of outside sources for the paper and blog groups.

Table 3. Average Mean Scores Differences in Number of Outside Sources

	Group	N	Mean	Std. Deviation	Std. Error Mean
Number of outside sources proposal	Paper	24	5.2917	.75060	.15322
	Blogs	25	6.1200	2.00666	.40133
Number of outside sources final article	Paper	24	6.2917	1.65448	.33772
	Blogs	25	7.8000	2.88675	.57735

The results indicate that the first measure, the proposal measure, demonstrated no group effect. Perhaps time was also a factor; repetitive exposure to community feedback from published draft workshops might instigate higher levels of motivation, thereby, producing a group effect in the final article. The results also suggest that there is a floor effect for the paper group, a meeting of the minimal standards or requirements for the project (five sources). The paper group included a mean average of five outside sources with an extremely narrow standard deviation (s.d. of .75). While the blog group produced a relatively small gain in the number of outside sources, the standard deviation was much larger than the paper group's standard deviation (s.d. of 2.00) indicating that there was not as strong a floor effect for the blog group. In other words, the majority of the participants in the control group met no more than the minimal standards of the assignment; whereas the treatment or blogging group had a greater variation in terms of working beyond the minimum.

Errors

No statistical differences were found between groups for the mean average of the number of errors found in the proposal draft for paper ($M = 3.38$, $SD = 3.00$) and blogs ($M = .236$, $SD = 2.19$), $t(47) = 1.354$, $p = \text{n.s.}$; and between the mean average number of errors in the final article for paper ($M = 1.29$, $SD = 1.78$) and blogs ($M = .800$, $SD = 1.35$), $t(47) = 1.095$, $p = \text{n.s.}$

Writing articles for publication for the Pennsylvania Center for the Book provided an authentic task. Woo and Reeves (2007) argued that meaningful interaction occurs in web-based learning environments when authentic tasks are provided to learners. This argument has been supported by subsequent research (Pearson, 2010). Introducing an outside stakeholder creates an incentive to produce higher quality professional work (Manion & Selfe, 2012). Thus, this study, which included an outside stakeholder in the form of an editor who selected the best articles for publication, provided an ideal “assessment ecology” for utilizing a course blog. The course design played to the strengths of an online social learning space; the results of the study, in terms of publication rates and grades, supports developing CoP through blogging technologies.

Part 2: Examining web-mediated draft workshops

The sample size for this part of the study consisted of the 24 participants of the treatment or blog group that participated in a draft workshop. The control group’s draft workshops were blended workshops, which included both unrecorded oral comments and written comments. Their results differed significantly in nature and quantity, making a statistical comparison invalid. Thus, only the draft workshop feedback comments published to the course blog were coded and given weighted scores based on the following categories and values: judgment comments, such as good or nice work evaluating the quality of the work without providing specifics or reasons (1 pt.), stylistic comments involving word choice and sentence structure (2 pts.), and constructive comments asking for more information or suggestions regarding organization of the parts or sections of articles (3 pts.). One rater, the instructor, evaluated the feedback.

The null hypothesis stating that the quality and types of published peer review comments on the course blog would show no relationship to acceptance scores was partially rejected. The results demonstrate a moderately negative relationship between the independent variable, acceptance scores and the total weighted points of the proposal draft, $r(20) = -.463$, $p < .05$; and the overall weight of points scored from both draft workshops was nearly significant with an $r(24) = -.400$, $p < .053$. Correlational testing of the specific types of peer review comments (judgment, stylistic and constructive) demonstrated no significant relationship to acceptance scores.

Furthermore, the total weighted scoring of the proposal draft workshop significantly predicted the final article acceptance scores, $b = -.463$, $t(20) 2.144$, $p < .05$; however, this relationship is negative, the higher the quality of the feedback received during the proposal workshop indicated a reduced chance of having the final article accepted for publication.

Drafts, which received a higher percentage of quality feedback, might have garnered such feedback due to a weakness in the overall quality of the draft reviewed; in essence, weaker drafts receive more constructive feedback. The lower acceptance scores of drafts receiving the highest scores in terms of the quality of feedback might indicate that the writer was unable to translate feedback into an adequate revision process, suggesting that collaboration not only has an insignificant effect on learning outcomes, but a negative impact.

The results indicate that receiving quality feedback won’t ensure positive learning outcomes. An explanation for this result might be found in the literature. For example, Lundstrom and Baker (2009) divided students into two groups—the givers of feedback and the receivers of feedback—and found that the givers made larger gains improving their writer than the receivers. This indicates that the generation of feedback is more valuable than the actual feedback itself; however, in a true experimental study, analyzing an online peer-reviewing situation, Trautmann (2009) found that students who received critiques outperformed students who generated the critiques or who solely critiqued their own work and not that of their peers. Trautmann concluded that web-mediated peer review led to improved revision and high levels of engagement. This result of the study should be examined further in a future study.

Limitations

The results of the study cannot be generalized to any population other than the participants of the current study due to it consisting of a convenience sample of participants and the relatively small sample size. Furthermore, the inconsistencies in the results between the paper and web-mediated draft workshop prevented any direct comparisons of the feedback. However, it might be argued that the two processes differ significantly in nature and outcome. The paper draft workshop is a blend of oral and written feedback; whereas, the web-mediated draft workshop provides feedback solely in the form of published comments.

Suggestions for further study

A more effective research design, which allows for the direct comparison of the nature and amount of feedback generated during a paper and web-mediated draft workshop, would provide greater insight and possibly explain the benefits of incorporating a socio-cognitive learning situation or CoP in the form of a course blog. Furthermore, a longitudinal repeated measures research design, which includes a pre-test and post-test, would produce a more reliable and valid measure of learning outcomes.

Conclusion

Social media enhanced the learning environment by providing a level of engagement that is not found in the traditional classroom. Students who published their work on a course blog published a significantly higher number of articles and received higher grades. An examination of the published peer workshop draft comments and their relationship to learning outcomes produced mixed results with students receiving the most feedback having the lowest grades and publication rates. Perhaps, providing feedback has a greater impact on learning outcomes than receiving feedback.

In the overall context of this study, web-mediated writing proved to be useful in terms of generating more effective learning outcomes. During in-class activities, such as draft workshops, more time was spent on task. When more time is spent on task, learners master skills more quickly and effectively. Furthermore, having an outside stakeholder enhanced the social aspect of blogging and the authenticity of the CoP framework, creating an apprenticeship learning environment. The editor was able to communicate more effectively through the weblog and thus produced deeper relationships or bonds and trust. Students understood how to effectively respond to the editor's directions and needs and were able to outperform the control group. In addition to the editor's presence, the course blog provided the instructor with a higher degree of oversight. The instructor was able to monitor the work of the students more effectively due to having access to the student's work in real time. Finally, peer influence became more significant as peers were able to view the work of the class holistically and could then rank and score each of their respective positions in the class, thus eliminating the tendency to simply meet the floor or minimal requirements of an assignment. Instead students were inspired to contribute beyond the minimum in order to show well on the course blog.

For the blogging group, the classroom boundary expanded dramatically. The work of the course became genuine in the sense that online publication augmented the importance of audience (Manion and Selfe, 2012). The awareness of audience shifted focus to the writing process and social engagement and mirrored the predominant writing process on social media sites like Tumblr and Facebook. Writing was then viewed through an imagined or real perception of an audience's reactions rather than the narrow lens of the author's world. Students ultimately found genuine readers outside of the classroom who were self motivated to read their work.

Overall, the study revealed that a CoP that takes place in the form of a course blog can impact learning outcomes significantly. Hodgkinson-Williams et al. (2008) argue that higher education institutions have "operated on the assumption that learning is an individual process best encouraged by explicit teaching that is, on the whole, separated from social engagement with those outside the university community" (p. 435). Introducing a CoP, Hodgkinson-Williams et al. (2008) contend, will demonstrate that "learning doesn't happen in a void" (p. 435). This study

further the case for incorporating blogging technologies to establish an effective and engaging CoP, making it possible for learners to practice knowing.

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