Can Online Peer Review Assignments Replace Essays in Third Year University Courses? And if so, What are the Challenges?

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Abstract: Essays are a traditional component of the course requirements in many post-secondary courses. However, the practical and pedagogical disadvantages of essays are significant. These include the increasing ease with which essays can be plagiarized, the lack of peer involvement in the traditional essay submission and feedback process, the usual lack of meaningful instructor-student intellectual discourse in the essay development and feedback process, and the inability to include hyperlinks and non-text media in essays submitted on paper. It is suggested that as instructors make the transition from traditional to blended/online instruction, they consider jettisoning the traditional essay requirement and replace it with some form of "assignment essay/peer review" system such as the one described. Contemporary Learning Management Systems facilitate peer review and peer assessment approaches in ways that were not available in traditional offline education. This paper describes and discusses an online assignment system utilizing peer commentaries that addresses many of the shortcomings of these traditional essay requirement. The system is modeled after peer commentary academic journals such as *Behavioral and Brain Sciences* and *Current Anthropology*. This system has successfully been used as a substitute for the traditional essay requirement in a number of third year psychology course sections platformed on both Moodle and Blackboard. The advantages, challenges and practicalities of instituting, managing and grading such peer-reviewed assignments are outlined, and the benefits of the system in terms of student engagement, intellectual modeling, and learning community enhancement are discussed. The peer reviewed assignment system is discussed in the context of recent research indicating some advantages of blended learning approaches compared to traditional approaches. Criticisms of peer feedback approaches are examined, and instructors are encouraged to provide students with detailed instructions and criteria regarding the peer review process. It is hoped that the discussion will be particularly useful to instructors who are in the process of moving from traditional face-to-face course context to the blended/online education environment.

Keywords: peer assessment; peer review; blended learning; LMS; essays

1. Introduction

The ongoing transformation of post-secondary education from traditional face-to-face models to blended and online learning environments provides instructors with a valuable opportunity to examine traditional methods of assessing student learning, and consider replacing or augmenting them with assignments and assessment methods that take advantage of the online environment's strengths and possibilities.

One such traditional assessment technique is the essay.

2. Disadvantages of essays

Essays (or term papers: I will use the two terms synonymously for the purposes of this paper) have long been a standard requirement of many post-secondary courses, yet their usefulness as a learning aid is questionable, and there are many practical disadvantages to their use (e.g., Battaglia 2008).

In the traditional essay system, students generally submit their essays to the course instructor at or near the end of term. The essays are usually (and often laboriously) marked by the instructor, who often appends detailed comments to the essays, such as suggestions for improvements, queries about unclear passages and commendations regarding incisive points, in addition to a final grade on the essay.
The instructor then usually returns the essays to the students (or leave them to be picked up by the students), often several days or sometimes weeks after the end of classes.

One disadvantage to essays is the "private" nature of the traditional essay submission and grading process. The only people involved in the transaction are the student and instructor. This "privacy" runs counter to the ideally public nature of both the education process, and of accepted scientific and scholarly discourse. It does not facilitate students benefitting from the learning experienced by other

students in researching and writing their essays, and it does not allow students to augment the learning of their peers by critiquing, commenting on or expanding upon their essays.

Moreover, the privacy inherent in the traditional essay system fails to leverage the social energy that is activated when learning is more public and social. Post-secondary students are often young adults who are intensely social and are very responsive to the attention, evaluations and commentary of their peers (as demonstrated in the resounding interest in "social media" in this age group). However, the traditional essay system forgoes the learning motivation unleashed in a more public, peer-oriented forum for the "closed system" of the instructor-student dyad.

A second disadvantage of the traditional essay system is that often the carefully constructed instructor feedback on the essay is not processed or even read by the students. Many students apparently read the instructor's feedback in only the most cursory fashion, or not at all. The latter is necessarily the case in the many instances where students fail to pick up their marked essays.

Another growing disadvantage of the essay system is the ease of plagiarism ushered in by internet and related digital information storage and transfer technologies. Although there are a variety of anti-plagiarism services and techniques available, none are fool-proof, and the variety of digital essay sources available provides a daunting problem for the classic essay system.

Other disadvantages for the traditional essay system include the substantial amount of paper used every year to provide the medium for the transmission of essays, as well as the inconvenience of delivering, receiving, filing, transporting, storing and returning paper-based essays.

3. Peer reviewed assignments as essay replacements

I wanted to institute a system of online major "assignments" in my third year university courses to replace the traditional essay system that I had been using. Although essays are subject to the problems reviewed above, they do provide students with the opportunity for a deeper level of analysis and, potentially, knowledge of a topic, then is afforded by preparing for examinations or quizzes.

3.1 The "assignment essay"

The "assignment essay" described by Scouller (1998) provides many of the learning advantages of the essay while avoiding some of its problems. Biggs (1988) defines the "assignment essay" as " .. a response in continuous prose to a specific question, for which the student has received advance notice, which is to be prepared in the student's own time, and which is to be subject to to some kid of summative evaluation (P. 185)". I wanted to combine "assignment essays" with a peer review system in order to provide some of the learning advantages of the essay in an online learning environment.

3.2 The peer review journal as a model for scholarly discourse (and maybe online education?)

In searching for an alternative to essays for third year psychology classes. I was aware of and admired the journal *Behavioral and Brain Sciences*, which uses a "Peer Review" model of publication, where "target articles" are posted online, and qualified commentators (usually academic experts on the topic explored in the target article) are invited to make short commentaries on the target articles. The authors of the target articles then respond to the commentaries.

The peer review model of scholarly discourse is attractive for a number of reasons. (Harnad, 1979). It facilitates the reactions of expert peers simultaneously with the publication of an important theoretical or empirical reviews, and provides the paper's authors with a public forum to respond to the criticisms and comments of their work. This system shortens the usual latency between scholarly publication and peer response, and also adds the "energy" of public, transparent discourse among groups of scholars with an interest in a particular topic.

3.3 Online peer review systems

Peer review systems have been used and discussed for some time. (Bostock, 2000; Brown, Race and Rust, 1995; Race, 1998; Wolfe 2004). Student peer review systems are sometimes subsumed under the broader category of "peer feedback" approaches (Nilson, 2003), together with "peer assessment" approaches. Generally speaking, peer assessment approaches involve suggesting a mark or grade to

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a peer's work, while peer review approaches do not. The system described in this paper is therefore best described as a "peer review' approach, as students were not asked to assign marks or grades to their peers.

Wen and Tsai (2006) reported that the students they surveyed were generally positive toward peer assessment systems, with the caveat that they preferred that the peer assessment component of their mark be a relatively small percentage of the course total.

In the peer review system described in this paper, students were not asked to assign marks or grades to their peers. The "assignment essay", peer reviews, and response to peer reviews contributed 15% of the final grade in the course: 10% for the assignment essay; 2% of each of two peer commentaries; 1% for the response to peer commentaries.

4. The peer reviewed assignment system: Steps in implementing in third year post-secondary courses

The peer reviewed assignment system described below is designed to be a replacement for the essay requirement in third year university courses. The steps involved in implementing the system are described below. Although many of these details will be unsurprising to instructors familiar with peer feedback systems, they are aimed more at instructors who may be moving from a traditional F2F context into the blended or online environments.

4.1 Step 1: Provide students with list of possible assignment topics

I provide students with a list of 40 - 60 possible "Assignment" topics (example from Blackboard given in Figure 1 below, but I am currently using Moodle for the same peer review assignment system).

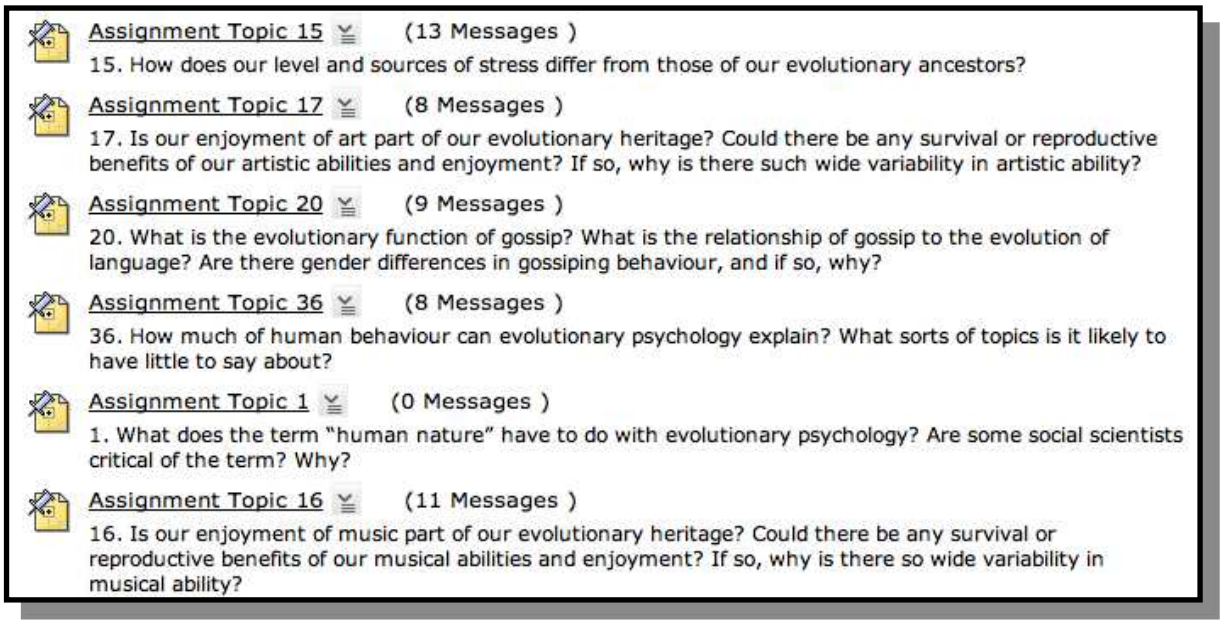

Figure 1: List of assignment topics

An advantage of supplying the list of topics, instead of having students choose their own, is that this deters plagiarism. Students cannot find an assignment topic discussion online, and then ask to submit that topic as their assignment. Assignment topics can be tailored to avoid standard discussions found on the internet by adding specific or "non-standard" subquestions.

For instance, for both Topics 16 and 17 in Figure 1, I added a sub-question involving " ... why is there such wide variability in ... [artistic ability/musical ability]". These "individual differences" aspects are not covered in many "standard" discussions of these topics, and therefore students are expected to apply their knowledge of evolutionary principles and findings from the course and other sources to those aspects of the topic, rather than simply find the answer in an online passage or source.

Students can suggest assignment topics other than the ones supplied by the instructor, but these require a discussion with the instructor to determine the student's reasons for wishing to do a "non-

posted" topic. Part of the purpose of this discussion is to attempt to determine whether the student's interest in the "non-posted" topic is genuine, and does not appear to be simply a convenient "canned" discussion that was found on the internet.

The majority of student are happy to choose one of the posted assignment topics, and each class perhaps two or three students ask to discuss topics other than the ones posted, and these requests are usually granted, after the discussion outlined above.

4.2 Step 2: Have students choose their topics midway through the term

Some of the assignment topics maybe seen as more desirable than others, so it is important that the system for students "claiming" their topics is fair and gives all students an equal chance to claim the topic of their choice.

Figure 2 (below) provides the directions given to students regarding "claiming" their topics.

PSYC 320 (Evolutionary Psychology)
Assignment Topics Oct 18, 2010

Claiming Assignment Topics

Note: The Assignment Forum questions will not be available until Monday Oct. 18 at 7 PM. You will be able to "claim" your topic starting at that time. Do not email Martin to claim your topic. Go the Assignment Forum on the PSYC 320 Moodle Webpage after Monday Oct. 18 at 7 PM to claim your topic.

To "claim' an assignment question, just post a reply to that question saying "I'll do this one". Two people can claim each question. If two people have already "claimed" a question, please don't sign your name.

You can only "claim" one question. If your name is down for more than one question, it will be removed from both ("unnatural" selection against greedy behaviour!)

You can move your name from one question to another if you decide you want to do a different one (and there is room – i.e., less than two people already "claiming".)

If someone moves from one question (as above) then you can of course claim the question that now has only one claimant.

Do not attempt to claim a topic by emailing me. To claim a topic, you have to go to the Assignment forum, and follow the above procedure.

If you want to propose a different topic, or a variant of one of the posted topics, just email me (msmith@uvic.ca) or drop by my office, and I'll discuss your suggestion with you. In many cases, you will likely be able to do a topic you suggest, but not all will necessarily be appropriate.

If you have any other questions about this, drop me a line.

Martin

Figure 2: Directions for claiming assignment topics

For the "topic claiming" system to work well, students need to be very clear about when and how they claim their topics, and the directions above (which are discussed in class, posted online, and emailed to the students) is constructed to provide such clarity. Student have reported few problems with claiming their topics in this system with these directions, and any issues have been easily addressed.

4.3 Step 3: Provide detailed directions regarding every aspect of the peer assignment and commentary system

Because most students are unfamiliar with the peer review assignment system, it is necessary to provide them with detailed, specific instructions that outline every aspect of what they are expected to do to complete their peer reviewed assignment. Detailed and specific instructions are of course good

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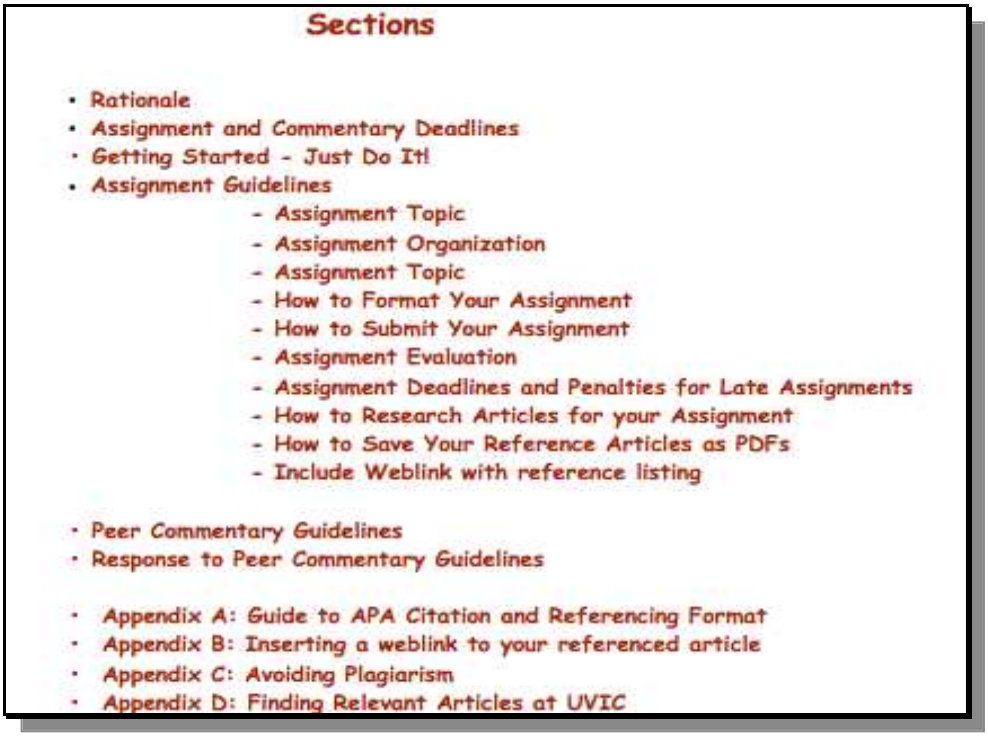
pedagogical practice in almost all educational environments, but they are particularly important when students are asked to complete a relatively novel assignment such as this.

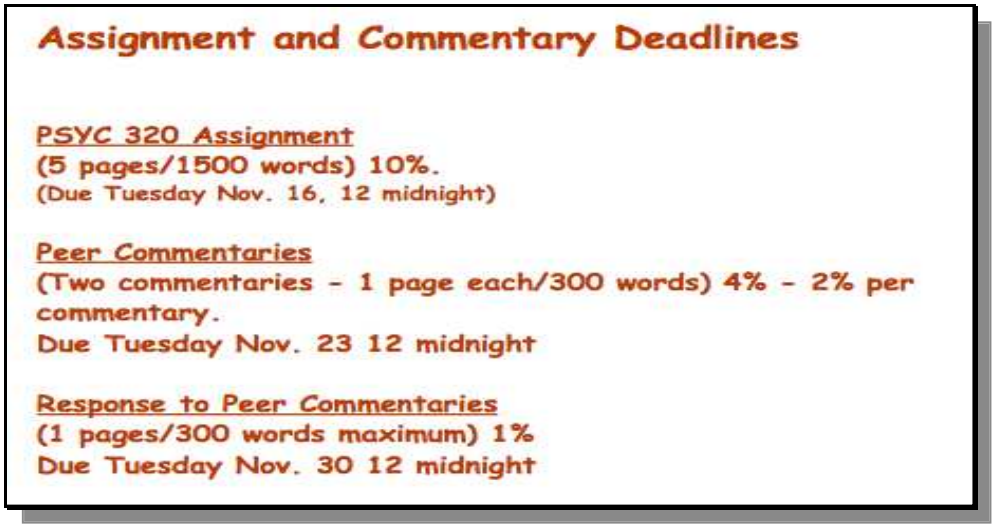
To this end, students are provided with detailed (20 page, with 14 pages of appendices) instructions outlining every aspect of the assignment, including, deadlines, formatting, evaluation criteria, and late penalties. See Figure 3 for the topics covered in the assignment instructions, and Figure 4 for the Assignment, Peer Commentaries and Response to Peer Commentaries deadlines. The Assignment deadline is several weeks before the end of term, to allow time for students to submit commentaries on their peer's assignments, and to prepare their responses to the commentaries.

Students are also provided with links to sample Behavioral and Brain Science articles as models of "target' articles, peer commentaries and responses.


Sections

- Rationale
- Assignment and Commentary Deadlines
- Getting Started - Just Do It!
- Assignment Guidelines
  - Assignment Topic
  - Assignment Organization
  - Assignment Topic
  - How to Format Your Assignment
  - How to Submit Your Assignment
  - Assignment Evaluation
  - Assignment Deadlines and Penalties for Late Assignments
  - How to Research Articles for your Assignment
  - How to Save Your Reference Articles as PDFs
  - Include Weblink with reference listing
- Peer Commentary Guidelines
- Response to Peer Commentary Guidelines
- Appendix A: Guide to APA Citation and Referencing Format
- Appendix B: Inserting a weblink to your referenced article
- Appendix C: Avoiding Plagiarism
- Appendix D: Finding Relevant Articles at UVIC

Figure 3: Peer review assignment instructions: Table of contents


Assignment and Commentary Deadlines

PSYC 320 Assignment
(5 pages/1500 words) 10%.
(Due Tuesday Nov. 16, 12 midnight)

Peer Commentaries
(Two commentaries - 1 page each/300 words) 4% - 2% per commentary.
Due Tuesday Nov. 23 12 midnight

Response to Peer Commentaries
(1 pages/300 words maximum) 1%
Due Tuesday Nov. 30 12 midnight

Figure 4: Assignment, peer commentaries and response to peer commentaries deadlines

4.4 Step 4: Students submit their "assignments" online

As the assignments are submitted online (via a Learning Management System such as Blackboard or Moodle) no paper submission is required.

Students' submitted assignments are visible to all students in the class, and they are encouraged to view as many as they can (See Figures 5 and 6)

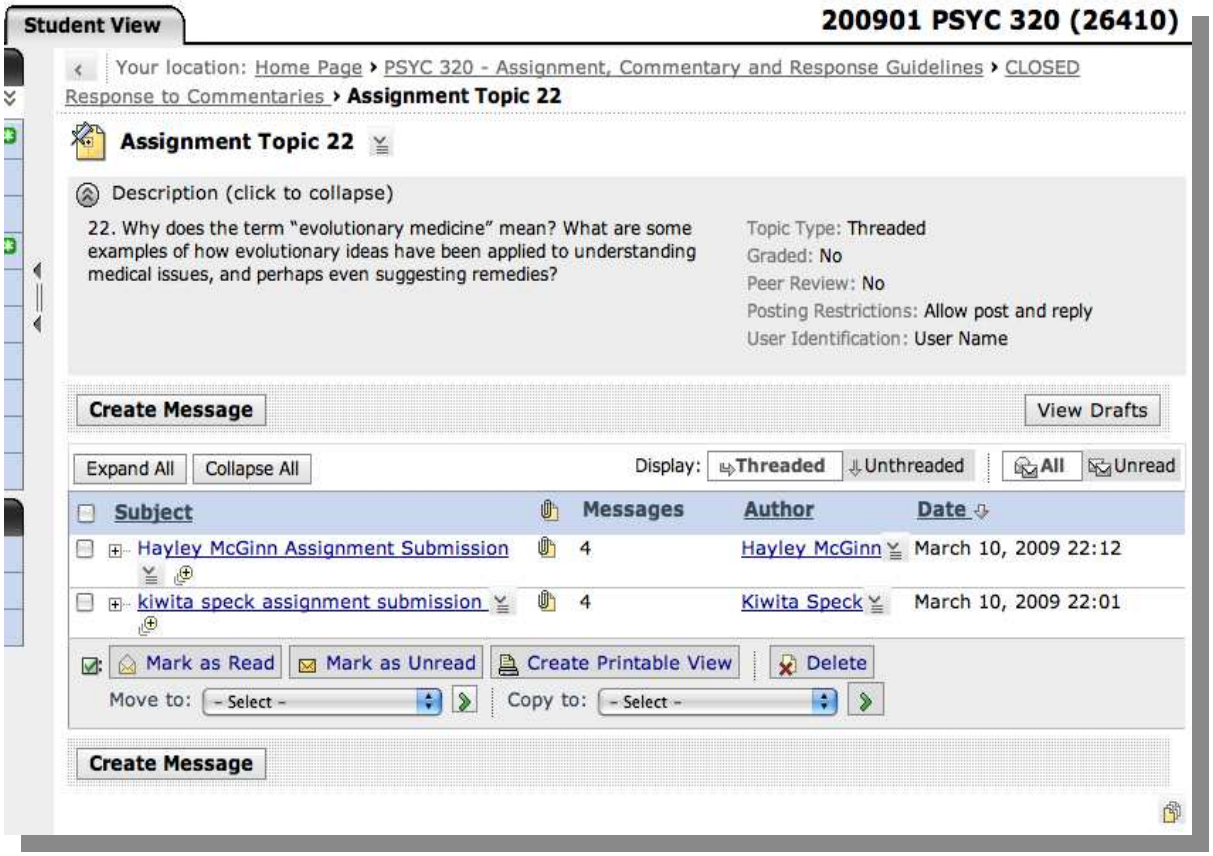


Figure 5: Assignment topic with two students assignment submissions posted

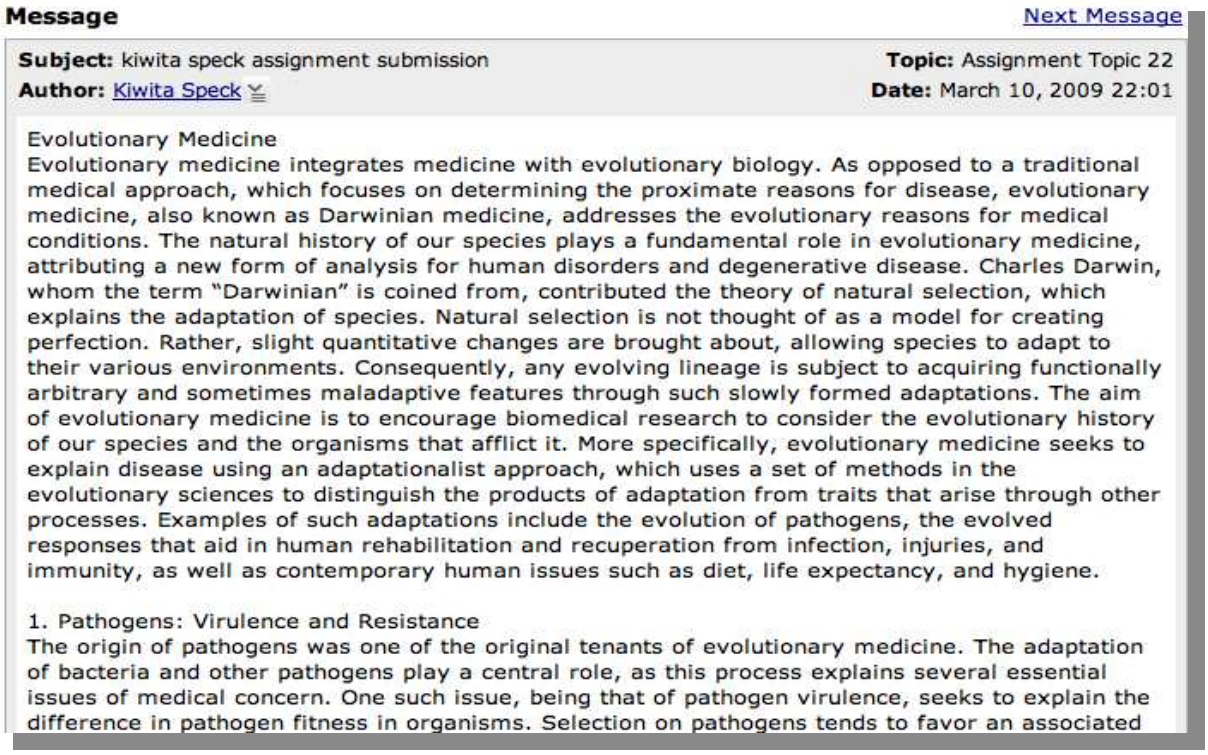


Figure 6: Posted assignment (excerpt) visible to all students in the class

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4.5 Step 5: Students assigned to comment on their peers assignments

I randomly assign students to comment on one of their peers' assignments (Figure 7). They select one assignment of their own choosing to comment on.

COMMENTER	TARGET
Al-Khalifa, Salman	Zhao, Fei
Alce, Shannon	Warren, Emily
Bae, Song Ae	Wang, Hai Yun
Bandla, Radhika	Walsh, Emma
Baptie, Sandra	Tucker, Phillipa
Barbeau, Kelly	Trivett, Casey
Beattie, Elizabeth	Towle, Kyla

Figure 7: List of assigned commentaries

4.6 Step 6: Students respond to commentaries

Messages in the thread Display Complete Thread

Name	Author	Date
kiwita speck assignment submission	Kiwita Speck	March 10, 2009 22:01
Commenter 1	Rosa Chiang	March 23, 2009 15:35
Commentator 2	Simen Hagen	March 24, 2009 20:36
Kiwita Speck Response	Kiwita Speck	March 31, 2009 13:33

Figure 8: Example of completed assignment with two commentators and student's response to commentators

Message Previous Message | Next Message

Subject: Commentator 2 **Topic:** Assignment Topic 22
Author: Simen Hagen **Date:** March 24, 2009 20:36

Applying evolutionary principles to explain various phenomena has proven to be useful in many fields of research, and medicine is no exception. Kiwita Speck provides a good account of what evolutionary medicine means and provides examples of significant contributions made by evolutionary medicine. According to Speck, evolutionary medicine addresses the evolutionary reasons for medical conditions. Specifically, it uses a set of methods in the evolutionary sciences to distinguish the products of adaptations from traits that arise through other processes to explain disease. Further, examples of such adaptations provided by Speck include the evolution of pathogens, the evolved responses that aid in human rehabilitation and recuperation from infection, injuries, as well as the issue of immunity, andcontemporary human issues such as diet, life expectancy, and

Figure 9: Sample commentary

Author: Kiwita Speck **Date:** March 31, 2009 13:33

Response: Evolutionary Medicine

Thank you Rosa and Simen for your input and thoughts about my article on Evolutionary medicine. In response to your comments and questions, the following provides some information both on the evolution of diet, as well as female hormones.

R1: Evolution of Diet
With response to Rosa, as to why we are attracted to foods that are not that good for us, I found some interesting information regarding salt in foods we consume today.

One aspect of evolutionary medicine looks at the changes in human diet. In evolutionary medicine it is explained that the body benefits from a diet that is similar to our evolutionary ancestors since natural selection proceeds too slowly for us to adapt to our modern diet. As explained, our hominin ancestors survived off of a diet primarily based on fruits, vegetables and meat, and this was extremely beneficial to our overall health. As time has passed, society has changed dramatically, with lifestyles becoming extremely fast paced. Being busy individuals, we often turn to quick and easy meals instead of those that take time

Figure 10: Sample response to commentary

4.7 Step 7: Marks are assigned to assignments, commentaries and responses

After the commentaries and responses are completed, I review each student's assignment submission, commentaries and responses and give them a mark out of 12 or 15 for the entire assignment "package", based on the criteria described in the Assignment instructions.

So I would characterize this system as more of a "peer review" system than a "peer assessment" system, as students are not required to grade their peers.

However it retains almost all of the benefits of peer assessment (Bostock, 2000) without the drawbacks of requiring students to assign a grade or mark to their peers.

5. Discussion

5.1 Online peer review assignments and the blended learning "advantage"

One of the advantages of the described peer review system is that, as it necessarily takes place in a blended learning context, it potentially accesses the pedagogical resources available in the online environment. Means, Toyama, Murphy, Bakia, and Jones (2009) conducted a meta-analysis that assessed the effectiveness of blended instruction as compared to both traditional face-to-face, and "online-only" instruction. One of their general conclusions was that students in blended courses tended to demonstrate superior learning than students in traditional face-to-face courses. This analysis provides some empirical reassurance that moving traditional components of courses, such as the "formal writing/essay" component into the blended learning environment, may indeed have the potential to increase the learning benefit of these assignments in consistent and measurable ways.

Means et al (2009) suggest that many of the learning benefits of blended versus traditional courses appear to be due to the fact that online learning tends to give students more control of their learning activities and that " manipulations that trigger learner activity or learner reflection and self-monitoring of understanding are effective when students pursue online learning as individuals". It would seem likely that peer review systems such as the one outlined here might indeed lead to greater student reflection on their topics; partly because the expanded "audience" for their work may lead to greater care and diligence in the preparation of their assignments. Similarly, the feedback provided by their peers, as well as the required formal response to the feedback, might be useful in developing the increased intellectual "self-monitoring" that is one of the goals of the "cognitive apprenticeship" inherent in most advanced post-secondary courses.

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Means et al (2009) also point out that ultimately, perhaps the most important factor in the observed advantage of blended instruction appears to derive from the greater "time on task" that the online environment facilitates and, in some cases, promotes. This suggests that one of the challenges for instructors designing and delivering online-based assigned essay review systems is to include requirements or motivations in the guidelines and in-class discussion of the peer review system that serve to increase the productive time and thought that students spend on their assignments. The described system does includes several such features. For instance in the traditional essay system, there is just one "assessment/feedback" point: at the end of the term, when the student submits the essay and the instructor marks and returns it.

By contrast, the described peer review system involves at least four separate intellectual "products" that have to be submitted, and that lead in turn to further feedback and/or reflection: the assignment itself, two peer reviews and the response to the peer review. The construction of each "product" involves applying the concepts learned in the course, as well as requiring the student's general critical, analytic, synthesizing, research and writing abilities. It is likely that the repeated, iterative application of these valuable intellectual skills is more useful in promoting desired higher-order learning outcomes in a course than the "single product" traditional essay system.

5.2 The differing goals of peer assessment

Gielen et al (2011) point out that peer assessment systems can have at least five distinctive goals. They are social control, assessment tool, learning tool, learning how-to-assess tool, and active participant tool. The peer review system presented in this paper focuses on the "learning tool" and "active participant tool" goals. Gielen et al (2011) suggest that reasons that peer assessment may be particularly effective as a learning tool include the fact that peers are "on the same wavelength" and share some of the same discourse templates. These shared learning schemas likely provide advantages in feedback appropriateness and relevance compared to feedback from instructors.

The system described in this paper also focuses on the benefits of peer review for increasing the active participation of students. Gielen et al (2011) discuss the "emancipatory" effect that including a peer review component can have on student learning and self-perception as apprenticing scholars. These effects include the development of student intellectual autonomy and contributing to the development of students as lifelong learners.

Kollar and Fischer (2010) in a review that focussed on the cognitive processes underlying the learning benefits of peer assessment, is that a crucial aspect of effective peer assessment (but one that is often overlooked) is that for peer assessment to facilitate learning, the peer feedback must be processed and acted upon by the learner. It is therefore not enough to simply provide an opportunity for students to review and provide feedback for their peers. It is equally important that students are required to respond to the their peers's assessments. The system described here fulfils this criterion by requiring students to post a "response" to the comments of their peer "commenters". In line with the model outlined by Kollar and Fischer, this response serves as a cognitive capstone to the peer review and reponse process, and provides a sense of task closure that serves as a an affective reinforcement to the completion of the assignment.

5.3 Online peer review assignments: Facilitating the learning community

Beebe, Vonderwell and Boboc (2010), in a discussion of issues involved in transferring assessment practices from offline to online environments, emphasize the necessity of carefully considering the differences between the online and F2F class environments in designing assessments in online and blended courses. A particular issue that they raise is the difficulty in encouraging the "community of learners" in the online environment, and suggest that instructors should search for assessment methods that are "community-friendly" rather than falling back on the "individualistic" strategies carried over from the traditional offline classrooms.

I would suggest that the essay requirement is one such "community-unfriendly" assessment tool that instructors would benefit from jettisoning in moving to the online/blended course environment, and that assignment-based peer feedback systems are far more likely to encouraging the kind of active, stimulating, and "public" learning community that most instructors and students desire.

5.4 Two peers are better than one

In the peer review system described in this paper, each student generally ends up with feedback from at least two peers. Some evidence that it is desirable to have students receive feedback from more than one peer is provided by Reily, Finnerty and Terveen (2009) who found that aggregating peer reviews for computing assignments improved the accuracy of the review score, and that the aggregated scores were generally similar to those provided by an experienced teaching assistant. Although the system described here did not involve assigning scores to peers' work, this finding implies that multiple reviews increase the chance that the feedback received by students will be valuable.

5.5 Critiques of peer feedback approaches

Nilson (2003) critiques peer feedback approaches as having questionable validity, reliability and accuracy, and of being potentially too "...uncritical, superficial , vague and content-focused... (p.34)". Nilson suggests a number of remedies to address these problems, including avoiding opinion-oriented assessments, and providing detailed and specific guidelines to students regarding what questions they should ask themselves about their peer's work, and what specific criteria they should apply in assessing or reviewing the work.

Nilson's suggestions are very useful, and are should be considered prior to designing and implementing a peer assessment or review system, whether it is in an online context or not. Nilson concludes that, if the peer system addresses some of the potential pitfalls that she outlines, peer feedback can be very useful in facilitating student learning, and that experience with giving and receiving feedback from peers is a valuable "life skill" that can be developed in classes that use peer feedback systems. Similarly, Orsmond and Merry (1996) reported that where assessment criteria were detailed and specific, student and instructor assessments of a biology poster project were similar.

5.6 Peer feedback approaches: Quality and planning issues

Ploegh, Tillema and Segers (2009) suggest several criteria that can be used to evaluate the quality of peer assessment systems. They include authenticity, transparency and fairness. Authenticity refers to the extent to which the peer system is similar to the "real world" environment where the learning is expected to be applied. Insofar as the present system is explicity modelled on "real world" academic peer commentary journal where professional scholars present and critique their findings, it meets this criterion well.

The quality criterion of transparency refers to the requirement that the goals, process and assessment criteria be completely clear to the students. This criteria is well addressed by the extensively detailed guldelines and examples provided to the students, as well as by the fact that all the students submissions, commentary and responses are visible online to all students in the course. This is in marked contrast to the highly "opaque" nature of the traditionally essay system.

The fairness aspect of the present system is facilitated partly by the transparency outlined above, and also by the fact that students have a great deal of choice in this system. They can choose to do one of the suggested "questions" or they can suggest one themselves. They can choose one of the "target" articles that they would like to critique. Students generally believe that the more control that they have of their academic "product", the fairer the system is. Furthermore, this system removes verbal skills, extroversion, and appearance as factors that can provide unwanted "halo" effects: for instance, in classroom based presentations. Creating an online exchange of ideas and critiques "levels the playing field" in regards to these extraneous factors, and provides a forum for student to be evaluated based on well-considered analysis and research, rather than on impromptu classroom participation.

Topping (2009) provides a list of "planning issues" for instructors and course designers to consider in designing and implementing peer feedback systems. Experience with the peer review system described here suggest that three of the most important such issues are:

- "Clarify purpose, rationale, expectations and acceptability with all stakeholders". Of course,the most important stakeholders in this system are the students, and it very important that the instructor's reasons for using the peer review system instead of the standard essay system are

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communicated clearly, early and often. Such communication primes the students to the anticipated advantages of the system, and helps them move past any "novelty angst".

- "Provide training, examples and practice". A number of studies (e.g. van Zundert, Sluijsmans and van Merrienboer, 2010) have provided evidence that the effectiveness and learning benefits of peer review systems improves substantially with increased training and practice. Instructors should try to provide these training and practice opportunities both the in-class, face-to-face environment, and also online.
- "Provide guidelines, checklists or other tangible scaffolding". Students always appreciate detailed and clear directions, but this is particularly important with a relatively novel (to most students) course component such as this.

6. Conclusions

Bostock (2000) summarizing Brown, Rust and Gibbs (1996), Race (1998), and others, lists the following potential advantages of peer assessments for students.

- Gives a sense of ownership of the assessment process, improving motivation
- Encourages students to take responsibility for their own learning, developing them as autonomous learners
- Treats assessment as part of learning, so that mistakes are opportunities rather than failures
- Practises the transferable skills needed for life-long learning, especially evaluation skills
- Uses external evaluation to provide a model for internal self-assessment of a student's own learning (metacognition)
- Encourages deep rather than surface learning

My experience with the peer review system described in this paper leads me to advance some further potential advantages of online peer review and assessment systems for students.

- Can make the learning process more transparent, and visible
- Makes learning more social, and thereby recruits students' sociability motivations to the learning process
- Helps transform the class to a learning community, rather than a collection of individuals learning
- Takes advantages of the knowledge and critical skills of the students as powerful resources for their peers
- Learning from your peers can be more interesting and fun than learning from your instructor

Online technology provides tools and models that facilitate and encourage the use of well-designed peer feedback systems. As more instructors and students enter the blended learning environments that constitute the future of education, online peer review assignment systems such as the one described in this paper are likely to play an important role in post-secondary courses, and evidence is accumulating that these approaches are likely to increase student motivation, learning and enjoyment.

References

Battaglia, A. (2008) "Challenging the Essay Culture", [online], In Weller, S., Goodman, M.K. and Kinchin, I. (Eds). *King's Institute of Learning and Teaching: Excellence in Teaching Conference Proceedings* http://www.kcl.ac.uk/content/1/c6/05/55/79/ExcellenceinTeachingConference2007.pdf

Beebe, R, Vonderwell, S and Boboc, M. (2010) "Emerging Patterns in Transferring Assessment Practices from F2f to Online Environments" *Electronic Journal of e-Learning* Volume 8 Issue 1, pp 1-12, available online at www.ejel.org

Biggs, J.B. (1988) "Approaches to learning and essay writing", in Schmeck, R.F. (ed.), *Learning Strategies and Learning Styles*, Plenum Press, New York.

Bostock, S. (2000) "Student Peer Assessment", [online], Keele University, http://www.keele.ac.uk/depts/cs/Stephen_Bostock/docs/bostock_peer_assessment.htm

Brown, S., Race, P. and Rust, C. (1995) "Using and experiencing assessment", in Knight, P. (ed.) *Assessment for Learning in Higher Education*, Kogan Page/SEDA London:

Gielen, S. Dochy, F. Onghena, P., Struyven, K. and Smeets, S (2011) "Goals of peer assessment and their associated quality concepts," *Studies in Higher Education, 36*, pp. 719-735,

Harnad, S. (1978) "Editorial". *Behavioral and Brain Sciences.* http://www.ecs.soton.ac.uk/~harnad/Temp/Kata/bbs.editorial.html

Keehn, R. (2001). "Changing Places: Why I Have Students Grade Their Own Essays First". *Exchanges: The Online Journal of Teaching and Learning in the CSU*. http://www.exchangesjournal.org/classroom/changingplaces_pg1.html

Kollar, I. and Fischer, F. (2010) "Peer assessment as collaborative learning: A cognitive perspective". *Learning and Instruction,* 20**,** 344-348.

Lin, S.S.J., Liu, E.Z.F., and Yuan, S.M. (2001). 'Web-based peer assessment: Feedback for students with various thinking-styles', *Journal of Computer Assisted Learning 1*7, pp 420–432.

Means, B., Toyama, Y., Murphy, R., Bakia, M., and Jones, K. (2009) "Evaluation of Evidence-Based practices in online learning: A Meta-Analysis and review of online learning studies," Tech. Rep.,. http://www.eric.ed.gov/ERICWebPortal/detail?accno=ED505824

Orsmond, P. and Merry, S. (1996). "The importance of marking criteria in the use of peer assessment", *Assessment & Evaluation in Higher Education* 21, pp 239–250.

Pleogh, K., Tillema, H. H., and Segers, M.S.R. (2009). "In search of quality criteria in peer assessment practices". *Studies in Educational Evaluation* 35, pp 102–109.

Meichun L. W. and Tsai, C. (2006) "University Students' Perceptions of and Attitudes toward Peer Assessment", *Higher Education*, Vol. 51, No. 1 pp 27-44

Nilson, L.B. (2003), "Improving student feedback", *College Teaching*, 51, 1, pp 34,

Olson, V. L. B. (1990). "The Revising Processes of Sixth-Grade Writers With and Without Peer Feedback." *Journal of Educational Research* 84, no. 1, pp 22 - 29.

Race, P. (1998) "Practical Pointers in Peer Assessment", pp 113-122 in *Peer Assessment in Practice*, Brown, S. (ed.) (SEDA paper 102) SEDA, Birmingham.

Reily, K., Finnerty, P. L. and Terveen, L. (2009) 'Two peers are better than one: aggregating peer reviews for computing assignments is surprisingly accurate', *Proceedings of the ACM 2009 international conference on Supporting group work*, May 10-13, 2009, Sanibel Island, Florida, USA

Scouller, K. (1998). "The influence of assessment method on students' learning approaches: Multiple choice question examination versus assignment essay', *Higher Education* 35, pp 453–472.

Topping, K. J. (2009). "Peer assessment," *Theory Into Practice*, vol. 48, no. 1, pp 20-27. [Online]. http://www.eric.ed.gov/ERICWebPortal/detail?accno=EJ823946

van Zundert, M., Sluijsmans, D. and van Merrienboer, J. (2010). "Effective peer assessment processes: Research findings and future directions," *Learning and Instruction*, vol. 20, no. 4, pp 270-279. [Online]. http://www.eric.ed.gov/ERICWebPortal/detail?accno=EJ878559

William J. Wolfe. 2004. "Online student peer reviews" In *Proceedings of the 5th conference on Information technology education (CITC5 '04)*. ACM, New York, NY, USA, pp. 33-37. DOI=10.1145/1029533.1029543 http://doi.acm.org/10.1145/1029533.1029543

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