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Electronic feedback or handwritten feedback: What do undergraduate students prefer and why?

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Abstract: Giving feedback on students' assignment is, by no means, new to faculty. Yet, when it comes to handwritten feedback delivered in person and typed feedback delivered electronically to students, faculty may not know what undergraduate students prefer and reasons behind their preferences. The present study explored which form of feedback, i.e., electronic or handwritten feedback, undergraduate students preferred and rationale behind their preferences. Two hundred fifty respondents completed an online survey, which consisted of three closed-ended questions and two open-ended questions. Nonparametric tests were used to analyze the quantitative data. Qualitative responses were read and analyzed by four researchers and six themes were identified. The qualitative data were rechecked against the six themes independently first and then collectively. Discrepancies were discussed before complete consensus was made. The study found that nearly 70% of the participants preferred e-feedback for its accessibility, timeliness, and legibility. Yet, with respect to the quality of feedback, the majority of handwritten supporters chose handwritten feedback, as they perceived this type of feedback as more personal. The article discusses the marked discrepancies between the two groups and ends with educational implications and suggestions for future research.

Keywords: feedback, electronic feedback, handwritten feedback, teaching and learning, instructors, students

I. Introduction.

Feedback is important to student learning (Case, 2007; Ferguson, 2011; Krause & Stark, 2010) and a basis for supporting and regulating the learning process (Ifenthaler, 2010) regardless of who students are and where they are from and regardless of what form instructors choose to provide feedback on students' assignments, be it electronic feedback or handwritten. Quality feedback should work as a guiding light, promoting student learning (Chang, 2011). Krause and

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Stark sampled 2,137 university students and found that individual learning with feedback had significant effects on student learning. Increasingly students are demanding feedback from their instructors (Siew, 2003). Yet, students' perceptions of different forms of feedback are some times inconsistent and contradictory (Krause & Stark, 2010). The main objective of this study, therefore, was to examine which undergraduate students preferred; handwritten or electronic feedback and to understand the underlying reasons for these preferences.

II. Theoretical Framework.

A. Indifference to Feedback.

Some instructors do spend time providing feedback directly onto hardcopies of students' assignments (handwritten feedback) while others use a keyboard and send feedback electronically to students (electronic feedback). The National Union of Students (NUS) Survey (2008) reported that 85% of respondents did receive written comments. However, Winter and Dye (2004) found that despite time and work exerted by instructors to offer students feedback, some students did not even collect their feedback (Wojtas, 1998 in Higgins, Hartley, & Skelton, 2001). Sinclair and Cleland (2007) concurred, as a result of a survey study with undergraduate medical students, that fewer than half of the students did not want to be bothered to collect feedback when given a choice. Other students simply gave a quick glance to grades before slipping their assignments into backpacks (Wojtas, 1998 in Higgins, Hartley, & Skelton, 2001). Wojtas (1998) furthered, "Some students threw away the feedback if they disliked the grade, while others seemed concerned only with the final result and did not collect their marked work" (in Higgins, Hartley, & Skelton, 2001, p. 270). Still others justify that they do not appreciate feedback returned to them late (Winter & Dye, 2004).

B. Discontent with Feedback.

Discontent among students with the quality of instructor's feedback was commonly noted in the NUS Survey (2008) and Quality Assurance Agency for Higher Education (2007). After surveying 465 graduate students and 101 undergraduate students at a major Australian university, Ferguson (2011) substantiated that feedback failed to play the role as it was expected. Price, Handley, Millar & O'Donovan (2010) had a similar observation. Students felt feedback given on assignments was often vague and ambiguous, making it hard to follow. Additionally, students complained that feedback was overly negative and not useful to them. It might be a reason that students were less likely to act on feedback to improve their subsequent work. All seemed to think that instructors were not willing to spend time writing helpful feedback and did not seem to care about student learning (Price et al., 2010). In all, 90% of students at fourteen Australian universities (Scott, 2006) described feedback they were getting as insufficient.

C. Expected Feedback.

To improve their learning, students want useful and high quality feedback. With the promise of feedback, students would be happy to wait, even if it would be a little longer (Ferguson, 2011). Research indicates that students attach greater importance to quality and detail than to timing in regard to feedback, even though timeliness is continually described as an important component

of effective feedback in any form (Bai &Smith, 2010; Bridge & Appleyard, 2008; Denton, Madden, Roberts, & Rowe, 2008; Price et al., 2010; Scott, 2006).

With the growing demand for online course delivery, more instructors are offering electronic feedback. Timeliness of electronic feedback has been found helpful to students' learning (Dickinson, 1992; Seliem & Ahmed, 2009). Electronic feedback also encourages students to be responsible for their own assignments, facilitates collaboration, and increases student participation (Seliem & Ahmed, 2009). It also allows an instructor to review, clarify (Chang, 2011), and "tone down criticism" on feedback (Dickinson, 1992, p. 6). Feedback is one of the imperative factors affecting students' perceptions of course quality (Yang & Durrington, 2010). Yet, some students distrust the receipt system if feedback is delivered electronically (Bridge & Appleyard, 2008). Studies have reported some students' antipathy toward electronic feedback (Ferguson, 2011; Scott, 2006). One of the disadvantages of e-submission is a lack of social interaction, as it lacks personal touch. Since learning remains a profoundly social experience (Scott, 2006), students expressed their hunger for more opportunities to have a dialogue with instructors (Price et al., 2010).

Some research has found that handwritten feedback is personal (Morgan & Toledo, 2006). Others (Denton et al., 2008; Ferguson, 2011; Price, et al., 2010) have reported that handwritten feedback is difficult for students to read, due to illegible writing. Students may not perceive that handwritten feedback is part of the process that would help them improve their performances (Dickinson, 1992). As such, it is felt that the interactive face-to-face communication would help clear up students' concerns and offer reassurance. Nonetheless, NUS (2008) found that only 25% of the respondents set up individual meetings with instructors, because setting up face-to-face meetings "was dependent on a good relationship with the tutor; such good relationships where they felt comfortable to go and ask for verbal feedback" (NUS, 2008, p 31). This may indicate that it was not because those students would want to intentionally avoid individual meetings, but it was because they might not feel they had good relationships with instructors.

One overlooked aspect in defining feedback is a *feed-forward* component (Price, 2010), the opportunity for students to use the information to affect future work. It is a cyclic and ongoing in the process of longitudinal development (Denton et al. 2008), stemming from dialogues between instructors and students (Price et al., 2010). Students may inappropriately view each assignment as a discrete final project and regard feedback as simply justification for a given grade without this feed-forward opportunity. If feedback is considered a finished product, merely to correct errors on assignments, or if it is not delivered in time for student action, it is ineffective and more than likely ignored (Dickinson, 1992; Gibbs & Simpson, 2004; Price et al., 2010). Evaluative feedback can become useful and meaningful when there is a consensus on shared understanding between instructor and student about the purpose of feedback (Case, 2007; Price et al., 2010; Seliem & Ahmed, 2009). When give-and-take opportunities exist throughout the ongoing, cyclical process, instructors can offer additional explanations or elaborations on feedback (Hattie & Timperley, 2007; Price et al., 2010). This practice can clarify the information instructors have disseminated to students about their work and thereby help improve learning outcomes (Denton et al., 2008). In an assessment continuum between student and teacher, feedback and instruction are intertwined (Hattie & Timperley, 2007) as a component of an ongoing dialogue between the stakeholders, increasingly desired by students (Price et al., 2010). Hence, feedback is most effective when it is understandable to the extent that learners are able and willing to use it and when instructors focus on "*how to improve*" subsequent learning (Ferguson, 2011, p. 56, author added emphasis). The assessment process should not be a "bolt-on

addition at the end" of the curriculum, but "an integral part of the educational process" (National Curriculum TGAT Report, 1987, p. 6). Both feedback and feed-forward should be an ongoing part of the educational process in a forward-looking relational process, allowing students to use the information to improve subsequent assignments (Dickinson, 1992; Gibbs & Simpson, 2004; Price et al., 2010).

III. Methods.

A. Participants.

This study invited 664 undergraduate students from the School of Education at a Mid-western university to take part in an investigation of students' preference for either handwritten or electronic feedback and their rationale for this preference. Two hundred seventy nine students responded, making the return rate 42%. Out of 279 respondents, 29 respondents did not complete all of the survey questions. As these surveys were incomplete, they were discarded from the sample, leaving the total sample of 250 with a response rate of 38%.

Except for seven students (3%) who did not report their gender, among 250 participants, 80% were female, while 17% were male. Except for two who did not report their age, there were 147 participants (59%) ranging from 18 to over 45 years of age. Except for 19 students 8% failed to report their GPA, most participants 65% indicated that their GPA was 3.01-4.00. Over half of all respondents 66%, described their major as elementary, while 33% self-identified as secondary education majors (see Table 1 and Table 2).

Table 1. Gender and age.

Variable	*n*	%
Gender		
Female	200	80
Male	43	17
Missing	7	3
Age		
18-24	147	59
25-34	61	24
35-44	27	11
45 & Over	13	5
Missing	2	1

Note. All percentages add up to 100%

Table 2. Class Standing, GPA and major.

Variable	*n*	%
Class Standing		
Freshman	47	19
Sophomore	58	23
Junior	58	23
Senior	82	33
Missing	5	2
GPA		
3.01-4.00	164	65
2.01-3.00	62	25
2.00 & Below	5	2
Missing	19	8
Major		
Elementary	165	66
Secondary	70	28
Special Ed.	14	5.6
Missing	1	0.4

Note. All percentages add up to 100%

B. Research Design.

To best understand the research problem, a mixed methodology approach was used in the study, which obtained different but complementary data on student perceptions pertaining to handwritten or electronic feedback. It also combined the differing strengths and weaknesses of quantitative methods (large sample size, trends, generalization) with those of qualitative methods in the form of a questionnaire.

C. Instrument.

An online application of Lime Survey was used to collect data. The survey questions were developed by the four researchers and reviewed by a faculty member with expertise in instructional technology. In light of his suggestions, the questions were revised and refined until consensus was reached. The survey instrument consisted of three closed-ended questions: 1) Which kind of feedback do undergraduate School of Education students prefer – handwritten or electronic, 2) To what extent do School of Education undergraduate students prefer either handwritten feedback or electronic feedback, and 3) How useful was your instructor's feedback? In addition to questions of demographic information including: gender, age, class standing, GPA (grade point average), and major; there were also two open-ended questions: 1) I prefer handwritten feedback because . . . (this question was answered by handwritten supporters) or I prefer electronic feedback because . . . (this question was answered by e-feedback supporters), and 2) Do you have any other comments to make about assessment feedback that may help faculty better facilitate your learning? (This was asked of both groups of supporters). In the survey, handwritten feedback was defined as feedback that is written by hand on students' assignments and physically delivered to students." The definition of electronic feedback was "feedback that is typed and shared electronically with students via emails, forums, Facebook, etc.

D. Procedure.

Two weeks after the spring semester of 2012 started, all undergraduates admitted into the teacher preparation program were invited to participate in the study via an email. The potential participants were then redirected to the online site where they were first prompted with a consent letter, which informed them of the purpose of the study, ensured confidentiality and also made it clear that participation was voluntary. If potential respondents agreed to participate, they continued on to complete the questionnaire. Students could stop or quit answering the questions at any point they liked. All potential participants received a first follow-up letter electronically three weeks after the initial invitation letter was sent out. A second follow-up letter was emailed to all potential participants three weeks later.

E. Data Analysis.

To answer the first research question of whether the undergraduate students of the School of Education preferred electronic or handwritten feedback, nonparametric tests were utilized. SPSS 19 was used to answer part of the second research question of why either of these options was preferred over the other. A crosstabs procedure, using the Chi-square Test of Independence was used to analyze the nominal variables. A Chi-square Test of Independence measures the degree to which a sample of data comes from a population with a specific distribution (Bakerson, 2009; Mertler &Vanatta, 2005 Rosenberg, 2007; Stevenson, 2007). It tests whether the observed frequency count of a distribution of scores fits the theoretical distribution of scores. This issue was addressed through the use of the Pearson's Chi-square procedure (Bakerson, 2009; Mertler & Vanatta, 2005 Rosenberg, 2007).

The rest of the second research question was answered thorough the analysis of qualitative responses, which consisted of coding the survey responses and of aggregating the codes to identify themes (Charmaz, 2000; Creswell, 2002). Four researchers read and analyzed the respondents' responses with respect to their justifications of preferences for handwritten or electronic feedback, and their responses to the last survey question: "Do you have any other comments to make about assessment feedback that may help faculty better facilitate your learning?" Six themes were identified, which include: accessibility (A), timeliness (T), legibility (L), quality of feedback (Q), personal (P), and miscellaneous (M) (see Table 3 and Table 4). In light of the themes, the researchers went back to check the codes and then discussed the discrepancies of the coding through two meetings. The inter-rater reliability was 0.82 for electronic feedback preference, 0.84 for handwritten feedback preference, and 0.72 for the last question. The qualitative responses under each theme were then calculated to answer the second question of why the respondents preferred one form of feedback over the other and what they valued the most in terms of those six themes.

Table 3. Coding with themes and examples for accessibility and timeliness.

Codes	Themes	Example Quotes
A	• Able to get information easily • Convenience • Able to ask questions • Secure	• I spend the majority of my time on the computer. • I am able to access the information needed without having the hard- printed paper(s). Can access information anytime I have wireless connection through phone/laptop/or computer. • I check my email several times a day so that is what is convenient for me. Also, getting electronic feedback means that I will always be able to go back to it without losing it, whereas a handwritten feedback you can lose or misplace. • I can ask the professors in class what they mean if I have questions about it.
T	• Readability • Understanding	• I also appreciate that electronic feedback is a faster way to receive constructive feedback.

Note. Accessibility (A), timeliness (T)

Table 4. Coding with themes and examples for legibility, quality, personal and miscellaneous.

Codes	Themes	Example Quotes
L	• Quick return	• [Y]ou don't have to wonder what a comment says due to poor penmanship, • Sometimes it is harder to read hand written feedback.
Q	• Constructiveness • Usefulness • Helpfulness • Understanding the content • Revise and improve • Summary vs. In-Text comments (location) • More detail is better • Canned responses • Physical touch	• I like handwritten feedback on tests because they can point out exactly where I messed up and explain it right on the test. • I can see what my answers were and see what was wrong, why it was wrong and what the instructor thought. I also like to be able to touch the actually feedback because for some reason I feel like I understand it better when I can touch it.
P	• Close rapport between student/professor • Feeling obligated to read • Appreciation • Caring about students	• When I receive handwritten feedback I feel that my professor entered into a dialogue that required reflection, interpretation, and evaluation on my performance as a student. By providing me with handwritten feedback, I feel that the professor took the time to personalize their thoughts on my performance as a student and pre-service teacher. • Handwritten feedback is something I usually feel more obligated to read as it is all on my returned assignment.
M	• Wish • Use of Oncourse, gradebooks • Use of Word Review features • Save paper	• [T]he feedback has to be precise not just "good work" • [I]t saves paper, • I believe in going paperless to many extents, but when it comes to engaging with comments or feedback, having a marked up paper with comments and input is the most helpful.

Note. legibility (L), quality of feedback (Q)personal (P), and miscellaneous (M)

IV. Results and Discussion.

A. Preference.

The majority of SOE participating undergraduate students (68%) preferred electronic feedback/e-feedback to handwritten feedback (34%). The primary reason for those who supported e-feedback was accessibility, which accounted for 38% of the comments made by the e-feedback supporters (see Figure 1). In the following, along with the quantitative results, discussed are six identified themes, including: accessibility, timeliness, legibility, quality, personable, and miscellaneous.

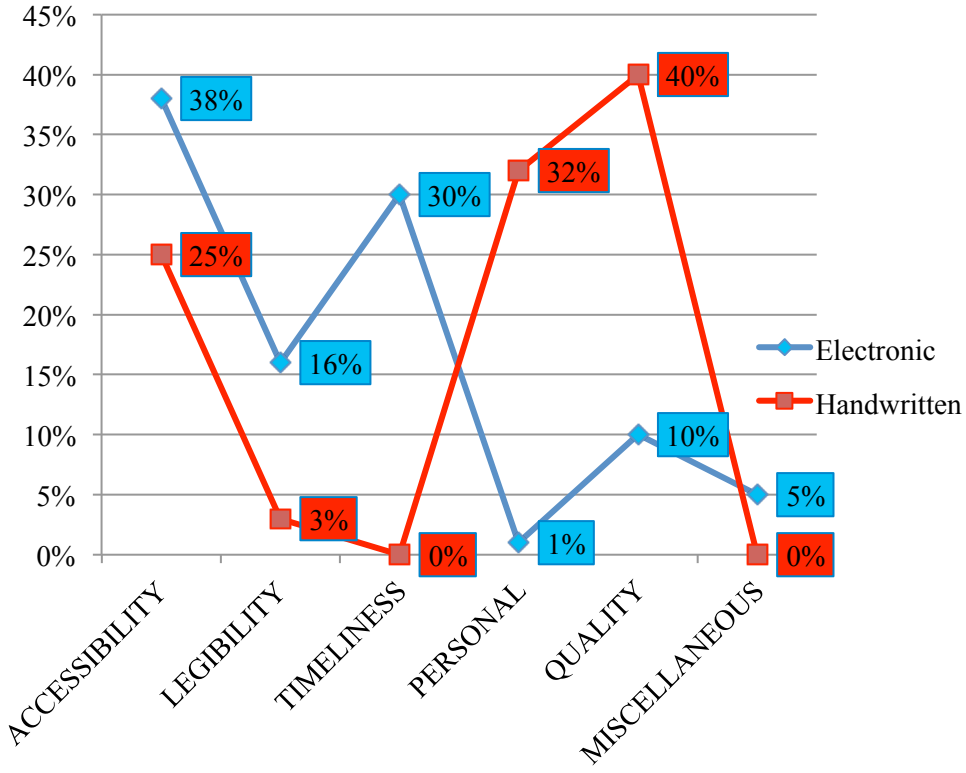

Figure 1. Qualitative responses by electronic and handwritten feedback supporters by six themes.

B. Accessibility.

The respondents most commonly noted that they were able to receive feedback effortlessly and found it convenient for their professors to provide electronic feedback. In addition, given that the Internet is omnipresent, it is also easy for students to check feedback, as they have laptops, smartphones, iPads, and other mobile devices: "I prefer electronic feedback because you get to check your emails." "I am able to see the feedback right away through my phone, and anywhere else I have [I]nternet access." ". . . I am generally always available to get to my laptop. I'm on my laptop so much that it just makes it easier for me." Chang (2011) confirmed that instructor's responses could conveniently be received electronically and entirely independent of location and

time. Those who supported electronic feedback also felt that e-feedback could be easily organized. The possibility of misplacing papers would be unlikely, so was carrying around papers. One student commented, "I prefer the electronic feedback because it is easier to keep a record of and less likely to become misplaced." In this sense, they also noted that they felt secure.

In contrast, 25% of the comments made by the respondents supporting handwritten feedback were on accessibility (see Figure 1). The respondents rationalized that handwritten feedback was independent of the Internet, which was convenient for their learning: "I like to read the handouts in my own time anywhere I want without having to get on a computer and see it." "Currently, [m]y life is very busy, the feedback written on my papers is sufficient." "I am able to take it home with me and really look at it. I can also make extra notes on the handwritten feedback that I get." These comments were supported by Chang (2011) that those who did not own computers and/or who did not have easy access to the Internet did not support e-feedback.

B. Timeliness.

Timeliness is the second reason for those who favored e-feedback (30%) (see Figure 1). Students explained, "It can get back to the student quicker especially if they are in a once a week class." "[I]t is usually a much faster turn-around; the feedback comes back much quicker." "I . . . appreciate that electronic feedback is a faster way to receive constructive feedback." Some respondents associated timeliness with the ownership of learning: "It is faster! I am more likely to respond!" "I can also respond quickly from any location." Immediate feedback was helpful to students' learning, as the content just discussed in classes is still kept fresh in their minds (Chang, 2011; Dickinson, 1992; Ferguson, 2011, Seliem & Ahmed, 2009; Winter & Dye, 2004). It could be the very reason that students were likely to respond to e-feedback. Electronic feedback encouraged students to be responsible for their own assignments and active participation (Chang, 2011; Dickinson, 1992; Nicol & Macfarlane-Dick, 2006; Seliem & Ahmed, 2009). In comparison, those who preferred handwritten feedback did not make any comments on timeliness (see Figure 1).

With handwritten feedback, timing is one of the major reasons for students' dissatisfaction (Ferguson, 2011; Winter & Dye, 2004). Mostly, when instructors are able to return students' assignments with feedback, it is when there are class meetings on campuses. If feedback is returned to students rather late and if students have already moved onto the next assignments or tasks, feedback would become useless to student learning. Students explained,
"A lot of time I get this feedback before the next class and before I have started the next homework. I have another class where the teacher does it all by hand and it takes forever to get the feedback and the next homework is due before the feedback gets back to me." "I think that instructors should allow time to provide feedback on all assignments before an exam or written assignment is given over that material. I have taken exams without feedback from prior assignments that covered material that was on the exam. This seems that instructors are simply going through the motions of handing out assignments then testing on the material. How am I supposed to know what I need to study, if I do not know what I misunderstood on the assignment portion?" These comments imply feedback after all is essential to student learning if students are able to benefit from it (Chang, 2011; Dickinson, 1992; Ferguson, 2011, Seliem & Ahmed, 2009; Winter & Dye, 2004).

C. Legibility.

Legibility (16%) is the third reason given by those who supported e-feedback (see Figure 1). The respondents explained that typed messages allowed them to read without much difficulty; they did not have to guess what comments were intended to say to them. At least, students did not have to make a special visit to professors just decipher what was written, as commented by some students: "[D]on't have to track down a professor to help read what [he] wrote." "[W]hen their responses are typed[,] I can clearly read . . . their input. . ." This is supported by prior research which found that handwritten feedback was difficult for students to read, due to illegible writing (Denton, 2008; Ferguson, 2011; Price et al., 2010). In other words, if students are able to read comments, they can "hopefully use their (professors') input." This signifies that students care about their learning and want feedback to better their work (Ferguson, 2011). Yet, when it comes to the quality of e-feedback, surprisingly, only 10% of the respondents supporting e-feedback made comments on this topic (see Figure 1).

D. Quality.

This section reports and discusses the data with respect to quality of feedback. In order to help the reader follow the results and discussion with ease, there are two sub-sections with one focusing on the views of e-feedback supporters while the other on views of handwritten supporters.

Perceptions of electronic feedback supporters. Ten percent of the comments made by the e-feedback supporters were largely about how feedback helped them learn. That is, the respondents recognized that instructors were able to explain their thoughts completely. Feedback was specific and detailed, as some wrote, "I . . . feel that electronic feedback gives instructors a chance to fully explain their thoughts and consideration." "I find comments are more thorough." A student also acknowledged that instructors took time, reading students' submitted work: "Professors take more time to respond to what I wrote, the comments written about my work seem to be more thought out and I can read them with an understanding of where the professor is coming from . . ." A clear expression of wanting to improve their performance can also be observed from the respondents' comments: "Electronic feedback gives a student a chance to read, then review the written feedback later. This is important because student[s] can improve and learn from feedback." Chang's (2011) study confirmed that students appreciated the time instructors spent in providing detailed feedback on their assignments. The feedback was helpful and useful to their learning.

Some respondents underscored the role technology plays in providing quality feedback, as technology allows for easy typing, which could lead to more detailed feedback. Students said, ". . . I find electronic feedback is more specific and detailed (perhaps because typing is faster?)" "I feel electronic feedback tends to be more detailed because typing is faster for most than handwriting." "It also is more in depth because the professor is not trying to condense it into the margin of my work." From some students' viewpoints, if feedback was sent to them electronically, they seemed able to receive more from professors: "[P]rofessors tend to give more comments when feedback is given electronically." In addition, technology enables instructors to place feedback near areas where students are able to understand specifically what was done well and what they need to improve. A respondent wrote, "On a paper, professors can provide feedback in certain spots in Microsoft word, indicating exactly where they agree or think could

use some work." This finding echoes the report by Chang (2011) that students wanted feedback that was specific and that enabled them to know what needed their attention. Moreover, students felt that using technology to offer feedback could turn sharp criticism into something easier for them to accept, as a student said, "[E-feedback] is more like constructive criticism than just criticism." This is in line with the findings of Chang (2011) and Dickinson (1992) that using technology to compose feedback allows an instructor to review, clarify and tone down criticism. However, taking advantage of technology does not seem widely used with all instructors, which seems a cause for concerns. Some respondents pointed out, "There is a feature in [M]icrosoft [W]ord where as a professor you can highlight words of phrases and sections and add specific feedback for that word or phrase. . ." "We live in a world full of technology and so many of us get online frequently throughout the day . . . "

Inconsistent with Chang's (2011) study are the priorities the present study respondents ranked. The e-feedback supporters preferred e-feedback predominantly due to accessibility (28%) and timeliness (20%) (see Figure 1). Quality of feedback fell in the distance third, whereas the participants in Chang's study enjoyed the feedback due to the quality of feedback. The students placed the accessibility in the distance second and timeliness the third. The low percentage of comments (10%) on the quality of feedback in the present study could indicate that at the time when the survey was administered, e-feedback might still be something new to most students, considering nearly 60% of the respondents were between ages 18-24. Although technology is by no means novel to this generation, receiving e-feedback from instructors might not be something familiar to them; they are much more conversant with handwritten feedback than e-feedback.

Perceptions of handwritten feedback supporters. In comparison with the percentage of comments on the quality of feedback made by those preferring handwritten feedback (40%) (see Figure 1). A number of comments were four times more than those made by the respondents with a preference for e-feedback (10%). The handwritten feedback supporters appeared to have attached much greater importance to the quality of feedback than the e-feedback group, rating this category as a key ingredient for success. Like those who preferred e-feedback, the qualitative responses made by handwritten feedback supporters conveyed a similar justification; the feedback was placed in proximity to what needed to be worked on and what was done well, "I enjoy having handwritten feedback because usually handwritten feedback is placed on papers in the areas that need to be fixed." "I can . . . look at exactly where and what the feedback is about and can improve off of that, where as if it is electronic I can not necessarily see exactly what the feedback is talking about or how to improve." Like e-feedback supporters, handwritten feedback supporters also pointed out that when professors wrote feedback by hand on their assignments, the feedback tended to be more detailed and specific than when given electronically. The respondents said, "I felt that my professors actually took the time to read and evaluate my performance and in doing so allowing each of us to get to know each other on a better level by being able to discuss the comments right then and there." "[I] feel like the instructor will say more with handwritten feedback rather than with electronic. With electronic they tend to be short with comments and few." Yet, what is different from the responses made by the e-feedback group is that feedback written by hand is more tailored to an individual learning level: ". . . it is ni[c]e to see that your teacher is taking the time to look over the assignments that you spent your time on and individualizing your comments." Feedback is shaped by individual student assignments as a means of individualized instruction (Chang & Petersen, 2006). An additional difference is that professors allowed students to revise their work if the feedback was

written on their assignments: "Also with handwritten feedback, most professors will allow you to fix the paper and resubmit it." The findings of the present study mirror Chang's study (2011) in that students felt making revisions to their assignments promoted their learning. Yet, the findings were incongruent with Dickinson's (1992) notion that handwritten feedback does not help students improve their performances. The respondents' expressions clearly indicated that they found handwritten feedback was advantageous to their learning and that they would rather take extra time decoding professors' handwriting than receive assignments without feedback. What also differed from the view of e-feedback supporters was that handwritten feedback supporters were able to physically touch the feedback, which they perceived had an effect on their learning: "I also like to be able to touch the actually feedback because for some reason I feel like I understand it better when I can touch it."

E. Personal.

Supporters of handwritten feedback seemed to tie the quality of feedback to personal attributes (32%) (see Figure 1). Handwritten feedback seemed to allow for establishing a closer rapport with instructors than e-feedback. Some students noted, "The feedback that is rece[i]ved from the instructor is more [personal] than the electronic issued feedback . . ." "[I]t makes the feedback feel more personal and shows an interest in all students, whereas electronic could be set up to give the same feedback to multiple people. . . It makes . . . me feel as if my professor really knows who I am." The findings were supported by the reports of Ferguson (2011) and Scott (2006), both of which found that some students still felt a strong dislike toward e-feedback. Asking professors questions in person, from the perspectives of the handwritten feedback supporters, was an avenue to establish a relationship with professors. In contrast, there was only 1% of e-feedback respondents (see Figure 1) making comments on the same topic. The comments principally pointed to e-feedback being impersonal: "It's more impersonal [than handwritten feedback]." " . . . sometimes electronic feedback feels generic and impersonal." ". . . When receiving all feedback from a computer, it becomes easy for the student to feel like a number." Scott (2006) had a similar concern and identified that e-communication lacked social interaction and personal touch.

An explanation of rating quality of feedback and personal by handwritten supporters as the first and second is that most of the respondents are Millennial Generation or Generation Y (59%), who were born between 1980-1999 and who may be extremely comfortable with technology and have no real memory of life without computers, cell phones, and digital music (Rockler-Gladen, 2006 in Chang, 2011). Therefore, typing is natural and ordinary. As such, the participants might answer the survey questions based on their past experiences. From their perspectives, if instructors were willing to sit down and write on students' submitted assignments, it shows that instructors would read their work carefully and give thoughts to students' work. This seems to imply, what was also highly valued by the handwritten supporters, which was the time spent by instructors reading their assignments and the time on writing feedback. That is, time spent by instructors writing by hand represented a level of care that instructors had about them, as noted by a student, "It . . . shows that the professor actually cares about the student's work and doesn't just gloss over it . . ." The care given by professors who wrote feedback by hand also seemed encouraging; students felt a sense of obligation to read the feedback: "Handwritten feedback is something I usually feel more obligated to read as it is all on my returned assignments."

F. Longing for Feedback.

The last survey question, "Do you have any other comments to make about assessment feedback that may help faculty better facilitate your learning?" invited all respondents to respond, irrespective of handwritten feedback supporters or e-feedback supporters. The findings revealed that 57% of the responses were about the quality of feedback (see Figure 2). It is evident that the respondents generally were interested in receiving feedback in order to improve their learning. Some students commented, "I don't have a preference on electronic or handwritten, I just prefer to receive feedback." "Professors don't tend to give a lot of feedback so whatever we get is helpful." "I love timely feedback that is specific instead of just a general grade. I really want to know what I did great on and what I need to improve on and the reasons behind them." ". . . I like to see the RED ink on my page...there is always room for improvement." ". . . when it comes to engaging with comments or feedback, having a marked up paper with comments and input is the most helpful." This is consistent with Chang's (2011) findings that students expect to receive feedback that is useful, helpful, constructive, specific, detailed, in-depth, and thorough. The findings, however, differ from those by Winter and Dye (2004) that students were careless about feedback as they had no intention to pick up graded assignments with instructors' feedback. Discrepant with the present study's findings is also the notion by Wojtas (1998 in Higgins, Hartley, & Skelton, 2001) that students only glanced over their grades, but they did not read feedback. "Feedback in any form is greatly appreciated. . . [.] We do so many assignments in the School of Education and receive relatively small amounts of feedback from certain teachers. Not all of the teachers are lacking in the feedback department, but when being asked about which kind of feedback I prefer all I can think of is how much I would just like feedback regardless of the chosen delivery method." Students' strong desire for feedback also led them to offer suggestions: "I would appreciate all instructors familiarizing themselves with Oncourse, using it, and entering grades and communication in a timely and consistent manner." (Note, Oncourse is a course management system developed by Indiana University along with a few other major universities, which is similar to Blackboard).

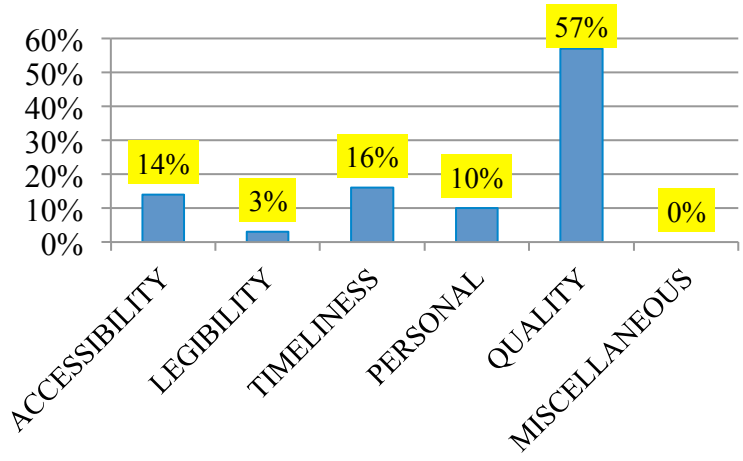

***Figure 2*. Qualitative responses to final open-ended question in light of six themes.**

All this data illuminates that there is extensive work to be done, which is in a sense concurred with Ferguson's (2011) and Price et al.'s (2010) assertion that feedback has not yet fully played its expected role in facilitating student learning. Feedback needs to be unambiguous and detailed enough for students to understand with ease. Instructors also need to write feedback in a way that learners are willing to act on and that shows instructors care about student learning. Taken into account that 57% of the comments were about quality of feedback and that timeliness was in the distance second (16%), these findings do confirm with Ferguson's (2011) report that if students expect to receive quality feedback, waiting a bit longer would not cause a huge issue. Even though there is a 41% difference between the quality of feedback (57%) and timeliness (16%), these two categories, being next to one another, are a good indication that students not only expect quality feedback, but also want it in a timely fashion in order to benefit their learning (Bai &Smith, 2010; Bridge & Appleyard, 2008; Chang, 2011; Denton et al., 2008; Price et al., 2010; Scott, 2006). The practices of the quick delivery of quality feedback with computer technology coupled with communication/dialogue between instructors and students have been termed as feed-forward (Duncan, 2007; Murtagh & Baker, 2009; Price et al., 2010). That is, feedback should not be seen as simply as justification for a given grade without an opportunity for students to use the information to better future work. The findings echo Hattie and Timperly's (2007) report that feedback is an assessment continuum between instructors and students where feedback and instruction are intertwined. Price et al. also supported that feedback was a component of an ongoing dialogue between the stakeholders. It becomes most effective when learners are able and willing to use it and when instructors provide information of "*how to improve*" subsequent learning (Ferguson, 2011).

G. Miscellaneous.

With respect to miscellaneous, there is a difference between handwritten feedback supporters and electronic feedback supporters. Handwritten feedback supporters did not make any comments at all under this theme, whereas the e-feedback supporters did (5%) (see Figure 1). Students rationalized three reasons for supporting e-feedback, including saving trees, having less paper to deal with, and potentiality of e-feedback. Some respondents noted, "[It] saves trees and money." "I … prefer to use as little paper as possible for environmental reasons." Some found it easier to receive e-feedback, because students would have "less paper to deal with." Chang's (2011) study supported these findings. Some respondents might not have direct experience of interacting with e-feedback, but imagined that the feedback could offer more to student learning, "I feel that electronic feedback has the potential to be more thoughtful as well."

H. Degree of Preferences.

Although the majority of students were interested in e-feedback, more respondents who preferred handwritten feedback (88%) favored the feedback to a moderate or large extent more so than those with a preference for e-feedback (81%) (see Figure 3).

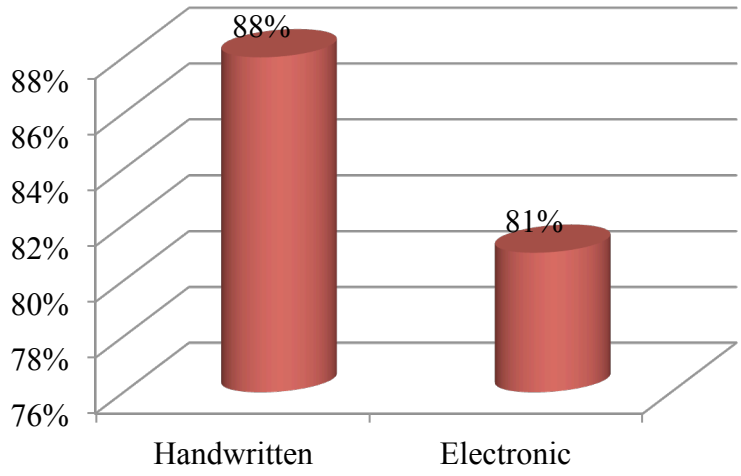

***Figure 3*. The degree of preferences for feedback.**

I. Usefulness to Learning.

The same pattern is observed when it comes to the usefulness of feedback to learning. Eleven percent more respondents were in favor of handwritten feedback (99%) than were in favor of e-feedback (88%). Students felt feedback was somewhat to very useful to their learning (see Figure 4).

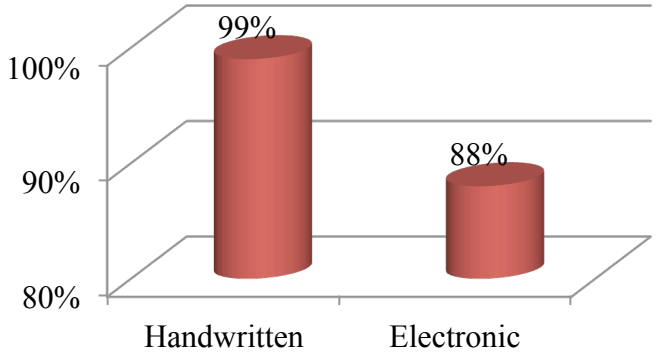

***Figure 4*. The degree of usefulness of feedback.**

J. Gender, Age, Class Standing, GPA, and Major.

Table 5 reports the frequency analysis of gender, age, class standing, GPA, and major corresponding to handwritten feedback and e-feedback. There are twice as many female respondents and male respondents preferring electronic feedback than handwritten feedback. The

same is true for majors. Except for juniors, twice as many seniors, freshmen, and sophomores preferred electronic feedback than handwritten feedback.

Table 5. Handwritten or electronic feedback data.

	Handwritten Feedback		Electronic Feedback		Total	
Variables	*n*	%	*n*	%	*n*	%
Gender						
Female	62	0.3	138	0.69	200	100
Male	14	0.33	29	0.67	43	100
Age						
18-24	59	40.1	88	59.9	147	100
25-34	13	21.3	48	78.7	61	100
35-44	2	7.4	25	92.6	27	100
45-54	3	23.1	10	76.9	13	100
Class						
Freshman	13	27.7	34	72.3	47	100
Sophomore	19	32.8	39	67.2	58	100
Junior	24	41.4	34	58.6	58	100
Senior	23	28	59	72	82	100
GPA						
4.00-3.01	49	29.9	115	70.1	164	100
3.00-2.01	28	45.2	34	54.8	62	100
2.00-1.01	0	0	5	100	5	100
Major						
Elementary	51	30.9	114	69.1	165	100
Secondary	24	34.3	46	47.8	70	100
Special Education	4		10	71.4	14	100

Note. Percent ranges refer to the partitioned group or *n*.

A crosstabs procedure, using the Chi-square Test of Independence, revealed there were no statistically significant differences between the observed and expected frequencies on the variables of interest. The results failed to reveal a statistically significant difference in terms of gender, $\chi^2(1, 243) = 0.040$, $p=0.842$ between handwritten and electronic feedback. A crosstabs procedure, Chi-square Test of Independence, also failed to reveal a statistically significant difference $\chi^2(3, 245) = 3.335$, $p=0.343$ regarding class standing between handwritten and electronic feedback. Lastly, there was no statistically significant difference $\chi^2(6, 249) = 3.876$, $p=0.693$ among majors. This means that regardless of gender, class standing, or major, there was no preference between handwritten or electronic feedback. No other crosstabs procedures, using Chi-square Test of Independence, revealed any statistically significant differences in terms of gender, class standing, or major.

Yet, the Chi-square Test of Independence indicates a statistically significant difference, $\chi^2(3, 248) = 15.807$, $p=0.001$, among age group respondents. In the 35-44 age group, 93% preferred electronic feedback while only 60% of the 18-24 age group preferred electronic feedback (see Table 6).

Table 6. Age and feedback preferences.

			Feedback		
			Handwritten	Electronic	Total
Age	18-24	Count	59	88	147.0
		Expected Count	45.6	101.4	147.0
		% within Age	40.1%	59.9%	100.0%
		% within Feedback	76.6%	51.5%	59.3%
		% of Total	23.8%	35.5%	59.3%
	25-34	Count	13	48	61.0
		Expected Count	18.9	42.1	61.0
		% within Age	21.3%	78.7%	100.0%
		% within Feedback	16.9%	28.1%	24.6%
		% of Total	5.2%	19.4%	24.6%
	35-44	Count	2	25	27.0
		Expected Count	8.4	18.6	27.0
		% within Age	7.4%	92.6%	100.0%
		% within Feedback	2.6%	14.6%	10.9%
		% of Total	0.8%	10.1%	10.9%
	45-54	Count	3	10	13.0
		Expected Count	4.0	9.0	13.0
		% within Age	23.1%	76.9%	100.0%
		% within Feedback	3.9%	5.8%	5.2%
		% of Total	1.2%	4.0%	5.2%
Total		Count	77	171	248.0
		Expected Count	77.0	171.0	248.0
		% within Age	31.0%	69.0%	100.0%
		% within Feedback	100.0%	100.0%	100.0%
		% of Total	31.0%	69.0%	100.0%

A Chi-square Test of Independence also revealed a statistically significant difference, $\chi^2(2, 248) = 7.284$, $p=0.026$, among GPA respondents. In the 2.00 or lower GPA group, 100% preferred electronic feedback while in the 3.00-2.01 only 54.8% preferred electronic feedback (see Table 7).

Table 7. GPA and feedback preferences.

			Feedback		
			Handwritten		Total
GPA	3.01-4.00	Count	49	115	164
		Expected Count	54.7	109.3	164.0
		% within GPA	29.9%	70.1%	100.0%
		% within Feedback	63.6%	74.7%	71.0%
		% of Total	21.2%	49.8%	71.0%
	2.01-3.00	Count	28	34	62
		Expected Count	20.7	41.3	62.0
		% within GPA	45.2%	54.8%	100.0%
		% within Feedback	36.4%	22.1%	26.8%
		% of Total	12.1%	14.7%	26.8%
	1.01-2.00	Count	0	5	5
		Expected Count	1.7	3.3	5.0
		% within GPA	.0%	100.0%	100.0%
		% within Feedback	.0%	3.2%	2.2%
		% of Total	.0%	2.2%	2.2%
Total		Count	77	154	231
		Expected Count	77.0	154.0	231.0
		% within GPA	33.3%	66.7%	100.0%
		% within Feedback	100.0%	100.0%	100.0%
		% of Total	33.3%	66.7%	100.0%

Perhaps younger students still need quite a lot of encouragement and appropriate assistance from professors in order to increase their awareness of the importance of feedback in their learning and of how to act on it. With respect to the difference between students' preferences for either form of feedback and GPA, an explanation of this may be that the students in the mid-range might feel satisfied with their mediocre grades and thereby cease to make extra effort to achieve better grades. The findings are inconsistent with those by Chang (2011), as she did not find any statistically significant differences among preference of e-feedback, and age or GPA.

K. Limitations.

This study was only focused on the SOE undergraduate participants' perceptions of e-feedback and handwritten feedback. The data from this survey study were the respondents' subjective reports, which mostly rest on the respondents' mood, feelings, degree of carefulness and attentiveness in reading questions and writing answers, and the effect of the surroundings when the responses were being composed. It also depended on the various levels of experiences that the respondents had had with e-feedback and handwritten feedback. In addition, the responses might be affected by how the respondents understood a certain definition, such as that of e-feedback. In the survey, e-feedback was defined as feedback that is typed and delivered electronically to students via emails, forums, etc. Based on the responses received, this definition did not seem to suffice, as it resulted in various interpretations or misunderstandings: Some understood that e-grades were e-feedback. Some others referred it to general feedback

received via email while some might think that e-feedback meant canned responses preset by professors or automatically generated by computers after an exam or a quiz was taken. Some interpretations could be that e-feedback was identical and sent to multiple students in the class using some application, e.g. Turnitin-GradeMark ®. Others might have defined feedback as detailed and individualized, especially tailored to each student's assignments. Furthermore, owing to these distinct variations, even though no responses were read indicating students had never received any feedback from faculty, the report issued by the National Union of Students (NUS) Survey (2008) that 85% of respondents did receive written comments could not be addressed. Perhaps those students excluded themselves from the survey altogether.

Nonetheless, the study provides preliminary insights into the preference of the form of feedback undergraduate students preferred and an explanation of why. The threshold will begin the path of continual investigation about how feedback is provided to better facilitate students' learning.

L. Educational Implications.

Even though nearly 70% of the SOE undergraduate participants claimed that they preferred e-feedback, the comments made by this group on the quality of feedback were not nearly equivalent to those by handwritten feedback supporters. In terms of the degree of preferences, there were fewer e-feedback supporters than handwritten supporters who felt that the feedback was somewhat to very useful. However, there were an alarming number of responses made by both of the groups on the quality of feedback, when they answered the last survey question: "Do you have any other comments to make about assessment feedback that may help faculty better facilitate your learning?" Many responses were of their longing for feedback, "I prefer feedback in general which is greatly lacking in some classes." In light of this, it would be wise for instructors to take some action to offer feedback useful and beneficial to student learning. In addition, instructors need to enhance or strengthen their capabilities to provide feedback on students' assignments with computer technology, as we are in a technology era; technology is omnipresent. With computer technology, instructors are able to place comments on places where students are better able to determine where they need to revise and how their work can be improved. Typing on computers also allows for more words and clearer messages. Students want more specific and detailed feedback rather than a few brief notes on their assignments: "I think that feedback needs to be more specific and to the point. Not just a 'good job' or a check mark. I want to know what I did [well] and what I did wrong. I also think that the more detail the professor can give the better." "I feel that electronic feedback has the potential to be more thoughtful as well." Typing should eliminate illegible writing, thereby reducing unnecessary frustration.

Before writing feedback, instructors should read students' work carefully so that feedback is especially tailored to a student's learning level. Instructors also need to give feedback plenty of thought and try to find out, by trial and error, how to provide constructive, thorough, specific, clear, unambiguous, and friendly feedback so that students are encouraged to read and act on it for the amelioration of their performances. With computer technology, instructors may also consider writing a general summary at the end of a paper or exam in addition to specific feedback.

In providing feedback on students' assignments, instructors also need to bear in mind that they ought to make every effort to steer clear of e-feedback that has potential to be misconstrued

by students, as a student commented, "I think that miscommunications can often happen with electronic feedback that can cause rifts in the teacher/student communication." Even though some professors still intend to maintain writing feedback by hand, they also need to keep in mind to consistently offer quality feedback, as pointed out by a student: "However, handwritten feedback does not always equal quality in terms of being helpful and constructive." By and large, students, irrespective of e-feedback or handwritten feedback supporters, yearn for useful and helpful feedback. Yet this study demonstrates that providing quality feedback has not been a widely acceptable practice, thereby a need for effective faculty training to facilitate students' learning with quality feedback feed-forward.

To affect student learning, instructors should pay particular attention to those in the 18-24 age category and with those whose GPA falls 2.01-3.00. Particular attention to "double dip" students, those who are young and have an average GPA, should prove especially beneficial.

M. Suggestions for future research.

Future research may involve the replication and expansion of the present study and examine preferences of undergraduate students and graduate students alike. Since the issue of feedback being personal seemed to surface as one of the principal reasons behind students' preference, research questions could also include: "How could instructors compose e-feedback that is personal and appreciative?" Students expressed frustration and disappointment when feedback is too unclear or brief to help their future learning and the findings seem to have indicated that more feedback is better. One student remarked, "Professors tend to give more comments when feedback is given electronically." Future research could delve deeper into how much feedback is enough for students to feel a benefit. Information overload can easily discourage students to enhance learning, as a student pointed out, "Ridiculously little font sizes are almost as annoying as bad handwriting and information saturation leads to the type of visual clutter that frustrates me as I look for the spec[i]fic area I need." On the other hand, students wanted specific and detailed feedback: "On the feedback please be specific and tell us how we should have answered." "[M]ore detail makes things much more clear." Research focus could also be placed on what an explicit definition of e-feedback is and how to feed-forward so that students are helped to genuinely gain knowledge and skills.

N. Conclusion.

The vast majority of SOE undergraduate participants preferred feedback that is sent to them electronically because this form of feedback was said to be easy to access, considering many students have cell phones, laptop computers, and other mobile devices. Feedback sent to them electronically is faster than handwritten feedback returned back to them during face-to-face meetings. Typed feedback is more readable than most handwritten feedback. Although the groups did not virtually provide an equal number of comments on the quality of feedback, both clearly indicated that undergraduate students in general not only welcomed but also wanted feedback that is detailed, tailored, specific, in-depth, and thorough. Timeliness was an additional reason for undergraduates supporting e-feedback. Even though there was a polarized view on feedback being personal between the two groups, a close rapport with instructors was what most students would appreciate. The students also urged instructors to familiarize themselves with technology in order to efficiently provide them with helpful feedback. When working with

students who are at ages 18-24 and whose GPA is between 2.01 and 3.00, instructors should make the effort to encourage these students to use feedback to advance their learning.

References

Bai, X., & Smith, M. B. (2010). Promoting hybrid learning through a sharable elearning approach, *Journal of Asynchronous Learning Networks, 14*(3),13-24.

Bakerson, M., (2009). Persistence and success: A study of cognitive, social, and institutional factors related to retention of Kalamazoo Promise recipients at Western Michigan University. Ph.D. dissertation, Western Michigan University, United States -- Michigan. Retrieved from Proquest Dissertations & Theses Database: A&I (Publication No. AAT 3392137).

Bjorkman, M. (1972). Feedforward and feedback as determiners of knowledge and policy: Notes on a neglected issue. *Scandinavian Journal of Psychology, 13*, 152–8.

Bridge, P., & Appleyard, R. (2008). A comparison of electronic and paper-based assignment submission and feedback. *British Journal of Educational Technology, 39*(4), 644-650.

Brown, J. (2007). Feedback: The student perspective. *Research in Post-Compulsory Education, 12*(1), 33–51.

Case, S. (2007). Reconfiguring and realigning the assessment feedback processes for an under-graduate criminology degree. *Assessment & Evaluation in Higher Education, 32*(3), 285–99.

Chang, N. (2011). Pre-Service teachers' views: How did e-feedback through assessment facilitate their learning? *Journal of the Scholarship of Teaching and Learning, 11*(2), 16-33.

Chang, N., & Petersen, N. J. (2006). Cybercoaching: An emerging model of personalized online assessment. In D. D. Williams, S. L. Howell, & M. Hricko (Eds.), *Online assessment, measurement, and evaluation: Emerging practices* (pp. 110–130). Hershey, PA: the Idea Group.

Charmaz, C. (2000) Grounded theory: Objectivist and constructivist methods. In N. Denzin, & Y. Lincoln (Eds.), *Handbook of qualitative research*. 2nd ed. London, Sage.

Cobb, R. Jr., Graham T, Kapur A, Rhodes, C, & Blackwell E. (2005, December). Give better feedback on engineering drawings. *Tech Directions,* 19-21.

Creswell, J. W. (2002). *Research design.* London, Sage.

Denton, P., Madden, J., Roberts, M., & Rowe, P. (2008). Students' response to traditional and computer-assisted formative feedback: A comparative case study, *British Journal of Educational Technology, 39*(3), 486-500.

Dickinson, P. F. (1992, October). *Feedback that works: Using the computer to respond*. Paper presented at the Annual National Basic Writing Conference. College Park, MD. (ERIC

Document Reproduction Service No. ED35649)

Duncan, N. (2007). Feed forward: Improving students' use of tutors' comments. *Assessment and Evaluation in Higher Education, 32*(3), 271–283.

Ferguson, P. (2011). Student perceptions of quality feedback in teacher education. *Assessment & Evaluation in Higher Education, 36*(1), 51–62.

Gibbs, G., & Simpson, C. (2004). Conditions under which assessment supports students' learning. *Learning and Teaching in Higher Education, 1*(1), 1–31.

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research, 77*(1), 81-112. http://growthmindseteaz.org/files/Power_of_Feedback_JHattie.pdf

Higgins, R., Hartley, P., & Skelton, A. (2001). Getting the message across: The problem of communicating assessment feedback, *Teaching in Higher Education, 6*(2), 269-274.

Higher Education Funding Council for England. (2007). *Annual national student survey*. Retrieved from http://www.hefce.ac.uk/news/hefce/2007/nss.htm

Ifenthaler, D. (2010). Bridging the gap between expert-novice differences: The model-based feedback approach. *Journal of Research on Technology in Education*, *43*(2), 103-117.

Krause, U., & Stark, R. (2010). Reflection in example- and problem-based learning: Effects of reflection prompts, feedback and cooperative learning. *Evaluation & Research in Education, 23(*4), 255-272.

Limniou, M., & Smith, M. (2010). Teachers' and students' perspectives on teaching and learning through virtual learning environments. *European Journal of Engineering Education, 35*(6), 645-653.

Mertler, C. A., & Vanatta, R. A. (2005). *Advanced and multivariate statistical methods (3rd ed.)* Glendale, CA: Pyrzcak Publishing.

Morgan P., & Toledo, C. (2006). Online feedback and student perceptions. *Journal of Interactive Online Learning, 5(3),* 333-340.

Murtagh, L., & Baker, N. (2009). Feedback to feedforward: Students' response to tutors' written comments on assignments. *Practitioner Research in Higher Education, 3*(1), 20-28.

National Curriculum Task Group on Assessment and Testing: A Report. (1987). Department of Education and Science and the Welsh Office. Kings College, London. Retrieved from http://www.kcl.ac.uk/content/1/c6/01/54/36/TGATreport.pdf

National Union of Students (NUS) (2008). *Student Experience Report.* Retrieved from http://aces.shu.ac.uk/employability/resources/NUSStudentExperienceReport.pdf

Nicol, D., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in Higher Education, 31*(2), 199-218.

Price, M., Handley, K., Millar, J., & O'Donovan, B. (2010). Feedback: All that effort, but what is the effect? *Assessment & Evaluation in Higher Education, 35(*3), 277–289.

Quality Assurance Agency for Higher Education. (2007). Enhancing practice. Retrieved from http://www.enhancementthemes.ac.uk/documents/IntegrativeAssessment/IAManaging.pdf.

Rosenberg, K. M. (2007). *The Excel Statistics Companion.* Belmont, CA: Thomson Higher Education.

Sadler, D. R. (2010). Beyond feedback: Developing student capability in complex appraisal *Assessment & Evaluation in Higher Education, 35(*5), 535–550.

Scott, G. (2006). *Accessing the Student Voice: A Higher Education Innovation Program Project*. Canberra, Australia: Department of Education, Science and Training.

Seliem, S., & Ahmed, A. (2009, March). *Missing: Electronic Feedback in Egyptian EFL Essay Writing Classes.* Online Submission, Paper presented at the Centre for Developing English Language Teaching (CDELT) Conference, Cairo, Egypt.

Siew, P. F. (2003). Flexible on-line assessment and feedback for teaching linear algebra. *International Journal of Mathematical Education in Science & Technology, 34*(1), 43-52.

Sinclair, H., & Cleland, J. (2007). Undergraduate medical students: Who seeks formative feedback? *Medical Education, 41*, 580–582. http://onlinelibrary.wiley.com/store/10.1111/j.1365-2923.2007.02768.x/asset/j.1365-2923.2007.02768.x.pdf?v=1&t=h1dxgkhr&s=98da8e0463e211288733384af16aa4a5be4c643a

Stevenson, J. P. (2007). *Applied Multivariate Statistics for the Social Sciences* (5th ed.). New York, NY: Routledge.

Store, R. E., & Armstrong, J. D. (1981). Personalizing feedback between teacher and student in the context of a particular model of distance teaching. *British Journal of Educational Technology, 12*(2), 140-157. doi: 10.1111/j.1467-8535.1981.tb00420.x

Winter, C., & Dye, V. L. (2004). An investigation into the reasons why students do not collected marked assignments and the accompanying feedback. *CELT Learning and Teaching Project.*

Yang, Y., & Durrington, V. (2010). Investigation of students' perceptions of online course quality. *International Journal on E-Learning, 9*(3), 341-361.

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The Impact of Technology on Student Perceptions of Instructor Comments

Kathleen J. Hanna[1] and David Yearwood[2]

Abstract: *The lack of writing skill among college graduates is often blamed on poor teaching, or alternatively, failure on the part of schools and instructors to teach the basic grammar and punctuation skills that employers remember learning in their own school years. While it may be true that teaching techniques and course content have changed over the years, a far greater cause of student inability to write clearly may be students' negative perceptions of instructor comments. If this is indeed the case, as borne out in some earlier studies by Bardine, then how might students who grew up in a digital era view electronic comments? The prevalence of technological tools to make electronic notations increases readability, but what impact might instructors' use of technology in making comments have on tone, completeness, and length of comments when viewed through the lens of the student writer?*

Keywords: teaching, writing, technology, teacher comments, grading

I. Introduction.

A cursory search for information about faculty grading practices reveals that there is no dearth of research about instructor comments. Indeed, qualitative research into this subject often produces recommendations such as making positive comments, and not making so many comments that students are overwhelmed (Monroe, 2002), and making sure comments are as clear as possible (Fife & O'Neil, 2001). Other research focused on length, tone, type of comments (Bardine, 1999), placement of comments, use of hedges, (Ferris, 1997; Fife & O'Neil, 2001). Other research focused on length, tone, type of comments (Bardine, 1999), placement of comments, use of hedges, (Ferris, 1997: Fife & O'Neil, 2001), and on the relative ease of on-line as opposed to hand-written commenting (Monroe, 2002: Monroe, 2003).

Information gleaned from these works clearly suggests that instructor comments are important tools in teaching students to write. However, advice on grading papers and making comments is used only to change a narrow aspect of the comments themselves, often without addressing the overall impact of the comments upon students. The result is that comments continue to have the same impact they have had for many years, and students' negative perceptions continue to be a problem (Fife & O'Neil, 2001; Wiltse, 2002). What appears to be certain is that the effective utilization of instructor comments, including the use of technology to deliver those comments, could potentially change writing in the classroom and affect student writing (Bardine, 1999; Bardine, Bardine, & Deegan, 2000). More recently, faculty, particularly those who teach online, have begun to use technological tools to make comments about students' writing, but how these comments are perceived and the effect that the use of technology is likely to have on student perceptions of the comments made is just one issue that warrants

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investigation. Further, there is some concern as to what might be the long-term impact of comments made about student writing using technological tools.

A. Justification for Research.

The purpose of this study was to explore the relationship between the use of technology to provide comments to students, and students' perceptions of these comments. Studies of this nature are necessary and important in view of the current emphasis on writing across the curriculum. While it may be the responsibility of composition instructors to teach basic writing skills, instructors in all disciplines who make comments on papers will likely have an impact on student perceptions, and an awareness of that impact among teachers could be beneficial to students in every field of study. This article examines the following questions:

1. In what way or ways does placement of faculty comments, i.e., in the paper's margins, at the end of the paper, close to where there are structural or other issues associated with sections of the students' work, or on a separate page, as determined by the necessities of the use of various technologies in delivering comments, affect how the comments themselves are interpreted and perceived by students?
2. How, and to what degree, are student perceptions of faculty comments affected by the appearance of the comments, especially as determined by the use of technological tools to deliver those comments?
3. What relationships, if any, exist between the completeness of comment marks provided via computer technology, such as symbols, abbreviations (i.e., frag., tr., sp.), single words, phrases, complete sentences, and explanatory paragraphs, and student perceptions of teacher criticism?

The possibility of a relationship between the use of technology as a comment delivery system and students' perceptions of the comments received from instructors was explored in this study. An examination of student reports about the tones of comments they received is one way to explore student perceptions of those comments. The comment tones explored in this research included resigned, encouraging, positive, negative, impartial, and hostile tones.

B. Theoretical Framework.

An instructor's primary goal in making comments on student papers is to teach student writers to do something differently in the next draft or the next paper (Wiltse, 2002). However, despite this noble goal there do not appear to be clear and concise conclusions about how students might interpret comments made about their writing (Sommers, 1982). Most of the research into instructors' comments to students seems to focus primarily on written commentary style, and is based on the assumption that the problems of ineffective response stem from the way those comments are written, insofar as poor wording, vagueness, or insufficient information may apply (Bardine, 1999; Bardine, Bardine, & Deegan, 2000; Fife & O'Neil, 2001). However, given the possibility of the use of programs such as Electronic Markup and Track Changes, it is increasingly likely that teacher feedback would be in an electronic format. While this has not been addressed in the literature it does raise some question about the potential impact of the use of technology on students' responses to instructor comments.

Placement of comments (at the end, in the margins, or near an issue to be addressed), appearance of hand-written comments (color and legibility), and the use of typed comments (e-mail or list-serve) (Monroe, 2003) may also have an impact on how these comments are perceived by students. Bardine (1999) found that end comments tended to be longer than margin comments, with 87% of the end comments being rated as average or long. This may be in part because instructors have more space to write comments at the end of the paper. Would comments delivered by technology-based methods be perceived differently, though, because of their tendency to be placed at the end of the paper?

An often-overlooked aspect of instructor comments is the tone, which students often interpret far differently than intended by the instructor. Tone can range from positive and encouraging to negative, hostile, or resigned. For example, a comment with a positive tone would be, "Good work," while an encouraging tone might be perceived in a comment that pointed toward future accomplishment, or recognition of improvement, such as, "Good start, keep working." In contrast, a comment with a resigned tone might imply a sense of futility, while one with a negative tone would be more critical, and less hopeless in nature. For example, a comment with a negative tone might say something like, "Sloppy, careless work." Hostile tone, on the other hand, is more aggressive and even personally critical, and comments perceived as hostile may sound almost like accusations, such as, "You really do not belong in this program." The important issue is not necessarily what the instructor intended (though some may indeed intend to make negative comments) but rather how the recipient perceives the tone of the comment.

Finally, comments can be evaluated for completeness, which, though similar to Ferris's (1997) category of length, refers not only to the actual length of comments, but to how complete and effective students perceive those comments to be. The readers in Lunsford and Straub's (2006) study made a point of providing full comments, generally in complete sentences. In contrast, the use of symbols, abbreviations, and one-word responses can leave students uncertain about what they are being asked to do, while lengthy comments may be overwhelming.

The question to consider is how the use of technology affects students' perceptions of those comments, and whether that effect is positive or negative. It could be important to examine the impact placement of comments has on student perceptions and anxieties, as well as how technology influences the placement of those comments. Does the typescript appearance of technology-delivered comments have any relationship to the way in which students perceive the comments? Are comments delivered through the use of various technologies generally more or less complete than those delivered in other ways? These questions could be important in determining how, and to what degree, technology should be used in responding to student writing.

II. Methodology.

A. Survey Instrument.

The student survey was developed after examining literature from various researchers on the topic, as well as comments about common student responses that seemed to warrant investigation (Bardine, 1999; Bardine, Bardine, & Deegan, 2000; Ferris, 2001; Fife & O'Neill, 2001; Monroe, 2002; Popovich & Masse, 2005; Wiltse, 2002). A pilot study was conducted of the instrument

with a selected sample consisting of instructors from the University's Language and Literature Department and students from a freshman composition class.

Instructor comments were broken into four sections: placement, appearance, tone, and completeness. Placement referred to whether comments were written in the margins, close to problems associated with student writing, at the end of the paper, or on a separate sheet of paper. Questions pertaining to appearance requested information about the color of writing implement used as well as instructors' penmanship styles, including case, darkness, underlining, legibility, and the use of typed or electronic transmission. To evaluate student perceptions of the tone of comments they had received, students were asked, using a likert-type scale, how often they had received comments with tones that were, respectively, positive, encouraging, negative, impartial, hostile, or resigned. To enhance clarity, each of the questions regarding tone included a brief example, such as, "Good start, keep working" as an example of encouraging tone. Finally, questions about completeness asked how often students received comments in the form of symbols, abbreviations, single words, phrases, sentences, and complete paragraphs.

B. Demographic Information.

The population for this study consisted of college seniors at Dickinson State University from the Departments of Business, Nursing, and Education, though many of the Education students carried a second major in their teaching subject areas, such as history, music, or math. The majority, N = 64 (81%) were traditional students, ranging from 20 to 25 years of age. An additional 11 students (13.9%) were 26 to 30 years old, and four students (5.1%) were over 30 years of age. Male students made up 27.8% (N = 22) of the students responding to the survey, while 72.2% (N = 57) were female. The majority (89.8%) of these graduating seniors were full-time students (N = 71), completing a minimum of 12 credit hours in the semester during which they were surveyed. An additional 10.2% (N = 8) were part-time students.

III. Results.

An examination of student reports of the tones of comments they received is one way to explore student perceptions of those comments. Comment tones explored in this research included resigned, encouraging, positive, negative, impartial, and hostile tones, as well as comments that sounded like orders, instructions, suggestions, and questions, respectively.

A. Population Sample.

Table 1 provides a summary of the descriptive statistics analyzed with respect to study participants. These data include the participants' age, gender, cumulative grade point average, native country, and native language.

Research Question #1: In what way or ways does placement of faculty comments, i.e., in the paper's margins, at the end of the paper, close to structural errors or other issues associated with sections of students' work, or on a separate page as determined by the necessities of the use of various technologies in delivering comments, affect how the comments themselves are interpreted and perceived by students? Comments in any of the locations studied could be delivered by technology, though some locations are more feasible than others.

Table 1. Descriptive Statistics of Study Participants

		Frequency	Percent
Age	20-22	33	41.8
	23-25	31	39.2
	26-30	11	13.9
	over 30	4	5.1
	Male	22	27.8
	Female	57	72.2
	1.0-1.9	1	1.3
Gender	2.0-2.9	9	11.4
	3.0-3.9	63	79.7
	>4.0	6	7.6
	US/Can.	68	86.1
GPA	Other	11	13.9
Native Country			
Native Language	English	69	87.3
	Other	10	12.7

In examining the data related to this question, several significant findings were discovered with regard to the relationship between the placement of the comments and the tone the students perceived in those comments. For example, a statistically significant correlation was found between comments placed at the end of the paper ($r = .38$, $p < .01$) and encouraging tone. A similar correlation ($r = .29$, $p < .05$) was found between comments placed on a separate page and encouraging tone. This information is shown in Table 3.

Not every specific element of instructor comments studied could be related to the use of technology; however, the findings with regards to comment placement are of particular interest because further statistical analysis showed a strong correlation ($r = .33$, $p < .01$) between the use of comments that were typed or electronically transmitted and placement of comments on a separate page. This information is shown on Table 2.

If computer-generated comments are placed at the end of the page, those comments could then be shown to have a positive relationship with comments having an encouraging tone. No statistically significant correlations were found between comment placement and any other comment tones, or between typed and computer-generated comments and any other comment placement. No significant relationships were found between any aspects of demographic information, i.e., age, gender, grade point average, native country, or native language, and the student perceptions of comments in various places.

Research Question #2: How, and to what degree, are student perceptions of faculty comments affected by the appearance of the comments, especially as determined by the use of technological tools to deliver those comments?

Once again, interesting findings were uncovered with respect to the relationship between the appearance of comments and the tone students reported. This is of particular interest because of the close tie between comment appearance and the use of various programs or techniques

designed for commenting on student papers using computer technology. This aspect of instructor comments is directly related to the use of technology in responding to student writing since comments delivered using computer technology are typed, and students were specifically asked how often they received instructor comments that were typed.

Table 2. Correlation Between Comment Placement and Use of Typed or Computer-Generated Comments.

		Typed
End of paper	Pearson Correlation	.107
	Sig. (2-tailed)	.346
Separate paper	Pearson Correlation	.331**
	Sig. (2-tailed)	.003

In this case, typed or electronically submitted comments showed a statistically significant relationship ($r = .36$, $p < .01$) to negative comment tone. This was the strongest relationship seen in this area of exploration. Illegible comments, on the other hand, showed a statistically significant relationship ($r = .26$, $p < .01$) with hostile comment tone. Since computer-generated comments are generally not illegible, this is an interesting finding, if somewhat contradictory. No other aspects of comment appearance showed significant relationships with comment tone, or with typed or computer-generated comments. No significant relationships were found between any aspect of demographic analysis and the perception of comments with different appearances. These results are shown in Table 3.

Research Question #3: What relationships, if any, exist between the completeness of comment marks provided via computer technology, such as symbols, abbreviations, (i.e., frag., tr., sp.), single words, phrases, complete sentences, and explanatory paragraphs, and student perceptions of teacher criticism?

This question was not as closely tied to the issue of technology use as the previous question, but it still provided interesting results. Both one-word comments ($r = .23$, $p < .05$) and paragraph-long comments ($r = .28$, $p < .05$) showed statistically significant correlations with hostile comment tone. In addition, abbreviations showed a statistically significant negative relationship ($r = -23$, $p < .05$) with positive tone. Although this research showed no significant correlations between the use of typed or computer-generated comments and the completeness of those comments, the correlations between completeness and tone are important to keep in mind, since comments of any level of completeness could be delivered by the use of computer technology. These correlations are shown in Table 3. No significant relationships were found between the various demographic analyses and the perception of the tone of comments of varying levels of completeness.

The examination of all of the correlations between the various aspects of instructor comments and the tone students reported perceiving in comments, as well as between those aspects of instructor comments and the use of typed or computer-generated comments indicates that some degree of correlation does in fact exist between specific aspects of instructor comments and the use of technology to deliver instructor comments, as well as between those specific aspects and the tone perceived in the comments. Those correlations, however, vary and

are limited to the specific aspects identified. The implications of the findings will be explored in greater detail later.

Table 3. Correlations Between Various Aspects of Teacher Comments and Perceived Comment Tone.

		encouraging	negative	hostile	positive
End of paper	Pearson Correlation	.38**	.04	.03	.15
	Sig. (2-tailed)	.00	.75	.78	.20
Separate paper	Pearson Correlation	.29*	.11	.13	.05
	Sig. (2-tailed)	.01	.33	.26	.64
Typed	Pearson Correlation	.02	.35**	.07	.14
	Sig. (2-tailed)	.88	.00	.53	.23
Illegible	Pearson Correlation	.17	.21	.26*	.03
	Sig. (2-tailed)	.13	.06	.02	.81
Abbreviation	Pearson Correlation	-.11	.17	-.07	-.23*
	Sig. (2-tailed)	.32	.14	.57	.05
One word	Pearson Correlation	-.01	.20	.23*	-.14
	Sig. (2-tailed)	.94	.08	.04	.23
Paragraphs	Pearson Correlation	.19	.04	.28*	.22
	Sig. (2-tailed)	.09	.70	.01	.06

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

IV. Discussion.

Although research about writing and instructor comments, as separate issues, is available in plentiful amounts, little attention has been given to the relationship between the use of technology in delivering instructor comments, and its impact on student perceptions. The results of this study provided some significant findings in this regard. However, before any changes to student comments can be addressed it may be necessary to examine the nature of the relationship between technology used in instructor comments and students' perceptions of those comments.

In this study, comments made by faculty on students' papers appeared to be perceived as having or conveying certain elements of tones, e.g. positive or hostile, none of which might be intended, but which nonetheless must be considered in the evaluation of students' responses. Examples of generally positive tones might include statements like, "well done," or alternatively, an error being pointed out in a positive way. "Your punctuation is generally very good, but this comma can be deleted." An encouraging tone could be similarly demonstrated, where an instructor might point out an error, but then encourage the student by saying, "This is a good start. Keep working."

Comments that were perceived as negative or hostile are also worth noting. A negative comment might be one that indicates a negative perception on the part of the instructor, like, "This is immature and undeveloped." Comments with hostile tone, on the other hand, might include phrases such as "You really do not belong in this program."

The first area of instructor comments researched was that of comment placement. Placements considered included in the margins of students' papers, near structural or other issues that warranted the comments, at the end of papers, and on separate pieces of paper.

The impact of comment placement is particularly interesting because of the correlation ($r = .33$, $p < .01$) found between typed or electronically transmitted comments, and comments placed on a separate page. Keeping in mind that this study examined the impact of the use of technology in delivering comments, the finding that comments at the end of a paper are frequently typed provides a link between the use of technology and the perceived tone of the comments.

Why do students perceive comments placed at the end of the paper as having a positive tone and comments placed on a separate piece of paper as having an encouraging tone as discovered in this study? Perhaps this distancing of comments from a particular section of the paper that needs further work or attention is viewed as less threatening, which may cause those comments to be perceived by students as less judgmental or attacking and thus more encouraging of their work.

In addition, it might be important to consider that although the distance between the student's writing and the comment may in itself be a factor, it is also possible that teachers unintentionally write a different type of comment at the end of the paper, because they may be conscious of addressing the quality of the paper as a whole. Regardless of the reason for students' perceptions, the lesson may be that the placement of comments, combined with an awareness of the need for a positive tone, can help increase the beneficial aspects of teacher comments overall.

These findings support the conclusions of Elbow (1989), who suggested writing comments separately, in letter form, in order to have those comments be perceived in a less threatening manner by students. The results of this study are therefore encouraging for those who provide computer-generated comments on a separate piece of paper.

Instructor penmanship styles, including the use of typed or electronically transmitted comments, as well as underlined, uppercase, or lowercase lettering were also investigated. Only typed or electronically transmitted comments were found to be strongly related to negative comment tones ($r = 35$, $p < .01$). This raises questions about online classes, where nearly all communication between instructor and student is typed or electronically transmitted.

Interestingly, in this study, illegible comments showed correlations ($r = .26$, $p < .05$) with comments having a hostile tone, and appeared to be generally perceived as having hostile rather than positive tone. In fact the only other aspects of comment appearance that showed any significant correlations with tone were those such as color, darkness, and handwriting versus hand-printing, none of which would be influenced by the use of computer technology to deliver the comments.

Another issue that was not addressed by this study was the impact of technology-delivered comments made using computer writing implements such as a pen mouse for hand written comments. Those comments might, depending on the instructor, be either more or less legible than hand-written comments due to factors related to screen rendering. Do students react to the varying range of legibility in such cases, or are these comments considered separately based on the delivery method? This is a topic that may require further research.

In order for instructors to successfully convey a positive or encouraging tone, there are several steps that might be taken. Since both typed and illegible comments seem to be negatively perceived, the use of carefully handwritten comments, which are legible to students, might be

helpful. An alternative would be to focus more intensely on wording, in order to overcome the negative impact of either typed or illegible comments.

Among the aspects of comment appearance that could be connected to the use of technology is readability, which might be worth exploring, because illegible comments may simply be difficult for students to read, leading to frustration, confusion, and a final impression of hostility. There are a number of possible explanations, aside from innate penmanship styles, for illegibility of instructor comments. These could include a combination of grading fatigue and physical fatigue of the hand muscles, as well as haste, lack of time, overwork, insufficient attention to detail, or general indifference.

The link with technology arises because the solution for many instructors may be typing their comments. However, from a students' perspective, those typed comments may seem negative, though not hostile.

The primary suggestion for instructors that can be gleaned from this study of penmanship styles is that comments need to be legible, but if they are typed, even at the end of the paper or on a separate page, care must be taken with the wording and intended tone to be sure that the impact of the typed appearance does not overwhelm any positive tone attached to the placement of the comments.

The third aspect of instructor comments that was explored was that of comment completeness. Interpreting the findings of this research project with regards to the use of technology to deliver instructor comments was more difficult and complex than interpreting the findings related to comment appearance or placement, because comments of any level of completeness could be provided either by hand, or via technology. However, the use of comments written as paragraphs could be the most easily tied to the use of computer technology in delivering comments, and responses provided in paragraph form were related to student perceptions of hostile comment tone. At a time when instructors are urged to provide longer, more detailed comments by such noted experts as Elbow (1989), Bardine (1999), Ferris (1997), and Lunsford and Straub (2006), the findings in this study raise questions about whether such lengthy comments are actually beneficial to students. These findings suggest that they are not.

The fact that comments that are longer, such as paragraphs, might more often be provided through the use of computer technology, because it is physically easier for many people to type a paragraph than to write one, is a critical element in this examination of the impact of the use of technology in responding to student writing. Still, both abbreviations and one-word comments could also be provided by technological methods, using one of the several computer programs available for this purpose, and those showed relationships with much more positive comment tones. However, it is important to make sure students understand the abbreviations.

Since students perceived comments presented as symbols, single words, and paragraphs negatively, the use of technology could further add to their negative response. Comments provided in typed or computer-generated form also show a correlation ($r = .35$, $p < .01$) with negative comment tone, and it is possible that the combination is viewed in an even more negative light. Instructors who use technological comment delivery systems might do well to carefully monitor the wording and tone of the comments they make on student papers, especially when using abbreviations such as "frag.," "sp.," " tr.," when using single words like "awkward," "vague," or even simply "good," or when providing full paragraphs.

V. Conclusion.

Regardless of the root cause of students' sometimes negative perceptions of instructor comments, if instructors can begin to use commenting techniques that are neutral if not positive, they may be able to improve student perceptions, at the very least. In fact, minimal use of those aspects of instructor comments that showed a connection with negative student perceptions, including the use of technology to provide comments on a separate page, might work to actually decrease negative student perceptions.

For many years, instructors at all levels have discussed ways to respond to student writing, looking for the most helpful and effective ways to do so. Responding to student writing using one of the numerous computer programs designed for the task has been discussed, and much more research remains to be conducted. However, without careful attention to the impact of various aspects of written comments on student writing apprehension, this coordinated effort cannot reach its full potential in helping students become less apprehensive about writing.

References

Bardine, B. (1999, April/May). Students' perceptions of written teacher comments: What do they say about how we respond to them? *High School Journal, 82(4),* 239.

Bardine, B. A., Bardine, M. S., & Deegan, E. F. (2000). Beyond the red pen: Clarifying our role in the response process. *The English Journal, 90(1),* 94-101.

Elbow, P. & Belanoff, P. (1989). *Sharing and Responding.* New York: Random.
Ferris, D. (1997). The influence of teacher commentary on student revision. *TESOL Quarterly, 31,* 315-339.

Fife, J. M., & O'Neill, P. (2001, December). Moving beyond written comment: Narrowing the gap between response practice and research. *College Composition and Communicatioin, 53,* 300-321.

Lunsford, R. F., & Straub, R. (2006). Twelve readers reading: A survey of contemporary teachers' commenting strategies. In R. Straub (Ed.), *Key works on teacher response* (pp. 157-189). Portsmouth, NH: Boynton/Cook Publishers.

Monroe, B. (2002, September). Feedback: Where it's at is where it's at. *The English Journal, 92(1),* 102-104.

Monroe, B. (2003, January). How E-mail can give you back your life. *The English Journal, 92(3),* 116-118.

Popovich, M. N., & Masse, M. H. (2005, Summer). Individual assessment of media writing student attitudes: Recasting the Mass Communication Writing Apprehension Measure. *Journalism and Mass Communication Quarterly, 82,* 339-355.

Sommers, N. (1982, May). Responding to student writing. *College Composition and*

Communication, 33(2), 148-156.

Wiltse, E. M. (2002, Summer). Correlates of college students' use of instructors' comments. *Journalism and Mass Communication Educator, 57(2),* 126-138.

Wiltse, E. M. (2006, Summer). Using writing to predict students' choices of majors. *Journalism and Mass Communication Educator, 2(61),* 179-194.

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Increasing student interaction and the development of critical thinking in asynchronous threaded discussions

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Abstract: The context for this case study is an online, undergraduate, 300-level organization behavior course that explores the intersection of individuals and organization systems at three levels of aggregation: individual, team/group, and organization system. The case study begins with a learning activity designed to use an asynchronous threaded discussion format to elicit, organize and meaningfully share prior knowledge. The case study goes on to detail the initial review, redesign, assessment and results of an improvement cycle aimed at addressing the challenges of stimulating meaningful interaction and critical thinking in this online format. The resulting redesigned learning activity used a collective visual metaphor, based on prior experience, to fuel the threaded discussion process. The case study includes pre- and post-redesign examples and specific instructions for those interested in applying this approach.

Keywords: prior knowledge, visual metaphor, word cloud, content analysis, online teaching and learning, learning activity, online message boards, undergraduate education

I. Introduction.

The following case study begins with a learning activity designed to use an asynchronous threaded discussion format (discussion forum) to elicit, organize and meaningfully share prior knowledge. The case study goes on to detail the initial review, redesign, assessment and results of an improvement cycle aimed at addressing the challenges of stimulating meaningful interaction and critical thinking in the online discussion forum format.

The learning activity described took place in an online, undergraduate, 300-level organization behavior course. Generally speaking, the content of the course explores the intersection of individuals and organization systems at three levels of aggregation: individual, team/group, and organization system. Based on this content, the course lends itself to the inclusion of interactive learning activities. The activity described in this case is one such activity.

II. Literature Review.

The objective of the improvement cycle described in this case study was to enhance meaningful interaction among students and stimulate the development and demonstration of critical thinking skills taking place in a discussion forum.

Discussion Forum Challenge. In the undergraduate online teaching and learning environment, one of the core challenges is to provide opportunities, structures and formats that increase meaningful interaction and give students opportunities to practice and demonstrate critical

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thinking skills. Discussion forums are frequently used as a response to this challenge. At their best, discussion forums allow for connection and interaction among students, can provide exposure to differing perspectives and ideas, and present opportunities for thinking more deeply about the focus topic (Klemm, 2000; Cox & Cox, 2008; Hulkari & Mahlamäki-Kultanen, 2008; LaPointe & Reisetter, 2008). Unfortunately, typical applications of the discussion forum tool often lead to superficial interaction and fail to adequately stimulate the development of critical thinking skills (Klemm, 2000). In their research on this topic, McNamara & Brown (2009) concluded that discussion forums can be an effective mechanism to "facilitate collaborative learning and to scaffold student reflection. However, discussion forums need to be carefully structured and managed to ensure that they result in the deep level of collaborative reflection and active student learning that is desired" (p. 421). The following case study describes the assessment and redesign of a discussion forum aimed at stimulating deeper levels of interaction and critical thinking.

III. Methods.

A. Description of Original Discussion Forum Format.

This discussion forum was originally designed to tap into prior knowledge. It was based on the theory that, if used well, accessing prior knowledge supports learning and provides a foundation for the introduction of new information and concepts. The learning potential of prior knowledge and the importance of appropriate activation is emphasized on the websites of many Centers for Teaching and Learning. For example, "Students come into our courses with knowledge, beliefs, and attitudes gained in other courses and through daily life. As students bring this knowledge to bear in our classrooms, it influences how they filter and interpret what they are learning. If students' knowledge is robust and accurate and activated at the appropriate time, it provides a strong foundation for building new knowledge" (Carnegie Mellon University, n.d.). Since we all interact with organizations in a variety of ways throughout our lives, an organization behavior course provides an ideal opportunity to elicit, organize and meaningfully share prior knowledge. To accomplish this, at the beginning of the course, students were asked to identify, think about and use the discussion forum to share examples of their best and their worst job experiences. The discussion forum was launched with two basic questions: *Describe aspects of your "best" work experience? Describe aspects of your "worst" work experience?*

B. Initial Review of Original Discussion Forum Format.

Variations of the format described above were used for several semesters and, while the importance of the activity was never in question, the quality of student posts was generally disappointing. To more clearly understand the specific ways in which the discussion forum posts fell short, a review was conducted. All of the posts from one semester were carefully examined, looking for: 1) the demonstration of critical thinking, and 2) the amount of meaningful interaction among students. To assess critical thinking at the undergraduate 300-level, three general categories were examined. These were, does the student:

- include the *Why* beneath their response? (e.g. *I think that it is important to have fun at work because …*)

- include illustrative examples? (e.g. *A time when I experienced boredom at work was …*)
- make connections to other theories, models, and/or frameworks from current or from other courses? (e.g. *The text discussed recognition as an important aspect of engagement and this fits with my best job experience*.)

Meaningful interaction was assessed by:
- the number of content-rich (as opposed to *that's interesting*, or *nice post*) responses.
- the number of questions that are asked.

Upon review, it was immediately evident that the learning activity was falling short of delivering on these two variables. Most of the posts were simple recall, evidence of critical thinking skills and content-rich responses were minimal, and questions posed to other students were virtually non-existent.

Example Comments:
- My best job was as a Japanese/Spanish interpreter at the village of "Fukuoka Universidad 95" (Olympics for university students), in Japan. The worst job I've had was the same interpreter job.
- I have had three jobs in my life, two of which tied for the position of worst job ever and one that is without a doubt the best job I have ever had and best job that I think I could possibly have at this point in my life.
- I want flexibility to work when I want to, I don't like being tied down to a schedule. I need personal growth, if I am not growing I feel like I am failing in life.
- I want to be able to move up in the business, if I have reached the top I have to find a different job, I always want to keep moving up!
- I love working with people-this includes other employees as well as customers.
- Communication is key in the workplace.

C. Redesigned Discussion Forum Format.

The objectives for the redesign of the learning activity were twofold:
- To increase meaningful interaction, as measured by the number of content-rich responses and the number of questions asked.
- To increase the development and demonstration of critical thinking, as measured by evidence of including underlying thinking, illustrative examples, and connections to other theories, models, and frameworks.

In order to accomplish these objectives, it was decided that, rather than jumping straight into the discussion forum, the learning activity would be split into two phases. In the first phase, student responses were collected and combined to create a visual metaphor or artifact (an object made by an individual or a group, especially with a view toward subsequent use). This approach was selected because visual metaphors can help reveal patterns, themes, connections and finer nuance. They can create an "AHA!" experience. Noel Carroll describes a visual metaphor "as a device for encouraging insights, a tool to think with. That is, with visual metaphors, the image-maker proposes food for thought without stating any determinate proposition. It is the task of the

viewer to use the image for insight" (2001). This concept is well-illustrated by a student post: "It's odd how the words weren't much different than I had thought they would be, and yet how profound they are when they are all linked together graphically like that."

In the second phase, the visual artifact was used to launch the discussion forum. The specific steps for the redesigned activity were as follows:

1. In the first phase, two focus questions were developed that required students to respond with a list of words. These were focused on concrete experience and were designed to allow students to reflect upon, organize, and pull forward prior knowledge/experience. This prior knowledge/experience provided the starting point for the meaning-making associated with deeper levels of critical thinking.
2. Phase 1 Questions: *What five words would you use to describe aspects of your "best" work experience? What five words would you use to describe aspects of your "worst" work experience?*
3. The words submitted by all students were gathered and entered into the Wordle™ (Fienberg, 2011) application, thus creating two collective "word clouds" – one for "best jobs" and one for "worst jobs." The word clouds became a collective artifact that synthesized individual experiences into one image that suggested broader patterns and themes. The word cloud does this by making words mentioned more often larger. Additionally, it has been observed that a graphic representation can sometimes help a viewer to "see things differently." Figure 1 offers an example of a word cloud.
4. In phase 2, the word clouds were posted in the discussion forum with prompts to encourage reflection and inquiry.
5. Phase 2 Questions: *Spend some time looking at and thinking about the word cloud(s). What do you notice about our collective experience with work? If you were a manager, what would you pay attention to in order to create a positive work experience? What surprised you? What did you expect? What else?*

Figure 1. Word cloud example.

D. Assessment of Redesign.

To assess the effectiveness of the redesigned approach, a direct assessment of student learning was conducted using the discussion forum posts. A content analysisof 40 randomly selected posts was completed, looking for the following variables:

- Did the post include underlying thinking – the Why?
- Did the post include illustrative examples?
- Did the post make connections to other theories, models, or frameworks?
- If it was a response, was it content rich?
- Did the post include a question?

As the posts were reviewed, an additional interesting and potentially important variable was identified:

- Did the post identify some type of future action?

IV. Results.

The content analysis resulted in the following:

Variable	Why	Example	Connection	Content-rich	Question	Action
% of Comments	53%	38%	13%	97%	20%	10%

Example comments:

- I was amazed that most of the bad words were more emotion oriented and not as much about doing the actual job. I thought there would be more words about the kind of job instead of how people on the job made you feel.
- I have had managers who possessed both categories of traits. I've had managers who were unorganized but caring; rude but driven; back stabbing yet creative; and, unqualified yet a good leader.
- I think that what people say they want and what they really want are not always the same.
- I am curious if, after reviewing the word clouds, would you change the words that you originally used?
- What I find most interesting is how the words in the best jobs section spoke directly to employee engagement. After reading the description of that in the text, the words that had the larger focus in the graphic were a nearly perfect match for what was identified in the text.
- As a manager I think that this would be a great exercise to see how the employees feel about the company and a starting point to make things even better.
- Oh Yeah! I wonder what kind of response employers would get if they were just being honest: HELP WANTED: Degrading workplace is in need of a pushover for demeaning, boring, dirty work. Miserable working conditions with lousy pay. No benefits, long hours, and no possibility for advancement. Must have MBA, clean driving record, perfect credit, straight teeth, and no sense of humor.

V. Discussion.

First off, the students seemed to enjoy the redesigned format. In the discussion forum itself, many of the students commented on how much they enjoyed and/or learned from the learning activity. For example: "I found this forum very interesting. It made me realize things that I wasn't necessarily thinking about at work. Thanks everyone for making me more aware."

The first goal of this redesign was to increase meaningful interaction, as measured by an increase in both the number of content-rich responses and questions asked. Content rich responses went from almost non-existent in the original learning activity to 97% in the redesigned activity. The frequency of questions asked was still disappointing at 20%.

The second goal was to increase the development and demonstration of critical thinking, as measured by evidence of including underlying thinking, illustrative examples, and connections to other theories, models, and frameworks. Sharing underlying thinking was evident in 53% of the posts, which is acceptable for a 300-level undergraduate course. Illustrative examples were shared in 38% of the posts, again within the acceptable range. Only 13% of the posts included a connection to a model, concept, or framework.

Through the content analysis it was also noticed that a small percentage of the posts (10%) actually identified some type of future action or application of the learning.

VI. Conclusion and Implications for Future Action.

The addition of the visual metaphor clearly improved content-rich responses and several aspects of the demonstration of critical thinking. It also increased student interest in the discussion forum.

The redesigned activity still falls short in encouraging students to ask questions and make connections to models, theories and frameworks. The assessment also identified potential opportunities to incorporate a focus on identifying application opportunities. These three areas provide opportunities for future improvement and enrichment of the learning activity

References

Carnegie Mellon University. (n.d.). Learning principles: Enhancing education. In *Eberly Center for Teaching Excellence*. Retrieved from http://www.cmu.edu/teaching/principles/learning.html

Carroll, N. (2001). Visual metaphor. In *Beyond aesthetics: Philosophical essays* (pp. 347-368). Cambridge, UK: Cambridge University Press.

Cox, B., & Cox, B. (2008). Developing interpersonal and group dynamics through asynchronous threaded discussions: The use of discussion board in collaborative learning. *Education*, *128*(4), 553-565.

Hulkari, K., & Mahlamaki-Kultanen, S. (2008). Reflection through web discussions: Assessing nursing students' work-based learning. *Journal of Workplace Learning*, *20*(3), 157-164.

Klemm, W. R. (2000, November). What's wrong with online discussions and how to fix it. In G. Davies, & C.B. Owen (Eds.), *Proceedings of WebNet 2000: World Conference on the WWW and Internet* (pp. 335-340). San Antonio, TX: AACE.

LaPointe, L., & Reisetter, M. (2008). Belonging online: Students' perceptions of the value and efficacy of an online learning community. *International Journal on E-Learning*, *7*(4), 641-665.

McNamara, J., & Brown, C. (2009). Assessment of online discussion in work-integrated learning. *Campus-Wide Information Systems*, *26*(5), 413-423.

Feinberg, J. (2011). *Wordle: Beautiful word clouds*. Retrieved from http://www.wordle.net

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Factors that impact students' motivation in an online course: Using the MUSIC model of academic motivation

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Abstract: The aim of this study was to examine the factors that motivate students in large online courses. Specifically, the purposes were: (a) to document how highly men and women rated motivational beliefs in a large online course; (b) to determine why men and women rated their motivational beliefs the way in which they did; and (c) to provide recommendations for how to intentionally design online courses to motivate students. Using a mixed methods design, we used a questionnaire to assess undergraduate students' perceptions of the components of the MUSIC Model of Academic Motivation (i.e., eMpowerment, Usefulness, Success, Interest, and Caring) in an online course and their suggestions for changing the course. Overall, men and women provided high ratings for their motivational beliefs in the course. The suggestions students provided for changing the course were similar for both sexes and revealed a preference for instructional strategies that were consistent with the tenets of the MUSIC Model of Academic Motivation, including: offering more and/or varied assessments, providing interactive activities, including videos and/or video lectures, and offering face-to-face meetings. Other suggestions for improving the online course design are provided.

Keywords: motivation, MUSIC Model of Academic Motivation, online teaching, engagement, student perceptions

I. Introduction.

Although online courses are becoming more prevalent in higher education, the literature related to student motivation in online courses is only in its nascent stages (e.g., Dixson, 2010). Instructors and instructional designers of online courses must consider how engaging students in online course content might be similar to, yet possibly different from, face-to-face courses. In one study of a course that was taught face-to-face in one semester and then taught online in another semester, the researcher found that the students in the online section of the course provided higher ratings for several motivational beliefs than the students in the face-to-face section of the course (Jones, 2010a). Although this study documented differences in students' beliefs, it did not explore *why* students rated their motivational beliefs higher in the online section than in the face-to-face section of the course. The aim of the present study was to address this issue by examining *why* students in online courses might provide higher ratings for motivational beliefs than students in face-to-face courses. Specifically, the purposes of the present study were: (a) to document how highly men and women rated motivational beliefs in a

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large online course, (b) to determine why men and women rated their motivational beliefs the way in which they did, and (c) to provide recommendations for how to intentionally design online courses to motivate students.

A. Background.

Motivation is a varied construct that can be examined through the lens of many theories and principles. To help instructors design courses that engage students in learning, Jones (2009) developed the MUSIC Model of Academic Motivation, which consists of five components that have been derived from research and theory as ones that are critical to student engagement in academic settings: empowerment, usefulness, success, interest, and caring. The name of the model, MUSIC, is an acronym based on the second letter of "eMpowerment" and the first letter of the other four motivational components. The MUSIC model has been used as a framework for instructors in designing instruction (Jones, 2009; Jones, 2010b) and for researchers in understanding the impact of instruction on students' motivation (Jones, 2010a; Jones, Ruff, Snyder, Petrich, & Koonce, 2012). Interestingly, Jones (2010a) documented that men and women's ratings differed for some of the MUSIC components in an online course.

The first component of the MUSIC model, empowerment, refers to the amount of perceived control that students have over their interactions with their learning environment. Instructors can empower students by supporting their autonomy, such as by providing them with choices and the ability to make decisions. In online courses, empowerment has been shown to be a predictor of undergraduate students' effort, course ratings, and instructor ratings (Jones, 2010a).

The usefulness component of the MUSIC model involves the extent to which students believe that the coursework (e.g., assignments, activities, readings) is useful for their short- or long-term goals as their motivation is affected by their perceptions of the relevance of what they are learning for the future (De Volder & Lens, 1982; Kauffman & Husman, 2004; Tabachnick, Miller, & Relyea, 2008). One implication is that instructors need to ensure that students understand the connection between the coursework and their goals. Students in an online course have been shown to access examples and exercises more frequently when they were provided with information about the usefulness of the material (Sansone, Fraughton, Zachary, Butner, & Heiner, 2011).

For the third MUSIC component, success, instructors need to ensure that students believe that they can succeed if they have the required knowledge and skills and put forth the appropriate effort. Instructors can foster students' success beliefs in a variety of ways, including making the course expectations clear, challenging students at an appropriate level, and providing students with feedback regularly. For example, students' perceptions of their ability to succeed in using technology in online courses have been shown to be related to their motivation (Kim & Frick, 2011).

The interest MUSIC component includes two theoretically distinct constructs: situational interest and individual interest (Hidi & Renninger, 2006). Situational interest, which is akin to curiosity, refers to immediate, short-term enjoyment of instructional activities, whereas individual interest refers to internally activated personal values about a topic that are more enduring. Instructors can create situational interest by designing instruction and coursework that incorporates novelty, social interaction, games, humor, surprising information, and/or that engenders emotions (Bergin, 1999). Instructors can develop students' individual interest in a

topic by providing opportunities for them to become more knowledgeable about the topic and by helping them understand its value (Hidi & Renninger, 2006). Studies of undergraduate and graduate students in online courses have documented that when instructors make the online course content more useful and relevant to students' interests, students' motivation increases (Kim & Frick, 2011).

The underlying principle of the caring MUSIC component is that all humans have a need to establish and sustain caring interpersonal relationships (Baumeister & Leary, 1995; Ryan & Deci, 2000). The caring component can be divided into two components: academic caring and personal caring (Johnson, Johnson, & Anderson, 1983). Academic caring specifies that instructors need to demonstrate to students that they care about whether or not they successfully meet the course objectives. Personal caring involves the idea that students need to perceive that their instructor cares about their welfare. Having an online presence in online courses, providing students with well-conceived immediate feedback, supporting students' critical and independent perspectives, offering invitations for personal discussions and interactions, and encouraging students to engage with one another in learning communities are all strategies for communicating a sense of caring in online courses that can lead to increased student motivation (Baker, 2010; Weiss, 2000).

B. Research Questions.

Because Jones (2010a) documented differences between men and women for some of the MUSIC model components, we designed the present study to examine not only why students have certain motivational beliefs in online courses, but also whether these beliefs vary by gender. We addressed the following two research questions in this study.

1. How highly do men and women rate each of the components of the MUSIC model?
2. What online course characteristics do men and women perceive as ones that could be changed to increase their perceptions of the MUSIC components?

II. Methodology.

A. Design.

We implemented a partially mixed, concurrent design whereby the quantitative and qualitative components have approximately equal status (Onwuegbuzie, & Collins, 2007). This study includes some of Newman, Ridenour, Newman, and DeMarco's (2003) goals for conducting research, such as: *understanding a complex phenomena* (i.e., how course characteristics affect student motivation), *adding to the knowledge base* in the areas of motivation and the scholarship of teaching and learning, and *informing constituencies* (e.g., educators, instructional designers) of the findings.

B. Participants.

Participants in this study included 609 of the 651 undergraduates (a 93.5% response rate) enrolled in a fully online "Personal Health" course at a large, public university in the United States. About half of the participants were women (n = 303; 49.8%) and about half were men (n = 306; 50.2%). The majority of students were White or Caucasian (not Hispanic; n = 466;

76.5%), whereas others self-reported their race/ethnicity as Asian or Pacific Islander (*n* = 73; 12.0%), Black or African American (*n* = 30; 4.9%), Other (*n* = 21; 3.4%), Hispanic (*n* = 17; 2.8%), or Native American (*n* = 2; 0.3%). The reported academic level of the participants reflected students at their Freshman (*n* = 33; 5.4%), Sophomore (*n* = 109; 17.9%), Junior (*n* = 187; 30.7%), and Senior (*n* = 280; 46.0%) years.

C. Course Description.

The syllabus description of the Personal Health course stated, "This on-line course is designed to provide students with health information based on scientific principles that will enable him/her to make sound decisions regarding his/her health. The major emphasis is wellness and the importance of individual responsibility for health related matters through health promotion efforts." The course included material from thirteen chapters of a textbook covering topics such as wellness, mental health, substance abuse, alcohol, tobacco, cardiovascular health, cancer, communicable diseases, consumer health, nutrition, fitness, and human sexuality. Students were assessed with four exams that were weighted equally toward students' final course grade. The exams included questions in the format of true/false and multiple-choice and assessed content material from the textbook. To prepare for the exams, students read the textbook and studied questions provided by the instructor that were similar to the questions on the exams. Students were also required to attend one workshop at the campus health center or to complete five online self-assessments. Final grades were calculated based on the following percentages: the exams accounted for 84.5%, the workshop or online assessments accounted for 14.1%, and a questionnaire about the course accounted for 1.4% of students' final grade. The course was not a requirement for any of the students as part of their university coursework.

D. Measures.

Participants completed a questionnaire that contained items from previously validated instruments, as well as items written by the authors. The instruments that we used were the same as those presented in Jones (2010a). Students rated each item on a 7-point Likert-type scale with descriptors at each point; one example item of each is presented here. The instruments measured seven constructs: five items measured empowerment (α = 0.93; "My instructor listens to how I would like to do things."), three items measured usefulness (α = 0.95; "In general, the material in this course is useful to me."), four items measured success (α = 0.93; "In this course, I feel that I am able to perform well."), three items measured situational interest (α = 0.90; "In general, how interested are you in learning the content material in this course?"), three items measured individual interest (α = 0.84; "Learning the course content material is very valuable to me."), four items measured academic caring (α = 0.93; "I believe that my instructor cares about how much I learn."), and four items measured personal caring (α = 0.92; I believe that my instructor really cares about me as a person."). We found the reliability estimates for the scales to be acceptable.

As a measure of the perceived quality of the course, students were asked on a 7-point Likert-type scale with descriptors at each point (1 = *terrible*; 7 = *excellent*): "My overall rating of the course is:" Open-ended items were written by the authors to gain further insight into those aspects of the course that contributed to or detracted from the MUSIC components. The exact wording of the eight open-ended items is provided in the "Results" section.

E. Procedures.

Participants were introduced to the questionnaire through the course syllabus, which was provided at the start of the semester. At three weeks prior to the availability of the questionnaire and again at one week prior to the availability of the questionnaire, the course instructor reminded the participants via email that they needed to complete the questionnaire assignment when it became available. A link to the online questionnaire was made available to the participants during the ninth week of a 16-week semester via email notification and on the course website.

F. Data Analysis.

We used SPSS 12.0 to analyze students' responses to the Likert-type and descriptive items on the questionnaire. To compare the differences between men and women on the MUSIC model components, we conducted *t*-tests and set the alpha level at 0.01 to address the problem of multiple comparisons.

For analysis of the open-ended items, we used a thematic whole text analysis, which was informed by the analytic procedure developed by Glaser and Strauss (1967; also see Strauss & Corbin, 1998). An initial coding scheme for the item responses was developed after the authors read all of the responses, identified themes, and created coding categories within the themes. Once codes were established for all open-ended items, the authors independently coded all 609 potential responses for each question. Their responses were compared and the disagreements were noted. Because it was possible for participants to provide a response that warranted more than one code, the inter-rater reliability was computed using the percentage of responses, not respondents. The inter-rater reliability ranged from 91% to 98% for the open-ended items.

III. Results.

A. Research Question 1: Ratings for MUSIC Model Components.

The first research question asked: How highly do men and women rate each of the components of the MUSIC model? To address this question, we computed the mean scores and conducted *t*-tests to determine whether there were differences between females and males in their ratings. The means, standard deviations, and results of the *t*-tests are presented in Table 1.

Both men and women rated all of the variables highly in that all of the mean values were greater than 5.0 on a 7-point Likert-type scale. Women provided statistically higher ratings than men for usefulness, success, situational interest, and individual interest. We found no statistical differences between men and women for empowerment, academic caring, or personal caring. Men and women's overall rating of the course was similar (t = 1.86, df = 607, p = .06). The average course ratings were slightly above 6 on the 7-point scale (M = 6.11, SD = 0.97 for men; M = 6.26, SD = 1.02 for women), indicating that their overall rating of the course was between *very good* (a "6" on the scale) and *excellent* (a "7" on the scale).

Table 1. Means, standard deviations, and *t*-test results of students' ratings of the MUSIC model components by sex.

Variable	Females[a] *M* (*SD*)	Males[b] *M* (*SD*)	Mean difference	*t*	*df*	*d*
Empowerment	5.46 (1.04)	5.25 (1.19)	0.21	2.32	597.9	0.19
Usefulness	6.02 (0.96)	5.81 (1.04)	0.21	2.63**	607.0	0.21
Success	6.45 (0.64)	6.29 (0.76)	0.16	2.78**	591.2	0.23
Situational interest	5.93 (0.88)	5.67 (0.96)	0.26	3.47***	603.4	0.28
Individual interest	6.20 (0.71)	5.96 (0.84)	0.23	3.70***	591.2	0.31
Academic caring	6.15 (1.03)	6.00 (1.02)	0.15	1.85	607.0	0.15
Personal caring	5.30 (1.54)	5.36 (1.46)	-0.05	-0.45	607.0	0.04

Note: All items were rated on a 7-point Likert-type scale.
** $p \leq 0.01$; *** $p \leq 0.001$
[a]n = 303; [b]n = 306

B. Research Question 2: Course Characteristics Related to MUSIC Components.

Our second research question asked: What online course characteristics do men and women perceive as ones that could be changed to increase their perceptions of the MUSIC components? Participants were asked a series of open-ended questions for which they provided information about those aspects of the course that could be changed to enhance their motivation. Responses to these questions are summarized in the following sections.

Empowerment. We asked participants the following question related to empowerment: "What could be changed in this course to make you feel you had more control over your learning?" We received 614 responses (310 from males and 314 from females); the results are presented in Table 2. Over half of the students reported that nothing could be changed to give them more control and 16.3% of the responses indicated that they already had sufficient control. The other responses reflect more varied suggestions on how the course could be changed to give students more control over their learning, including eliminating exam deadlines, requiring more or varied assessment opportunities, offering face-to-face meetings with the professor, providing opportunities for interactive activities with other students in the class, finding ways to include videos and video lectures into the course, and incorporating more workshop opportunities (see Table 2 for the complete list).

To determine which aspects of the course gave students a sense of control, we asked them: "Which aspects of this course give you control over this course?" We received 983 responses (458 from males and 525 from females), which are summarized in Table 3. Of the overall responses, 18.1% indicated that the availability of practice questions to prepare for the course exams gave them control over the course; 16.4% indicated that the ability to work at their own pace/teach themselves gave them control over the course; 14.6% of the overall responses indicated that "everything" about the course gave them control over the course; and 12.7% of the responses indicated that the choice to either read the textbook or answer the practice questions gave them control over the course. Varied responses comprised 34.6% of the overall data for this question and indicated that the online format and its subsequent flexibility for testing and completing assigned work, the correspondence with the instructor, and the choice to attend workshops outside of class contributed to the their sense of control in the course.

Table 2. Things that could be changed to give students more control over their learning.

Response	% Male Responses[a]	% Female Responses[b]	% Overall Responses[c]
Nothing	50.0	58.9	54.4
I have sufficient control	17.4	15.1	16.3
Irrelevant response that did not address the question	9.4	6.6	8.0
No exam deadlines except one at the end of the course	4.8	4.3	4.6
N/A	2.6	4.3	3.4
Require more or varied assessments	3.5	2.6	3.1
Allow for meetings with the professor	3.3	0.3	1.8
Make the course more interactive	1.6	1.3	1.5
Videos or lecture videos	1.9	1.0	1.5
More workshops	1.6	1.0	1.3

Note: Inter-rater reliability = 94%; responses with less than 1.0% overall are not shown.
[a]310 coded responses, [b]314 coded responses, [c]624 coded responses

Table 3. Aspects of the course that give students control over the course.

Response	% Male Responses[a]	% Female Responses[b]	% Overall Responses[c]
Availability of practice questions or tests	17.5	20.2	18.9
Ability to work at my own pace or teach myself	17.5	15.4	16.5
Everything	15.7	13.4	14.6
Choice to read text or answer practice questions	12.4	13.4	12.9
Online course or online tests	9.6	6.7	8.2
Where or when to take multiple choice exams	7.4	7.4	7.4
Correspondence with the instructor	6.1	8.0	7.1
Plenty of time to take tests or flexible deadlines	3.9	5.9	4.9
Attending the workshops	2.8	3.1	3.0
Irrelevant response that did not address the question	3.3	1.3	2.3
Being able to finish early or get ahead in class	1.6	2.1	1.9
Choice between tests or workshops	1.1	1.5	1.3

Note: Inter-rater reliability = 91%; responses with less than 1.0% overall are not shown.
[a]458 coded responses, [b]525 coded responses, [c]983 coded responses

Usefulness. We asked students: "What could be changed in this course to make it more useful to you?" We received 627 responses (317 responses from males and 310 from females), which are summarized in Table 4. Over half of the responses reported that there was nothing that could be changed to make the course more useful to them (52.3%); however, 39.2% of the responses indicate that there are methods and practices that could be changed to make the course more useful. Although the suggestions for making the course more useful represented a variety of ideas (as shown in Table 4), 5.6% of the overall responses indicated that providing more interactive, group activities throughout the term would make the course more useful, 4.8% of the overall responses indicated that requiring more workshops would make the course more useful, and 3.7% of the overall responses indicated that requiring more or varied assessments would make the course more useful.

Success. We asked students, "What could be changed in this course to help you feel you could be more successful in it?" and we received 620 responses (309 from males and 311 from females). The results are presented in Table 5. Over two-thirds of the students reported that nothing could be changed in the course to make them feel more successful in it. Although varied

and fewer in number, the remaining responses indicated that students believed that they would be more successful if the course required more, varied types of assessments; if the course was more interactive; if videos and video lectures were included among the instructional materials for the course; if improvements were made to the textbook, course website, and study guides; if more workshops were made available; and if other resources were provided to help students better prepare for exams (see Table 5 for the complete list).

Table 4. Things that could be changed in the course to make it more useful.

Response	% Male Responses[a]	% Female Responses[b]	% Overall Responses[c]
Nothing	51.1	53.5	52.3
N/A or irrelevant response	9.5	7.4	8.5
Provide more interactive, group activities	5.7	5.5	5.6
Require more workshops	4.4	5.2	4.8
Require more or varied assessments	3.8	3.5	3.7
Use a different textbook	3.5	1.3	2.4
Provide a more specific content focus	1.9	2.6	2.2
Do not use a textbook	1.6	2.6	2.1
Provide online tutorials or lectures	2.8	1.3	2.1
Make it a traditional class that is not online	2.2	1.9	2.1
Give shorter, more frequent exams	0.6	3.2	1.9
Use videos to share information	2.8	0.6	1.8
Post presentation slides online	0.9	2.3	1.6
Focus more on current news or health issues	1.6	1.3	1.4
Provide fewer multiple choice questions	1.6	1.0	1.3
Make the content more relevant	1.6	1.0	1.3
Send less email	0.9	1.6	1.3
Use the course management system for everything	1.6	0.6	1.1
Offer more or varied practice questions	0.6	1.3	1.0
Reveal all practice questions at once	0.3	1.6	1.0

Note: Inter-rater reliability = 94%; responses with less than 1.0% overall are not shown.
[a]317 coded responses, [b]310 coded responses, [c]627 coded responses

Table 5. Things that could be changed in the course to help students feel more successful.

Response	% Male Responses[a]	% Female Responses[b]	% Overall Responses[c]
Nothing	68.0	69.1	68.6
Irrelevant response that did not address the question	5.2	3.6	4.4
N/A	3.6	5.5	4.6
Require more or varied assessments	2.6	4.0	3.3
Make the course more interactive	2.3	3.6	3.0
Videos or lecture videos	2.8	2.3	2.6
Improved textbook	2.6	0.6	1.6
More practice questions after each chapter	1.3	1.6	1.5
Weekly online lectures	2.3	0.6	1.5
Improved study guides	1.0	1.6	1.3
More Workshops	1.0	1.6	1.3
Improve the website	1.0	1.6	1.3
Use other methods to help prep for exams	1.0	1.3	1.2

Note: Inter-rater reliability = 97%; responses with less than 1.0% overall are not shown.
[a]309 coded responses, [b]311 coded responses, [c]620 coded responses

Interest. We asked students "What could be changed in this course to make it more interesting and enjoyable?" and we received 643 responses (321 from males and 322 from females). Forty percent of the responses indicated that nothing could be changed to make the course more interesting and enjoyable; however, nearly 52% of the responses suggested a variety of changes. The most predominant suggestions for making the course more interesting and enjoyable included showing videos or including images, and making the class more interactive by including games and discussion forums. Other responses indicated that requiring more workshops, incorporating more and varied assessments, and maintaining a more specific content focus would make the course more interesting and enjoyable, as would making improvements to the textbook and providing additional instructional materials beyond the textbook (see Table 6 for the remainder of the responses).

Table 6. Things that could be changed in the course to make it more interesting and enjoyable.

Response	% Male Responses[a]	% Female Responses[b]	% Overall Responses[c]
Nothing	40.1	39.8	40.0
Show videos or images	12.1	11.1	11.6
More interactive activities	9.7	12.7	11.2
More Workshops	6.5	7.5	7.0
Irrelevant response that did not address the question	5.3	3.4	4.4
N/A	3.4	4.0	3.7
Require more or varied assessments	3.4	3.4	3.4
More specific content focus	2.8	3.1	3.0
Use real-life examples, stories, or case studies	1.2	4.0	2.6
Opportunities for application or hands-on	1.9	2.8	2.4
Make content more relevant to students' lives	2.5	2.2	2.4
Textbook improvements	3.4	1.2	2.3
Provide additional materials beyond textbook	2.2	1.2	1.7
More meetings or interactions with instructor	2.2	1.2	1.7
Video-taped lectures or presentation slides	1.2	0.9	1.1

Note: Inter-rater reliability = 98%; responses with less than 1.0% overall are not shown.
[a]321 coded responses, [b]322 coded responses, [c]643 coded responses

Caring. Because the caring component can be divided into academic and personal caring (Jones, 2010a; Jones & Wilkins, 2012), we asked questions related to both of these caring subcomponents. Related to academic caring, we asked students: "What could be changed in this course to make you feel that the instructor cares about whether you learn the course content and do well in the course?" We received 621 responses (319 from males and 302 from females), which are summarized in Table 7. Almost half of the students reported that there was nothing that could be done to increase academic caring. Nearly 16% of the students reported that academic caring is difficult to convey in an online environment and that it is, therefore, not expected. Additional responses suggested providing more interaction between the student and the instructor, providing opportunities to meet the instructor face-to-face, offering the course face-to-face instead of fully online, and asking students about themselves personally via email (see Table 7 for the remainder of the responses).

Table 7. Things that could be changed in the course to increase academic caring.

Response	% Male Responses[a]	% Female Responses[b]	% Overall Responses[c]
Nothing or can't think of anything	44.0	47.1	45.6
Caring is difficult to convey online or isn't expected	13.7	17.9	15.8
More interaction between the students and instructor	6.0	6.3	6.2
Opportunities to meet the instructor face-to-face	6.3	4.0	5.2
N/A	4.1	5.3	4.7
Offer the class face-to-face instead of online	6.3	1.7	4.0
Irrelevant response that didn't answer the question	2.2	2.6	2.4
Ask students about themselves personally by email	2.5	2.0	2.3
Send email about current events in health	2.8	1.7	2.3
More interaction among students	2.2	2.0	2.1
Don't know	2.8	1.3	2.1
Instructor should hold "live" office hours online	1.9	1.3	1.6
Meet with students to discuss their performance	0.9	1.3	1.1
Class is too large for the instructor to show caring	0.9	1.3	1.1
Video lectures online	1.3	0.7	1.0

Note: Inter-rater reliability = 96%; responses with less than 1.0% overall are not shown.
[a]319 coded responses, [b]302 coded responses, [c]621 coded responses

To gather additional data related to academic caring, we asked students: "What does the instructor do to provide you with the impression that she cares about whether you learn the course content and do well in the course?" We received 667 responses (327 from males and 340 from females), which are summarized in Table 8. Of the responses, 73.9% indicated that the instructor's continual communication via email to the class gave the impression that she cared about whether they learned the course content and did well in the course, with an overall 8.3% of the responses indicating that prompt, thorough responses to students' questions via email gave them the impression that the instructor cared about their academic success in the course. Among the remaining 14.3% of responses, students cited the accessibility of the instructor, the instructor's encouragement for students to ask questions, her accommodations and flexibility to meet the needs of her students, and her personal, individualized responses to students' emails as things the instructor did to provide the impression that she cared about whether the students learned the course content and did well in the course.

With respect to personal caring, we asked students: "What does the instructor do to provide you with the impression that she cares about you as a person?" We received 643 responses (326 from males and 317 from females), which are summarized in Table 9. Of the responses, 35.0% indicated that the instructor's frequent email reminders and notifications gave the impression that she cared about students personally. Additionally, 13.5% of the responses indicated that prompt, personalized email responses gave students the impression that the instructor cared about them personally, with 6.1% of the responses indicating that the tone of the email (e.g., polite, friendly, encouraging) made the students feel as if the professor cared for them personally. The instructor's approachability and willingness to help was found in 7.3% of the responses. Overall, 7.3% of the responses indicated that the professor did "nothing" to provide the students with the impression that she cared about them personally, whereas 6.6% of the responses asserted that personal caring was not possible in an online environment and 4.0% of the responses noted that personal caring is not possible because students have no personal interaction with the professor. The remaining responses are presented in Table 9.

Table 8. Things that the instructor does to provide academic caring.

Response	% Male Responses[a]	% Female Responses[b]	% Overall Responses[c]
Continual communication via email to the class	74.9	72.3	73.6
Prompt, thorough responses to email inquiries	7.5	9.1	8.3
Irrelevant response that didn't answer the question	5.2	2.6	3.9
Nothing	3.1	1.8	2.5
Accessibility of instructor	1.2	3.5	2.4
Encourages students to ask questions	1.5	3.2	2.4
Accommodating and flexible to meet student needs	1.8	1.5	1.7
Personal, individualized responses to student email	0.9	1.5	1.2
N/A	1.8	0.3	1.1
Clear, detailed course documents and materials	0.3	1.8	1.1
Provides practice exams	0.9	1.2	1.1

Note: Inter-rater reliability = 97%; responses with less than 1.0% overall are not shown.
[a]327 coded responses, [b]340 coded responses, [c]667 coded responses

Table 9. Things that the instructor does to provide personal caring.

Response	% Male Responses[a]	% Female Responses[b]	% Overall Responses[c]
Frequent email reminders and notifications	36.6	33.4	35.0
Prompt, personalized email responses	11.3	15.6	13.5
Approachability or willingness to help	6.1	8.5	7.3
Nothing	9.8	4.7	7.3
Irrelevant response that did not address the question	8.6	5.7	7.2
Personal caring not possible in online environment	5.9	7.3	6.6
Tone of email was polite, friendly, or encouraging	6.1	6.0	6.1
Office hours and availability	4.9	3.5	4.2
Have had no personal interaction with instructor	3.1	5.0	4.1
N/A	3.7	2.8	3.3
Patience or assistance with technology issues	0.3	3.5	1.9
Allowed students to force-add or enroll late in course	1.8	0.3	1.1
Flexibility of due dates	0.6	1.6	1.1

Note: Inter-rater reliability = 97%; responses with less than 1.0% overall are not shown.
[a]326 coded responses, [b]317 coded responses, [c]643 coded responses

IV. Discussion.

A. Research Question 1.

Both men and women rated each of the components of the MUSIC model higher than 5.0 on a 7-point Likert-type scale. These findings indicate that, overall, men and women were satisfied in this type of course. As further evidence, students' average overall course ratings were between *very good* and *excellent*. Additional research is needed to determine why women provided statistically higher ratings than men for usefulness, success, situational interest, and individual interest; however, as Jones (2010a) speculated, based on research in the field of interest (Jones, Howe, & Rua, 2000; Von Bothmer & Fridlund, 2005), women might value some aspects of the health content more than men (i.e., they might find it more useful and interesting). Being

interested in the course content and finding it useful might also lead them to feel more successful which could result in higher ratings than men on all of these MUSIC components.

B. Research Question 2.

When students responded to what they would do to change the instruction to make it more consistent with each MUSIC model component, the suggestions provided by men and women appeared to be similar in quantity. Therefore, we grouped men and women's responses together and discuss them together in this section.

Student recommendations across MUSIC components. Students' responses across the MUSIC components included recommendations for the addition and/or change of specific course characteristics. Each of these characteristics and their perceived benefits is discussed in detail in the following sections and is illustrated in Figure 1.

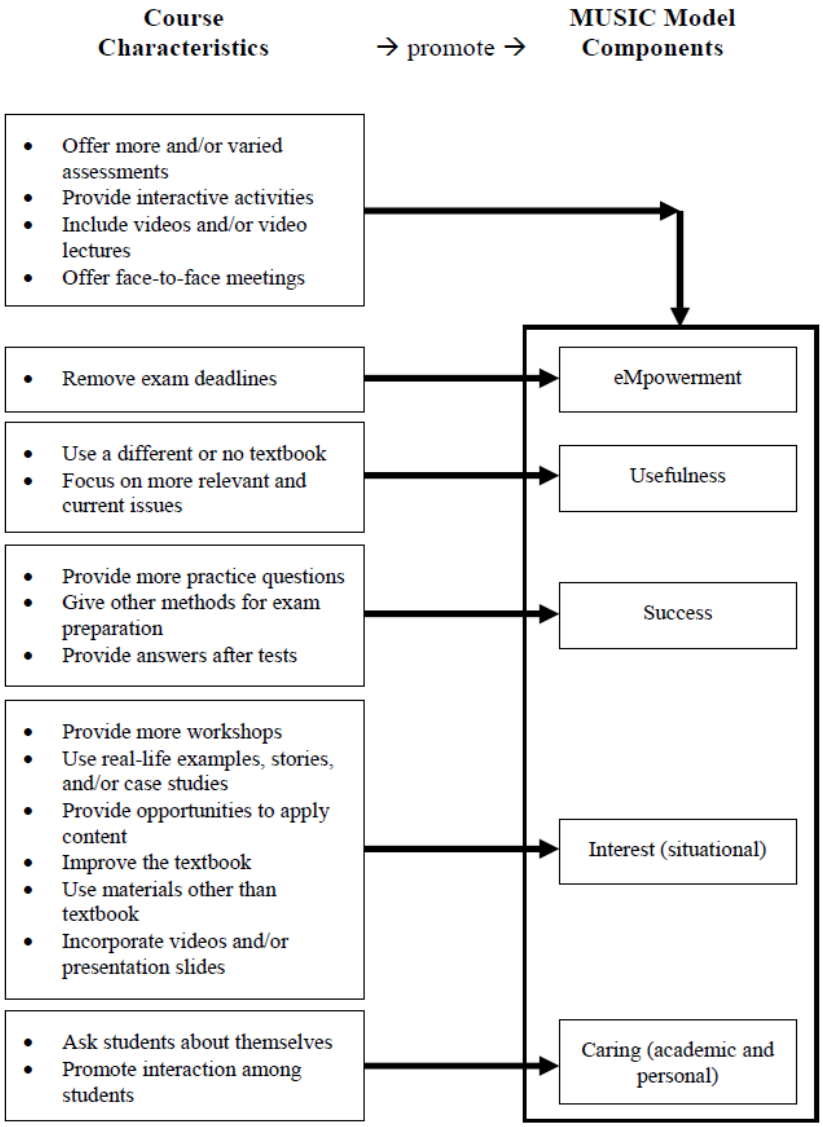

Figure 1. Summary of the main course characteristics that could be changed to enhance the MUSIC model components.

Students suggested that the instructor provide more and/or varied types of assessments to increase their perceptions of empowerment, usefulness, success, and situational interest. Currently, the course is constructed such that 84.5% of the students' final grade for the course is based on the results of exams that include true/false and multiple-choice questions. Although these types of summative assessments might be appropriate for the evaluation of students' comprehension of specific curricular objectives, they do not allow for formative development of students' understanding of the content. Adopting a course design that includes more and/or varied types of assessments may improve students' perceptions of empowerment by providing them with more choices; improve students' perceptions of usefulness by creating formative assessments that "inform future learning experiences" (Doolittle, 1999, p. 8); improve students' perceptions of success by providing other types of assessments (besides true/false and multiple choice exams) for which some students' believe that they have a better chance of succeeding at; and improve students' perceptions of situational interest by reducing redundancy of assessment methods and introducing a sense of novelty.

Students suggested that the instructor include more activities that involve student interaction within the course. This response was highest for situational interest, followed by academic caring, usefulness, success, and empowerment. Thus, interactive activities were perceived as a means to improve perceptions in all of the MUSIC components. Counter to isolated learning assignments, interactive activities require social negotiation and mediation, allowing for multiple perspectives and representations of content (Doolittle, 1999). Further contributing to an effective learning environment, interactive activities allow for formative assessment opportunities in which students are engaged in higher-order cognitive processes—including analysis, synthesis, elaboration, and evaluation—as they provide one another with ongoing feedback and validation (Marra & Jonassen, 2001). Because of the significance of the role of interaction with respect to student motivation that was identified in this study, future researchers should examine exactly what students consider "interactive activities" and which of them might be the most effective at increasing students' perceptions of the MUSIC components. We believe that interactive activities would increase students' perceptions of situational interest if they are novel, involve social interaction, include games or puzzles, or require physical movement (see Bergin, 1999, for evidence and a discussion).

Students suggested that the instructor include videos and/or provide video lectures. This suggestion was highest for situational interest, but also appeared as a suggestion for empowerment, usefulness, success, and academic caring. Videos could enhance situational interest by providing a medium that is novel to the text-heavy nature of the course; they may also be incorporated to illustrate the usefulness of the material in ways that are not as easily (or quickly) transmitted through text. Further, videos (particularly appropriate motion pictures in which characters and situations are developed in emotionally evocative ways) serve to construct authentic, albeit vicarious, environments in which the course content may be accessed and contextually engaged. Videos allow for a shared framework within a course and provide a common narrative from which students can derive relevance and authenticity, critical components of an effective learning environment (Marra & Jonassen, 2001).

Because the course was offered completely online, students recommended meeting face-to-face with the instructor as a means to increase academic caring, interest, and empowerment. Certainly, "in person" conversations better facilitate "personal" connections, incorporating queues such as eye contact, facial expressions, tone of voice, and immediate responses to dynamic questions, and these factors may increase the perception of caring. Interest may also be

heightened in these face-to-face sessions through the enthusiasm of the teacher and her ability to provide immediate, personal examples of the content in light of student questions and experiences. Finally, students may feel more empowered through face-to-face meetings, particularly if their ideas and knowledge are heard and validated. Offering face-to-face opportunities in an online course also provides students with another choice through which to receive guidance about the course content.

Student recommendations within each MUSIC component. In this section, we highlight some of the other student recommendations that were more common in one of the MUSIC components and less common in the other components (see Figure 1).

To feel more empowered, students suggested removing the exam deadlines, which would provide them with more choices as to when to complete the course work. This recommendation is simple for the instructor to implement; however, one problem with this recommendation is that students might not self-regulate their learning well in an online environment without regular queues and reminders. The danger of removing exam deadlines is procrastination: some students might wait until the end of the course to take all of the exams and, subsequently, perform poorly in the course. As Jones (2010b) states, the empowerment and success components must be balanced carefully so that one does not hinder the other. In this case, too much empowerment in the form of no deadlines might hinder students' ability to be successful. A possible compromise would be to have deadlines, but allow students to complete the work and receive grades on it anytime prior to the deadline. This way, students have a choice as to when to do the work, as long as it is completed before the instructor-set deadline. In fact, students reported that the ability to work at their own pace was one aspect of the course that provided them with control.

Students' suggestions that appear consistent with the usefulness component of the MUSIC model focused on the content of the course. Some students recommended using a different textbook or not using a textbook at all. Such suggestions should be considered if the textbook content is not related to students' lives or to the real-world in some manner. We acknowledge that not all learning objectives can be personally useful to all students, but to the extent possible, the instructional materials should be presented within a framework of the learners' experiences and prior knowledge. In this way, learners can find relevance in newly introduced material. Other suggestions by students included focusing on more relevant and current health issues, which might be easier to do through web-based resources and real-world case studies, which could be made more current than those provided in a paper textbook.

Over two-thirds of the students reported that there was nothing about the course that could be changed to help them feel more successful. This finding was also evidenced with the quantitative data in that the success component was rated higher than any of the other MUSIC components by both the men and the women. These results indicate that the structure of the course is sufficient for most students to feel successful. Most of the recommendations for success were about factors related to the exams, which seems reasonable given the high importance of the exams for students' final course grade. The suggestions included providing more practice questions, giving other methods to help prepare for the exams, and providing the correct answers after the tests. These techniques would provide students with formative and constructive feedback about their increasing content knowledge, which could help them to succeed on the exams. The suggestion to provide more exams would allow each exam to include less content, which is another method that could help students succeed.

Students provided some specific examples for how the course could be more interesting and enjoyable, such as providing more workshops; using real-life examples, stories, and/or case

studies; providing opportunities for application of the content; improving the textbook; using materials beyond the textbook; and incorporating videos and/or presentation slides. Most of these recommendations would vary the style of the course presentation, which is one way to improve situational interest (Jones, 2009).

Given that email was the only means of communication between the instructor and her students, many of the suggestions for the caring component related to the use of email. Table 8 and 9 show that students felt cared for (academically and personally) through the instructor's continual email communications and her prompt, polite, and personalized responses to students' email inquiries. These findings are consistent with the findings of a study by Clayton, Blumberg, and Auld (2010), which found that students in online courses want "engaging learning environments that promote direct interaction with professor(s) and students, spontaneity, immediate feedback, and relationships with faculty and other students" (p. 362). Possible ways for the instructor to do more to be perceived as caring include asking students about themselves by email and by promoting interaction among the students (Dixson, 2010).

V. Conclusions.

Although men and women differ in the amount of some of their quantitative ratings of the MUSIC components, there does not appear to be a need to design an online course differently for men and women because the suggestions provided in the open-ended items for changing the course were similar for both sexes. Students' responses to the open-ended items revealed a preference for instructional strategies that are consistent with the tenets of the MUSIC Model of Academic Motivation; thus, providing validity evidence for the use of the MUSIC model in online courses. It is notable that several of the strategies provided could increase students' perceptions in more than one component of the MUSIC model, such as providing varied types of assessments, including interactive activities, providing videos and/or video lectures, and meeting face-to-face with the instructor. It is our hope that instructors can use the recommendations provided in this study and that doing so will lead to greater student engagement in online courses.

References

Baker, C. (2010). The impact of instructor immediacy and presence for online student affective learning, cognition, and motivation. *The Journal of Educators Online, 7*(1), 1-30.

Baumeister, R., & Leary, M. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529.

Bergin, D. A. (1999). Influences on classroom interest. *Educational Psychologist, 34*, 87-98.

Clayton, K., Blumberg, F., & Auld, D. P. (2010). The relationship between motivation, learning strategies and choice of environment whether traditional or including an online component. *British Journal of Educational Technology*, 41(3), 349-364. doi: 10.1111/j.1467-8535.2009.00993.x

De Volder, M., & Lens, W. (1982). Academic achievement and future time perspective as a cognitive-motivational concept. *Journal of Personality and Social Psychology, 42*(3)*,* 566–571.

Dixson, M. D. (2010). Creating effective student engagement in online courses: What do students find engaging? *Journal of the Scholarship of Teaching and Learning, 10*(2), 1-13.

Doolittle, P. E. (1999). *Constructivism and online education*. Retrieved from http://www.trainingshare.com/resources/doo2.htm

Glaser, B. G. & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine Publishing Company.

Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist, 41*(2), 111-127.

Johnson, D. W., Johnson, R. & Anderson, A. (1983). Social interdependence and classroom climate. *Journal of Psychology, 114*(1), 135-142.

Jones, B. D. (2009). Motivating students to engage in learning: The MUSIC Model of Academic Motivation. *International Journal of Teaching and Learning in Higher Education, 21*(3), 272-285.

Jones, B. D. (2010a). An examination of motivation model components in face-to-face and online instruction. *Electronic Journal of Research in Educational Psychology, 8*(3), 915-944.

Jones, B. D. (2010b, October). *Strategies to implement a motivation model and increase student engagement.* Paper presented at the annual meeting of the International Society for Exploring Teaching and Learning, Nashville, TN.

Jones, B. D., Ruff, C., Snyder, J. D., Petrich, B., & Koonce, C. (2012). The effects of mind mapping activities on students' motivation. *International Journal for the Scholarship of Teaching and Learning, 6*(1), 1-21.

Jones, B. D., & Wilkins, J. L. M. (2012). *Testing the MUSIC Model of Academic Motivation through confirmatory factor analysis*. Manuscript submitted for publication.

Jones, M. G., Howe, A., & Rua, M. J. (2000). Gender differences in students' experiences, interests, and attitudes toward science and scientists. *Science Education, 84*(2), 180-192.

Kauffman, D. F., & Husman, J. (2004). Effects of time perspective on student motivation: Introduction to a special issue. *Educational Psychology Review, 16*(1), 1-7.

Kim, K., & Frick, T. W. (2011). Changes in student motivation during online learning. *Journal of Educational Computing Research*, 44(1), 1-23.

Marra, R. M., & Jonassen, D. H. (2001). Limitations of online courses for supporting constructive learning. *Quarterly Review of Distance Education, 2*(4), 303-317.

Newman, I., Ridenour, C., Newman, C., & DeMarco, G.M.P., Jr. (2003). A typology of research purposes and its relationship to mixed methods research. In A. Tashakkori & C. Teddlie, (Eds.) *Handbook of mixed methods in social & behavioral research* (pp. 167-188). Thousand Oaks, CA: Sage.

Onwuegbuzie, A. J., & Collins, K. M. T. (2007). A typology of mixed methods sampling designs in social science research. *The Qualitative Report, 12*(2), 281-316.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78.

Sansone, C., Fraughton, T., Zachary, J. L., Butner, J., & Heiner, C. (2011). Self-regulation of motivation when learning online: The importance of who, why and how. *Educational Technology Research and Development*, 59(2), 199-212.

Strauss, A., & Corbin, J. (1998). Basics of qualitative research: Techniques and procedures for developing grounded theory. Thousand Oaks, CA: Sage.

Tabachnick, S. E., Miller, R. B., & Relyea, G. E. (2008). The relationships among students' future-oriented goals and subgoals, perceived task instrumentality, and task-oriented self-regulation strategies in an academic environment. *Journal of Educational Psychology, 100*(3), 629-642.

Von Bothmer, M. I. K., & Fridlund, B. (2005). Gender differences in health habits and in motivation for a healthy lifestyle among Swedish university students. *Nursing & Health Sciences, 7*(2), 107-118.

Weiss, R. E. (2000, Winter). Humanizing the online classroom. In R. E. Weiss, D. S. Knowlton, & B. W. Speck (Eds.), New directions for teaching and learning: No. 84, *Principles of effective teaching in the online classroom* (47-51). San Francisco: Jossey-Bass.

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Record Your Way to Shorter Grading

DeDe Wohlfarth[1] and Nathanael Mitchell[2]

Keywords: assessment, skills-focused teaching, grading

Framework

One of the most effective strategies we found for teaching novice clinicians new, specific, skills is through observation of student role play and timely formative assessment of student practice. Many subjects require students to demonstrate competence in concrete behavioral skills, including nursing, teaching, physical and occupational therapy, psychology, and social work.

When direct observation of such student skill development is not a viable option, the use of an inexpensive video camera can be a valuable tool for students to create video role plays and post them on the internet for instructor review. Students can post their videos on You Tube and make the link to the video accessible only to the professor, or, if desired, students in the class providing peer review. Because the video is now on the web available for review, the student no longer needs to turn in the video on expensive media (e.g., flash drive) or inexpensive media (DVD).

Furthermore, instructors can use their own camera to record video formative feedback while watching student videos, allowing for copious amounts of useful feedback created in about half of the time it would take to write the same feedback.

Making in Work

This teaching strategy could be highly effective for any clinical disciplines where specific clinical skills need to be evaluated and mastered. We have used this technique in clinical psychology courses and in teaching courses; colleagues have utilized this technique in occupational therapy with great success.

With changing technology, there are many inexpensive cameras that could be used to record videos. While this could be seen as financial hardship for some students, we help manage this cost by: 1) explaining the need for a video recording device before entering our program; 2) using the device across several skills building courses; and 3) reminding students they can also use the device for fun, such as recording themselves doing super human tricks. Additionally, many students opt to utilize their smart phones as recording devices and have found that the most sophisticated of these phones allows them to record and post digital videos. And we have had no

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difficulty convincing students that they might want to purchase top-of-the-line cell phones with remarkable technological advances!

The majority of students who own video cameras have found them to be very user friendly. Individuals with just a modicum of technological savvy (the authors of this tip fall into this category; one of us just barely so) will be able to record, save, upload, and share videos. The advantage of video recording student feedback when grading is that, in addition to reducing feedback time for professors, students can understand the nuances and context of our comments when the comments are "live" compared to in writing. The major disadvantage, ironically, is also an advantage. If you grade at home, as we do, students may see a glimpse of you outside of the "ivory tower" as rambunctious children scream for you or pets run into the video frame. Students say they love this feedback because it makes their professors seem more human.

Future Implications

Students consistently provide feedback that creating video role plays improves their learning, especially in learning specific behavioral skills that are foundational to learn for success in their chosen field and difficult to learn via traditional pen-and-paper assessment measures. On course evaluations, students have also noted that receiving timely, specific, constructive feedback on their developing skills is the single most helpful aspect of the course. Additionally, rubrics are helpful and can be used in conjunction with the video feedback to provide written feedback on specific microskills (e.g. good eye contact—present or absent; open body language—yes or no). Finally, having students post their videos online instead of turning in several forms of media has decreased instructor stress about being responsible for possibly expensive student property (e.g., flash drives).

While the use of the video camera is an easy tool for creating and sharing videos, it is not required for the creation of student video role play or instructor video feedback. If a student turns in the video on a media source that is able to be modified or has the capacity for an additional video files to be added (e.g., flash drive, DVD-RW), the instructor can provide video feedback while observing the student video and then save the video feedback file to the student's media.

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Storyboarding with PowerPoint to bring cases, case problems, and course content to life

Michael Morrone[1]

Keywords: PowerPoint, engagement, case studies, storyboard

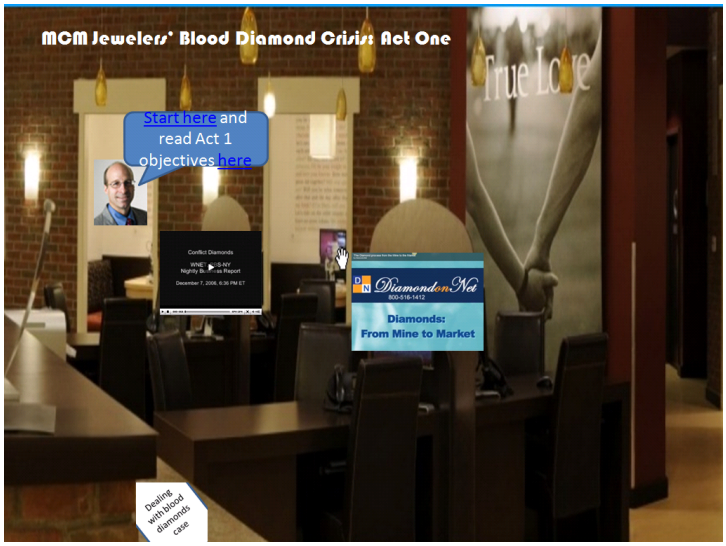
Framework

The case method is widely used in business, law and other disciplines as a way of contextualizing course content. Most commonly, cases are delivered as paper descriptions of problems that arise in the field being studied. The case method leads to student engagement as students use course content to understand and to propose solutions to real world problems. Technological developments, however, empower teachers to easily move away from paper presentation of cases and to bring cases to life with multi-media elements.

Making it Work

In order to integrate course readings and a business case for my Business Communication class, I use a storyboard approach in PowerPoint (sample screenshots left and below). The case discussed here includes five acts (modules) and centers on potential problems a jeweler faces because unscrupulous diamond vendors still find ways to sell conflict diamonds to jewelers.

The first slide of each act includes a link to a discussion of learning objectives presented in print and audio. As the students read the act, they discover other embedded links in the story. Pictures (all pictures are royalty free) of corporate offices, jewelry stores, etc. were used to create context and setting. Characters (again royalty free pictures were used) involved in the case converse with each other. Links to course content appear in conversation and thought bubbles, computer screens, and work files pictured in the act. For example, in the first act the executives



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at a regional jewelry chain begin to deal with fallout from a 60-Minutes episode featuring the arrest of one of the jeweler's diamond vendors. The students see the executives in a conference room discussing the company's public image crisis and a potential ethical lapse. The students click on the computer screen in the conference room and it shows a video that discusses crisis communication. As the story develops, the students become a part of the story as their assignments represent the company's attempts to deal with the crisis.

Implications

In class students take a readiness assurance quiz regarding course content. In follow up class days we apply and generalize the course content to other business contexts. Culminating assignments for each act and the class as a whole relate to the storyboarded case. This approach allowed me to create one storyline and easily use the case in class. Students showed enthusiasm for the case by learning character names and discussing, sometimes with surprise, the ways business messages have to change depending on purpose, audience, and channel. In general, the engagement with the lifelike story helped students remain engaged in the course and course content, while connecting course content to a variety of business situations.

This approach to case/course delivery can easily be replicated for other cases and classes in other disciplines.

Reducing 'Death by PowerPoint'

Michael Abernethy[1]

Keywords: PowerPoint, best practices, student engagement

Framework

PowerPoint use in the classroom has increased dramatically in the last ten years, although not always successfully. When PowerPoint presentations take precedence over lecture material, students lose interest and feel that they are being read to, not taught. Numerous studies show that overuse of PowerPoint actually decreases student – teacher interaction in the classroom, as instructors focus on the presentation and not the class, while students are afraid to interrupt the "flow" of the PowerPoint with questions or comments.

Making it Work

To help increase student interaction, only use brief bullet points in your PowerPoint, as opposed to putting all the information on your slides, so that you have to explain the material to the students. More importantly, after each main point or every 3 to 4 slides, include a blank slide. This serves as a "discussion" slide, which allows students the opportunity to ask questions or engage in interaction and forces the instructor to turn away from the PowerPoint to face the class and get feedback.

Audience: any class in which PowerPoint is used

Tools: PowerPoint presentations

Implementation: Immediate. Requires no additional work beyond adding extra slides to PowerPoint presentations.

Future Implications

Outcomes/Assessment:

> Outcome: Increase student engagement and student-teacher interaction
>
> Assessment: Assessment may be achieved by comparing tests/quiz results before and after changes to the use of PowerPoint

Hybrid/Online contexts: When PowerPoint presentations are posted online for students but won't be discussed in person, replace the "Discussion" slide with a "Questions" slide. This would include questions over the material just covered. Make it clear that if students struggle to answer any of the questions, they can contact the instructor for further clarification.

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Wikifolios, reflections, and exams for online engagement, understanding, and achievement

Daniel T. Hickey[1] and Firat Soylu[2]

Keywords: wiki, graduate courses, engagement social networking, open-source

Framework

We are refining three instructional practices in online introductory-level graduate courses on Learning Theories at Indiana University. The course serves a challenging mix of educators, designers, trainers, & researchers. Some are tech-savvy distance learners while others are residential students taking their first online course. It is a required course for many MEd students and a first course for some doctoral students. Despite varied backgrounds and goals, all are expected to gain enduring understanding of the major theories of learning and the primary processes in human cognition, as outlined in a popular graduate-level text.

This particular section also included students enrolled in a certificate program that promised more advanced levels of professional social networking. But many of the students were busy full-time teachers, and the course was taught by busy regular faculty. As such it was crucial that the course be manageable for both students and faculty within the standards 12-hour per week commitment. These techniques were gradually introduced and refined over several semesters. Other could gradually incorporate the specific strategies in the context of a normal teaching load; preparing to implement all of the strategies from the start of an existing course would likely be as labor-intensive as designing an entirely new course.

Making it Work

Our efforts were guided by newer participatory theories of learning and new connectionist models of teaching. These theories are used to refine wikis, wiki commenting, and other features in the open-source *Sakai* platform (and available in many commercial online course management systems). The course is organized around weekly *wikifolios* where students consider and discuss the relative relevance of course readings to a personally relevant instructional problem. First, assignment-specific online videos, course-specific FAQs, and a program-specific help page allow even novice online learners get their homepages and personal introductions up quickly (Figure 1). Second, students define a unique instructional problem (Figure 2). These contexts anchors most course learning. Third, the problems are used to organize students into professional networking groups (*literacy, comprehension, writing, math,* and *science*). For the next eight weeks, students then post and discuss weekly wikifolios that correspond with one chapter from the text. On each of these assignments, each student selects and defends at least three "most relevant" and one "least relevant" *implications for education* (Figure 3) and five most relevant *specifics*.

During each week, students and the instructor comment within and across groups (Figure 4). Students are encouraged to begin projecting their professional identities by considering the consequences of the implications and specifics for their particular lesson, domain, and role.

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Threaded discussions emerge in the comments. These discussions can get quite extensive, and allow the instructor to strategically insert more advanced topics that would otherwise overwhelm the students. These eight weeks include two assignments address course goals that previously were only accomplished in the more advanced course. One has students reframe their instructional problem and the textbook implications using newer situative theories of learning; another has them learn to search out and evaluate scholarly references to a core reading using Google *Scholar*.

During the last five weeks, each group uses a discussion forum and the relevant text chapter to create an expanded *groupwiki* (Figures 6 and 7). These present (a) an exemplary lesson, (b) the entire set of chapter implications, (c) a lengthier set of specifics, (d) annotated links to relevant web resources, (e) the most relevant instructional debate, and (f) descriptions of relevant professional social networks based on initial participation.

Even if time was available to strictly grade all of the posts and discussions, doing so would undermine participation. Instead, students post brief reflections on how the wikifolio showed three types of engagement (Figures 8 and 9). At weeks five, ten, and 15, students can get full points for each wikifolio for having a draft posted by the weekly deadline and including meaningful reflections.

So far, the results are quite promising. In the most recent classes, all of the students successfully completed all of the assignments, including two aforementioned challenging ones. In the most recent class, weekly wikifolios averaged 1,580 words. Sixteen students posted 1,047 comments on average, while the instructor posted only 50. The average student comment length was 120 words, ranging as long as 730 words. In an anonymous course evaluation, every student who responded agreed or strongly agreed that *the wikifolios and comments helped me better understand the relevance of course content to the educational issues I am dealing with*.

Accountability for broad coverage is accomplished using midterm and final exams in the OnCourse testing subsystem. Multiple-choice and short answer items constructed or selected so that answers could not be readily looked up in a time-limited context. This provided rigorous evidence prior engagement and additional motivation, without allowing this exam to drive instruction or undermine participation. Evidence of broad coverage of course content is shown in the high midterm and exam scores across the two most recent courses The average scores across the four were 92, 96, 91, and 85 percent; the lowest scores across the four tests were 66, 80, 72, and 79 percent. In an anonymous evaluation, none of the students disagreed with the statements *the content of the exams were appropriate and what I expected* and *the form of the exam was fair and what I expected.*

Future Implications

One promising innovation we are currently experimenting is assigning "badges" for particularly noteworthy wikifolios, comments, or discussion threads. These currently consist of instructor-awarded badges (e.g., *early bird* for posting first, *provocateur* for a particularly good comment), and are simply highlighted text in the comments. We will shortly begin introducing peer-assigned badges. The ultimate goal is a crowdsourced system with multiple levels of peer-assigned badges like the ones that are currently in use at *Peer to Peer University* and in discussion forums for programmers (e.g., *Stackoverflow.com*)..

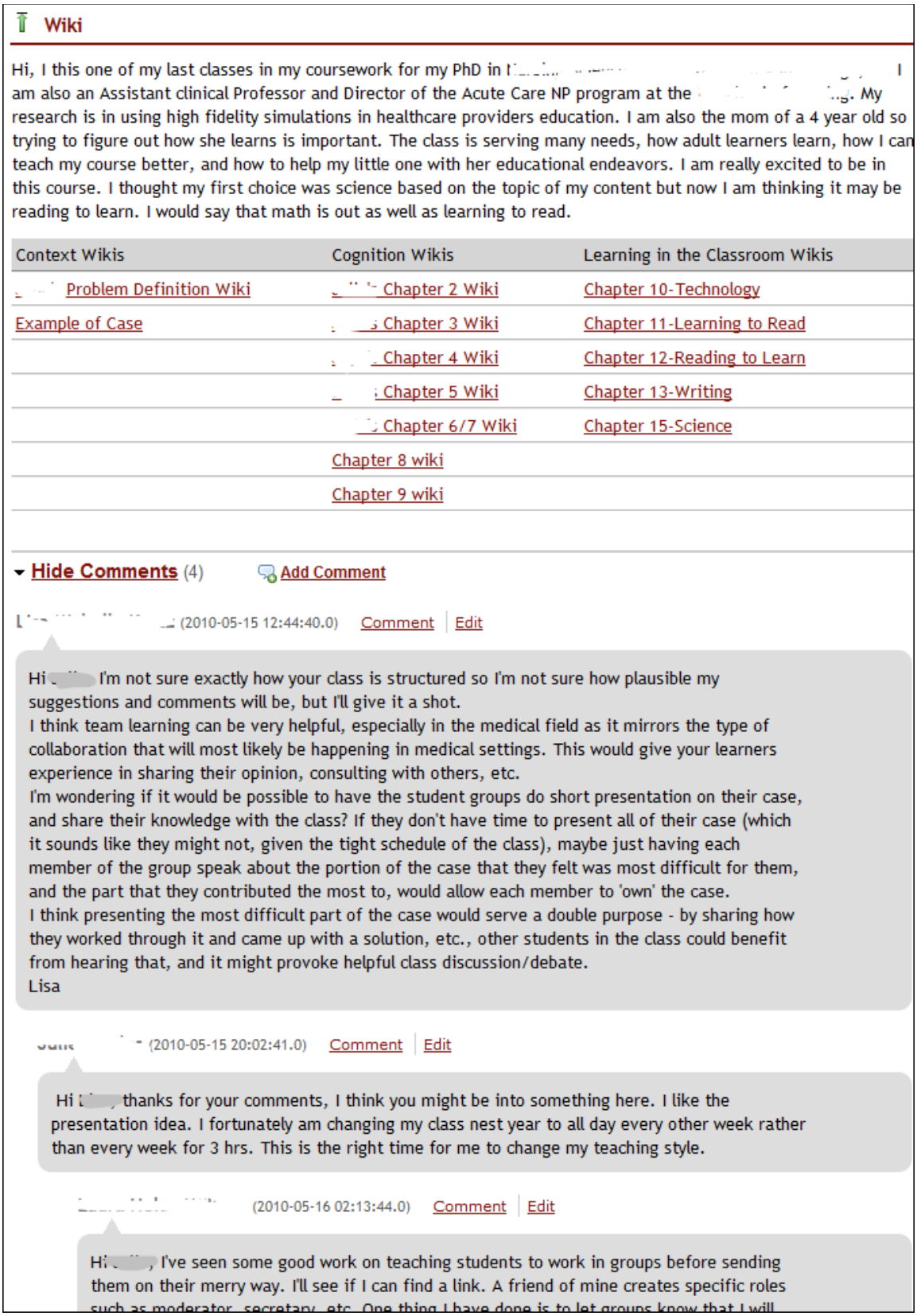


Figure 1. Example Homepage with Personal Introduction.

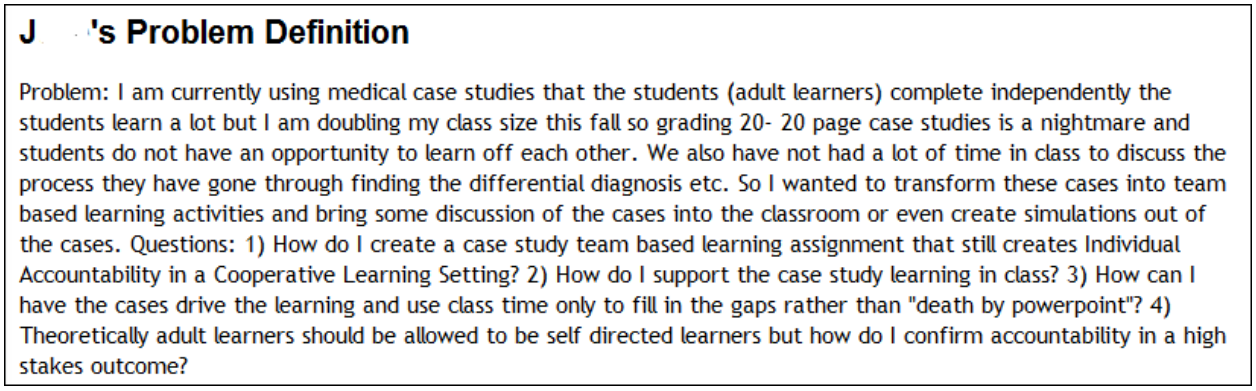


Figure 2. Example Anchoring Instructional Problem.

IMPLICATIONS

1. *Aid students in proceduralizing their knowledge and linking it to conditional knowledge*

I believe this is the primary purpose of my case study assignments. They read the book, they learning what certain drugs do but the case put them in context and gives them an opportunity to solve a real world problem. How the students approach many disease processes or changing clinical signs needs to be proceduralized. This need and the heavy emphasis on practicing with evidence-based practice has led to many facilities creating "order set" that gives the procedural steps to a patient with a certain health care condition. For example a patient with chest pain will always get certain labs drawn, an EKG and the same medicines. These order sheets aren't available for every condition however.

2. *Help student's organize new information into meaningful "chunks".*

This relates to my assignment as students order medications and diagnostic test for various conditions. Since the students do multiple case studies we use the cases to help students begin to develop a system to problem solve a complex medical condition. They then need to write it down in that system so that others can understand it. This system entails the student to "chunk" out sections. They must also give a rational for their decisions.

3. *Help students activate their current knowledge.*

One big advantage of teaching the acute care NP program and hand selecting who get accepted into the program as director of the program I know that the students I have are all excellent bedside nurses. They will have observed many of the cases we teach or carried out the orders of treatment plans. As an NP they need to build on the "why" of how they do these things. I do not think I emphasize enough about what they already know. Connecting these activities with experiences they have already had will make the cases more powerful.

LEAST IMPACTFUL

Recognizing that the starting point of learning is what the students already know-their prior knowledge. I think overall this is a very important concept but somehow I was smart enough to decipher this before they even get to my class. So it doesn't directly relate to the use of cases. I have monitored since I took over the program what the 'elements" were of people who are the most successful in the program. These attributes have then been added as scoring elements during their interview for the program. The intention is that all of the students coming in will be at a certain level of knowledge in nursing. Most of the nurses I take have at least 5 years experience in an ICU or ER, and at a large facility. 5 years in a hospital with 4 ICU beds is not the same as one with 40. However, that being said they do come from different specialty areas so I need to think about how to incorporate their strengths in assignment that relate more to their specialty areas so that it would assist their peers.

RELATIVE SPECIFICS

1. "Production rules specify how chunks are transformed and apply only when a rules conditions are satisfied by the knowledge available in declarative memory."(p. 58)

So I had a discussion in another wiki about how I was confused with what "chunks" were and have now discovered that what I thought were "chunks" were actually production systems. However, we have come full circle, as "chunks" are an essential part of production systems. The cases need to fulfill the requirement of creating declarative information that allows the students to develop production rules. Since "experience" is what activates an

Figure 3. Weekly Wikifolio with Most Relevant and Least Relevant Implications.

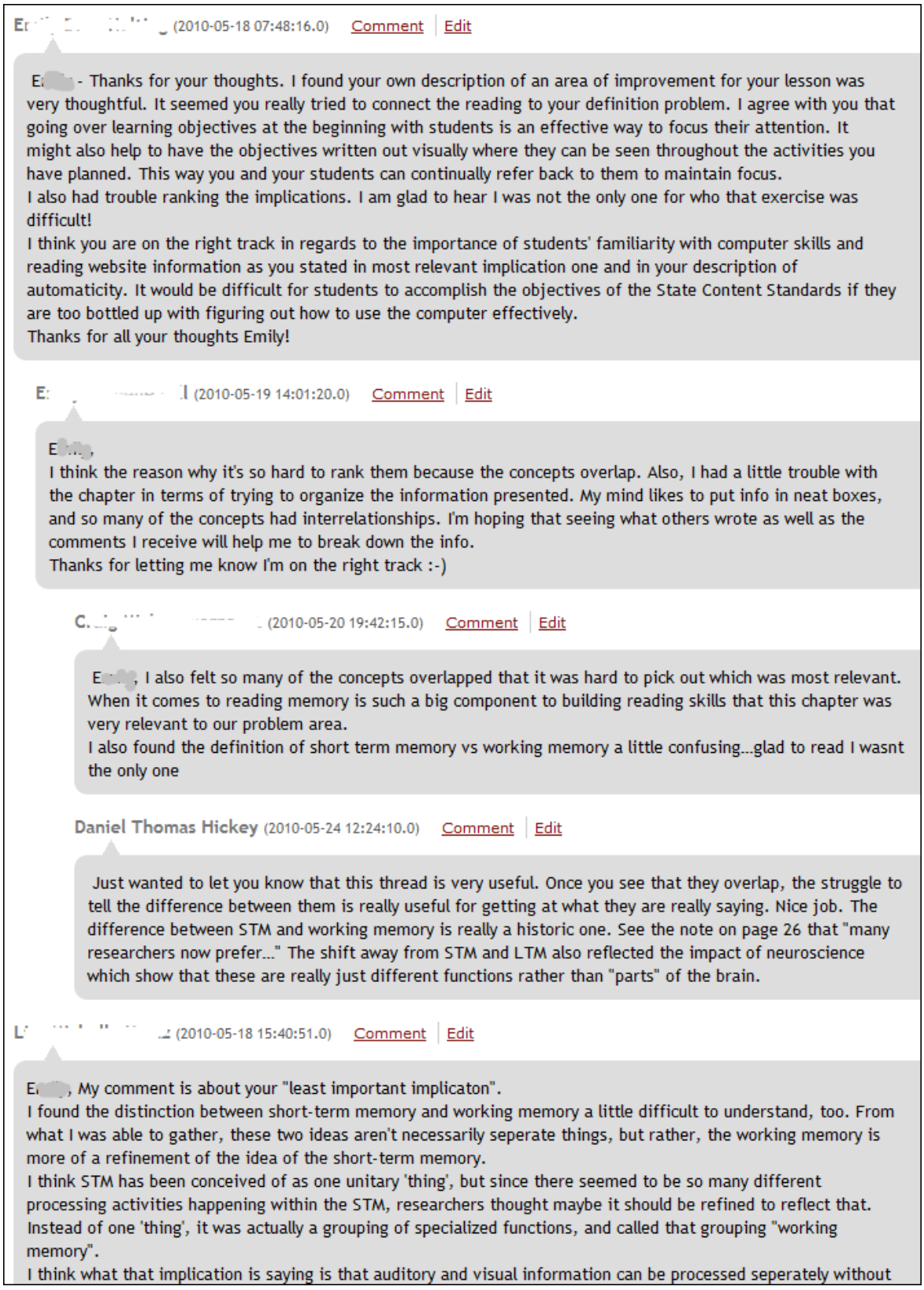
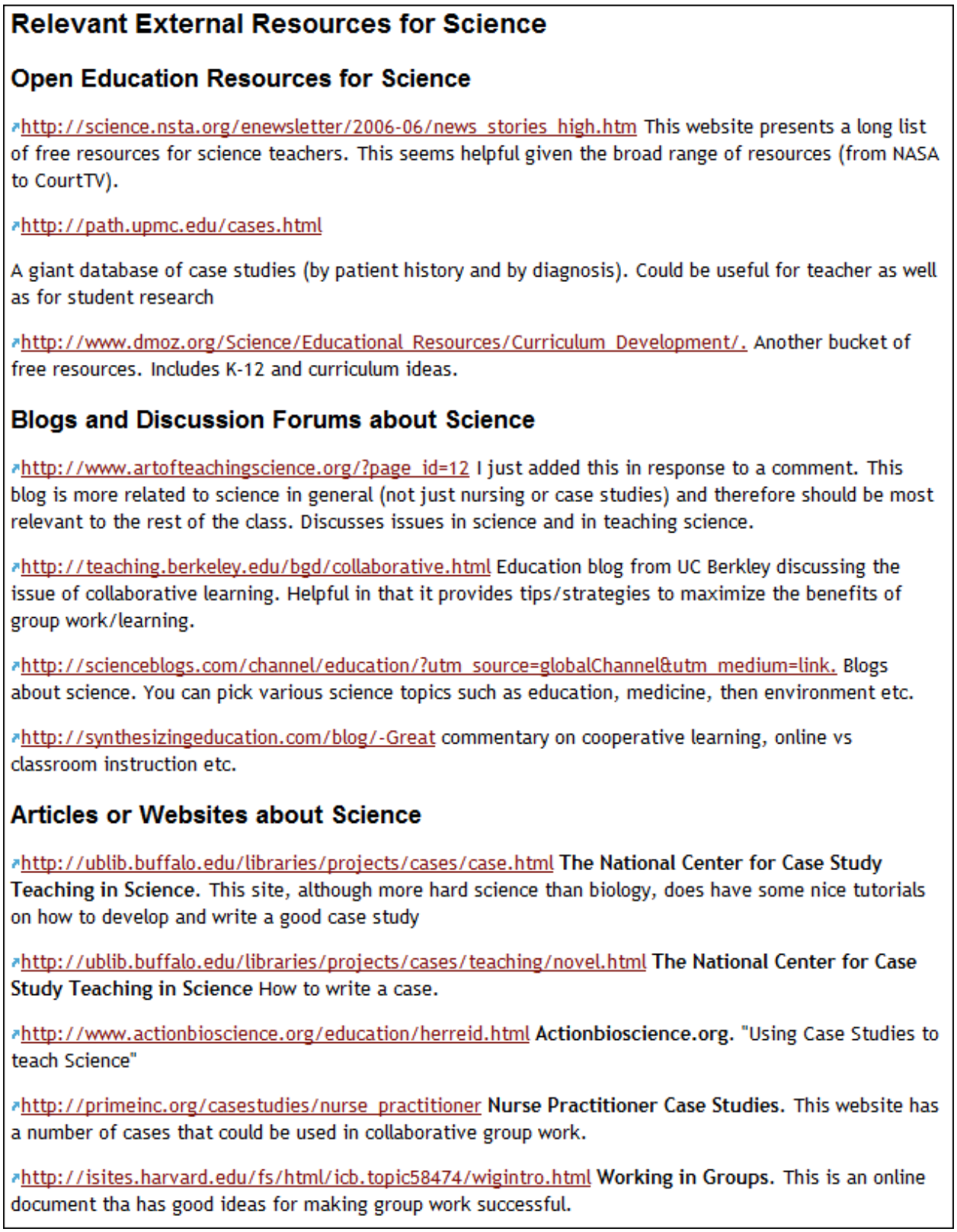


Figure 4. Typical Wiki Commenting by Week Three.



Relevant External Resources for Science

Open Education Resources for Science

http://science.nsta.org/enewsletter/2006-06/news_stories_high.htm This website presents a long list of free resources for science teachers. This seems helpful given the broad range of resources (from NASA to CourtTV).

http://path.upmc.edu/cases.html

A giant database of case studies (by patient history and by diagnosis). Could be useful for teacher as well as for student research

http://www.dmoz.org/Science/Educational_Resources/Curriculum_Development/. Another bucket of free resources. Includes K-12 and curriculum ideas.

Blogs and Discussion Forums about Science

http://www.artofteachingscience.org/?page_id=12 I just added this in response to a comment. This blog is more related to science in general (not just nursing or case studies) and therefore should be most relevant to the rest of the class. Discusses issues in science and in teaching science.

http://teaching.berkeley.edu/bgd/collaborative.html Education blog from UC Berkley discussing the issue of collaborative learning. Helpful in that it provides tips/strategies to maximize the benefits of group work/learning.

http://scienceblogs.com/channel/education/?utm_source=globalChannel&utm_medium=link. Blogs about science. You can pick various science topics such as education, medicine, then environment etc.

http://synthesizingeducation.com/blog/-Great commentary on cooperative learning, online vs classroom instruction etc.

Articles or Websites about Science

http://ublib.buffalo.edu/libraries/projects/cases/case.html **The National Center for Case Study Teaching in Science.** This site, although more hard science than biology, does have some nice tutorials on how to develop and write a good case study

http://ublib.buffalo.edu/libraries/projects/cases/teaching/novel.html **The National Center for Case Study Teaching in Science** How to write a case.

http://www.actionbioscience.org/education/herreid.html **Actionbioscience.org.** "Using Case Studies to teach Science"

http://primeinc.org/casestudies/nurse_practitioner **Nurse Practitioner Case Studies.** This website has a number of cases that could be used in collaborative group work.

http://isites.harvard.edu/fs/html/icb.topic58474/wigintro.html **Working in Groups.** This is an online document tha has good ideas for making group work successful.

Figure 5. Groupwiki Featuring Relevant External Resources.

8. Draft reflection. Add a reflection at the bottom of this wikifolio. Write a few sentences in which you reflect on how your wikifolio is evidence of three types of engagement:

Consequential engagement. What were the consequences of the big ideas in the chapter for you wikifolio. In other words, what did you do differently because of the big ideas in the chapters. Can you reflect on what the consequences of your selected lesson for understanding the big ideas in this chapter? Some lessons and domains are more suited for using this item format and this will impact what you learn about it.

Critical engagement. Can you imagine why someone might disagree with you about the consequences of the ideas in the chapter and how you implemented them? Do you think that a different selected lesson might have been better for learning the ideas in this chapter?

Collaborative engagement. Where did you learn what you learned in this chapter? Did your classmates provide you with helpful insights? Be specific. Did you learn anything from reading the wikifolios of your classmates?

Figure 6. Reflection Prompt.

Implication #2: Develop an Awareness of a General Problem Solving Strategy

Consequential Reflection: Although, I have just argued that critical thinking applies to my lesson, I still feel many of the implications for problem solving as apply. Since students will be given a specific goal to solve, the lesson must support students' identification and background of the problem, students' choice and use of specific strategies to solve the problem, and evaluation of the solution after it has been met. In this lesson, the use of a list is the basic strategy being practiced and communicated. Other ideas and strategies may be used or shared such as color coding the list, using food group flashcards, using a calculator to stay on budget.

Critical Reflection: Since the authors divide the chapter into different sections - problem solving and critical thinking - one might argue that my lesson can not have elements of both. However, through my study and experience in education, nothing is rarely exclusively one thing or the other. Compromise is often the case. I had a difficult time drawing the boundary lines for one or the other. With this in minds, I feel it is important to recognize where they overlap in my lesson. The knowledge is important to both - background knowledge and strategy knowledge. I also believe the evaluation of the solution or metacognition are important components of both.

Discussion Reflection: This week's discussion has been the most revealing for me. Through comments made on my wiki as well as reading one of my classmate's wiki, I adopted my original view of my lesson and critical thinking. I have now adopted the implication that critical thinking is a reflective activity that involves knowledge, evaluation, and thinking and our thinking. As my lesson includes these components, I would now argue that critical thinking is a valuable part of my lesson and am grateful to my classmates who had a broader sense of this concept than I did.

Figure 7. Typical Wikifolio Reflection.

JoTLT
JOURNAL OF TEACHING AND LEARNING WITH TECHNOLOGY

Mission

The Journal of Teaching and Learning with Technology (JoTLT) is an international journal dedicated to exploring efforts to enhance student learning in higher education through the use of technology. The goal of this journal is to provide a platform for academicians all over the world to promote, share, and discuss what does and does not work when using technology in postsecondary instruction. Over the last few decades, faculty have progressively added more and more sophisticated technology into their courses. Today, the variety of technology and the creative ways in which technology is being used is simply astonishing, whether in-class, online, or in a blended format. In the final analysis, however, it isn't whether our students - or faculty members - like the technology that matters but whether the addition of these technological tools results in or expands access to quality student learning. JoTLT will play a prominent role in helping higher education professionals better understand and answer these questions.

We will accept four types of manuscripts:

Quick Hits: A Quick Hit is a brief contribution describing innovative procedures, courses, or materials involving technology (1500 words or less). Each contribution should include sufficient detail to allow another educator to use the Quick Hit in his or her own course.

Empirical Manuscript: Manuscripts in this category should provide qualitative or quantitative evidence demonstrating the effectiveness of the technology in increasing student learning. Each manuscript should include sufficient detail to allow another educator to use the technology in his or her own course.

Book Reviews: Book Reviews can be submitted for recently published works related to teaching and learning with technology. These manuscripts are typically less than 1500 words in addition to the complete citation of the book and the publisher's description of the book.

Case Studies: These studies illustrate the use of technology in regards to teaching and learning of higher education students, usually generalizable to a wide and multidisciplinary audience.

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Submissions

Authors are encouraged to submit work in one of the following categories:

- Quick Hits: A Quick Hit is a brief contribution describing innovative procedures, courses, or materials involving technology (1500 words or less). Each contribution should include sufficient detail to allow another educator to use the Quick Hit in his or her own course.

- Empirical Manuscript: Manuscripts in this category should provide qualitative or quantitative evidence demonstrating the effectiveness of the technology in increasing student learning. Each manuscript should include sufficient detail to allow another educator to use the technology in his or her own course.

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- Case Studies: These studies illustrate the use of technology in regards to teaching and learning of higher education students, usually generalizable to a wide and multidisciplinary audience.

All submissions for JoTLT should be submitted using the online submission process.

Please follow this link to get more detailed information on the submission process for the Journal of Teaching and Learning with Technology: http://jotlt.indiana.edu/about/submissions#onlineSubmissions

If you have additional questions or run into problems please contact the journal at jotlt@iu.edu

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JOURNAL OF TEACHING AND LEARNING WITH TECHNOLOGY

Editorial Board

Journal of Teaching and Learning with Technology, Vol. 1, No. 1, June 2012, pp. 75 – 77.

Style Sheet for the *Journal of Teaching and Learning with Technology*

John Dewey[1] **and Marie Curie**[2]

Abstract: This paper provides the style sheet for the Journal of Teaching and Learning with Technology. Manuscripts submitted for publication should adhere to these guidelines.

Keywords: clickers, iPad, tablet, retention, engagement.

I. General Guidelines for the Manuscript.

The final manuscript should be prepared in 12-point, Times New Roman, and single-spaced. Submissions should be double-spaced. All margins should be 1 inch. The text should be fully left- and right-justified. The title (in 16 point bold) and author's name (in 12 pt. bold) should be at the top of the first page. The author's name should be followed by a footnote reference that provides the author's institutional affiliation and address. The abstract should be indented 0.5" left and right from the margins, and should be in italics.

Except the first paragraph in a section subsequent paragraphs should have a 0.5" first line indent. Use only one space after the period of a sentence (word processors automatically adjust for the additional character spacing between sentences). The keywords should be formatted identically to the abstract with one line space between the abstract and the keywords. Authors should use keywords that are helpful in the description of their articles. Common words found in the journal name or their title article are not helpful.

Pages should be unnumbered since they will be entered by the Journal editorial staff. We will also insert a header on the first page of the article, as above.

References should be incorporated in the text as authors name and date of publication (Coffin, 1993), with a reference section at the end of the manuscript (see below for the desired format for the references). Titles of articles should be included in the references in sentence case. Unless instructed otherwise in this Style Sheet, please use APA style formatting. Footnotes should incorporate material that is relevant, but not in the main text.

A. Plagiarism.

It is essential that authors refrain from plagiarism. Plagiarism is a violation of ethics and, in serious cases, will lead to a manuscript being rejected by this journal. No future manuscripts will be accepted from authors who have submitted a plagiarized manuscript.

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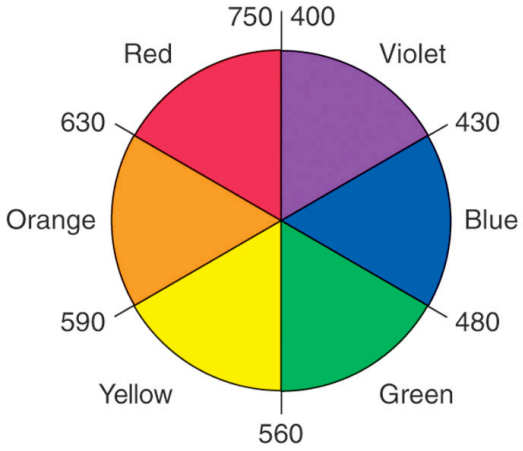

B. Unique work.

This journal does not accept previously published work. We also do not accept work that is being considered for publication by another journal. If your manuscript is accepted, you will be required to sign a form stating that your manuscript has not been previously published.

II. Section and Sub-Section Headings.

A. Major Sections.

Major section headings should be flush-left, bold-faced, and Roman numeral numbered. Major section headings should have one-line space before and after. The first paragraph(s) of the article do not require a major heading.

B. Sub-Sections.

Sub-section headings should also be flush-left, in italics, and alphabetically numbered. Sub-section headings should have a one-line space before and after. Sub-sub-sections should appear at the beginning of a paragraph (i.e., with an 0.5" indent, followed immediately by the text of the sub-sub-section), with the heading also in italics.

III. Tables and Figures.

Tables and figures should be inserted in the text where the author believes they best fit. They may be moved around a little to better correspond to the space requirements of the Journal. If necessary, tables and figures may occupy an entire page to ensure readability and may be in either portrait or landscape orientation. Insofar as possible, tables should fit onto a single page. All tables and figures should be germane to the paper. Tables should be labeled as follows with the title at the beginning (in bold), with data entries single-spaced, and numbered. Column labels should be half-line spacing above data.

Table 1. The title of the table.

Unit	Length, inches
Point	1/12
Pica	1/6

Figures should have their captions follow the image. Captions should be single-spaced, with title in bold. Additional text should not be in bold. The Editorial staff may adjust layout to allow optimal use of space.

Figure 1. Color wheel with wavelengths indicated in millimicrons. Opposite colors are complementary.

Acknowledgements

Acknowledgements should identify grants or other financial support for this research by agency (source) and number (if appropriate). You may also acknowledge colleagues that have played a significant role in this research.

Appendix

Please insert any appendices after the acknowledgments. They should be labeled as follows:

Appendix 1. The Title of the Appendix.

References

Coffin, D.A. (1993). Using the competitive edge. *Journal of Economic Education*, *24* (1), 62-69.

Garcia, J. and Rodriguez, P. (2002). The determinants of football match attendance revisited: Empirical evidence from the Spanish football league. *Journal of Sports Economics*, *3* (1), 18-38.

Hamilton, S. J. (1995). My name's not Susie: A life transformed by literacy. Portsmouth, NH: Boynton/Cook Publishers.

Pappas, D. (2004). Fixing the fan cost index: A more realistic view. Retrieved April 21, 2004, from http://www.baseballprospectus.com/article.php?articleid=2790.

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