Undergraduate students' perceptions of electronic and handwritten feedback and related rationale

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Abstract: Some instructors, besides awarding grades, provide comments/feedback on students' assignments. Views of students on feedback help frame effective and efficient teaching and learning. It is important to delve into this topic. In the 2013 academic year, all undergraduate students at a Midwestern university were invited to complete a survey to share perceptions of which feedback form they preferred: handwritten or e-feedback and related rationale behind their preferences. Their rationales were given in the categories of the following five themes: accessibility, timeliness, legibility, quality and personal. The data were analyzed quantitatively and qualitatively, and show that the majority of the respondents preferred e-feedback. With respect to the rationale, more respondents and higher ratings overall were given to e-feedback for timeliness, accessibility, and legibility. Although more respondents overall favored e-feedback, the ratings were higher in handwritten feedback for its quality and personal themes. Age and class standing are positively associated with students' desire for feedback in general and for e-feedback. However, there was a negative association between students' GPA and feedback in general and e-feedback. In this article, addressed are also limitations, educational implications, and future research suggestions.

Keywords: feedback, electronic feedback, handwritten feedback, instructors, students

I. Introduction.

Feedback is information that fosters deep learning (Denton, Madden, Roberts, & Rowe, 2008; Higgins, Hartley, & Skelton, 2002). It is a vital component of effective and efficient teaching and learning in higher education (Ackerman & Gross, 2010; Ball, 2009; Hounsell, 2003; Matthews, Janicki, He, & Patterson, 2012; Parkin, Hepplestone, Holden, Irwin, & Thorpe, 2012). Good teaching is represented by helpful comments on students' assignments (Ramsden, 2003). With the rapid development of technologies, some instructors have shifted the way they provide feedback from a conventional handwritten approach to a technological format; specifically typing feedback and delivering it electronically. Students' views on feedback help frame both effective and efficient instruction and learning in higher education (Denton et al., 2008; Higgins et al., 2002; Parkin et al., 2012). It is important to know students' perceptions of feedback,

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including handwritten and electronic feedback (e-feedback) (Ackerman & Gross, 2010; Carless, 2006; Higgins et al., 2002). Therefore, a survey was conducted at a regional campus of a large Midwestern university during the academic year 2012 to 2013. The purposes of this survey study were to explore the perceptions of undergraduate students regarding two forms of feedback: e-feedback and handwritten feedback and to explore the reasons behind the students varied preferences. The research questions underlying this study were "What do undergraduate students prefer: handwritten feedback or e-feedback?" and "What are their related rationale?"

A. Theoretical Framework.

Students desire to receive feedback, as it could help better their learning (Hyland, 2000). However, feedback needs to be easily accessible to students. Accessibility is a general expectation of students in the millennial generation (Morrissey, Coolican, & Wolfgang, 2011). A survey study conducted by Di Costa (2010) found that accessibility was mostly recognized by the students as a component in defining useful feedback. Bridge and Appleyard (2008) and Sadler (2010) noted students appreciated the permanence and safety of feedback that could be accessed electronically. In contrast, Chang et al. (2012) found one reason given by the handwritten feedback supporters was that they were able to easily access feedback conveniently through professors in class. That is, students did not need to rely on computers to access feedback.

Besides accessibility of feedback, timeliness has been identified as an important element in benefiting student learning. The National Union of Students (NUS; 2008) survey found students were unhappy with the timing of their feedback. Although students want feedback that is constructive, they have a strong preference for feedback that is prompt (Scott, 2006) and timely (Ferguson, 2011). If feedback is received late, it becomes useless to students, as many students have already moved on (Denton et al., 2008). To receive feedback early, it seems electronically delivered feedback gets the majority of student support (Chang et al., 2012). When Bridge and Appleyard (2008) asked students to consider the issue of online feedback, 88% reported that they favored online feedback because they were able to receive it faster than in the more conventional format of hand delivery. Bai and Smith (2010) cited the automated nature of e-learning as contributing to the benefit of timely feedback.

When feedback is typed rather than handwritten, feedback is readable. Denton et al., (2008) reported that students considered legibility a feature that would significantly improve the feedback they received. Therefore, legibility is a significant element in supporting student learning (Ferguson, 2011). (Price, Handley, Millar, & O'Donovan, 2010) reported students' general criticism of feedback was mainly due to illegible writing. Illegible feedback makes it unclear, leaving students both disappointed and frustrated, which are also supported by the study conducted by Chang et al. (2012).

In aiding students to learn, feedback also needs to be constructive and helpful. The content needs to be understood by students. Feedback should also enable students to know what and where their attention is needed and whether or not their work is on right track. Furthermore, allowing students to engage in revisions according to received feedback is beneficial to students as well. All the above is the operational term of quality. According to the National Union of Students (2008), students are dissatisfied with the quality of feedback. Case (2007) also identified poor and low quality feedback as issues in the feedback students received. When considering the quality of online instruction, Yang and Durrington (2010) found quality of

instructors' feedback as the aspect mentioned most often in student course evaluations. When time and quality were considered as competing aspects of feedback, students were happy to wait a little longer for feedback if quality increased (Chang et al., 2012; Ferguson, 2011).

Quality feedback also needs to contain language that is positive and relational, which may help establish the relationship between instructors and students. When such feedback is received, students may think their professors care about their learning. Time and effort spent in providing feedback on students' assignments is appreciated by students. Students are thus likely to read feedback and, in turn, better their performances. All the above is the operational term of *personal* in terms of feedback. Krause and Stark (2010) found that feedback is most useful to students when it is perceived to be personal. Students responding to Ferguson's (2011) study want feedback to be both positive and personal. When the tone of feedback is overly negative, students often feel that instructors do not care about their learning (Price et al., 2010). Without feedback that is personal, students may view assignments as mere products, leaving them feeling alienated and disengaged (Di Costa, 2010; Mann, 2001; Price et al., 2010). With respect to feedback that is personal, one interesting finding by Chang et al. (2012) was that respondents who supported handwritten feedback perceived that type of feedback as more personal than those who supported e-feedback. The handwritten supporters also recognized that handwritten feedback enabled them to have close rapport with their instructors.

Accessibility, timeliness, legibility, quality, and personal, as have been mentioned above, are the five themes identified by Chang et al. (2012) through a prior study in the academic year 2011-2012. Two hundred and sixty students from the School of Education at the university participated in the study. The study was intended to explore what form of feedback that the students preferred, handwritten or electronic, and related rationale behind their preferences. In term of e-feedback, it was defined as all feedback that was delivered to students electronically. As the result of the study, Chang et al. (2012) found that the majority of the participants (68%) preferred e-feedback while 32% preferred handwritten feedback. When considering rationale for preferring e-feedback, 38% of the respondents enjoyed its easy accessibility. Thirty percent of students favored timeliness and 16% supported its legibility. Not as many e-feedback supporters mentioned quality (10%) and personal (1%) aspects as they did for timeliness and legibility. In contrast, there were many more handwritten feedback supporters who endorsed quality (40%) and personal (32%). Fewer students favored handwritten feedback for accessibility (25%), and timeliness (3%). No handwritten feedback supporters indicated legibility as a rationale. The present study further explored the two aspects: What form of feedback did the students prefer: handwritten or electronic feedback? And what was the related rationale?

II. Methods.

A. Participants.

All undergraduate students at a Midwestern university were invited to participate in a survey asking about handwritten and e-feedback and the related rationale. Of the approximate 7,200 students, 763 undergraduate students responded, with a return rate of almost 11%. Out of the 763 respondents, those respondents who skipped questions are noted in the results. Almost twice as many female as male respondents preferred e-feedback ($n = 475$) over handwritten feedback ($n = 273$). The predominant age range was 18-24 ($n = 423$). Class standing for the most part was

evenly distributed. The predominant GPA range was 3.01-4.00 ($n = 470$) and the College of Liberal Arts (CLAS) had the most respondents ($n = 301$) (see Table 1).

B. Instrument.

The online survey was hosted on Survey Monkey and was used to collect data. The survey questions were modified and revised from the previous study to obtain more valid information with students of the entire campus. In other words, based on the five themes: *accessibility*, *timeliness*, *legibility*, *quality*, and *personal*, which were derived from the previous study (Chang et al., 2012), the present study expanded and extended each of the themes with a few corresponding items on a 7 point Likert scale. For example, there were four factors under the theme of *accessibility*: (a) *allows me to get information easily,* (b) *allows me to receive and send information conveniently*, (c) *allows me to ask questions easily* and (d) *makes me feel secure to receive feedback from the professor*. The survey instrument consisted of thirteen closed-ended questions with multiple factors in each and four open-ended questions.

Table 1. Demographics in terms of handwritten and e-feedback feedback preference.

Variables	Handwritten *n*	%	E-feedback *n*	%	Blank *n*	%	Total *n*	%
Gender								
Male	74	35.24	135	63.98	1	0.47	210	100
Female	199	36.18	340	61.93	10	1.82	549	100
	273	36%	475	62%				
Age								
18-24	180	42.55	239	56.50	4	0.95	423	100
25-34	53	29.78	122	68.54	3	1.69	178	100
35-44	26	26.26	71	71.72	2	2.02	99	100
45-54	11	25.58	31	72.09	1	2.33	43	100
55+	5	27.78	12	66.67	1	5.56	18	100
	275	36%	475	62%				
Class Standing								
Freshman	74	46.84	81	51.27	3	1.90	158	100
Sophomore	74	43.27	95	56.21	2	1.18	171	100
Junior	62	32.80	125	66.14	2	1.06	189	100
Senior	65	27.20	170	71.13	4	1.67	239	100
GPA								
3.01-4.00	161	34.26	302	64.26	7	1.49	470	100
2.01-3.00	78	36.62	134	62.91	1	0.47	213	100
1.01-2.00	4	25.00	12	75.00	0	0	16	100
0.00-1.00	1	100	0	0	0	0	1	100
Unknown	31	56.36	23	41.82	1	1.82	55	100

School							
Arts	23	34.33	42	62.69	2	2.99	67	100
Business	31	27.68	80	71.43	1	0.89	112	100
Education	57	43.18	74	56.49	1	0.76	132	100
CLAS	118	39.20	181	60.13	2	0.66	301	100
Health	34	28.81	85	71.43	1	0.84	120	100
Technology	12	44.44	14	51.85	1	3.70	27	100

Note. Percent ranges refer to the partitioned group or *n*. Also, some of the *n*s do not add up to 763 as some respondents skipped questions.

C. Procedure.

After the Institutional Review Board approval, the survey link was sent out to all undergraduate students who were in attendance at the university via an email invitation. On Survey Monkey, the students were first prompted with a study information sheet, 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 survey. All potential participants received a first follow-up letter electronically two weeks after the initial invitation letter was sent out. A second follow-up letter was emailed to all potential participants two weeks later. The study was closed two weeks following the second follow-up letter.

D. Data Analysis.

To answer the research questions of whether the undergraduate students preferred e-feedback or handwritten feedback, nonparametric and parametric tests were utilized. SPSS 20 was used to answer 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). Independent *t*-tests were conducted to compare feedback preference for all factors under the five themes; accessibility, timeliness, legibility, quality, and personal (Charmaz, 2000; Creswell, 2002). Correlations of demographic variables, with feedback preferences, were run to establish patterns in the variables (Cresswell, 2002). In addition all responses to open ended questions were analyzed with respect to their justifications or preferences for handwritten or e-feedback providing a purposeful examination of detailed actual experience (Cresswell, 2002).

III. Results and Discussion.

A. Preference for the form of feedback.

With respect to the first research question: "What do the participants prefer: handwritten feedback or electronic feedback?" it was found that the majority of the participants (*n*=476, 63.3%) preferred e-feedback (see Figure 1). The studies conducted by Chang et al. (2012), Denton et al. (2008), and Parkin et al. (2012) also yielded similar findings in which more students preferred e-feedback than handwritten feedback.
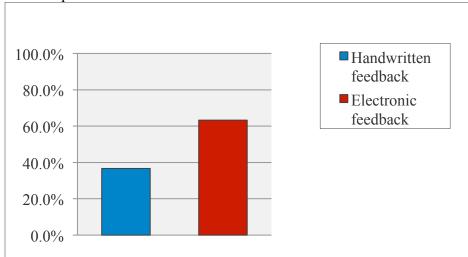

Figure 1. Feedback preference.

B. Degrees of preferences for both forms of feedback.

In addition to a question on preference, the respondents were also asked to rate the degree of preference for e-feedback and handwritten feedback in general, and then for all factors under the five main themes; accessibility, timeliness, legibility, quality, and personal. Table 2 details the results of the question concerning what degree a respondent preferred: e-feedback or handwritten feedback. Whichever the preference by the respondents, handwritten or e-feedback, these respondents also rated their preferred feedback form higher than the other.

Table 2. T-tests comparing how much preference for handwritten and e-feedback feedback based on choice of feedback.

	n	*Mean*	*SD*	*t*	*df*	*p*
Preference for Handwritten						
Handwritten	276	1.95	1.01	-24.596	745	0.00
E-feedback	471	4.46	1.51			
Preference for E-feedback						
Handwritten	274	4.33	0.921.39	29.33	748	0.00
E-feedback	476	1.86	0.92			

Note. Likert scale 1 = very much prefer to 7 = not preferred at all, the lower the mean the stronger the preference.

C. The usefulness of two forms of feedback.

The respondents were also asked to rate the degree of usefulness of each form of feedback (see Table 3). When the respondents preferred handwritten feedback, they also thought handwritten feedback was more useful than e-feedback. When the respondents chose e-feedback as their preferred form, they rated e-feedback as much more useful than handwritten feedback.

Table 3. T-tests comparing usefulness of feedback.

	n	*Mean*	*SD*	*t*	*df*	*p*
Usefulness of Handwritten						
Handwritten	275	1.644	0.878	-16.147	748	0.000
E-feedback	475	3.324	1.591			
Usefulness of E-feedback						
Handwritten	274	3.518	1.435	20.127	747	0.000
E-feedback	476	1.787	0.916			

Note. Likert scale 1 = very useful to 7 = not useful at all, the lower the mean the stronger the preference.

D. Accessibility.

There were four factors under the theme of accessibility: (a) *allows me to get information easily,* (b) *allows me to receive and send information conveniently*, (c) *allows me to ask questions easily* and (d) *makes me feel secure to receive feedback from the professor*. Irrespective of the respondents' preferred feedback form, there was a statistically significant difference in the perceptions of each of the factors under this theme between handwritten feedback supporters and e-feedback supporters. That is, when the respondents chose handwritten feedback as their preferred feedback form, they rated all factors more strongly than those who preferred e-feedback (see Table 4). When the respondents chose e-feedback as their preferred feedback form, they rated all factors under e-feedback more strongly than the same factors under handwritten feedback (see Table 5). Overall, however, these respondents gave higher ratings to e-feedback than to handwritten feedback regardless of preferred feedback form (see Tables 4 & 5).

Table 4. T-tests comparing accessibility factors for e-feedback feedback.

	n	*Mean*	*SD*	*t*	*df*	*p*
(a) *Allows me to get information easily*						
Handwritten Preference	270	2.722	1.595	13.858	736	0.000
E-feedback Preference	468	1.511	0.773			
(b) *Allows me to receive and send information conveniently*						
Handwritten Preference	269	2.100	1.307	9.668	733	0.000
E-feedback Preference	466	1.380	0.703			
(c) *Allows me to ask questions easily*						
Handwritten Preference	269	2.877	1.815	9.770	734	0.000
E-feedback Preference	467	1.803	1.164			
(d) *Makes me feel secure to receive feedback from the professor*						
Handwritten Preference	267	3.240	1.664	12.912	729	0.000
E-feedback Preference	464	1.882	1.167			

Note. Likert scale 1 = strongly agree to 7 = strongly disagree, the lower the mean the stronger the preference.

Table 5. T-tests comparing accessibility factors for handwritten feedback.

	n	*Mean*	*SD*	*t*	*df*	*p*
(a) *Allows me to get information easily*						
Handwritten Preference	274	2.449	1.465	-17.526	728	0.000
E-feedback Preference	456	4.568	1.648			
(b) *Allows me to receive and send information conveniently*						
Handwritten Preference	271	3.989	1.623	-10.838	518	0.000
E-feedback Preference	454	5.286	1.447			
(c) *Allows me to ask questions easily*						
Handwritten Preference	266	2.872	1.680	-12.335	579	0.000
E-feedback Preference	454	4.504	1.770			
(d) *Makes me feel secure to receive feedback from the professor*						
Handwritten Preference	268	1.720	1.206	-14.100	718	0.000
E-feedback Preference	452	3.489	1.832			

The justifications provided by the e-feedback supporters for (a) *allows me to get information easily* include, "I'm always online, always even on my phone so it makes things easier for me." "[N]o matter where you are, you usually have access to the internet therefore you can get it anywhere at any time." Denton et al. (2008) and Parkin et al. (2012) found similar data. They found that technology enabled students to access their grades and feedback at a time and place of their choosing. In commenting on (b) *allows me to receive and send information conveniently*, some e-feedback supporters wrote, "Easily accessible as it only requires one or two clicks of the mouse." "Very helpful because I can log on whenever it is convenient for my schedule to check on things." Similarly, conveniently receiving and sending information with the use of the Internet was concluded in Chang (2011) and Chang et al. (2012). Students recognized and appreciated the flexibility and convenience that technology could provide in facilitating their learning (Denton et al., 2008; Parkin et al., 2012).

In contrast, handwritten feedback supporters had their own reasons to support (a) *allows me to get information easily* and (b) *allows me to receive and send information conveniently*. The respondents justified, "It does not require a computer to read." To some students, finding a computer and/or logging on a computer required an effort. A student noted, "If it's an email or electronic, I have to take the time to log in to the computer, which at home is slow and in a dark corner." The rationale given by the handwritten feedback supporters is consistent with the studies conducted by Chang (2011) and by Chang et al. (2012), handwritten feedback was independent of the Internet, which made student learning convenient. To avoid redundancy, the discussion of (c) *allows me to ask questions easily* will be made in section of Personal.

With respect to why e-feedback supporters supported (d) *felt secure to receive feedback from professors*, here are some of the explanations: "I don't have to worry about losing it!" "It's nice that you can always go back to refer to it when it's saved online." Yet, the handwritten feedback supporters contended, "Does make me feel secure with having the actual feedback in my hands." "This is also good for keeping me secure because I can always keep and lock the feedback from it being deleted." Even though Chang et al. (2012) identified and supported this category, few other studies have examined this category. Therefore future research is warranted for better facilitating student learning.

E. Timeliness.

There is only one factor under the theme of timeliness: (e) *[Feedback] allows me to receive feedback fast*. On this factor, there was a statistically significant difference between the views by the handwritten feedback supporters and those by the e-feedback supporters. When the respondents chose handwritten feedback as their preferred feedback form, they rated timeliness more strongly than those favoring e-feedback. When the respondents chose e-feedback as their preferred feedback form, they rated timeliness more strongly than those favoring handwritten feedback. Overall, however, these respondents' ratings for e-feedback were stronger than for handwritten feedback regardless of preferred feedback form (see Table 6).

Table 6. T-tests comparing timeliness theme for handwritten and e-feedback.

	n	Mean	SD	t	df	p
Handwritten (e) feedback allows to receive feedback fast						
Handwritten	266	3.624	1.581	-12.220	570	0.00
E-feedback	451	5.135	1.631			
E-feedback (e) feedback allows to receive feedback fast						
Handwritten	267	2.277	1.461	8.927	731	0.00
E-feedback	466	1.504	0.883			

Note. Likert scale 1 = strongly agree to 7 = strongly disagree, the lower the mean the stronger the preference.

Regardless of the respondents' preferences for the two forms of feedback, it is apparent that they rated e-feedback as timelier than handwritten feedback. The mean difference of views on timeliness is notably large (see Table 6). Similar findings were determined in the reports by Chang et al. (2012) and Dennen, Darabi, and Smith (2007). When feedback is delivered electronically, students do not have to wait until next class or another week, as a student wrote, "…I don't have to wait a week to hear back on how well I did or what I need to improve on." Another student pointed out, "If I receive feedback that is very late, I usually disregard it because it is irrelevant." The findings are consistent with Parkin et al. (2012), who found that if students did not receive feedback in time for it to be meaningful germane to a task assessed, the relevance of the feedback could thus be reduced. Feedback needs to be timely to appropriately promote student learning (Chang et al., 2012; Dennen et al., 2007; Di Costa, 2010; Ferguson, 2011; Parkin et al., 2012; Rowe & Wood, 2008).

However, from the perspectives of those who supported handwritten feedback, timeliness did not seem to be a concern. One respondent rationalized that feedback that was regularly delivered in class would enable students to predict when they could receive feedback from instructors: "With handwritten feedback, you know when you can expect to receive it (i.e. in class or other scheduled meeting time)." Another reason behind not being concerned about timeliness is the view many handwritten feedback supporters, even some e-feedback supporters, had that the delayed return of feedback is due to instructors spending time reading students' work, as a student put, "It takes longer to get a handwritten feedback … because the Professor took the time and effort to read it [your work]." Thus, feedback could be shaped by individual student assignments as a means of individualized instruction (Chang et al., 2012). As such, the respondents perceived that they were likely to receive detailed and constructive feedback, as some commented, "I am willing to wait longer for and prefer to wait for detailed handwritten feedback as opposed to electronic feedback." "If constructive feedback given, time isn't too

much a factor." "It's okay if they take a little longer because the quality is better." Chang et al. (2012) and Ferguson (2011) had a similar finding that students would be willing to wait longer for quality feedback.

Throughout the entire survey, neither those students who preferred e-feedback nor those who preferred handwritten feedback specifically indicated the size or type of assignments in relation to timeliness. In other words, none mentioned about to what extent timeliness is based on the size or type of assignment: a longer assignment might be turned around slower than a shorter assignment. It could be easily understood that short essay can be more quickly evaluated than a longer paper. Therefore, there is no particular answer to this issue. Nonetheless, feedback that is received untimely is not helpful in deepening or maximizing student learning (Chang et al., 2012; Dennen et al., 2007; Di Costa, 2010; Ferguson, 2011; Parkin et al., 2012; Rowe & Wood, 2008).

F. Legibility.

There were two factors under the theme of legibility; (f) *[Feedback] enables me to read the feedback* and (g) *[Feedback] enables me to understand what the professor writes*. There were statistically significant differences between the perceptions by the handwritten feedback supporters and those by e-feedback supporters. When the respondents chose handwritten as their preferred feedback form, they rated both factors under the theme of legibility more strongly than those e-feedback supporters did (see Table 7). The same holds true for the respondents who chose e-feedback as their preferred feedback form. These respondents rated the two factors of legibility under e-feedback more strongly than under handwritten feedback (see Table 8).

Table 7. T-tests comparing legibility factors for handwritten feedback.

	n	*Mean*	*SD*	*t*	*df*	*p*
(f) *enables me to read the feedback*						
Handwritten Preference	266	2.959	1.510	-11.912	716	0.000
E-feedback Preference	452	4.522	1.800			
(g) *enables me to understand what the professor writes*						
Handwritten Preference	267	3.079	1.450	-12.404	717	0.000
E-feedback Preference	452	4.601	1.675			

Note. Likert scale 1 = strongly agree to 7 = strongly disagree, the lower the mean the stronger the preference.

Even though there are statistically significant differences within each factor, overall more students preferred e-feedback on both of these factors, and gave higher ratings regardless of their particular feedback preference (see Tables 7 and 8). Chang et al. (2012), Denton et al. (2008), Ferguson (2011), and Price et al. (2010) reported similar findings. Common justifications provided by the respondents include, "Since it is typed, it is legible [,] [i]f their spelling and grammar is good at least." "… electronic feedback wins in this category [legibility]." Denton et al. (2008) and Parkin et al. (2012) found that many students were likely to read or use feedback if it was returned to them in a typed and legible format. Chang (2011), Chang et al. (2012), and Ferguson (2011) also confirmed the finding that typed feedback enabled students to read feedback without difficulty. With respect to (g), *[Feedback] enables me to understand what the professor writes*, to some respondents, e-feedback, even if it is typed, does not make sense to

students and is full of spelling errors, it is of little use, as a respondent expressed, "You will always be able to read typed [feedback], but that doesn't matter if [it] is not necessarily comprehensible and more subject to misspellings." On the contrary, if feedback's quality was good, the respondents were willing to take time to decipher it. A student put it this way: "If the quality of what is written is high enough, student time to making out the writing is worth it." The linkage between legibility and quality appears to suggest that students care about their learning and hope to act on feedback to better their work (Chang et al., 2012; Ferguson, 2011). However, further research is needed for a deep look at this factor.

Table 8. T-tests comparing legibility factors for e-feedback feedback.

	n	*Mean*	*SD*	*t*	*df*	*p*
(f) *enables me to read the feedback*						
Handwritten Preference	267	1.846	1.316	6.707	728	0.000
E-feedback Preference	463	1.324	0.788			
(g) *enables me to understand what the professor writes*						
Handwritten Preference	265	1.996	1.242	5.886	726	0.000
E-feedback Preference	463	1.495	1.021			

Note. Likert scale 1 = strongly agree to 7 = strongly disagree, the lower the mean the stronger the preference.

G. Quality.

There were seven factors under the theme of quality: *[Feedback]* (h) *offers constructive criticism or comments,* (i) *is helpful,* (j) *allows me to understand the content of the professor's comment,* (k) *allows for revisions and improvement,* (l) *provides detailed information that I would like to know in text,* (m) *provides detailed information that I would like to know at the end of paper, and* (n) *allows me to feel and touch the feedback, which is conducive to my reading and understanding.* There were statistically significant differences between the views by the handwritten feedback supporters and those by the e-feedback supporters on all the factors of quality. That is, when the respondents chose handwritten feedback as their preferred feedback form, they rated all factors more strongly than those by e-feedback supporters (see Table 9). The same holds true for those who chose e-feedback as their preferred feedback form. These respondents rated factors of quality under e-feedback statistically more strongly than under handwritten feedback (see Table 10). However, overall, more respondents rated factors of (h) and (n) under handwritten feedback higher than those under e-feedback (see Tables 9 & 10).

Table 9. T-tests comparing quality factors for handwritten feedback.

	n	Mean	SD	t	df	p
(h) *offers constructive criticism or comments*						
Handwritten Preference	268	1.679	1.126	-9.792	718	0.000
E-feedback Preference	452	1.799	1.659			
(i) *is helpful*						
Handwritten Preference	267	1.588	1.098	-10.137	717	0.000
E-feedback Preference	452	2.741	1.656			
(j) *allows me to understand the content of the professor's comment*						
Handwritten Preference	267	1.970	1.214	-10.962	716	0.000
E-feedback Preference	451	3.268	1.695			
(k) *allows for revisions and improvement*						
Handwritten Preference	265	1.951	1.228	-10.375	712	0.000
E-feedback Preference	449	3.229	1.770			
(l) *provides detailed information I would like to know in text*						
Handwritten Preference	266	2.139	1.382	-9.426	711	0.000
E-feedback Preference	447	3.333	1.770			
(m) *provides detailed information I would like to know at the end of a paper*						
Handwritten Preference	263	1.658	1.036	-10.914	708	0.000
E-feedback Preference	447	2.904	1.672			
(n) *allows me to feel and touch the feedback, which is conducive to my reading*						
Handwritten Preference	265	1.676	1.258	-11.655	707	0.000
E-feedback Preference	444	3.205	1.902			

Note. Likert scale 1 = strongly agree to 7 = strongly disagree, the lower the mean the stronger the preference.

Handwritten feedback supporters perceived that if the feedback was handwritten, the quality of handwritten feedback was always higher than that of e-feedback. A student said, "Handwritten feedback from my courses has been consistently higher quality and more thought out comments than any electronic feedback I have received." Most handwritten feedback supporters were also in sync with the notion that handwritten feedback was "more apt to explaining mistakes." When feedback enabled students to see and understand their mistakes, it is likely that students perceived such feedback as high quality. Therefore, handwritten feedback was helpful and comprehensible, and enabled students to know specifically where further improvement was needed. In addition, when instructors write feedback by hand, various colors of pens would be used for different purposes, as a respondent explained, "Some teachers use different colored ink which helps distinguish whether the written comment refers to a mistake or simply a constructive comment. An example would be red ink for errors like [grammar]. Blue ink could mean a [constructive] comment or constructive [criticism]." Chang et al. (2012) found that the handwritten feedback supporters appeared to have attached much greater importance to the feedback that was more detailed and specific than feedback that was typed and sent electronically.

Table 10. T-tests comparing quality factors for e-feedback feedback.

	n	Mean	SD	t	df	p
(h) *offers constructive criticism or comments*						
Handwritten Preference	263	2.970	1.604	8.656	725	0.000
E-feedback Preference	464	2.070	1.180			
(i) *is helpful*						
Handwritten Preference	265	2.608	1.580	8.053	727	0.000
E-feedback Preference	464	1.819	1.057			
(j) *allows me to understand the content of the content of the professor's comment*						
Handwritten Preference	264	3.136	1.549	10.844	727	0.000
E-feedback Preference	465	2.039	1.159			
(k) *allows for revisions and improvement*						
Handwritten Preference	263	2.875	1.492	8.024	721	0.000
E-feedback Preference	460	2.078	1.148			
(l) *provides detailed information I would like to know in text*						
Handwritten Preference	261	3.111	1.561	8.787	719	0.000
E-feedback Preference	460	2.174	1.259			
(m) *provides detailed information I would like to know at the end of a paper*						
Handwritten Preference	259	3.290	1.567	9.676	714	0.000
E-feedback Preference	457	2.230	1.310			
(n) *allows me to feel and touch the feedback, which is conducive to my reading*						
Handwritten Preference	261	4.667	1.817	8.708	715	0.000
E-feedback Preference	456	3.384	1.943			

Note. Likert scale 1 = strongly agree to 7 = strongly disagree, the lower the mean the stronger the preference.

Many handwritten feedback supporters also show their propensity toward handwritten feedback by rationalizing their disapproval of e-feedback. One respondent noted, E-feedback "[i]s usually based on a scale rather than the professor leaving actual comments." Miscommunication is another reason for many handwritten feedback supporters to feel disinterested in e-feedback. A respondent wrote, "It is particularly hard to fully understand nuance via electronic communication. [Thus], miscommunication is so easy." A lack of non-verbal cues could easily lead readers to misinterpret or misunderstand instructors' intended comments or messages (Chang, 2011). In terms of caring for student learning, the respondents felt that e-feedback did not show the sincerity of professors: E-feedback was "[n]ot always the best advice because it seems like they just threw it together." These reasons indirectly convey that e-feedback is not useful and does not allow students to improve their learning.

E-feedback supporters offered a different rationale for preferring all factors of quality. From their perspectives, e-feedback was specific and offered useful explanations: "I've noticed that most of the electronic feedbacks are more in-depth in their explanations and reasons." Parkin et al. (2012) echoed that the participants in their study felt that online feedback was thoughtful. Additional reasons given by e-feedback supporters include, "The clarity I receive from electronic feedback has been better than written. I suspect that is because thoughts can be edited and organized in such a way that handwritten examples do not allow." Parkin et al. (2012) also reported that their respondents recognized editing and revising feedback could become fairly easy to tutors with the use of electronic tools. Apparently, technology has made teaching more effective, as instructors are able to edit and reorganize feedback that has been composed. In

contrast, instructors who chose to write feedback by hand did not seem able to do so frequently and conveniently. An e-feedback supporter commented, "Handwritten comments tend to be abbreviated more often and leaves you occasionally wondering if you missed something or if you correctly understand the abbreviations." Decoding abbreviations and wondering whether the resulting work matched the instructor's intended meaning were fairly uneasy to the respondents and could generate a sense of uncertainty. Such feeling and emotional status could plausibly become the reasons for some respondents to support e-feedback. However, these aspects were not found by the studies conducted by (Chang, 2011) and by (Chang et al., 2012). As such, an investigation could be warranted to further the understanding of how to facilitate student learning via assessment feedback.

The qualitative data given above might help point to specific, detailed, clear, thoughtful, and comprehensible feedback that was generally desired by the respondents, as it could offer information for improvement. In other words, the data showed that irrespective of their particular feedback preferences, the respondents viewed that handwritten feedback could provide constructive feedback. This might explain why more respondents, in general, gave higher ratings to handwritten feedback than e-feedback on (h) *offers constructive criticism or comments* than to e-feedback.

H. Personal.

There were four factors under the category of personal: *[Feedback]* (o) *allows me to establish rapport with my professor,* (p) *encourages me to read feedback,* (q) *shows that the professor cares about me, and* (r) *makes me appreciate my professor's time and attention.* When the respondents chose handwritten feedback as their preferred feedback form, they rated all factors significantly more strongly than those by e-feedback supporters (see Table 11). The same holds true for those who chose e-feedback as their preferred feedback form. These respondents rated all factors under electronic feedback significantly more strongly than the same factors under handwritten feedback (see Table 12). However, overall, more respondents rated factors of (q) and (r) under handwritten feedback higher than those under e-feedback (see Tables 11 & 12).
One of the main reasons for handwritten supporters to support handwritten feedback may be that "[h]andwritten feedback … always seems personal …" as a respondent stated. Commonly felt by the respondents is that e-feedback appears to distance instructors from students psychologically (Chang, 2011), as some students noted: "There seems to be a distance between you and the professor if all feedback is just electronic." The respondents explained, "Electronic is usually more of a summary…" "… they … just copy and paste a generic statement." Similarly Chang et al. (2012) found that "… sometimes electronic feedback feels generic and impersonal" (p. 12). As such, if feedback is handwritten, it would be difficult for instructors to "duplicate" feedback, as a respondent pointed out, "I feel like an instructor is much less likely to copy and paste when the feedback is handwritten." If feedback is copied and pasted on a student's assignment, the student would be made to "[a]lmost feel as if I'm simply a part of a mass email that is sent out to a lot of students." This is implicit that instructors care very little about student learning, if e-feedback is delivered in this fashion. Therefore handwritten feedback seems a good-to-fit candidate for instructors to show care about student learning, as a respondent remarked, "I think that having a professor hand write their comments not only shows that you['re] not just another number but that they actually care about your improvements in their classes." This might also explain why overall the respondents in the present study gave higher ratings on

the factors of (q) *shows that the professor cares about me, and* (r) *makes me appreciate my professor's time and attention,* irrespective of their particular preferred feedback forms. In fact, the respondents' view of care rendered by instructors had already been expressed in the section of *timeliness*. That is, handwritten feedback supporters were willing to wait a bit long to receive handwritten feedback, because they perceived that instructors took time to provide thoughtful and constructive feedback, which demonstrated that their academic enhancement was cared by the instructors.

Table 11. T-tests comparing personal factors for handwritten feedback.

	n	*Mean*	*SD*	*t*	*df*	*p*
(o) *allows me to establish rapport with my professor*						
Handwritten Preference	265	1.751	1.114	-9.940	710	0.000
E-feedback Preference	447	2.953	1.772			
(p) *encourages me to read the feedback*						
Handwritten Preference	265	1.381	0.871	-10.945	710	0.000
E-feedback Preference	447	2.651	1.765			
(q) *shows that the professor cares about me*						
Handwritten Preference	263	1.464	0.923	-9.164	707	0.000
E-feedback Preference	446	2.498	1.686			
(r) *makes me appreciate my professor's time and attention*						
Handwritten Preference	264	1.337	0.778	-9.007	707	0.000
E-feedback Preference	445	2.256	1.546			

Note. Likert scale 1 = strongly agree to 7 = strongly disagree, the lower the mean the stronger the preference.

In this sense, handwritten feedback seems to have a tendency to make students feel personally connected with instructors. "[H]andwritten feedback seems more human than electronic feedback," commented a respondent. Chang et al. (2012) also reported that when all feedback was received electronically, it became easy for a student to feel like a number and that when feedback was handwritten it would encourage students to ask instructors for clarifications of comments. This can also address (c) *allows me to ask questions easily* in the section of *Accessibility*. When feedback was written by hand and delivered in class, asking instructors questions becomes quite easy. "Handwritten feedback makes it more welcoming to ask the professor questions about their feedback face-to-face and encourage building a student-instructor relationship with the instructor," commended a respondent. Chang et al. (2012) echoed that it was convenient to approach instructors for explanations if feedback was delivered in class. Easy and immediate responses from instructors also represent gestures that instructors care about students' improvement.

Asking instructors questions face-to-face could promote a positive relationship between instructor and student, which seemed, in turn, to encourage students to read feedback. Otherwise, reading feedback is unlikely to happen, as a respondent shared, "[M]y professor does not get to know me this way …, if it can be all uniform and not unique to each student, the connection is not there so reading the "comments" is much less likely to happen." It is apparent that students' emotions, derived from the relationship between instructor and student, plays a very important role in student learning. "The personal relationship between a professor and myself is very important to me." "I love to feel the connection between the professors," remarked the respondents. Di Costa (2010) and Rowe and Wood (2008) also reported that students wanted

instructors to consider their feelings; they wanted instructors to be empathetic and understandable.

Table 12. T-tests comparing personal factors for e-feedback feedback.

	n	*Mean*	*SD*	*t*	*df*	*p*
(o) *allows me to establish rapport with my professor*						
Handwritten Preference	262	4.053	1.780	9.777	718	0.000
E-feedback Preference	458	2.769	1.647			
(p) *encourages me to read the feedback*						
Handwritten Preference	261	3.874	1.914	14.769	717	0.000
E-feedback Preference	458	2.109	1.280			
(q) *shows that the professor cares about me*						
Handwritten Preference	260	3.862	1.804	10.461	714	0.000
E-feedback Preference	456	2.540	1.516			
(r) *makes me appreciate my professor's time and attention*						
Handwritten Preference	261	3.671	1.860	11.240	715	0.000
E-feedback Preference	456	2.318	1.342			

Note. Likert scale 1 = strongly agree to 7 = strongly disagree, the lower the mean the stronger the preference.

Some e-feedback supporters disagreed with their peers and believed that e-feedback had its capability to establish rapport with professors. They defended that e-feedback was "[m]ore one on one [than] the classroom," and "… was speaking directly to me." In view of e-feedback supporters, e-feedback was "[m]ore personal." The findings are consistent with Rowe and Wood (2008) that students requested feedback to be more personal, as it could motivate student learning and guide students in the right direction.

I. Correlations among demographic factors.

The second research question: "What are their related rationale?" was also examined through correlations of demographic variables. Table 13 shows there were positive correlations among students' ages and feedback preference. It means that the older the students were the more they preferred feedback. The finding is consistent with the findings by Chang (2011) and Chang et al. (2012). In addition, a positive correlation was also observed among class standings and feedback preference. This means the higher class standing, the more the students desired for feedback. This finding is incongruent with the reports by Siew (2003) and Chang et al. (2012). In regards to GPA, however, GPA and feedback preference were negatively correlated. This means that those whose GPA was between 1.00 and 2.01 craved for feedback more than those whose GPA ranged between 2.01 and 3.00. This finding is inconsistent with the reports by Chang (2011) and Chang et al. (2012) that the higher GPA the respondents had, the more eager they wished to receive feedback. However, further research is needed as there seemed more respondents whose GPA ranged between 3.01-4.00 (62.4%) than those GPA between 2.01 and 3.00 (28.1%), 1.01-2.00 (2.1%).

In terms of preference for a particular form of feedback, 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, $\chi^2(2, 752) = 3.543$, $p = 0.170$

Table 13. Feedback correlations among demographic variables.

	Gender	Age	Class Standing	GPA	College	Feedback Preference
Gender	1.000	-.088[*]	-.041	-.033	-.020	-.003
Age		1.000	.272[**]	-.050	.008	.147[**]
Class Standing			1.000	-.258[**]	-.044	.165[**]
GPA				1.000	-.005	-.072[*]
College					1.000	-.004
Feedback Preference						1.000

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

between handwritten and e-feedback. This means that regardless of gender there was no preference between handwritten or e-feedback. However, the Chi-square test of independence indicated a statistically significant difference, $\chi^2(5, 752) = 16.792$, $p = 0.005$ among age. This means the older students were, the more preference they had for e-feedback. The Chi-square test for independence also indicated a statistically significant difference, $\chi^2(3, 746) = 21.020$, $p = 0.000$, among class standing. E-feedback was preferred by seniors 72.3%. Juniors also preferred e-feedback 66.8%. For freshmen and sophomores the preference for e-feedback was about even.

A crosstabs procedure, Chi-square test of independence, also revealed a statistically significant difference $\chi^2(4, 752) = 13.511$, $p = 0.009$ among GPA respondents. In the 3.01–4.00 GPA group, 65.4% preferred e-feedback. Among GPA respondents in the 2.01–3.00 GPA group, 63.4% preferred e-feedback, while GPA respondents in the 1.01-2.00 GPA group preferred e-feedback 75.0% of the time.

There was statistically significant difference $\chi^2(5, 751) = 11.719$, $p = 0.039$ among colleges as well. The biggest preference difference was found in the College of Health Sciences with 71.4% of these respondents preferring e-feedback. All other colleges preferred e-feedback as well, although the differences were much smaller.

J. Educational implications.

The findings offer useful insights of the respondents on their preferred feedback form and the related rationale behind their preferences. As such, it is time for instructors and concerned administrators to start contemplating how to compose/or develop and deliver feedback, be it handwritten or e-feedback, in order to genuinely facilitate student learning. To be more specific, it is time to make changes to ways to develop and deliver e-feedback to bolster its quality and personal attributes. It is time to make changes to ways to develop and deliver handwritten feedback to better its timeliness, accessibility, and legibility. The need for change also implies that a form of feedback may not matter much if feedback, be it handwritten or e-feedback, is useful and beneficial to student learning and/or contains all the five themes. Therefore, in providing feedback, instructors need to "engage with students, consider their responses and offer individualized challenges" (Rushoff, 2013). Perhaps, basic training or professional development for instructors would enable them to establish a better understanding of what kind of e-feedback, for example, is needed by students. In addition the delivery style impacts student learning, as a student pointed out, "The few times I have received feedback in these ways [electronically]

(especially through annotations), I found it [e-feedback] immensely helpful. As such, I think this problem is more of one of education on the part of professors; if they are aware of this method of giving feedback and how to provide it in this way, then maybe they would be more likely to do so. Professor training would be very helpful." Professional training converging on how to provide and deliver feedback, be it handwritten or e-feedback, is of great significance.

K. Future research.

This study demonstrated that both handwritten feedback and e-feedback supporters appeared to clearly hold their own positions. To facilitate student learning via assessment feedback, future research would be useful to examine specifically what content of handwritten feedback is desired by respondents and, when and how instructors deliver this feedback to students. The same is necessary for the examination of e-feedback supporters' views. Further research may also be focused on if "a hybrid approach" to providing and sending feedback to students is helpful from the students' point of view, e.g. Tablet PC or iAnnotate PDF on iPad. These approaches would allow for handwriting and delivering feedback electronically. Or future research may need to be focused on the following question: "Do students prefer feedback provided with the use of VoiceThread, the software that allows for recording feedback orally and delivering it electronically? In addition future research may look into whether or not feedback provided through various electronic means, such as email, webs, Oncourse, phones, etc., would result in different students' perceptions or even in different impact on their learning. Interested others could also delve into to what extent e-feedback or handwritten feedback could really improve teaching and learning.

L. Limitations.

The following limitations were identified (1) Even though the survey instrument was modified and improved from the previous study, 2% of the respondents thought the survey was a bit too long. Thus, it might be the case that some respondents might not be able to complete the survey in earnest or honestly convey their insights. (2) This survey was conducted at the beginning of the spring semester. It might be that some students had not had much experience receiving or reading feedback. (3) It might be that some respondents' perceptions might not fully reflect their views taken into consideration that they might not comprehend certain survey questions and/or might be distracted by their surroundings when the survey was being taken. (4) Lastly, since there was no clear definition of e-feedback given, it might bear on the answers of the respondents to some survey questions. Nonetheless, with a large number of the respondents involved in this study, the findings could still make useful contributions to teaching and learning in higher education, generating a stimulating topic for the best interest of students.

IV. Conclusion.

Feedback preferences of undergraduate students at a Midwestern university were explored with regards to handwritten feedback or e-feedback and the rationale behind these preferences. It was found that about two thirds of the respondents preferred e-feedback. However, each group of supporters appeared to hold their explicitly distinct reasons for their perceptions in terms of the five themes: accessibility, timeliness, legibility, quality, and personal. Despite their differing

views, it appears that irrespective of their distinctive preferences, ratings for favoring handwritten feedback under some factors of quality and personal were stronger than for e-feedback. Likewise, there were stronger ratings and more respondents, regardless of their distinctive preferences, supporting e-feedback for its timeliness, accessibility, and legibility. The justifications that backed up their expressed preferences could also explain why there were higher ratings for usefulness of handwritten feedback than that of e-feedback. In addition, the respondents' various perceptions with respect to e-feedback were also found to be positively correlated with age and class standing and negatively correlated with GPA: Those whose GPA is between 1.01-2.00 favored more feedback than those whose GPA was between the range of 3.01–4.00 and that of 2.01–3.00.

The findings indicate that the majority of students long for assistance from instructors to better their learning via assessment feedback. It is important for instructors to be mindful when providing feedback on students' assignments in terms of what, why, how, and when. Since feedback offering has been recognized by literature to have significant effect on student learning (Case, 2007; Chang, 2011; Ferguson, 2011; Krause & Stark, 2010) and fundamental in supporting and regulating the learning process (Ifenthaler, 2010). It is time for all faculty concerned with effective student learning to understand more about the provision of feedback via the assessment process. Awarding a single grade is not welcomed by students and is not conducive to improving learning. Students do desire to receive feedback (Chang, 2011; Siew, 2003). However, the feedback should truly help advance their learning.

References

Ackerman, D. S., & Gross, B. L. (2010). Instructor feedback: How much do students really want? *Journal of Marketing Education, 32*(2), 172-181. doi: 10.1177/0273475309360159

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*. Proquest Dissertations & Theses Database: A&I. . Western Michigan University, United States

Ball, E. (2009). A participatory action research study on handwritten annotation feedback and its impact on staff and student. *Systemic Practice and Action Research, 22*, 111-124.

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.

Carless, D. (2006). Differing perceptions in the feedback process. *Studies in Higher Education, 31*, 219-233.

Case, S. (2007). Reconfiguring and realigning the assessment feedback processes for an undergraduate criminology degree. *Assessment & Evaluation in Higher Education, 32*(3), 285-299.

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

Chang, N., Watson, B., Bakerson, M., Williams, E., McGoron, F. , & Spitzer, B. (2012). Electronic feedback or handwritten feedback: What do undergraduate students prefer and why? *Journal of Scholarship of Teaching with Technology, 1*(1), 1-23.

Charmaz, C. (2000). *Grounded theory: Objectivist and constructivist methods* (2nd ed.). London: Sage.

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

Dennen, V. P., Darabi, A., & Smith, L. J. (2007). Instructor-learner interaction in online courses: The relative perceived importance of particular instructor actions on performance and satisfaction. *Distance Education, 28*(1), 65-79.

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. doi: 10.1111/j.1467-8535.2007.00745.x

Di Costa, N. (2010). *Feedback on Feedback: Student and academic perceptions, expectations and practices within an undergraduate Pharmacy course*. Paper presented at the ATN Assessment Conference 2010 University of Technology Sydney.

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

Higgins, R., Hartley, P., & Skelton, A. (2002). The conscientious consumer: Reconsidering the role of assessment feedback in student learning. *Studies in Higher Education, 27*, 53-64.

Hounsell, D. (2003). *Student feedback, learning, and development*. Berkshire, UK: SRHE & Open University Press.

Hyland, P. (2000). *Learning from feedback on assessment*. Manchester, UK: Manchester University Press.

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.

Mann, S. (2001). Alternative perspectives on the student experience: Alienation and engagement. *Studies in Higher Education 26*(1), 7-20.

Matthews, K., Janicki, T., He, L., & Patterson, L. (2012). Implementation of an automated grading system with an adaptive learning component to affect student feedback and eesponse time. *Journal of Information Systems Education, 23*(1), 71-83.

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

Morrissey, G., Coolican, M., & Wolfgang, D. (2011). *An intersection of interests: The millennial generation and an alternative world language teacher education program*. Paper presented at the American Educational Research Association Annual Conference New Orleans, LA.

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

Parkin, H., Hepplestone, S., Holden, G., Irwin, B., & Thorpe, L. (2012). A role for technology in enhancing students' engagement with feedback. *Assessment & Evaluation in Higher Education, 37*(8), 963-973.
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. doi: 10.1080/02602930903541007

Ramsden, P. (2003). *Learning to teach in higher education* (2nd ed.). London: RoutledgeFalmer.

Rosenberg, K. M. (2007). *The excel statistics companion*. Belmont, CA: Thomson Higher Education.

Rowe, A. D., & Wood, L. N. (2008). Student perceptions and preferences for feedback. *Asian Social Science, 4*(3), 78-88.

Rushoff, D. (2013, January 15, 2013). Online courses need human element to educate. from http://www.cnn.com/2013/01/15/opinion/rushkoff-moocs/index.html

Sadler, D. R. (2010). Beyond feedback: Developing student capability in complex appraisal. *Assessment & Evaluation in Higher Education, 35*(5), 535-550. doi: 10.1080/02602930903541015

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

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.

Stevenson, J. P. (2007). *Applied multivariate statistics for the social sciences* (5th ed.). New York, NY: Routledge.

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