

The impact of text versus video communication on instructor feedback in blended courses

Jered Borup · Richard E. West · Rebecca Thomas

© Association for Educational Communications and Technology 2015

Abstract In this study we examined student and instructor perceptions of text and video feedback in technology integration courses that combined face-to-face with online instruction for teacher candidates. Items from the Feedback Environment Scale (Steelman et al. 2004) were used to measure student perceptions of feedback quality and delivery. Independent sample *t* tests found no significant difference in perceptions of feedback quality and delivery between students who received video feedback and those who received text. End-of-semester student and instructor interviews identified several differences in the instructors' feedback methods when they were communicating with text as compared to video. In general, students and instructors found that the affordances of text enabled more efficient and organized feedback, while the affordances of video encouraged more supportive and conversational communication. Analysis of actual feedback comments found video comments were longer and more supportive, while text feedback contained more specific critiques. When rating types of feedback, both students and instructors valued the efficiency of text over the more affective benefits of video. The article concludes with possible implications for future research and recommendations for practice that draw on the potential benefits of both feedback forms.

Keywords Instructor feedback · Asynchronous video communication · Blended learning · Feedbackdelivery

Introduction

Instructor feedback is considered a critical element of formal learning (Lizzio and Wilson 2008; Mutch 2003). Moore (1993) explained that students are most “vulnerable at the point

J. Borup (✉)
George Mason University, Fairfax, USA
e-mail: jeredborup@gmail.com

R. E. West · R. Thomas
Brigham Young University, Provo, USA

of application” (p. 21–22)—the time when they apply their knowledge in some form and may not have sufficient understanding to know if they are doing so correctly. Garrison (2009) added that “it is inadvisable to go too far on one’s own in interpreting and understanding life’s phenomena because it is too easy to be wrong or to become fixed and dogmatic in one’s views” (p. 96). Thus during times of application and practice, instructors fill the essential role of offering students “counsel, support, and encouragement” (Moore 1993, p. 21). Instructor feedback to students is perhaps the most common way to support students during this critical moment of application, and for that reason is an “irreplaceable” aspect of the formal learning process (Garrison 2009, p. 97).

Recent changes in higher education have impacted teachers’ abilities to provide students with personalized feedback. Evans (2013) stated that “feedback to students needs to be considered against the backdrop of the massification and consumerization of [higher education]” (p. 73). Higgins et al. (2002) suggested that providing personalized feedback has become more difficult as class sizes increase and instructor-student personal contact opportunities decrease. This is especially true in learning environments where teachers and students are separated in space and time for all or most of the course.

Despite these changes, students still desire verbal feedback from their instructors (National Union of Students, 2008). Graham (2006) explained, “Many learners want the convenience offered by a distributed environment yet do not want to sacrifice the social interactions and human touch they are used to in a face-to-face classroom” (p. 9). Although feedback in distributed environments has traditionally been asynchronous text (Parsad and Lewis 2009), new technology innovations have the potential to improve instructor feedback and provide students with the human touch that they desire (Oncu and Cakir 2011).

Anderson (2009) explained that distance education instructors are particularly dependent on technology innovations and the affordances they provide. When distance education began, students received instructional materials by mail and completed them with little to no formative instructor feedback (Garrison, 2009). Garrison (2003) described the core of this instructional model as “self-management, self-monitoring, and motivation” (p. 165).

As synchronous audio and video conferencing emerged, so did more interactive instructional methods. More recently the advent of online learning with its accompanying focus on collaborative-constructivist methodologies has dramatically changed instruction to include a high level of communication and feedback via asynchronous text (Garrison, 2009). Although asynchronous text offers several communication benefits (Garrison et al. 2000), the shift from video conferencing to asynchronous text has eliminated the nonverbal cues that convey unspoken information to students (Draft and Lengel 1986).

As a result some online instructors have attempted to improve their feedback methods by providing students with asynchronous video feedback as a way of retaining some of the benefits of asynchronous communication and increasing the richness of information that they convey (Borup et al. 2011, 2012, 2013; Griffiths and Graham 2009a, b, 2010; Moore and Filling 2012; Silva 2012). Additionally, online technologies have enabled students to apply their understanding in new and authentic ways, which may require different feedback methods.

Clark (1983, 1994) cautioned that those researching instructor feedback should focus on instructional methods and not the media that deliver them. He explained that feedback can be presented using a variety of media but that ultimately feedback methods—not media—impact learning. This is not to say that media should be ignored. Clark (1994) explained that “the selection of media and symbol systems is critical at this final stage in design” (p. 8) and can be influenced by student preferences and time constraints. Graham et al. (2014) also argued that media can impact the methods that instructors are able to employ. These

researchers condensed Gibbons and Rogers' (2009) seven layers of instructional design into the pedagogical (or method) layer and the physical (or media) layer and claimed that in blended settings "the physical layer can impact the availability and effectiveness of the pedagogical layer" (p. 28). We agree with Clark (1983, 1994) that researchers' focus should remain on instructional methods but also agree with Graham et al. (2014) that the methods instructors can employ in mediated communication are impacted by the communication medium. Thus researchers can better understand how instructors can convey feedback if they also examine the attributes of the media.

Draft and Lengel's (1986) media richness theory provides insights into how asynchronous video feedback could impact the feedback methods that instructors are able to employ. Their theory contended that the richness of information conveyed will likely differ depending on the media that instructors choose. They claimed that the richest form of information is best communicated face to face because it affords immediate feedback with verbal and non-verbal cues (i.e., body language, facial expression, and tone of voice) that convey "information beyond the spoken message" (p. 196). Draft and Legel ranked written communication lower on the richness scale because feedback is slow and lacks visual cues. Although asynchronous video feedback lacks the immediacy of face-to-face communication, it contains non-verbal cues placing it between face-to-face communication and asynchronous text communication on the media richness continuum. Unfortunately, little is known about how the shift from asynchronous text to video communication changes the methods that teachers use or the richness of information they are able to provide in their online feedback. In the following section we discuss the existing research and identify specific gaps in the literature.

Literature review

Although instructors spend an abundance of time providing feedback to students, what constitutes effective feedback is under-researched (Getzlaf et al. 2009; Mutch, 2003; Price et al. 2010). Eraut (2006) summarized that "we need more feedback on feedback" (p. 118). Guided by the media richness theory, our review of the existing literature identified three elements of feedback quality: (1) content and utility, (2) timing and efficiency, and (3) delivery and affective support. In the following sections we will discuss each element of feedback quality, considering how it can be influenced by the richness of audio and video communication.

Content and utility

Although feedback timing and delivery are important, the content of the feedback is paramount. For instance, Price et al. (2010) stated that correction is a defining attribute of feedback. Additionally, research has found general praise and correction to be insufficient, emphasizing the need for instructors to provide more complex affirmations and corrections that evaluate specific attributes of student performance (Getzlaf et al. 2009; Wolsey, 2008). Wiliam (2011) added that detailed descriptions of student performance are necessary but not sufficient. Feedback should also provide students with information that helps them narrow the gap between their current and desired performance (Getzlaf et al. 2009; Wiliam 2011). However, a three-year study examining feedback provided to undergraduate and graduate students enrolled in business courses at three universities found that feedback tended to lack adequate specificity (Price et al. 2010). Wolsey (2008) believed that the

general lack of feedback specificity was due in part to instructors' time constraints. Similarly, Mutch (2003) summarized, "Given mass higher education, it is perhaps unsurprising that feedback is often terse" (p. 31).

In their media richness theory, Draft and Lengel (1986) explained that feedback content can reduce uncertainty and equivocality. These researchers defined *uncertainty* as "the absence of information" (p. 556). The more relevant information instructors provide in their feedback, the less uncertainty the student will experience. *Equivocality* was defined as "confusion and lack of understanding" (p. 556). Equivocality is likely when projects are ill defined and allow for multiple and conflicting interpretations. In these cases, additional information alone is unlikely to eliminate students' equivocality, and instructor feedback needs to "enable debate, clarification, and enactment more than simply provide large amounts of data" (p. 559). Draft and Lengel (1986) explained that this is best done when feedback contains "multiple cues via body language and tone of voice" (p. 560). As a result, the use of audio and video communication may help instructors to improve the content of their feedback.

Rodway-Dyer et al.'s (2011) content analysis of audio and text feedback on student essays in an undergraduate geography course found that in general audio comments contained more details in their description of student work and suggestions for improvement. Similarly, a large majority of students in Lunt and Curran's (2010) survey research in an undergraduate face-to-face geography course reported that compared to text, audio feedback on student writing was more detailed and helpful in explaining to students what they needed to improve and providing instruction on how they could improve it. However, the number of details that instructors provide in video and audio feedback can vary greatly. For instance, Moore and Filling (2012) examined two face-to-face instructors' use of video feedback on students' writing assignments in an English composition and a children's literature course. Researchers found that the first instructor's feedback was much shorter (average of five minutes) than that of the second instructor (average of 15.54 min). It is perhaps not surprising that students felt video feedback approaching 20 min was too long, which raises the question of how much feedback is too much?

Timing and efficiency

Draft and Lengel (1986) explained that the richness of feedback is impacted by how quickly it is provided to students. The timing of the feedback is especially important in light of Wolsey's (2008) research that found K-12 teachers in a master's degree program were more likely to ignore feedback comments on their written work that were not provided promptly. Furthermore, Higgins et al.'s (2002) study showed that business and humanities students felt entitled to timely feedback, reasoning that if students paid their tuition and completed an assignment on time, they were entitled to timely feedback on that assignment. However, Getzlaf et al. (2009) found that online graduate nursing and health students varied in their perceptions of what constitutes timely feedback, with some students wanting feedback within 1 day and others reporting that feedback within 2 weeks would be acceptable. Students received feedback on a variety of assignments "including written assignments, conference posting and course interactions" (p. 3), and Getzlaf et al. (2009) hypothesized that students likely have different feedback expectations for different types of assignments.

Some research has indicated that teachers do not tend to provide feedback in a timely manner. For instance, a large mixed-methods report that examined instructor feedback at 146 post-secondary institutions found that 80 % of the 3135 participants reported not

receiving instructor feedback until three or more weeks after submitting an assignment (National Union of Students, 2008).

Some researchers have explained that online tools can be leveraged to provide students with more timely feedback (Gikandi et al. 2011; Ice et al. 2007; Lunt and Curran 2010; Morris and Finnegan 2009; Rodway-Dyer et al. 2011; Wood et al. 2011). For instance, Silva's (2012) case study research of a blended writing course for engineering majors found that handwritten or typed feedback comments on students' 10-page essays required an average of 10 min longer than the time required to provide students with video feedback using a screencasting tool. Similarly, Wood et al. (2011) conducted an exploratory pilot study examining an online instructor's use of audio feedback on four nursing student essays and found that audio was more efficient than text. However, the instructor spent an average of 55 min per paper at the beginning of the semester and less than 20 min at the end of the semester when student writing had improved. Although not explored in this article, instructors may have also been less willing to provide detailed formative feedback at the end the semester compared to the beginning of the semester. It is possible that the efficiency of using audio feedback varied depending on the quantity and type of feedback that was needed.

Additional factors should be considered. Both the study by Silva (2012) and the study by Wood et al. (2011) examined feedback on student writing and research examining feedback on alternative types of student work may have different outcomes. Hew and Cheung (2012) also warned that technological problems can occur when creating and providing audio and video feedback, making it less efficient than text. In addition, Rodway-Dyer et al. (2011) observed that audio feedback on geography undergraduates' written work required more time for students to access and listen to. It is also likely that the efficiency of providing audio versus text feedback is influenced by the communication tool used, instructors' familiarity with that tool, the nature of the assignment, and instructors' communication abilities.

Delivery and affective support

Gikandi et al. (2011) stated that students' application of provided feedback depends mainly on how the feedback is delivered and perceived. Although feedback is required to correct student errors, online graduate nursing and health students in Getzlaf et al. (2009) research reported that feedback should be delivered in a positive, encouraging, and friendly manner—especially at the beginning of the semester when students feel the most insecure. Evans (2013) added that feedback should not harm students' egos. Unlike feedback timing and content, which can be objectively examined, feedback delivery is generally described in terms of student perceptions, making it more idiosyncratic and difficult to measure (Gikandi et al. 2011). For instance, through student surveys and interviews in business and humanities courses, Higgins et al. (2002) found that perceptions of similar corrective feedback could vary across students, with some indicating that a particular sample of feedback was judgmental while others viewed it as empathetic.

Draft and Lengel (1986) explained that richness of the communication is increased when the "message content is expressed in natural language" (p. 560), and research has found that the mode of communication may impact feedback delivery. In a blended learning environment Silva (2012) found that engineering students viewed instructor video feedback on student writing to be more conversational, positive, personal, and clear than written comments, even when the instructor attempted to write the comments in a friendly conversational manner. Similarly, a face-to-face English instructor in Moore and Filling's

(2012) research believed that video allowed her to be nuanced and sensitive when correcting student writing. Students in this study confirmed her perception when they reported that their video feedback was more personal and encouraging than text (Moore and Filling 2012).

But contrasting study results show that for some instructors and students video was a more risky medium. Rodway-Dyer et al. (2011) described an undergraduate student in a face-to-face geography course who commented that her instructor's tone of voice in audio feedback on her 1500-word essay made her feel like she was "being told off" (p. 220), as well as another student who stated that her audio feedback was "extremely harsh" (p. 222). Kim (2004) concluded that instructors might find it more difficult to hide their frustrations from students when more communication cues are present, and that while technology can increase the communication cues that are present in feedback, the quality of the feedback ultimately depends on the instructor's communication skills and behavior.

In summary, research has found that the use of audio and video communication tools can positively impact feedback timing, content, and delivery. However, the sparse literature examining the use of online video feedback has several limitations. First, most researchers have focused on students' perceptions and have largely ignored instructors' perspectives (Evans 2013). In addition, researchers have failed to triangulate these perceptions with content analyses of actual feedback comments. Similarly, the existing research has been limited to qualitative methodology, and a mixed-methods approach would likely provide additional insights (Greene et al. 1989). Next, even though Web 2.0 and other technological innovations allow learners to represent their learning in many different ways (Graham 2006), the research discussed above focused predominantly on traditional types of assessment such as feedback on students' written work (Gilbert et al. 2011; Harper et al. 2012; Hynson 2012; Moore and Filling 2012; Silva 2012), and little research has examined video feedback on other types of projects (Griffiths and Graham 2009a, b, 2010). Norton and Wiburg (2003) explained that writing requires different cognitive strategies than multimedia products. By definition, the content of feedback depends on the project and cognitive strategies being evaluated (Price et al. 2010), and a particular mode of communication may prove more useful for feedback on certain types of assignments than on others.

Unfortunately research examining feedback to teacher candidates is especially sparse. Putnam and Borko (2000) explained that teacher candidates depend heavily on feedback from teacher educators and practicing K-12 teachers to become "enculturated into the teaching profession" (p. 10). Additionally, these prospective teachers are more likely to understand effective methods for providing feedback to their students if their instructors model effective methods when providing feedback to them. Nillas (2008) added that quality feedback is especially important for teacher candidates in technology integration assignments because their instructors have the dual responsibility of helping the candidates develop technological skills in addition to promoting positive dispositions toward teaching with technology.

Study purpose and research questions

Considering this body of varied and often contrasting research and the particular need of teacher candidates for efficient but clear, specific, and affective feedback, this mixed-method research examined student and instructor perceptions of video and written text feedback provided on varied online multimedia projects (i.e., instructional videos, online portfolios, and digital presentations) in a blended learning environment. These perceptions were triangulated using a content analysis of instructors' actual feedback comments.

More specifically, our research addressed the following questions:

1. Do blended learning students who received video feedback report higher levels of feedback quality and delivery than students who received text feedback?
2. Does the content of text feedback differ from that of asynchronous video feedback?
3. What advantages and disadvantages do blended learning students and instructors perceive in asynchronous video feedback compared to those who gave/received feedback by text?

Methods

This research used a complementary mixed-methods design as described by Greene et al. (1989): “[Q]ualitative and quantitative methods are used to measure overlapping but also different facets of a phenomenon, yielding an enriched, elaborated understanding of the phenomenon” (p. 285). The following methods were employed:

1. Scaled survey questions to address Question 1, comparison of feedback quality reported by students who received video and text feedback
2. A content analysis of instructor comments to address Question 2, differences in feedback content received by text and asynchronous video
3. Interviews with instructors and students to address Question 3, advantages and disadvantages perceived by students and instructors for asynchronous video feedback compared to text

Research context and participants

This research examined instructor feedback to teacher candidates enrolled in three one-credit educational technology courses at a large university in the United States during a 14-week semester. The first course (EdTech4SecEd), required for all secondary education majors, included 71 students enrolled in six sections. The remaining two courses were required for all elementary education majors. The first of these (EdTech4ECE), which focused on technology integration in Grades K-2, enrolled 72 students in three sections. The second (EdTech4EIEd), which focused on Grades 3–6, enrolled 86 students in three sections. EdTech4ECE and EdTech4EIEd were based on a model by which a cohort of students took the class together and participated in a 4-week practicum experience toward the end of the semester. EdTech4SecEd, because it served students from many different departments on campus, was not cohort based, nor was it taken in conjunction with a practicum experience. However, EdTech4SecEd students were grouped by similar content majors, allowing instruction to be more tailored to student interests and needs.

All of the course sections were predominantly online with some face-to-face instruction. Two sections met the first day of class to be introduced to their instructor, peers, and course procedures. Instruction for the following weeks was then provided asynchronously online with optional face-to-face labs where students could receive personalized instruction if needed. The other sections also had a face-to-face meeting on the first day of class but additionally required students to attend four-five additional face-to-face sessions. The additional face-to-face class time was used to introduce new projects, provide direct instruction, conduct student presentations, or utilize university-owned technology (e.g.,

iPads and science probes). All sections also provided students with optional face-to-face labs during the weeks when instruction was provided online.

All sections used Canvas as their learning management system. Canvas was selected for two primary reasons: grading efficiency and video-enabled communication tools. Students embedded their projects in their personal online portfolios and submitted the URLs to their instructors via Canvas. Using the Canvas *speed grader* system, instructors could efficiently grade students' work by displaying a student's portfolio page side-by-side with the assignment rubric (see Fig. 1), designating point scores by clicking descriptive cells within the rubric. Instructors also provided personalized feedback comments to students, typing directly into a discussion window below the rubric for students to view. The feedback discussion window also allowed instructors to easily embed video feedback comments using Canvas' in-system video recording program. Students could reply in the discussion window using the same modes of communication.

Feedback procedures

During the semester each student received personalized feedback on three portfolio-based assignments that were similar across all courses. For the first assignment EdTech4ECE and EdTech4SecEd students created a website using Google Site, and EdTech4EIEd students created a blog and modified the website they had created the previous semester. For the second assignment all students created an edited video that they described and embedded into a page on their website. For the culminating course project EdTech4ECE and EdTech4EIEd students created a visual presentation showing and describing their experiences integrating technology into a lesson during their 4-week practicum. Because the EdTech4SecEd students did not participate in a practicum experience, they created a similar presentation highlighting specific technologies that they had chosen to learn and describing how they might integrate those technologies into future lessons.

At the beginning of the semester, participating instructors were assigned to one of two groups. On the first two assignments, instructors in the first group provided students ($n = 99$)

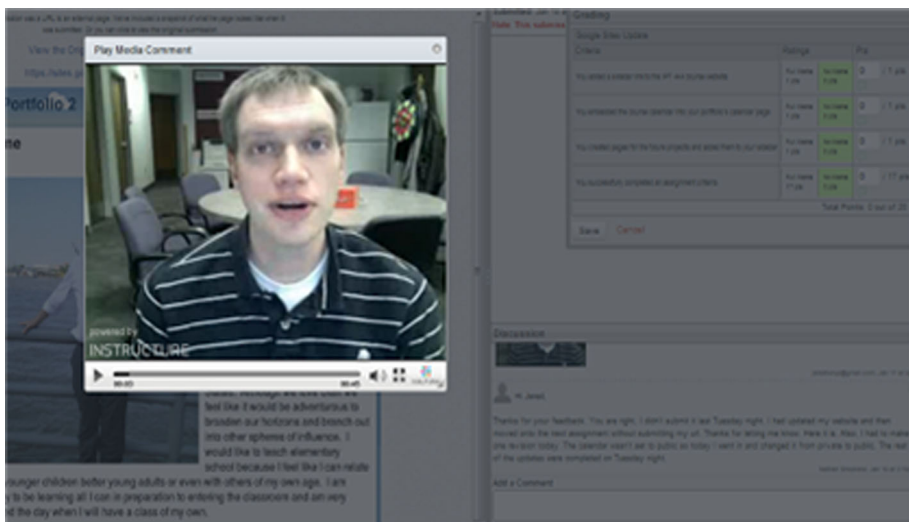


Fig. 1 Screenshot showing a sample video feedback comment

with personalized text feedback, and the instructors in the second group provided their students ($n = 130$) with personalized video feedback. On the culminating course projects, instructors who had earlier provided text feedback provided video feedback and vice versa. This ensured that each student would experience both video and text feedback during the course so they could compare the two modes of delivery. Instructors' preferences and previous experience using video feedback were considered when assigning them to the groups, allowing instructors to use the mode of feedback communication with which they would be most comfortable.

Clark (1994) explained that "the instructional method of feedback is part of most instructional programs... Yet the term feedback covers a multitude of very different instructional activities" (p. 8). Higgins et al. (2002) added that feedback can vary across instructors, depending on how instructors perceive its purpose. Accordingly, several precautions were taken to help ensure that the feedback was similar across instructors. First, all of the participating instructors met with a member of the research team who provided them with feedback guidelines: (a) address the student by name, (b) highlight positive aspects of the student's work, and (c) discuss areas that the student would need to correct in order to reach the mastery level explained in the assignment rubric. Instructors agreed to provide feedback within a week of the assignment due date to ensure that feedback would be timely. Additionally, instructors agreed to send an email providing general feedback to the entire class and reminding them to view their personalized feedback comments. In their first student feedback comment of the semester, instructors were asked to welcome their students into their class and invite students to contact the instructor if they ever needed help.

A member of the research team also spoke to the instructors regularly throughout the semester to answer questions and to encourage them to follow the provided feedback guidelines. Analysis of their feedback comments found a high majority of the comments complied with these guidelines (see the Feedback Comments Results in the findings section). All instructors based their feedback on common rubrics. Assignments were graded using a mastery approach that required students to meet all of the minimum technical criteria to pass an assignment. Students who failed to meet these technical criteria were required to revise and resubmit their project. These guidelines helped to provide enough consistency within a specific type of communication medium to compare modes of feedback.

Data collection and analysis

Data were collected twice during the semester (see Fig. 2). After feedback was provided on the first two assignments, researchers administered a mid-course survey that measured student perceptions of feedback quality and delivery. The survey items, which were obtained from Steelman et al. (2004) Feedback Environment Scale (FES), were rated on a 7-point response scale (1 = *strongly disagree* and 7 = *strongly agree*). Although the items were developed and validated in a corporate setting, our review found them to be applicable to our research setting with slight modifications: for example, changing the word *supervisor* to *teacher* and *job performance* to *course assignments* (see Table 1). Students' survey responses were combined for each of the two survey subscales: Feedback Quality and Feedback Delivery. Independent samples *t* tests were then conducted using students' aggregate scores for each of the subscales.

At the end of the semester, instructor and student interviews were conducted to examine students' and instructors' perceived advantages and disadvantages of text and video feedback. One instructor in the group initially doing text feedback failed to switch modes and provide video feedback on her students' culminating projects; as a result her course section was excluded from the end-of-the-semester data collection.

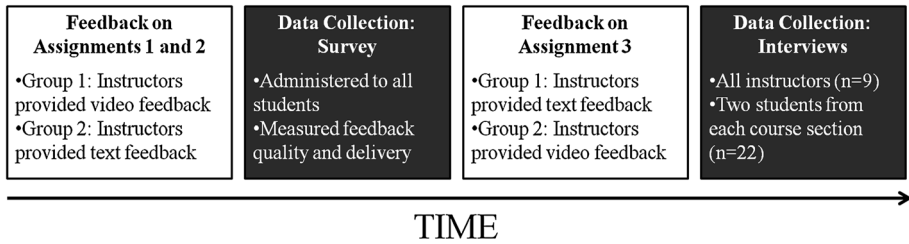


Fig. 2 Feedback and data collection procedures

Table 1 Items obtained and modified from the Feedback Environment Scale

Construct	Original survey item	Modified survey item
Feedback quality		
	My supervisor gives me useful feedback about my job performance	My <i>teacher</i> gives me useful feedback about my <i>course assignments</i>
	The performance feedback I receive from my supervisor is helpful	The feedback <i>on assignments</i> that I receive from my teacher is helpful
	I value the feedback I receive from my supervisor	I value the feedback I receive from my <i>teacher</i>
	The feedback I receive from my supervisor helps me do my job	The feedback I receive from my <i>teacher</i> helps me do <i>quality work</i>
	The performance information I receive from my supervisor is generally not very meaningful	The <i>feedback on assignments</i> I receive from my <i>teacher</i> is generally not very meaningful
Feedback delivery		
	My supervisor is supportive when giving me feedback about my job performance	My <i>teacher</i> is supportive when giving me feedback about my <i>course assignments</i>
	When my supervisor gives me performance feedback, he or she is considerate of my feelings	When my <i>teacher</i> gives me feedback <i>on my assignments</i> , he or she is considerate of my feelings
	My supervisor does not treat people very well when providing performance feedback	My <i>teacher</i> does not treat people very well when providing feedback <i>on assignments</i>
	My supervisor is tactful when giving me performance feedback	My teacher is tactful when giving me feedback <i>on assignments</i>

Researchers first administered the following open-ended survey item to students: “In this course you have received feedback from your instructor via both video and text. Which type of feedback did you prefer and why?” Two students were then chosen from each course section to participate in a 45–60-min interview, for a total of 22 interviews, focusing on the participants’ perceptions of advantages and disadvantages of video feedback. Specifically, 18 students were sampled to represent the range of opinions expressed in the end-of-course survey item: Similar proportions of those who preferred video, text, or neither were selected. The remaining four students were randomly selected from smaller sections in which few or no students completed the end-of-course survey item so that the experiences of students in those sections could still be represented. In total 30 students were invited to participate in an interview; the acceptance rate was 73 %. Additionally, at

the end of the semester half of the students from each section were randomly selected, and their feedback comments for the three main assignments were transcribed.

Nine instructors participated in a 45–60-min interview discussing the advantages and disadvantages of providing video feedback. One of the instructors left the institution following the semester, and we were unable to obtain his feedback comments for analysis. All student and instructor interviews were transcribed, and the transcriptions were sent to the interviewees, who reviewed them as member checks to verify their accuracy.

We analyzed the qualitative survey and interview data using elements of constant comparative coding methods (Glaser 1965). Initially two researchers open coded six interviews (three student and three instructor) and met following each interview to review the specific coded comments and discuss the themes they had identified. Any coding disagreements were discussed until the coders reached agreement. Afterward the two researchers coded the remaining 25 interviews separately; however, they met after coding every third interview to discuss emerging themes. Additionally, all four members of the research team met twice during the coding process to review the coding and discuss possible themes. The open-ended survey responses and actual feedback comments were coded using similar methods. Descriptive statistics were also obtained for each feedback comment regarding its length (word count) and timing (number of days after the due date).

Findings

Survey results

Of the 229 students enrolled in the course sections, 190 completed the midcourse survey. Of those students 10 reported not viewing any of the provided feedback comments and thus were excluded from the analysis, resulting in a useable response rate of 78.6 % (105 students in the experimental group and 75 in the control group). An independent sample *t* test found no significant difference in student perceptions of feedback quality (i.e., consistency, specificity, and usefulness) between those who received video feedback ($M = 5.88$, $SD = 0.87$) and those who received text feedback ($M = 5.74$, $SD = 0.84$); $t(178) = 1.06$, $p = 0.29$. Similarly, no significant difference was found in student perceptions of feedback delivery (i.e., respectful and supportive manner) when comparing those who received video feedback ($M = 6.11$, $SD = 0.80$) and those who received text ($M = 6.01$, $SD = 0.76$); $t(178) = 0.16$, $p = 0.88$ (see Table 2).

Although no significant differences were found on the mid-course survey in student perceptions of the quality and delivery of the feedback whether they had received it through video or text, descriptive statistics on an end-of-semester survey found that students strongly preferred feedback given through text. Of the 112 open-ended survey responses, 64.3 % preferred text, 14.3 % preferred video, and 21.4 % had no preference.

Table 2 Quantitative findings comparing feedback quality and delivery

	Video feedback		Text feedback		<i>t</i> test	<i>p</i> value
	M	SD	M	SD		
Feedback quality	5.88	0.87	5.74	0.84	1.06	0.29
Feedback delivery	6.11	0.80	6.01	0.76	0.16	0.88

Feedback comments results

On average feedback was provided 5.0 days after the assignment due date, with 80.0 % of the feedback provided within a week of the due date. Feedback provided after 7 days was predominantly from four sections, two of which were providing text feedback, and two of which were providing video feedback. Therefore, we concluded that late feedback timing was relatively consistent across video and text. The word count of video feedback was significantly higher ($p < .01$) than that of text for all three major assignments (see Fig. 3).

In analyzing the feedback comments from the instructors, we identified the categories indicated in Table 3.

Qualitative findings showed that 95.92 % of feedback comments included some form of praise and 42.62 % contained some form of correction. Instructors using video provided more general and specific praise and more general correction than instructors using text, and instructors using text provided more specific corrections than instructors using video. Instructors addressed students by name more often in video, with 97 % of video feedback starting with the student's name compared to 87 % of text feedback. On average 51.70 % of text and 65.82 % of video feedback included relationship-building comments. These friendly comments were more common in the first item of feedback (91.75 %) than in subsequent comments (41.71 %), possibly indicating that instructors' need to directly establish relationships with their students lessened as their relationships evolved during the semester. Relationship building and general and specific support were more prevalent in video comments than they were in text (see Fig. 4).

Interview results

Overall the analysis of the interviews indicated that students and instructors preferred the instructional methods used in text over those used in video. However, all participants identified advantages to both. Student and instructor perceptions of receiving and providing

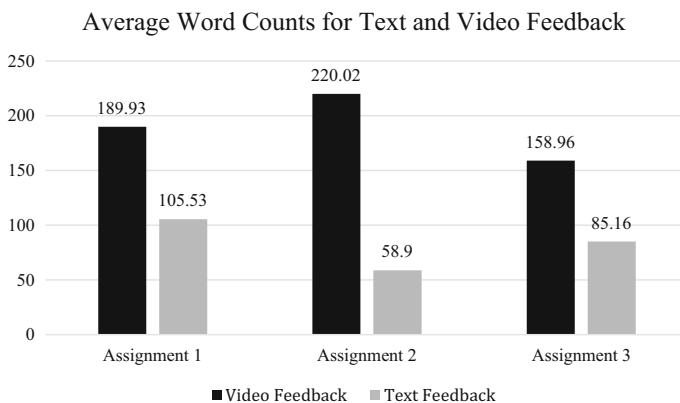


Fig. 3 Average word counts for text and video feedback by assignment. Independent samples *t* tests were conducted to compare text and video word counts for each assignment. Significant differences in word counts were found for Assignment 1 text ($M = 105.53$, $SD = 104.65$) and video ($M = 189.93$, $SD = 96.5$) feedback; $t(90) = 4.017$, $p < .01$; Assignment 2 text ($M = 58.9$, $SD = 42.35$) and video ($M = 220.02$, $SD = 155.01$) feedback; $t(92) = 6.317$, $p < .01$; and Assignment 3 text ($M = 85.16$, $SD = 58.01$) and video ($M = 158.96$, $SD = 83.58$) feedback; $t(109) = 5.475$, $p < .01$

Table 3 Coding categories with text and video examples

Coding category	Definition
Praise	
General	Comments that addressed the overall positive quality of the assignment Ex: <i>"I just took a look at your website and I thought it looked really good"</i>
Specific	Comments that addressed a particular positive aspect of the assignment Ex: <i>"Excellent use of music. I loved that the jump rope part used the same music beat for the duration of his jumping"</i>
Correction	
General	Suggestions to improve the project in ways that were not required or stated in the rubric Ex: <i>"I didn't take any points off for the layout, but in my opinion the three columns looks pretty busy"</i>
Specific	Comments that required students to resubmit the project following specific revisions Ex: <i>"The only thing I want you to fix is to have your YouTube video embedded onto your Tech Resources page"</i>
Support	
General	Comments notifying students that the instructor was available for assistance when needed Ex: <i>"Let me know if there's anything I can do to help you this semester"</i>
Specific	Comments providing students with directions and resources need to make specific revisions or to apply their learning in a specific way Ex: <i>"So all you do is go to your page, hit edit page, put the cursor where you want it to go"</i>
Relationship Building	Comments meant to build relationships with students (i.e. welcoming students into the course, identifying similarities, and self-disclosing personal information) Ex: <i>"I can see you're a fan of The Book Thief. That's one of my favorite books too"</i>

feedback via text will be discussed, followed by their perceptions of receiving and providing feedback via video. The reported themes were selected based on the number of participants who included them as well as the number of times they were mentioned. Less common themes were included if they were particularly insightful or provided an alternative explanation from the majority opinion. To protect anonymity, all participant names have been changed.

Student perceptions of text feedback

Students generally described three advantages of receiving feedback via text compared to video: easier access, more efficient viewing, and more concise and edited content

Easier to access text Of the 22 students interviewed, 14 noted that they could more easily access text feedback. For instance, one student stated, "I can read a [text] comment anywhere, but I can't listen to a video anywhere (like in the library) unless I have headphones." Similarly, a student named Jessica explained that she typically did not have headphones on campus and would have to wait "a few hours" until she got home to watch her feedback. Another student, Karli, found that even at home she had to use headphones while viewing video feedback so her roommates "wouldn't get distracted." She explained that instructors should recognize that viewing feedback requires more "than a laptop and internet." Students also seemed able to more easily access their text feedback on their mobile devices:

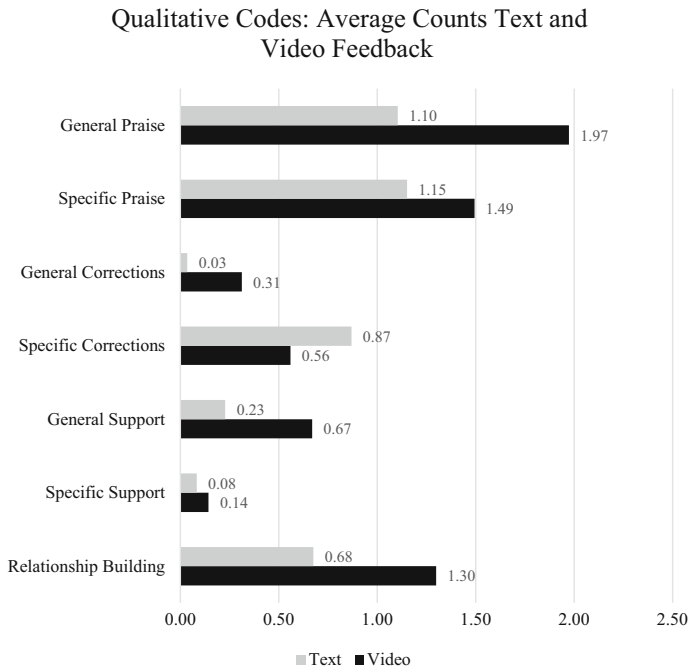


Fig. 4 Average frequency of each qualitative code for text and video feedback

I couldn't just watch [video feedback] right away if I was on campus or out somewhere... I have a smart phone, so I'm used to that instant gratification of just opening up the [text feedback] and reading it. But with video, I had to wait until I was somewhere that I could watch it.

Although most students stated that the inconvenience of video feedback did not impact their likelihood of accessing it, three students found that the “little bit more effort” required to access video feedback made it less likely that they would actually refer to their feedback if they saw that their grade was acceptable.

More efficient with text Almost all students ($n = 21$) mentioned that text feedback was more efficient to read because they could “just skim through it,” whereas with video students had “to wait for [their instructor] to say things at a conversational pace.” The disparity in time was compounded when students needed to use their feedback to make project revisions. Karli explained,

[Text feedback] is all there written out for you so you don't have to try and remember what [the instructor] said. You could just glance back at the text, and you could always reread something if it wasn't clear, whereas with video, you'd have to put a little more effort in going back and finding time-wise where it was at.

Three students also stated that they needed to take notes while they watched their video feedback, but with text the list of needed corrections “was already right there.” Perhaps Brittney summarized the efficiency of text best when she said, “You could just read through it whenever you wanted, as fast as you wanted, as carefully as you wanted.”

More concise in text Although conciseness was not a major theme in the survey responses, most interviewed students ($n = 20$) found that instructors were more concise in text. Rebecca explained, “I think [text feedback] is more concise and to the point. I like that. Blunt and to the point.” Similarly, another student believed that when providing feedback her instructor could “edit it a little bit,” but with video she was “getting the first draft.”

Instructor perceptions of text feedback

Similar to students, instructors tended to prefer text over video for its convenience and efficiency as well as their ability to edit their text feedback comments.

More convenient using text Seven of the eight instructors mentioned that text was more convenient because it provided them with more flexibility in when and where they worked on giving feedback to students. For instance, Kurt stated that he was “somewhat nomadic” in where he worked and preferred providing text feedback because he “could do it wherever.” In contrast, when he provided video feedback he had to “find a quiet place where [he] could be isolated... without background noise.” Similarly, Bill found that he could provide text feedback whenever he could find the time, for example “waiting to go into a meeting,” but when he provided video feedback he had to “go to some random room” and “lock [himself] away.” A couple of instructors seemed to find it easier to provide text feedback from their mobile devices. Robert commented, “I could type out text responses on the iPad. I could do it anywhere.” Gwen would have liked to have provided video feedback using her mobile device but found that her “tablet didn’t work that way.”

Five of the instructors, who were graduate students, found it difficult to find a quiet room where they could provide video feedback because they did not have on-campus offices. Among the seven instructors who mentioned that they attempted to provide video feedback from home, some difficulties were found. For instance, Bill found that if he wanted to provide feedback at home he had to do it late at night when his family was sleeping—“the one time during the day when it was quiet enough that [he] could do it.” Jake shared the opposite problem: “I couldn’t provide video feedback when I was home because I have a 15-month-old baby who is a really light sleeper and I didn’t want to wake her up.” Robert also explained that at times his home-internet connection was too slow to support video.

More efficient using text Instructors identified several factors that made providing text feedback more efficient than video. For instance, seven instructors explained that they could reuse common feedback comments by copying, pasting, and then modifying comments to fit specific students’ work. Chris’s experience was typical for most instructors:

I started to realize that “Hey, there are a lot of patterns of things that I am saying.” So I would just copy my explanations and keep them in a separate document. I would then just paste them over and make specific comments where I felt they were needed.

Similarly, Bill “used a template for the majority of the projects... because for the most part, 90 % of the class would always get the same thing wrong.” In contrast, all video feedback comments had to be entirely new. Bill mentioned that when he provided video feedback he would have to “keep saying the same thing,” and David found the process of providing similar video feedback to be “monotonous.” In addition, Jake found that video feedback was less efficient when students resubmitted assignments:

“One thing that’s kind of frustrating for me is if I gave video feedback and they resubmitted an assignment, I’d have to go and watch my comment over to remember what [each student] needed to fix. With text I could easily scan it.”

Five of the instructors stated that they encountered technological problems when providing video feedback using the Canvas’ in-system video feedback feature, which lessened its efficiency. Three of these instructors were able to work around the issue by switching internet browsers and/or computers. However, two instructors found that the technological problems were too difficult to resolve and used video recording systems outside of Canvas: one used webcam recording features in YouTube and the other used iMovie to record the video, which they linked or uploaded to Canvas for students to view.

The inability to easily edit video caused seven instructors to rerecord their feedback comments when they made errors the first time. Accordingly, they reduced the number of comments that they rerecorded and developed a higher tolerance for minor errors. Overall, the inefficient nature of video feedback was viewed as a major drawback, and Bill questioned the scalability of video feedback in larger classes.

Although most instructors found text feedback more efficient to provide than video, there were some exceptions. Two instructors found providing text feedback less efficient because of their poor typing and writing skills. One of these instructors was especially self-conscious about his writing ability because he was teaching English majors. He would “reread [his text feedback comments] three times,” but even then he would find that he “still misspelled a word or still left out a word or used the wrong word.” Additionally, some instructors found using video more efficient when providing complex corrective feedback. Jake explained that when a student “needed to fix a lot of things,” he preferred giving video feedback over text because “it took 2 min” compared to “five to 10 min giving text feedback.”

Easier to edit text Four instructors mentioned that they tended to prefer text feedback because it enabled them to have more control in what they said. Gwen explained,

Text you can edit, so you can type it up, re-read it, and then add things and remove things that you feel like aren’t coming across the way that you want them to be. You can look back at the rubric and say “I didn’t address that, I should address that” and then edit your comment again. With the video... you have to re-record it. You can’t just continue your recording. That frustrates me.

Because he could edit, Robert found that his text feedback was “more polished” and “targeted” because he could “really spell it out” for students. For instance, instructors could bullet point their text feedback or provide external links to additional resources as ways to make their feedback more targeted, concise, and understandable. Bill summarized, “With text I could write it, think about it, make it concise so it was understandable. Video, I had a lot less control over whether [the students] got what I was saying.”

Student perceptions of video feedback

Although students generally preferred text feedback, they identified several advantages of video feedback over text.

More elaborate in video Edith explained that while text feedback tended to be “more brief,” her “video [feedback] felt like a conversation—more elaborate.” Karli also found

that her video feedback was “a little bit fuller and a little bit longer.” Brittney explained that because her instructor could speak rather than write, he could be more detailed in his feedback “because it’s all stream of consciousness so he could add things in there that he wouldn’t necessarily have in writing if he had time to revise.”

More supportive in video Of the 22 students interviewed, 17 stated that their instructors were able to provide more affective support in video than they could in text. Hanna stated, “I think that video was supportive just because it felt more personal and friendly and not so matter of fact. I guess it is a different kind of support—emotional support.” Similarly, Edith found that because her instructor was able to elaborate more easily in video, he could “give more praise.” Visual and vocal cues in video seemed to help in conveying the praise that instructors intended. For instance, Natalie recalled that at the beginning of the semester she did not feel “very confident in [her] technology skills,” but her instructor was able to increase her confidence using video feedback: “Getting the video feedback and seeing that I really was doing a good job, his mannerisms conveyed that fact, helped me to see that I was maybe better at it than I thought that I was.” Lisa explained that she knew that in video feedback her instructor was “genuine when he told [her] that he liked something” because she “could see facial expressions and feelings.” Natalie preferred receiving corrections via video because in her experience “professors don’t really know the art of giving criticism in a nice way” using text, but her instructor’s “manner of speaking” and “facial expressions” in video helped her know that the critiques were meant for her benefit.

But just as the fidelity of video appeared to amplify and authenticate praise and to soften criticism for some students, one student, Angie, found that the video made it difficult for instructors to hide their disappointment:

I think that it has a lot to do with your facial expressions and social cues. If you really hated my movie projects or you’re really disappointed, it’s hard to hide that on your face, especially when you’re not taking social cues from me... [Face to face] if I start crying, then you’re going to start softening up and change your face a little bit. But in a video, that won’t happen.

More understandable in video Of the 22 students, 16 found that the visual and vocal cues in video reduced likelihood of misunderstandings. Natalie shared, “With the video [feedback] I could see the mannerisms and the voice inflections, and that helped me to know better what I needed to fix.” Dallin stated that “text could be misinterpreted if you had criticism to give, because sometimes people don’t understand what kind of tone you’re saying things in.” Three students also felt that video feedback was better than text “in explaining difficult concepts or complicated processes.” Two instructors provided video feedback using screencasting tools that allowed them to combine webcam video of themselves talking with recordings of their computer screen. Students seemed especially satisfied with this approach because it was “nice for seeing what it was he was looking for... rather than just reading it and trying to figure it out.” Karli felt that the visual content contained in her screencast feedback was “a huge advantage” over text. In fact, all interviewed students commented that screencast feedback would have been more valuable than feedback that only used a webcam. However, Margie explained that even though she could not see her instructor’s screen, she “could just tell where he was working [on her assignment], and he was scrolling and kind of pointing to things that he was looking at my webpage while he was talking.” Thus teachers may find it possible to provide useful context in video feedback even when they are not using screencasting tools.

Instructor perceptions of video

Similar to students, instructors found video feedback more conversational, supportive, and understandable than text feedback.

More conversational in video All eight of the instructors believed that they were more conversational and detailed when they communicated in video than when they used text. For instance, Robert recalled that when he provided video feedback, he “was more conversational and talked a lot more to [his] students.” Kurt believed that his ability to “flesh out [his] ideas” in video probably made the feedback more meaningful to students. David believed that video feedback allowed his students “to get a lot more understanding of the concept” because he could “explain concepts in more depth.” Gwen found that she could provide even more details using screencast recordings:

I used the [screencast] to navigate to what they turned into me, then I gave more detailed feedback... if they did a website or Prezi and I was navigating it. I would start going through their Prezi, and I would hit a point and say “Oh, I really like this for this reason” click, click, click, “Oh notice how this link is dead here”... I wouldn’t have been as specific [in text] because I couldn’t have pointed to it, and it would have taken so long to explain exactly. I think the video was better in those instances.

Matt perhaps summarized this affordance best when he said, “I could describe it better because I could just say it.”

More supportive in video The additional details that instructors could provide via video combined with the added visual and vocal cues appeared to provide students with more affective support compared to text. Matt remembered that his text feedback was “a little more business,” whereas his video contained more “non-corrective things” and “more encouragement.” Robert also questioned if students could sense “how much he cared about them” when he provided text feedback; he believed that the visual and vocal cues in video let his students know that he “wasn’t just trying to be mean” when he provided corrective feedback. Similarly, Jake found that when he was providing corrective feedback the communication cues in video helped him to “let students down easy” when they did poorly on an assignment.

More understandable in video Seven of the instructors believed that the added communication cues and details available in video made them “more confident that students could understand what it was that [they were] trying to say.” Jake felt that his tone of voice in video feedback helped him “to make sure that there weren’t any misconceptions with what [he] was trying to say.” Similarly, Gwen found that she could better convey the right emotion using video, whereas with text feedback, she found that she had to “go back and massage the text to make sure [she was] conveying the right emotion” and not being “too terse.”

Discussion

This section of the article begins with the contributions this research makes to our understanding of how various modes of instructor feedback on project-based assignments are received and applied by their students. The limitations of this study and recommendations for future research follow.

Contributions to current research

Although independent *t* tests found no significant differences in student perceptions of feedback quality and delivery between video and text mediums, the qualitative analysis of student and instructor interviews identified several advantages and disadvantages to the use of video feedback. For instance, students and instructors reported that feedback tended to be more conversational, supportive, and fully developed when communication was by video than would be possible or practical with text. These perceptions were supported by content analysis of feedback comments. We found that video comments had significantly ($p < .01$) higher word counts than text comments. Video feedback also contained more praise, support, and relationship building comments than text feedback. Similar to Wolsey's (2008) claim that non-verbal cues can provide context to instructor feedback, students in this research found that the added communication cues in video prevented misinterpretations. One instructor also found that screencasts were especially helpful for providing feedback on student websites and visual presentations, supporting previous recommendations that instructors provide rich context descriptions on student work (Rodway-Dyer et al. 2011; Thompson and Lee 2012).

However, students and instructors in our research agreed that feedback was more convenient and efficient in text. This finding supports Rodway-Dyer et al.'s (2011) finding that audio feedback is less efficient for students to listen to, but contradicts previous findings that audio and video feedback saved instructors time (Kim 2004; Lunt and Curran 2010; Silva 2012; Wood et al. 2011). For instance, Lunt and Curran (2010) observed the time that it took instructors to provide similar feedback on a single student assignment and found video feedback more efficient because "we speak quicker than we write" (p. 762). Although instructors can speak more quickly than they write, instructors in our research explained that feedback required them to be in a quiet location, which at times took time to secure. Furthermore, Harper et al.'s (2012) research as well as ours found that the inability to edit video comments caused teachers to re-record entire feedback sequences when errors were made. Lastly, instructors would commonly reuse and modify text comments for multiple students, whereas video feedback required each comment to be completely original for each student. As a result video feedback may be more efficient when providing feedback to an individual student but loses efficiency as the number of students increases.

Despite the affective benefits of providing feedback using video, most students and instructors preferred the efficient nature of text, somewhat contradicting previous research indicating that students desire more verbal feedback (National Union of Students 2008). This preference may have been in part due to instructors' tendency to provide more specific corrections in text feedback. This finding must also be examined within the context of these courses. The courses in the study used relatively objective scoring rubrics, which could have reduced the need for unique and elaborated video feedback. It is possible that student and instructor preferences would have been different if more personalized, nuanced, and/or subjective feedback had been needed. Also the courses were worth only 1 hour of credit and required little instructional time, which may have increased students' and instructors' desires to give and receive feedback efficiently.

Implications for practice

As shown in this research study, text and video feedback both have advantages; the challenge appears to be, as one student put it, finding how "to combine the specificity of the text responses with the emotional connection of the video responses." Selecting a

method or effectively combining the best of both methods for a specific course would require consideration of the characteristics and needs of specific assignments or students. For example, Draft and Lengel (1986) in their theory on media richness explained that information alone (text) could resolve uncertainty when issues are clearly identified and defined, but that information rich in communication cues (e.g., video) would be necessary when “issues are fuzzy and ill-defined” (p. 555). Similarly instructors and students in our study preferred text feedback when the needed corrections were minor and straightforward, but found video feedback more useful for complex feedback or for multiple corrective comments to a student.

Instructors should also take into consideration learner attributes and preferences, which, as Clark (1994) believed, influence instructors’ media decisions. For example, some students react more positively to video feedback than others. One student in our research lacked confidence in her technological abilities and appreciated the facial expressions in video feedback because they told her that the instructor genuinely liked her work. Similarly, instructors believed that video feedback was helpful when they needed to show their students that they cared about them and wanted them to be successful. Thus video feedback can be helpful when students require affective support, such as at the beginning of the semester or in fully online courses in which students are more likely to feel isolated (Palloff and Pratt 2007). Instructors may also consider providing generalized video feedback to the whole class. However, Gallien and Oomen-Early (2008) found that online students who received only collective feedback were less satisfied and performed at lower levels than students who received personalized feedback comments.

Limitations and suggestions for future research

Although these findings may prove insightful to policy makers, practitioners, and researchers (Merriam 1998), they should be understood within the context of this research (Merriam 1998; Stake 2010). Being teacher candidates, the large majority of our research participants were female; this may have impacted the results, as previous research has found that female students tend to prefer receiving feedback in individual meetings with instructors (National Union of Students 2008). Also our research examined video feedback in blended courses: The face-to-face class sessions may have influenced instructor-student relationships and thus the way students perceived the feedback that they received and the effectiveness of its medium. Another aspect of course context is that instructors followed clear rubrics that allowed for more objective feedback on the technical criteria of student work.

Thus future research should examine the use of asynchronous video feedback with more diverse student populations, in a variety of contexts (including fully online courses), and in content areas such as science and art that require more instructor subjectivity on extended and complex projects. In some settings audio or screencasting feedback may prove more advantageous. However, limitations to the use of video feedback are likely regardless of the context, and research should also seek to better understand the advantages of text feedback in these settings.

Limitations to this study should be addressed by future research. We were unable to directly observe instructors as they provided feedback, and these types of instructor observations might prove insightful. For instance, direct observations could verify participants’ perceptions that video feedback required more time to provide than text feedback. Themes for this study were identified across several instructors and students; future research might conduct descriptive case studies that would be more helpful in

“understanding the particular” (Merriam 1998, p. 208) and in identifying effective strategies for using video feedback to support learning. The research questions in this study were also relatively broad. Although this approach proved insightful, more focused research questions on particular aspects of feedback using a single mode of communication would provide additional insights.

Conclusions

Enrollment is increasing in courses where instructors’ physical presence is limited or eliminated. Traditionally the price of the online convenience and flexibility has been lower levels of specificity and richness in communication. Internet and Web 2.0 technologies are now allowing instructors to dramatically increase the levels of feedback to students, thus regaining some communication benefits. However, as Clark (1994) has warned us, our media-enabled pedagogical strategies are much more important than the media themselves. In this study, we found that students and instructors identified strengths and weaknesses to both video and text feedback, leading to insights about how choice of media can adapt feedback for individual student characteristics, course assignments, and instructor purposes. For example, participants reported text feedback on student work to be more efficient and professional and video feedback to be more supportive and conversational. The former perception was supported by direct interview comments, the latter by content analysis of instructors’ feedback comments.

As Draft and Lengel (1986) described in their theory on media richness, the media used for giving feedback to students will influence how rich the communication is—and different levels of communication richness are needed for various kinds of student needs. Richer and more nuanced communication is not always the best course of action. Ultimately a teacher’s expertise should be the deciding factor, as teachers must understand what their students’ needs are and provide feedback in a manner that best meets them. Therein lies both the challenge and the imperative for the modern online instructor—to understand what media options are available and when to use them. This study hopefully provides some initial light for instructors in this important role.

Acknowledgements The authors gratefully acknowledge the feedback of Dr. Charles R. Graham on the research design and earlier drafts of this article.

References

- Anderson, T. (2009). A rose by any other name: Still distance education—a response to D. R. Garrison : Implications of online and blended learning for the conceptual development and practice of distance education. *Journal of Distance Education*, 23(3), 111–116.
- Borup, J., Graham, C. R., & Velasquez, A. (2011). The use of asynchronous video communication to improve instructor immediacy and social presence in a blended learning environment. In A. Kitchenham (Ed.), *Blended learning across disciplines: Models for implementation* (pp. 38–57). Hershey, PA: IGI Global.
- Borup, J., West, R. E., & Graham, C. R. (2012). Improving online social presence through asynchronous video. *The Internet and Higher Education*, 15(3), 195–203. doi:10.1016/j.iheduc.2011.11.001.
- Borup, J., West, R. E., & Graham, C. R. (2013). The influence of asynchronous video communication on learner social presence: A narrative analysis of four cases. *Distance Education*, 34(1), 48–63.
- Clark, R. E. (1983). Reconsidering research on learning from media. *Review of Educational Research*, 53(4), 445–459.

- Clark, R. E. (1994). Media and method. *Educational Technology Research and Development*, 42(3), 7–10.
- Draft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management Science*, 32(5), 554–571.
- Eraut, M. (2006). Feedback. *Learning in Health and Social Care*, 5, 111–118. doi:10.1111/j.1473-6861.2006.00129.x.
- Evans, C. (2013). Making sense of assessment feedback in higher education. *Review of Educational Research*, 83(1), 70–120. doi:10.3102/0034654312474350.
- Gallien, T., & Oomen-Early, J. (2008). Personalized versus collective instructor feedback in the online courseroom: Does type of feedback affect student satisfaction, academic performance and perceived connectedness with the instructor? *International Journal on E-Learning*, 7(3), 463–476.
- Garrison, D. R. (2003). Self-directed learning and distance education. In M. G. Moore & W. G. Anderson (Eds.), *Handbook of distance education* (1st ed., pp. 161–168). Mahwah, NJ: Lawrence Erlbaum Associates.
- Garrison, R. (2009). Implications of online learning for the conceptual development and practice of distance education. *Journal of Distance Education*, 23(2), 93–104.
- Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2–3), 87–105. doi:10.1016/S1096-7516(00)00016-6.
- Getzlaf, B., Perry, B., Toffner, G., Lamarche, K., & Edwards, M. (2009). Effective instructor feedback: Perceptions of online graduate students. *The Journal of Educators Online*, 6(2), 1–22.
- Gibbons, A. S., & Rogers, P. C. (2009). The architecture of instructional theory. In C. M. Reigeluth & A. Carr-Chellman (Eds.), *Instructional-design theories and models* (Vol. III, pp. 305–326). Mahwah, NJ: Lawrence Erlbaum Associates.
- Gikandi, J. W., Morrow, D., & Davis, N. E. (2011). Online formative assessment in higher education: A review of the literature. *Computers & Education*, 57(4), 2333–2351. doi:10.1016/j.compedu.2011.06.004
- Gilbert, L., Whitelock, D., & Gale, V. (2011). *Synthesis report on assessment and feedback with technology enhancement*. Southampton, UK: Electronics and Computer Science EPrints. <http://eprints.soton.ac.uk/273221/>
- Glaser, B. G. (1965). The constant comparative method of qualitative analysis. *Social Problems*, 12(4), 436–445. <http://www.jstor.org/stable/798843>
- Graham, C. R. (2006). Blended learning systems: Definition, current trends, and future directions. In C. J. Bonk & C. R. Graham (Eds.), *Handbook of blended learning: Global perspectives, local designs* (pp. 3–21). San Francisco, CA: Pfeiffer Publishing.
- Graham, C. R., Henrie, C. R., & Gibbons, A. S. (2014). Developing models and theory for blended learning research. In A. G. Picciano, C. D. Dziuban, & C. R. Graham (Eds.), *Blended learning: Research perspectives* (Vol. 2, pp. 13–33). New York, NY: Taylor & Francis.
- Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, 11(3), 255–274. doi:10.3102/01623737011003255.
- Griffiths, M. E., & Graham, C. R. (2009a). Using asynchronous video in online classes: Results from a pilot study. *International Journal of Instructional Technology and Distance Learning*, 6(3), 65–76.
- Griffiths, M. E., & Graham, C. R. (2009b). The potential of asynchronous video in online education. *Distance Learning*, 6(2), 13–23.
- Griffiths, M., & Graham, C. R. (2010). Using asynchronous video to achieve instructor immediacy and closeness in online classes: Experiences from three cases. *International Journal on e-Learning*, 9(3), 325–340.
- Harper, F., Green, H., & Fernandez-Toro, M. (2012). Evaluating the integration of Jing screencasts in feedback on written assignments. *2012 15th International Conference on Interactive Collaborative Learning (ICL)* (pp. 1–7). doi:10.1109/ICL.2012.6402092.
- Hew, K. F., & Cheung, W. S. (2012). Audio-based versus text-based asynchronous online discussion: Two case studies. *Instructional Science*, 41(2), 365–380. doi:10.1007/s11251-012-9232-7.
- Higgins, R., Hartley, P., & Skelton, A. (2002). The conscientious consumer: Reconsidering the role of assessment feedback in student learning. *Studies in Higher Education*, 27(1), 53–64. doi:10.1080/0307507012009936.
- Hynson, Y. T. A. (2012). An innovative alternative to providing writing feedback on students' essays. *Teaching English with Technology*, 12(1), 53–57.
- Ice, P., Curtis, R., Phillips, P., & Wells, J. (2007). Using asynchronous audio feedback to enhance teaching presence and students' sense of community. *Journal of Asynchronous Learning Networks*, 11(2), 3–25.

- Kim, L. (2004). Online technologies for teaching writing: Students react to teacher response in voice and written modalities. *Research in the Teaching of English*, 38(3), 304–337.
- Lizzio, A., & Wilson, K. (2008). Feedback on assessment: Students' perceptions of quality and effectiveness. *Assessment & Evaluation in Higher Education*, 33(3), 263–275. doi:10.1080/02602930701292548.
- Lunt, T., & Curran, J. (2010). "Are you listening please?" The advantages of electronic audio feedback compared to written feedback. *Assessment & Evaluation in Higher Education*, 35(7), 759–769. doi:10.1080/02602930902977772.
- Merriam, S. B. (1998). *Qualitative research and case study applications in education: Revised and expanded from case study research in education*. San Francisco, CA: Jossey-Bass.
- Moore, M. G. (1993). Three types of interaction. In K. Harry, M. John, & D. Keegan (Eds.), *Distance education: New perspectives* (pp. 19–24). New York, NY: Routledge.
- Moore, N. S., & Filling, M. L. (2012). iFeedback: Using video technology for improving student writing. *Journal of College Literacy & Learning*, 38, 3–14.
- Morris, L. V., & Finnegan, C. L. (2009). Best practices in predicting and encouraging student persistence and achievement online. *Journal of College Student Retention: Research, Theory and Practice*, 10(1), 55–64. doi:10.2190/CS.10.1.e.
- Mutch, A. (2003). Exploring the practice of feedback to students. *Active Learning in Higher Education*, 4(1), 24–38. doi:10.1177/1469787403004001003.
- National Union of Students. (2008). *NUS student experience report*. London, UK: GfK Financial. http://www.nus.org.uk/PageFiles/4017/NUS_StudentExperienceReport.pdf
- Nillas, L. A. (2008). Challenges in preparing preservice teachers to teach using technology. In K. McFerrin (Ed.), *Society for information technology & teacher education international conference 2008* (pp. 4256–4261). Chesapeake, VA: AACE. <http://www.editlib.org/p/27924>
- Norton, P., & Wiburg, K. M. (2003). *Teaching with technology: Designing opportunities to learn* (2nd ed.). Toronto, CA: Thomson Wadsworth.
- Oncu, S., & Cakir, H. (2011). Research in online learning environments: Priorities and methodologies. *Computers & Education*, 57(1), 1098–1108. doi:10.1016/j.compedu.2010.12.009.
- Parsad, B., & Lewis, L. (2009). *Distance education at degree-granting postsecondary institutions: 2006–07. World Wide Web Internet and Web Information Systems*. <http://nces.ed.gov/pubs2009/2009044.pdf>
- 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.
- Putnam, R. T., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational Research*, 29(1), 4–15.
- Rodway-Dyer, S., Knight, J., & Dunne, E. (2011). A case study on audio feedback with geography undergraduates. *Journal of Geography in Higher Education*, 35(2), 217–231. doi:10.1080/03098265.2010.524197.
- Silva, M. L. (2012). Camtasia in the classroom: Student attitudes and preferences for video commentary or Microsoft Word comments during the revision process. *Computers and Composition*, 29(1), 1–22. doi:10.1016/j.compcom.2011.12.001.
- Stake, R. E. (2010). *Qualitative research: Studying how things work*. New York, NY: Guilford Press.
- Stelman, L. A., Levy, P. E., & Snell, A. F. (2004). The feedback environment scale: Construct definition, measurement, and validation. *Educational and Psychological Measurement*, 64(1), 165–184. doi:10.1177/0013164403258440.
- Thompson, R., & Lee, M. J. (2012). Talking with students through screencasting: Experimentations with video feedback to improve student learning. *The Journal of Interactive Technology & Pedagogy*, 1. <http://jitp.commons.gc.cuny.edu/talking-with-students-through-screencasting-experimentations-with-video-feedback-to-improve-student-learning/>
- William, D. (2011). What is assessment for learning? *Studies in Educational Evaluation*, 37(1), 3–14. doi:10.1016/j.stueduc.2011.03.001.
- Wolsey, T. D. (2008). Efficacy of instructor feedback on written work in an online program. *International Journal on E-Learning*, 7(2), 311–329.
- Wood, K. A., Moskovitz, C., & Valiga, T. M. (2011). Audio feedback for student writing in online nursing courses: Exploring student and instructor reactions. *The Journal of Nursing Education*, 50(9), 540–543. doi:10.3928/01484834-20110616-04.

Jered Borup is an assistant professor of learning technologies at George Mason University. His research currently focuses on online and blended learning communities and interactions in K-12 and higher education settings. His current research publications can be found online at: <https://sites.google.com/site/jeredborup/>.

Richard E. West is an assistant professor in the Instructional Psychology and Technology department at Brigham Young University, where he researches the design, support, and evaluation of environments that foster collaborative innovation, as well as online learning communities, K-16 technology integration, and the use of open badges for supporting teaching and credentialing. His research is available through his profiles on Mendeley, Academia.edu, Google Scholar, and his personal website (<http://richardwest.com>).

Rebecca A. Thomas is a graduate student in the Instructional Psychology and Technology department at Brigham Young University. Her current research and evaluation projects focus on online and blended learning, project-based learning, and alternative dissertation formats.