
A Video Is Worth a Gagillion Words

Enhancing Student Skills and Self-Efficacy Through a Video-Based Peer-Review Assignment

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Abstract: In order to elucidate how to improve active learning and collaborative engagement in large and online course contexts, the present exploratory research employed a mixed-method study examining a video-based peer-review assignment designed to help students advance their own video-creation skills and self-efficacy. Student participants ($N = 255$) responded positively to the platform and feedback process but were critical of classmates' engagement and own video skills. Video production self-efficacy increased from pre- to postsurvey, especially for individuals with less previous video production experience. Further, students' intent to use video persuasively increased from pre- to postsurvey for those with less previous video-sharing experience. Overall, results suggest that education technology developers and practitioners could use similar approaches to facilitate active learning, but researchers should continue exploring the implications of such video-based assignments.

Active learning strategies—such as collaborative group work—are highly effective at facilitating student learning (Ertmer et al., 2007). However, large class sizes impede the potential for effectively incorporating active learning into course design by reducing the opportunities for meaningful interactions between students and with instructors (Cuseo, 2007). This is especially problematic for online courses and is perhaps one reason that the quality of online education is questioned (Gaskell & Mills, 2014). While many education tools facilitate interactions online centered around course material, using video for active learning is promising but impeded by uneven video literacy. Ultimately, such tools are understudied.

This research examines the potential for student-created videos to facilitate collaborative engagement and active learning in a large-course context. Students are often assumed to be media literate enough to navigate the technologies of video production and sharing—a digital camera and YouTube—but students are often less technically adept than expected (Lehman, DuFrene, & Lehman, 2010; Watson & Pecchioni, 2011). However, just as with traditional written-word literacy, students can be guided in their development of these skills in ways that will enhance their educational pursuits across many domains.

To this end, the present exploratory study focuses on the specific question of how to guide a student-created video assignment in a large class to help students advance their own video-creation skills—and their self-efficacy related to those skills—as a means of enhancing their active learning in the course through engagement with their peers. The mixed-method study presented here is based on a collaboration between university and industry researchers, using a novel video-feedback platform in its prerelease stage. Findings are applicable across a wide range of education and training contexts and provide insights relevant to researchers, education technology developers, and practitioners.

Video-Based Peer Review: An Opportunity and Challenge

This research examines how video can be used to increase student engagement while also enhancing learning and success in the medium itself. Specifically, peer review (or peer assessment)—the process of producing and receiving feedback with fellow students (Nicol, Thomson, & Breslin, 2014)—facilitates active learning through collaboration and also increases personal motivation, content understanding, and, ultimately, student learning (Ballantyne, Hughes, & Mylonas, 2002; Vickerman, 2009). The cognitive process of providing constructive feedback to peers—as well as parsing the feedback from peers—is more involved than working in isolation, and thus helps students improve the quality of their own work, especially when given the opportunity for revision (Ertmer et al. 2007; Liu, Lin, Chiu, & Yuan, 2001).

Video-based peer review can harness the advantages of this type of assignment while facilitating online interactions that address challenges posed by large and/or online classes. However, such technology-based projects may require a significant investment of student time and effort, as these projects push students to engage in self-directed activities that differ from the traditional types of learning to which they are accustomed (Atkinson, 1994). Students' prior experiences, skills, and level of comfort with technologies can serve as challenges to this type of assignment (Groff & Mouza, 2008). Further, students may feel underqualified to provide consistent and fair feedback to their peers, especially when they are unfamiliar with the technologies being used (Ertmer et al., 2007). Nonetheless, students are capable of constructing the understanding and skills required to effectively engage in assignments based on novel technologies if they are sufficiently supported through the learning experience (Groff & Mouza, 2008).

Video-Review Platform for Peer Review

The present research guided students through a video-based peer-review assignment that was designed to minimize student anxiety and maximize engagement. This multistep assignment required students to engage in an iterative process of drafting, providing and receiving feedback within a small group, and revising their videos based on that feedback. The assignment structure is consistent with the general structure of a peer-reviewed written essay assignment. However, while tools used to facilitate text-based feedback are commonplace (e.g., in-line commenting), the analogous tools for video editing are not.

A primary contribution of the present research is thus to test the effectiveness of a novel, video-review platform designed to efficiently facilitate peer review. This prerelease product, developed by the research team's industry partner, allows comments on videos to be linked to specific time points of the video. All group members are able to add to the threaded discussions initiated at these time points. This structures the feedback temporally and topically, which we expected would make the process of both providing and parsing feedback more efficient and effective. We predicted that many students would benefit from and thus appreciate this approach, but we also knew that some students might dislike it for various reasons (e.g., novelty, frustration, etc.). In order to better understand the students' perspectives, we examined the following research question: *RQ 1: What do students like and dislike about a video-based peer-review assignment with a video-review platform that facilitates threaded discussions?*

In addition to their general perceptions, we are interested in how such an assignment influences students' competence beliefs. To the extent that expectancies focus on future behavior, competence or ability beliefs (i.e., perception about own level of skill or competence regarding a particular task) focus more

on present ability (Durik, Vida, & Eccles, 2006; Wigfield & Eccles, 2000). Several researchers have established a strong relationship between competence beliefs and performance such that when students are confident in their abilities, they tend to perform better (Wigfield & Eccles, 1992; Wigfield, 1994). Further, competence beliefs are closely related to self-efficacy—an individual's confidence in her ability to meet goals and overcome challenges—which is an essential element of the learning process (Bandura, 1977). This confidence arises in part from previous domain-specific experiences and accomplishments and in turn influences goals chosen and determination to attain those goals. Self-efficacy is thus a powerful predictor of future behavior across different domains (Bandura, 1986). Providing students with opportunity to increase self-efficacy in the domain of interest (e.g., video production) should, in turn, encourage them to pursue higher goals for their use of the technology toward their learning. Because the video-based peer-review assignment allowed students the opportunity to gain experience with a novel behavior, we expected that the assignment would contribute positively to students' video-production self-efficacy. *H1: Participation in a video-based peer-review assignment leads to increases in video-production self-efficacy.*

Bandura (1977) posits that past performance and mastery experiences with a specific behavior lead to a strong sense of self-efficacy for that behavior. People with less past performance have lower self-efficacy but also a greater potential for gains. For a video-making class assignment requiring minimal expertise, students with little previous experience would be expected to start out with lower self-efficacy but then display greater gains after the assignment. Thus, we hypothesize the following. *H2: Increases in video-production self-efficacy following a video-based peer-review assignment are greater for individuals with less previous experience in video production.*

In addition to self-efficacy, we are interested in whether such an assignment influences students' persuasive use of video, an important skill for media students specifically and communicators in the digital age more broadly. Given the hypothesized increase in self-efficacy for students with low previous video-production experience, we would expect an increase in persuasive use of video for students who have low previous video-sharing experience in their personal lives. Thus, we hypothesize the following. *H3: Increases in persuasive uses of video following a video-based peer-review assignment are greater for individuals with less previous personal video-sharing experience.*

Methods

This institutional review board (IRB)–approved study was conducted in an undergraduate introductory media course with in-person lectures twice per week at a Midwestern American university. Participation was optional. Only those who provided consent were included in the analysis. The course instructor, a coauthor, did not have access to the data until after final grades were submitted. Of the 355 enrolled students, 166 men, 88 women, and one nonbinary student consented to participate (Note: only two survey participants chose not to consent).

This study focused on a class project for which students read a research article on culture differences related to media use and then interviewed another student from a different national or cultural background on the article's topic. Students presented their findings in five-minute videos. Using the industry partner's video-review platform (see Figure 1), students viewed each other's videos and left feedback at specific moments for at least five peers' videos within randomly assigned groups of 9–10 students. After providing and receiving feedback, students revised their assignments. Pre- and postsurveys were distributed immediately before and after the assignment start and finish, respectively.

This class project had been assigned to students in four previous semesters but with a written essay as the output. By transitioning the assignment to a video essay, we retained the original learning goals (i.e., encouraging intercultural communication and understanding between students) while adding a media-literacy component to the assignment.

Note that students were randomly assigned an instruction (homogenous within groups) to self-present in their videos either (a) formally, (b) semiformally, or (c) casually. This manipulation did not statistically influence any dependent variables examined at present and is included only as a control variable.

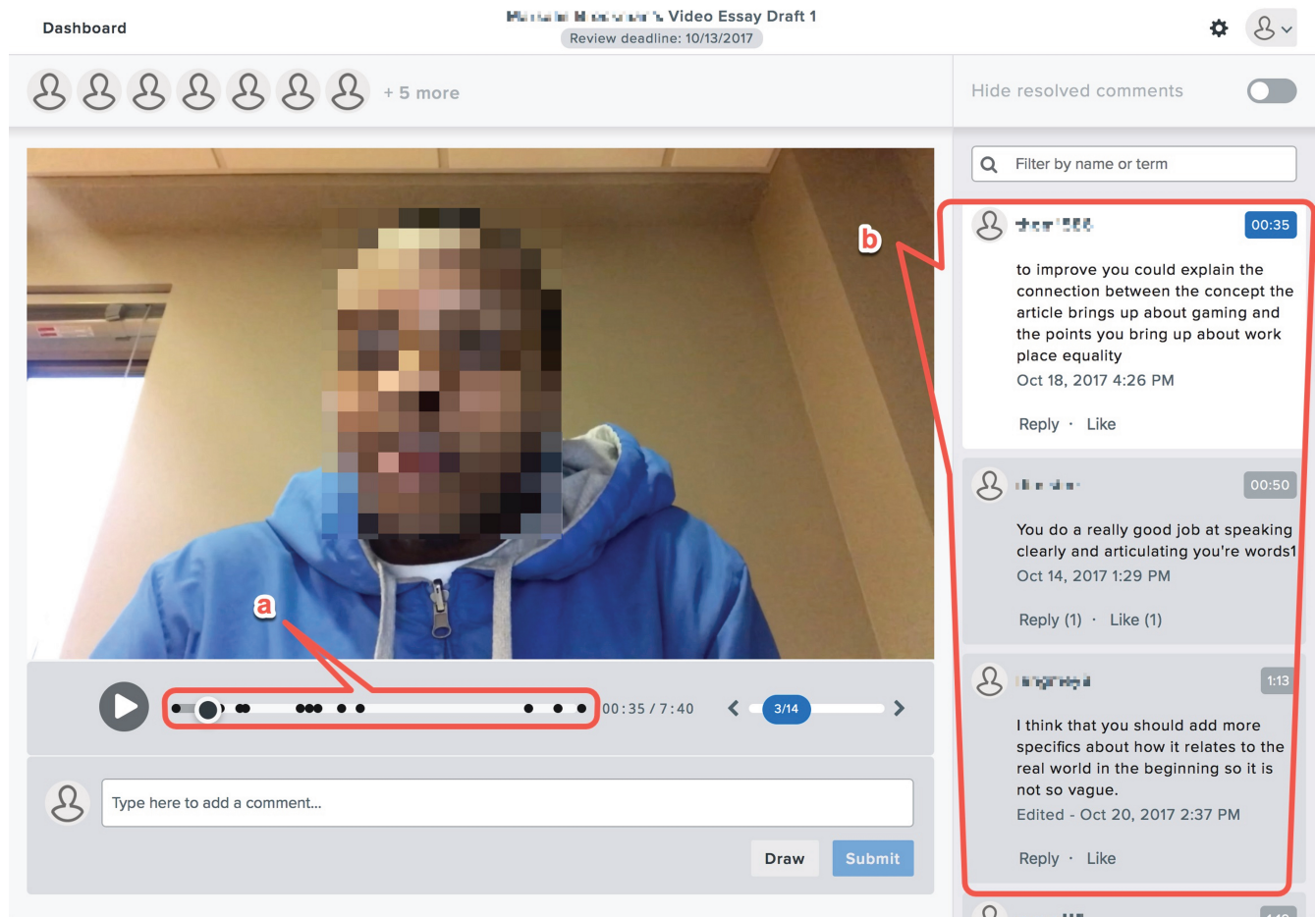


Figure 1. Video-review platform in which participants enter feedback at precise locations timeline (a), generating a thread for multiple comments on the right side of the screen (b).

Measures

As the study’s only qualitative measure, the postsurvey included open-ended prompts requesting thoughts about each assignment stage (draft, feedback, final version) and future video-making plans.

All remaining measures were quantitative and used a 7-point Likert-type scale ranging from *strongly disagree* (1) to *strongly agree* (7). *Video-production experience* reflects the extent to which the students had been involved in general video-making tasks in the past. It was measured on the presurvey using seven items developed by the research team, such as “I have made videos to inform people about something” and “I have produced videos with a group of people.” A composite measure was derived

from item means ($\alpha = 0.84$, $M = 3.05$, $SD = 1.47$). *Video-sharing experience* reflects how often students share videos with others and was based on three presurvey items developed by the research team, such as “How often have you shared videos that you have made with others on social media” and “How often have you streamed a video of yourself or your actions (e.g., twitch)?” A composite measure was derived from item means ($\alpha = 0.71$, $M = 2.31$, $SD = 1.47$). *Video production self-efficacy* reflects students’ beliefs about how competent they are in their abilities to make or edit videos. It was measured on the pre- and postsurvey with six items developed by the research team, including, “I am confident/knowledgeable at making videos” and “I am confident/knowledgeable about editing videos.” Composite measures were derived from item means (presurvey $\alpha = 0.95$, $M = 2.92$, $SD = 1.78$; postsurvey $\alpha = 0.94$, $M = 3.38$, $SD = 1.58$). *Persuasive video use* reflects the extent to which students would “choose video over other channels (e.g., pictures, text)” in order to “persuade others about something.” Descriptives for this single item were as follows (presurvey $M = 2.81$, $SD = 1.86$; postsurvey $M = 2.96$, $SD = 1.93$).

Results

To examine what students liked and disliked about the video-based peer-review assignment (RQ1), three research team members identified the most poignant positive and negative open-ended responses that represented clear themes. Only two out of hundreds of comments directly addressed the video-feedback platform itself. Both were positive, one offering a general compliment (“The program is awesome! I would love to use that more”) and one addressing the feedback mechanic (“I like how you can comment at specific times in the video & I found the feedback to be very helpful”). One additional comment indirectly addressed the platform (“I am a huge fan of criticism. This provided a structured platform for criticism”). Overall, we infer that the platform contributed productively to the experience.

The value of feedback in this assignment was a clear positive theme, exemplified by comments such as:

- “It was also nice to see where other students were in their projects. The peer feedback model is really effective when used correctly.”
- “Feedback really helped, as it provided a perspective that would not be biased.”
- “Going through other individuals’ videos also allowed me to see what I wanted to improve on mine, and making sure that I would not have the same mistakes.”
- “Giving others feedback was really nice because helping others is a good way of getting better.”

However, some valid critiques of the feedback process were raised (e.g., “I do wish that my classmates would have been more helpful with their comments. To be clear, all of my classmates were supportive and encouraging, but that did not always translate to helpful criticism”). Such critiques reflect disappointment in classmates’ engagement in the assignment, but a more overwhelming self-critical theme emerged (e.g., “I did not feel comfortable about giving feedback to others because I felt hypocritical as my video was done extremely poor for a first draft”). Most consistently, students expressed a lack of confidence in this domain (e.g., “Everyone’s drafts looked much better than mine, which was a little discouraging”), which impacted their perception of the feedback (e.g., “It was intimidating and a little stressful since I have little-to-no video experience.”) These comments support this study’s fundamental assumption that many students are uncomfortable in this medium and thus need guidance to improve their skills and confidence. Some comments suggested that our assignment fulfilled

this need (e.g., “As I got use to the situation, it became easier and I felt more relaxed.”), as did the quantitative analyses.

To test the expectation that the video-based peer-review assignment led to increases in video-production self-efficacy (H1), especially for individuals with less previous experience in video production (H2), we conducted a repeated measures ANCOVA with pre- and postsurvey video self-efficacy as the dependent variable, video-production experience as the independent variable, and student gender and self-presentation instructions as control variables. Video-production self-efficacy significantly increased from pre- to postsurvey $F(1, 204) = 42.56, p < .001, \eta_p^2 = .17$, supporting H1. There was a significant interaction between time and previous video-production experience, $F(1, 204) = 38.94, p < .001, \eta_p^2 = .16$. Estimated marginal means with median-split video experience suggest that people with lower previous experience gained video-production self-efficacy at a higher rate than people with more experience, supporting H2 (see Figure 2, left). The control variables had no statistical effect.

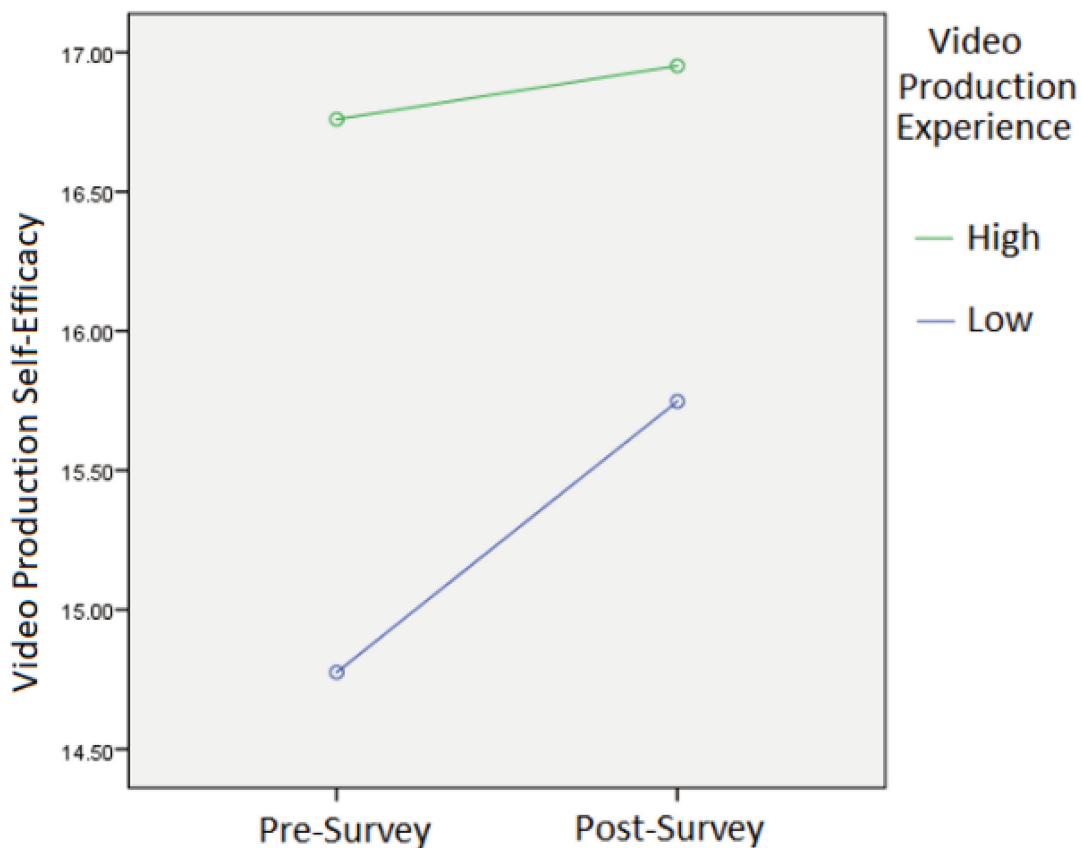


Figure 2. Estimated marginal means of video-production self-efficacy, from pre- to post-, by median split video-production experience (left) and estimated marginal means of persuasive video use, from pre- to post-, by median split video-sharing experience (right).

To test the expectation that people with less previous personal video-sharing experience exhibit greater increases in persuasive use of video following the assignment (H3), we conducted a repeated measures ANCOVA with pre- and postsurvey persuasive video use as the dependent variable and video-sharing

experience as the independent variable. In addition to gender and self-presentation instructions, previous video-production experience was included as a control variable because of the previous test's findings and the potential correlation between this variable and video-sharing experience. The main effect of time on persuasive video use was marginally significant, $F(1, 200) = 3.59, p = .06, \eta_p^2 = .02$. More important, there was a significant interaction between the time factor and previous video-sharing experience, $F(1, 200) = 19.08, p < .001, \eta_p^2 = .09$. Estimated marginal means with video-sharing experience as a median-split variable suggest that those with less experience reported a greater increase in persuasive video use after the assignment relative to those with more experience (see Figure 2, right), supporting H3.

Discussion

In order to elucidate how to improve active learning and collaborative engagement in large-course contexts, the present research examined a video-based peer-review assignment designed to help students advance their own video-creation skills and their self-efficacy related to those skills. Students responded positively to the video-review platform as well as the feedback process in general, though some were disappointed in their classmates' engagement. Many students were self-critical, expressing low confidence in their video skills and thus discomfort with the feedback process, but their engagement in the assignment helped to alleviate this. As quantitative evidence for this, video-production self-efficacy increased from pre- to postsurvey, especially for individuals with less previous experience in video production. Further, students' intent to use video for persuasive purposes increased from pre- to postsurvey for those with less previous personal video-sharing experience.

The present study advances our understanding of classroom technology use and peer assessment in several ways. Existing peer-review research has focused mainly on peer assessments of written works (e.g., van den Berg, Admiraal, & Pilot, 2006; Vickerman, 2009), with sparse prior work of which we are aware examining the peer-review process in multimedia contexts (i.e., video feedback). Furthermore, existing literature on video projects and the potential value of these projects tends to focus on students studying English as a second language (e.g., Aksel & Gürman-Kahraman, 2014; Ting, 2013), and has received less attention as an alternative to written assignments among primarily English-speaking students. Thus, the present research contributes a unique understanding to an understudied context.

This study's limitations should be noted. This study was conducted in a media course in which participants presumably have relatively high video literacy, potentially reducing generalizability. However, many reported low video-making self-efficacy, and thus we expect that the findings would be replicable in other college-age samples. Also, the class instructor was directly involved in the study, which may have influenced participant performance. We believe that instructor involvement did not affect any of the patterns observed in this study, though future research should be conducted in contexts where the primary researcher is less involved with the participants. Further, students were assigned to group sizes of 9–10 for logistical reasons, but future research could experiment with smaller group sizes in order to reduce social loafing and increase the mutual responsibility of each student. Also, the course was conducted in person, and while the assignment of interest took place online, the larger offline course context may have influenced students' experiences in ways that limit generalizability to purely online courses. Finally, many students complained that the feedback they received was vague or uncritical. Future research should examine how to encourage students to move past their politeness and hesitation to offer actionable, constructive feedback, which might be more challenging in video than written formats because of social norms. Overall, the results presented here suggest that education technology developers and practitioners could use similar approaches to facilitate active learning in

large-course contexts, but researchers should continue to explore the implications of such video-based assignments.

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