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Effects of learner–instructor relationship-building strategies in online video instruction

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Although research has demonstrated that an increased rapport between instructors and learners can positively relate with increased learning gains, perhaps mediated by the positive attitudes toward the course and self-efficacy beliefs in the coursework, little has been done to test what instructional strategies might increase this rapport in online video-based instruction. This study compared online video-based instruction that made use of relationship-building strategies with online video-based instruction that did not use those strategies. The two instructions were identical in every other way. The results show that the attitudes of the college students were positively affected by the relationship building strategies in a statistically significant way ($p = .025$) and that learning gains were also positively affected at a very near-significant level ($p = .052$). The implications of the findings are discussed.

Keywords: video-based lessons; learner–instructor relationship; learner affect; blended learning; e-learning

Introduction

The strength of the rapport between an instructor and his or her students influences each learner's affective experiences (e.g., attitudes and confidence) and achievements. When learner–instructor relationships are strong, students better engage in the task and enhance their learning (Micari & Pazos, 2012; Sakiz, 2012; Xiao, 2012). However, as online learning has become increasingly popular, it has become clear that building positive learner–instructor relationships in this environment can be challenging due to the limited opportunity for social and affective support. High dropout rates are also a concern in online education despite the advantages of increased flexibility and ease of access. Online instructional videos, in which the instructor presents materials, might add a sense of social presence to some degree, and due to the possibility of improving learner–instructor rapport, may help alleviate some online learning challenges. Therefore, it seems timely and necessary to evaluate the effectiveness of online videos in improving learner–instructor relationships and look into possible ways to enhance the relational rapport between the instructor and the learner during online video instruction.

Although much research has been conducted to examine how to effectively promote a learner–instructor rapport during conventional in-person instruction, there

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is a lack of research that examines how this relationship can be promoted through online video instruction. In this study, we adapted several techniques to facilitate learner–instructor relationships in classroom instruction for a series of online instruction videos. We examined the effect of the use of relationship-building (RB) strategies on the motivation and learning of college students taking online learning modules for one week.

Theoretical background

The relationship between affect and cognition

Emotion and cognition integrally influence our social and intellectual functioning in society (Schwarz, 2002). Likewise, a learner's emotions during an academic task can affect the learner's motivation, engagement, and achievement (Linnenbrink-Garcia & Pekrun, 2011). In particular, learners' achievement emotions are connected to their academic self-efficacy beliefs (i.e., their appraisals of their capability to succeed in an academic task) (Pekrun, 2006).

More importantly, the relationship that a learner builds with the instructor is closely related to the learner's affective experiences in class. Positive learner–instructor relationships lead to the learner's increased engagement in the material and subsequent achievement (Christensen & Menzel, 1998; Roorda, Koomen, Spilt, & Oort, 2011; Sakiz, 2012). A strong relational rapport between the learner and the instructor can promote positive emotions and diminish negative ones during the learning process (Angelaki & Mavroidis, 2013; Sakiz, 2012). The more care an instructor provides, the more positively the students evaluate the instructor's competence and trustworthiness (Teven, 2007). This positive evaluation can create a climate where the students feel more confident in speaking out about their difficulties and build trust in the instructor. An instructor's use of praise also increases students' motivation and their engagement in the learning task (Arghode, 2012; Komarraju, Musulkin, & Bhattacharya, 2010; Marchant & Anderson, 2012; Xiao, 2012).

In a classroom study, Micari and Pazos (2012) identified the instructor behaviors that potentially cultivate a strong relational rapport between the instructor and the learners. Three variables correlated with the positive learner–instructor relationships: viewing the instructor as a role model, the approachability of the instructor, and the respect that the instructor shows for his or her learners. The researchers reported that when the instructor fostered these variables during instruction, it facilitated the growth of a learner–instructor relationship, and the learners engaged in the task fully and communicated with the instructor openly. However, when learners participate in online learning, it can be harder for them to receive the positive benefits associated with a strong learner–instructor relationship because most (or all) interaction is mediated through technology.

The use of video in distance and online learning

Online education has been rapidly growing in higher education. From 2011 to 2012, the number of individuals who have taken at least one online course in higher education has grown from approximately 570,000 to a total of 6.7 million (Allen & Seaman, 2011, 2013). This total reveals that 32% of individuals in higher educationa new all-time highare taking online courses. Many of these individuals prefer online

courses because of their ease of access and scheduling flexibility (Kim, 2012; Robinson & Hullinger, 2008).

Much of online instruction today makes use of videos as a primary or supplementary mode of instruction. The use of video in distance and online learning has a varied historysome educators believed that video instruction would revolutionize learning by offering the possibility of distributing instructional materials and offering instructional experiences in a much cheaper and more efficient wayin a sense extending the reach of instructors by allowing their instruction to reach a more global audience. Gibbons, Kincheloe, and Down (1977) explored what they termed tutored video instruction (TVI), in which learners participated in distance learning using video-recorded instruction (of an asynchronous nature) and then received help as needed from an on-site paraprofessional tutor. Their research indicates that students in this approach performed significantly better academically than even students who learned from the live lecture. A replication study performed by Sipusic et al. (1999) obtained similar results, and also demonstrated that comparable improvements could be obtained even when students were connected only digitally with peers or mentors (rather than in a face-to-face, small group setting). Nonetheless, the popularity of tutorial videos had decreased for some, perhaps because of the broad use of personal computing and hypermedia products.

More recently, we have observed an increase in the use of video in online and distance learning. Examples of this resurgence can been seen in the development of popular instructional video repositories such as Khan Academy (http://www.khanacademy.org) and in the rise of what has been termed massive online open courses (MOOCs). Khan Academy has become widely popular, in part because the videos on the website are brief (usually between 8 and 12 min long) compared to the typical lecture (50–75 min) (Khan, 2012; Thompson, 2011). Further, much like the TVI approach of Gibbons et al. (1977), Khan (2012) encourages students to ask questions of their peers and available adult mentors (through discussion forums on the site). In addition to the success of Khan Academy, since 2008 there has also been a rise in MOOCs, which frequently use recorded videos as a primary means of instruction (Breslow et al., 2013; Kay, Remann, Diebold, & Kummerfeld, 2013; Pappano, 2012). More recently, some of these MOOCs (such as those run by Coursera) have been using shorter videos that automatically pause every few minutes and present the learner a brief quiz (Daniel, 2012; Kay et al., 2013). In this approach, the video screen is briefly replaced with a screen that prompts learners to answer a few questions to assess what they have learned. Even instructors in face-to-face settings are relying increasingly on online videos to supplement or supplant in-class lecture materials (Bonk & Graham, 2006; Means, Toyama, Murphy, Bakia, & Jones, 2010) in what has been termed blended learning. Furthermore, universities are increasingly offering online learning options, often using video instruction as a core component of the curriculum.

The promotion of positive learner experiences in online video instruction

Despite its continuing growth at varying educational levels, online education involves unique challenges that are not involved in face-to-face instruction, such as modest faculty involvement and low completion rates (Lee & Choi, 2011). On one hand, the development of effective online pedagogies is outpaced by the adoption of the technology (Baran, Correia, & Thompson, 2011). On the other hand, challenges

often stem from the lack of affective support and interpersonal relationships between the instructor and the learner (Kim, 2012).

Therefore, researchers have recently called for an examination of learners' affective experiences in online learning environments (Artino Jr. & Jones II, 2012; Daniels & Stupnisky, 2012; Marchand & Gutierrez, 2012). From a study examining the relationship between college student perceptions and course design factors, Swan (2001) reported that interaction with the instructor is one factor that significantly influences students' satisfaction and perceived learning gains in a college-level online course. Similarly, Young (2006) reported that effective instructional strategies should include affective components, such as presenting encouragement and showing concern for student learning. More recently, Murphy, Shelley, White, and Baumann (2011) reported that both instructors and students emphasize an instructor's personal qualities (e.g., being supportive, encouraging, and enthusiastic) and interpersonal support skills (e.g., establishing a friendly atmosphere and making students feel they matter) as equally important as subject matter expertise.

Obviously, a lack of social and affective communication between the learner and the instructor has been found to be an important barrier to effective online education (Muilenburg & Berge, 2005). Some of the variance in dropout rates in online courses was attributable to the learners' attitudes toward the course material as well as their interactions with the instructor (Tello, 2007). The academic self-efficacy of learners was a significant predictor of persistence in the course (Holder, 2007). Learner attitudes and academic self-efficacy have been closely related to the relationship between the learner and the instructor. It seems plausible, therefore, to hypothesize that strengthening the relational rapport between online instructors and learners might help build positive learner attitudes and self-efficacy and also increase retention rates of online and blended courses. Perhaps, it is possible to develop specific strategies to facilitate a relational rapport between the instructor and the learner in an online environment (Velasquez, Graham, & Osguthorpe, 2013), such as increasing a sense of social presence (Tu & McIsaac, 2002). It is unknown yet how the learner–instructor relationship could be developed and promoted in online video-based learning (Angelaki & Mavroidis, 2013).

The purpose of this study was to examine how we could incorporate affective RB strategies into online video-based instruction. More specifically, the study asked whether the RB strategies that were proven effective in face-to-face instruction (e.g., Micari & Pazos, 2012) might be effectively used in online video-based instruction. The specific research questions included:

(1) Will the strategies influence students' positive attitudes toward learning the subject matter (college-level, introductory statistics)?
(2) Will the strategies influence students' academic self-efficacy?
(3) Will the strategies promote a positive learner–instructor relationship?
(4) Will the strategies promote students' learning gains?
(5) Will the strategies promote students' module completion?

Method

Participants

Participants were on-campus, college students who enrolled in a required, face-to-face Introduction to Statistics course offered for general education credits. The majority of

participants were upperclassmen, 45% of the students were juniors, 25% were seniors, 17% were sophomores, and 10% were freshman. Very few participants (9%) reported being from majors in a natural science field, whereas the majority (48%) were social science majors followed by humanities majors (35%). Over two-thirds of the participants were female. Based on this data, it seems that many of the students did not have a strong desire to take this required statistics course, and some might have delayed taking the course.

Four lesson modules of online video instruction replaced one week of classroom lectures in the middle of the semester. A total of 60 students started the first online lesson and were randomly assigned either to treatment (37) and control (23) conditions by system programming. However, only 33 participants completed the pretest and posttest on learner affect (attitudes and self-efficacy); 22 participants completed all four tests on learner–instructor relationship; and 51 participants completed the pretest and posttest on learning. Only those students who took both the pre and posttest in each measure were included in the analysis of that measure.

Intervention: An online video-based learning module

The weeklong video instruction consisted of four lessons designed to introduce the concept of normal distribution. Lesson 1 introduced the normal curve. Lesson 2 introduced the basic approach to finding the area under the normal curve. Lesson 3 introduced the strategies for performing calculations under the normal curve. Lesson 4 introduced standard units and discussed how to calculate them and scenarios using them. In the lessons, the voice-over instructor, Chris, explained the concepts and procedures, and animated lecture slides (with graphics and texts) were presented along with Chris's explanations. The instructor (Chris) was a different person than the classroom instructor the students were used to, to control for the confounding variable of the students' previous in-person experiences with the classroom instructor. The students were able to pause and rewind the lecture. Students were required to complete one lesson each day.

We encouraged the participants to take the online instruction at their convenience in a natural setting (e.g., home or library) during the intervention week. There were no restrictions in their choice of time and location. The interaction logs indicate that their participation was distributed throughout the day from early morning to late night. Time spent on one module varied by individuals, but there was no significant difference in instructional time between the experimental groups.

Independent variable

The independent variable was treatment with two levels: RB vs. control. In the RB condition, we incorporated the strategies that were proven to promote positive learner–instructor relationships in face-to-face settings: building up the instructor as a role model, designing the virtual instructor to be approachable, and including various ways for the instructor to show respect for learners (Micari & Pazos, 2012; Young, 2006). We also incorporated the personal qualities and support skills recommended by Murphy and colleagues (2011), thus simulating social presence in online learning (Tu & McIsaac, 2002). Chris demonstrated these qualities in various ways in the RB condition. First, Chris used a friendly and warm tone of voice and included colloquialisms. Second, Chris provided anecdotes about his own experience

with statistics learning, particularly with the normal curve, including stories of how he struggled with certain concepts and how he still continued to use the information. Third, after asking questions, Chris provided encouragement to the learners and congratulated them if they were correct or politely asked them to try again a little differently while assuring them that they were capable. In the control condition, Chris used none of these RB strategies but presented curricular information in a neutral, straightforward manner. The two conditions were identical in curricular presentations and different only in the use of RB strategies. Also, there was no significant difference in instructional time between the two conditions. At login to the first lesson, the participants were randomly assigned to either of these two conditions and stayed in the same condition in the rest of the video lessons.

Dependent measures

The five dependent measures were learner attitudes, learner self-efficacy, learner–instructor relationship, learning gains, and module completion.

Learner attitudes

Learner attitudes were defined as learners' overall evaluative responses to learning the concept using the online module (Petty, DeSteno, & Rucker, 2001). The measure of learner attitudes consisted of four questions that were rated on a 7-point Likert scale ranging from 1 being *strongly disagree* to 7 being *strongly agree*. The items asked how much students enjoyed the material, how important the material was in their lives (Wigfield et al., 1997), and if they would be willing to take another similar course (Gorham, 1988). The coefficient α (computed to examine the reliability of the items) was shown to be moderately strong at $\alpha = .76$. To examine the changes in learner attitudes, a pretest was implemented at the beginning of the first online lesson, and a posttest at the end of the last lesson.

Learner self-efficacy

Learner self-efficacy was defined as learners' beliefs in their capability to successfully learn the online module (Bandura, 1997). Following Bandura's (2006) guidelines, the measure of learner self-efficacy consisted of four questions that were rated on a seven-point Likert scale ranging from 1 being *strongly disagree* to 7 being *strongly agree*. The items asked how confident they were in the course, whether they believed that they could succeed, and how well they would succeed. The coefficient α for the learner self-efficacy measure was shown to be strong at $\alpha = .84$. To examine the changes in learner self-efficacy, a pretest was implemented at the beginning of the first online lesson, and a posttest at the end of the last lesson.

Learner–instructor relationship

Learner–instructor relationship was defined as learners' perceptions of the interactions with the instructor (Komarraju et al., 2010). Two near-identical versions of the relationship questionnaire were modified from Micari and Pazos's (2012) study. Both versions consisted of eight items that were rated on a 7-point Likert scale ranging from 1 being *strongly disagree* to 7 being *strongly agree* At the end of each

lesson in the module, the participants were asked to complete the relationship questionnaire that alternated from the first version at the end of the first and third lessons and the second version at the end of the second and fourth lessons. The coefficient α for the learner–instructor relationship measure was indicated to be strong at $\alpha = .98$.

Learning

Learning was measured with a paper-based test implemented in class the week prior to the intervention and the week following the intervention. The test included 10 items on recall and application in a short-answer format. The maximum possible score on the learning test was 17 points, and students had 15 min to finish each test. Five items were factual recall about the normal distribution. Five items asked students to apply their understanding to solve more complex problems. An instructor who taught another section of the same course graded the assessments. Then, the face-to-face instructor who regularly taught the students reviewed and verified the students' scores. There was no discrepancy in their grading. The difference between pretest and posttest scores was analyzed for the students' learning gains.

Module completion

Module completion was measured in terms of how many lessons each student completed after the first lesson. That is, only participants who completed the first lesson were included in the analysis. The total number of lessons completed by each student was tabulated and used in the analysis.

Procedures

Learners completed the pretest to assess their prior knowledge of the normal curve during class the week before the online module. During the intervention week, learners logged in to the website that hosted the video lesson module. At the beginning of the first lesson, they typed in their demographic information and completed the attitudes and self-efficacy questionnaire. Learners then completed the lessons, one lesson per day (with no lesson on Wednesday). Immediately following each online lesson, they completed the questionnaire on learner–instructor relationship. At the completion of the last lesson, learners completed the attitudes and self-efficacy questionnaires as posttests. The following week, learners completed the same learning test as a posttest during class.

Design and analysis

To examine learner attitudes and self-efficacy, a two-way repeated measures ANOVA, in which two independent variables were treatment and time, was conducted respectively for the 33 learners who completed both pre and posttests. To examine the learner–instructor relationship, a two-way repeated measures ANOVA, in which two independent variables were treatment and time, was conducted for the 22 learners who completed all four tests implemented at the end of each online lesson. To examine learning, a two-way repeated measures ANOVA was conducted for the 51 learners who completed both pre and posttests. For online module

completion, a Mann–Whitney *U* test was completed to compare the number of lessons completed by each group. The significance level was set at $\alpha < .05$ for all analyses.

Results

Descriptive statistics

Preliminary analyses were conducted to test for violations of assumptions. Table 1 presents descriptive statistics of the dependent measures.

Learner attitudes

Out of 60 participants who started the first lesson, only 34 students who completed both pre and posttests were included in the analysis: the RB condition with 22 students and the control condition with 11 students. The analysis of learner attitude scores revealed that the scores violated the assumption of homogeneity of variances, so a square-root transformation was applied to the data. After this, it was determined that the data met all other necessary assumptions for the repeated ANOVA test. The ANOVA revealed statistically significant interaction between treatment (the RB intervention) and time on student attitudes, $F(1,32) = 5.496$, $p = .025$, $\eta^2 = .147$. There was also a statistically significant effect of time on the attitudes of the learners, $F(1,32) = 11.599$, $p = .002$, $\eta^2 = .266$. Figure 1 presents a graphical representation of these results. Overall, the attitudes of the students decreased significantly after the online instruction, but that the attitudes of those in the RB condition decreased significantly less than the attitudes of those in the control condition.

Table 1. Descriptive statistics.

Measures	Pretest		Posttest	
	M	SD	*M*	SD
Attitudes*				
Relationship building (RB) ($n = 22$)	17.13	4.87	16.65	6.13
Control ($n = 11$)	20.08	3.07	13.83	7.87
Total ($n = 33$)	18.14	4.80	15.69	6.80
Self-efficacy				
RB ($n = 22$)	20.55	6.12	19.41	4.44
Control ($n = 11$)	22.45	4.66	18.18	3.68
Total ($n = 33$)	21.18	5.67	19.00	4.18
Learning gains				
RB ($n = 31$)	1.39	1.26	5.58	1.52
Control ($n = 20$)	1.45	1.19	4.45	1.73
Total ($n = 51$)	1.41	1.22	5.14	1.69

Learner–instructor	Test 1		Test 2		Test 3		Test 4	
Relationship	*M*	SD	*M*	SD	*M*	SD	*M*	SD
RB ($n = 13$)	36.38	10.43	31.62	9.91	31.54	11.03	31.38	11.02
Control ($n = 9$)	36.00	11.97	34.78	14.82	34.67	14.27	33.11	15.71
Total ($n = 22$)	36.23	10.81	32.91	11.93	32.82	12.23	32.09	12.81

*$p < .05$.

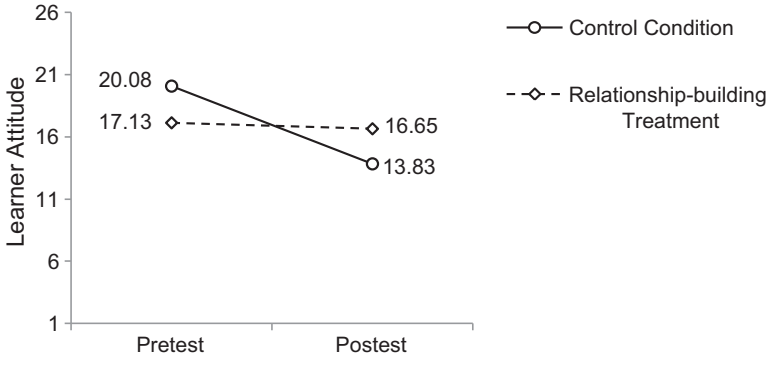

Figure 1. Change in learner attitudes in each group.

Learner self-efficacy

Thirty-three students who completed both pre and posttests were included in the analysis. The data met all other necessary assumptions for the repeated ANOVA test. There was no statistically significant interaction between treatment and time on student self-efficacy $F(1,31) = 1.971$, $p = .170$, $\eta^2 = .060$. There was, however, a statistically significant effect of time on the self-efficacy of the learners, $F(1,31) = 5.861$, $p = .022$, $\eta^2 = .159$. Overall, the self-efficacy of the students decreased significantly after the online instruction, but it is not certain that the RB condition had any effect (positively or negatively) on this decrease.

Learner–instructor relationship

The analysis of the learner–instructor relationship scores indicated that the data violated the assumptions of normality (in one experimental group and condition), homogeneity of variances (in one experimental group and condition), and homogeneity of co-variances. No transformation of the data was able to help the data meet these assumptions in the experimental groups. We performed a two-way repeated measures ANOVA with 22 students who completed all 4 tests on learner–instructor relationship (13 students in RB and 9 students in control). The results did not reveal a significant effect of the strategies used on the learner–instructor relationship, $F(2.00, 39.92) = .643$, $p = .541$, $\eta^2 = .031$.

A one-way repeated measures ANOVA was performed to test changes in learner–instructor relationship over time. The data did meet the assumptions of a one-way ANOVA. There was a statistically significant effect of time, $F(1.99, 41.88) = 3.32$, $p = .046$, $\eta^2 = .136$. Learners in both conditions evaluated the online instructor less positively as the lessons progressed, which indicated a weakening learner–instructor relationship online over time.

Learning gains

All participants who completed both the learning pretest and posttest, and who also participated in at least one online lesson, were included in this analysis (31 students in RB and 20 students in control). The resulting data met the assumptions for the

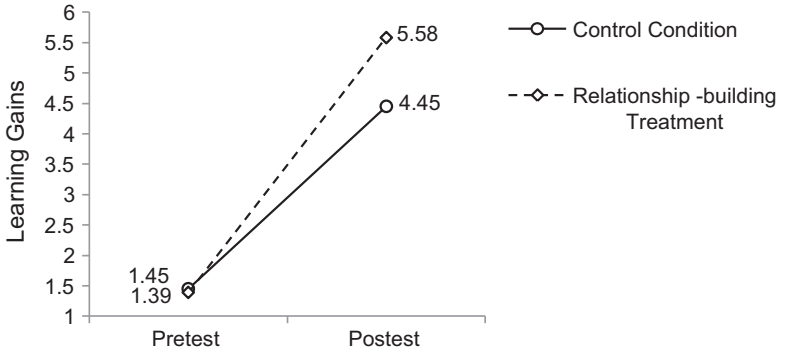

Figure 2. Learning gains in each group.

two-way repeated ANOVA test, except the assumption of normality. The test is fairly robust to violations of the normality assumption. We conducted the repeated ANOVA. The results did not reveal a statistically significant effect of treatment and time, $F(1.00, 49) = 3.95$, $p = .052$, $\eta^2 = .075$, but the results were very close to statistically significant. Figure 2 presents a graphical representation of these results. Both groups increased their learning significantly from the online module, but it appears that the RB group learned more on average.

Module completion

All 60 participants who completed the first lesson in the module were included in this analysis. Module completion was measured in terms of how many lessons each student completed. Sixty participants completed the first lesson, 54 of them completed the second lesson, 28 of them completed the third lesson, and 33 of them completed the last lesson. Twenty-two students completed all four lessons. Students in the RB group completed, on average, 2.92 lessons, and students in the control group completed, on average, 2.91 lessons. A Mann–Whitney *U* test was completed (as the data violated the normality assumption of the independent samples *t*-test) comparing the mean total numbers of lessons completed by students in each study condition. The Mann–Whitney *U* test is less likely to falsely reject the null hypothesis when data does not fit a normal curve. The mean number of lessons completed was not statistically significantly different between the two groups, $U = 420.5$, $z = -.08$, $p = .936$. A visual inspection of the data as well as a comparison of the means of the two groups indicates that it is unlikely that the RB intervention had a detectable impact on module completion.

Discussion

Due to the resurgence of video instruction in online learning, researchers and educators have the opportunity to explore how to make this medium most effective. In the current study, we explored ways to take advantage of online video instruction by cultivating a relational rapport between the instructor and learners. Specifically, we examined the effectiveness of the use of learner–instructor RB strategies in online video instruction on college students' attitudes, self-efficacy, perceptions of the

instructor, lesson completion, and learning of normal distribution. The results show that learner attitudes, self-efficacy, and the learners' perceptions of the instructor, in general, deteriorated over the course of the weeklong online video-based instruction. However, the RB strategies seem to have positively affected the learners' attitudes, leading to significantly less decrease in the RB condition than in the control condition. Also, although the students significantly increased in their understanding of the normal distribution during the online instruction regardless of the use of the strategies, strong trends indicate that the students in the RB condition had greater learning gains than those in the control condition.

The effectiveness of RB on learner attitudes and learning gains

The RB strategies seemed to have a positive impact on learner attitudes. Their attitudes toward the topic overall decreased after the online modules in both groups. This decrease may be attributable to a generic limitation of online learning, that is, the lack of a number of in-person social and interactive cues. As a reminder, the study was implemented in a blended learning context, in which the students regularly attended face-to-face classes and took online course to learn normal distribution for only a week. Although participation in this study was not required of the students, the instructor did require them to participate in the online module that replaced the week's classroom lecture. It was possible that students resented the addition of an online component to the course, which might also account for why the attitudes of learners decreased in both groups. In particular, for those who had weak confidence in learning the topic, taking online modules alone might increase some negative emotional burden, such as anxiety. Nonetheless, the RB strategies seemed to lead the learners to decrease in positive attitudes less than those in the control group. Apparently, the RB strategies ameliorated some of the potential negative impact of transitioning from face-to-face classroom instruction to online instruction. This finding supports literature in online education that highlights the importance of social and affective factors in online instruction (e.g., Muilenburg & Berge, 2005).

In addition to helping students adjust better to online learning, it seems very plausible that the positive impact of RB strategies on learner attitudes explains the RB group's higher learning gains. The students in both conditions significantly increased their learning gains after the online lessons; yet, those in the RB condition performed better than the control group with approaching statistical significance ($p = .052$). The RB strategies the online instructor used while presenting curricular information were likely to alleviate the students' negative reactions, and thereby lead them to be attentive to his explanations. Just as learner–instructor relationships resulted in greater learning gains in face-to-face instruction (Christensen & Menzel, 1998; Sakiz, 2012), they also did so in online instruction. Because of the near-significance of the results, however, we postulate that the marginal differences between the two conditions could be attributed to the decreased sample size and the short duration of the study.

Thoughts on the limited impacts

No statistically significant effects of the RB strategies on the learners' self-efficacy, completion rates, and learner–instructor relationships were observed in this study. Holder (2007) reported that the academic self-efficacy of learners was a significant

predictor of persistence in the course. Perhaps the weak impact on self-efficacy in the current study was, then, related to the finding of no statistical difference in the students' module completion between the two groups. First, it is plausible that the limited results are due to attrition. While 60 participants started the first lesson, only over 20 students completed all 4 lessons. This substantially decreased the sample size. Although the one-week online module was introduced to the class as mandatory, not all of the learners seemed to buy into this expectation. This invites future research to inquire about the factors that might lead the students to full or partial participation in a required online module. Given that the study took an approach similar to blended learning and flipped classroom, the partial participants might expect that they would be able to receive supplementary instruction from the classroom instructor later. Factors like the manner in which the online module is introduced and learner characteristics (e.g., prior online learning experience and self-efficacy in technology use) might be further investigated to clarify the variations in learner participation and reduce attrition (Wang, Shannon, & Ross, 2013).

Second, the results obtained might be due to the learners' subliminal comparison of the online instructor and the classroom instructor. Students may have compared the online instructor, Chris, unfavorably to their ordinary instructor who, historically, has been rated highly in course evaluations. Because the participants from the face-to-face course were required to participate in the online module (i.e., blended learning), they might not have been as interested in developing rapport with an online instructor as students who would voluntarily enroll in an online course. Further, it is unclear if the same results would be obtained if students felt from the outset that the online instructor was better equipped to teach, more competent, or more personable than their in-class instructor.

Third, in many online courses, video-based lessons are supplemented by asynchronous communication with the instructor via email, online discussion forums, etc. Other research (Tu & McIsaac, 2002; Young, 2006) has indicated that the presence of varied channels of communication with the instructor is essential to developing a learner–instructor relationship. In future research, it should be clarified that the effect of these RB strategies may be strengthened when the online instructor uses other communication tools as supplemental to the video module and takes a more personalized approach over the extended periods of online instruction.

Recommendations

Although we expect that the effectiveness of RB found in this study will become clearer with a long-term intervention, it should be confirmed in future research. Also, the current study used a learner–instructor relationship questionnaire modified from the questionnaire for in-person classrooms (Micari & Pazos, 2012). The modified questionnaire could be validated in a thorough, statistical procedure with the instructors in an online environment in subsequent research.

To conclude, as indicated in the rapid growth in MOOCs, online instruction can offer many affordances to learners that are otherwise not possible in classrooms. The investigation of ways to cultivate relational rapport between instructors and learners in online learning is vitally important. The findings of the current study suggest that learner–instructor relationship could be promoted and developed in online instruction. Even with a relatively short-term intervention, it was clear that the RB efforts in video instruction positively influenced learners' attitudes and learning. This

impact may not necessarily be limited to video instruction. Rather, we encourage online instructors to make a similar effort, adopting the RB strategies and strengthening their relationships with their distant students.

Notes on contributors

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