

ORIGINAL RESEARCH

RN to BSN Students' communication satisfaction with asynchronous discussion forums: Audio-video versus text-based responses

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ABSTRACT

Objective: This pilot study examined an innovative strategy for an RN to BSN online program, specifically focused on the required asynchronous discussion forums. The aim of the study was to compare RN to BSN students' communication satisfaction with audio-video discussion responses versus the traditional text-based responses.

Methods: Utilizing a pretest-posttest design, RN to BSN student's communication satisfaction with traditional text-based discussion responses was measured using a 5-point Likert scale survey at the end of fall semester. Audio-video responses were the required discussion response format during the subsequent spring semester. Students' communication satisfaction with asynchronous audio-video discussion responses was measured at the end of the spring semester. Paired *t*-tests and descriptive statistics were conducted.

Results: Students satisfaction significantly increased with audio-video discussion responses for the extent communication was positive, accurate and free flowing. There were no statistically significant differences in students' satisfaction between text and audio-video format related to the extent communication motivated them to meet course goals and identify with the discussion, or with the extent instructors offered guidance and were open to ideas and attention to content.

Conclusions: Although limited by a small sample size and low power (N = 16 pre-test, N = 17 post-test) the findings of this study may be of interest to online nurse educators who are seeking innovative strategies to improve student satisfaction within asynchronous discussion forums. With further research, the use of audio-video discussion responses may provide an alternative to the traditional text-based responses related to communication satisfaction.

Key Words: Nursing education, Online discussion, Satisfaction, Audio-video, RN-BSN program

1. INTRODUCTION

Enrollment in RN to BSN programs has steadily increased in the United States over the past 13 years.^[1] The tremendous growth of these programs now outnumber four-year nursing programs.^[1] Of the 747 RN to BSN programs available, more than 600 programs offer at least partial, if not completely,

online experiences.^[1] Online educators are challenged with discovering strategies "to promote achievement of learning outcomes, satisfaction, and persistence in online courses."^[2] One strategy extensively used in online programs are asynchronous discussion forums. Threaded text-based discussion formats are common^[3] and may be perceived as a substitute

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for traditional face-to-face classroom discussion time, yet there are limitations for text-based discussion in the virtual classroom. The technology may not be best suited for interactivity and collaboration due to a lack of connectedness with peers and lack of timely feedback.^[3] A study by Acolatse^[4] reported students viewed text-based discussion forums as merely busy work based on postings that were lacking depth in comments, critical thinking skills and participation. These waning efforts by students within discussion forums have the potential of decreasing communication satisfaction among peers. Because course satisfaction is an important variable related to student learning and retention in the online environment,^[5] improving communication satisfaction within the discussion forums is imperative. In recent years, researchers have explored the use of audio and audio-video discussions as an alternative strategy to text-based discussions to determine if this format improves satisfaction with the online experience.^[6-8] Thus, the aim of this study was to investigate RN to BSN students' communication satisfaction with online discussion forums, comparing asynchronous audio-video discussion responses to text-based responses.

1.1 Text-based discussion

Asynchronous online discussion forums are considered extensions of instructional practices and have been the primary means by which students interact, build community, and share thoughts.^[3] Text-based discussions are widely used and serve as a primary form of communication between students as well as instructors, with the goal of providing the opportunity for student interaction, collaboration, and the cultivation of higher level learning. The asynchronous written responses can be kept in virtual electronic space for predetermined periods of time, allowing students to view and post responses to peers at a time that is convenient. In addition to the flexibility afforded by asynchronous discussions, students enjoy autonomy and control over the time they must reflect and respond in asynchronous text-based discussion forums.

Despite the positive factors text-based discussions offer, issues can arise related to accessibility, personal connections, and ultimately satisfaction with the discussion format. Accessibility can become a barrier for students who live in remote rural areas with low bandwidth internet connections. Text-based online environments can be impersonal as they lack the common communication cues of facial expression and voice intonation.^[9] Written communication also presents difficulties in establishing an 'identity' within the virtual classroom.^[10] This absence of face-to-face communication can leave students feeling a sense of disconnect from faculty and classmates.^[11] Students who are weak in reading and

writing skills may find significant challenges in participating in text-based discussions.^[7] One strategy for improving satisfaction with online learning may be the use of asynchronous audio-video responses in the discussion forums.

1.2 Audio and audio-video discussions

A review of literature was conducted to search for strategies to overcome the barriers presented by text-based discussions with the intent of increasing student satisfaction related to discussion forums. Hew and Cheung^[7] introduced audio discussion responses along with text-based responses in a study of 41 post-graduate students pursuing a blended course in education. The data revealed seven affordances for using audio discussions with the two highest ranking affordances as: 1) the ability for expression, detection of emotions, and understanding peers' posts better, and 2) usefulness for students with poor writing skills or audio learners.^[7] Interestingly, the data demonstrated students preferred text-based responses despite reporting seven positive affordances for audio responses. Participant responses revealed the Learning Management System utilized for the course did not allow students to edit their audio responses, thus the format became impromptu whereas text-based discussion allowed more time to organize and structure responses as well as the ability to edit a post.^[7]

Audio-video technology has demonstrated positive effects for enhancing the asynchronous learning experience. A study comparing asynchronous audio-video discussions to text-based discussion, reported that video-enabled discussions helped create an environment of connectedness between students and instructors as compared to the text-based discussions.^[8] However, the participants were undergraduate pre-service teachers participating in an online technology course so the motivation to learn new technology strategies may not reflect the same outcomes with an RN to BSN student population.

A study of 36 graduate students was conducted to explore learners' preferences for the modality of online discussions, audio-video and text-based.^[12] Female participants were found to prefer audio-video discussions while males preferred text-based discussions. The majority (82%) of female participants felt audio-video format assisted in connecting with peers versus only 47% of males reporting this perception. Thirty percent of females valued the enhanced communication with visual cues versus 18% of males. A downside for the use of audio-video discussions revealed participants had difficulty reviewing long audio-video comments, spending more time and effort in discussions as compared to text-based responses.

The evidence suggests the use of asynchronous audio-video responses in online discussion forums may better assist in building community, promoting interactions, and creating satisfaction in online programs versus text or audio only discussion formats due to the ability of students to observe visual cues (body language, facial expressions) along with hearing voice intonation. Yet few studies have investigated this strategy specifically focusing on communication satisfaction with students enrolled in RN to BSN online programs.

1.3 Asynchronous discussion communication satisfaction model

Although computer-mediated communication has been extensively studied, much of the focus has been on cognitive processing and less on the affective aspect of online discussions.^[13] To further investigate communication satisfaction in the online educational context, Hung and Chou^[13] developed and empirically validated the Asynchronous Discussion Communication Satisfaction model/scale (ADCSS) consisting of 3 dimensions leading to students' satisfaction with computer-mediated communication: (1) Horizontal Communication (extent communication among students is accurate, positive, free flowing), (2) Communication Climate (extent communication motivates students to meet course goals and identify with the discussion), and (3) Leading Communication (extent instructors pay attention to discussion and offer guidance).^[13]

The model's concept of communication satisfaction was operationalized for this study and is defined as students' "achievements of positive communicative expectations through the online-learning discussion forums."^[13] The communicative expectations for each dimension are measured using a 12-item survey.^[11] Items are scored on a 5-point Likert scale with possible responses ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate more satisfaction.

2. METHODS

A quasi-experimental pre and post-test pilot study was conducted at a southwestern university school of nursing after obtaining approval from the university institutional review board.

2.1 Procedure

The convenience sample consisted of RN to BSN students enrolled in spring semester who had participated in online text-based discussion forums the previous fall semester. All courses for the RN to BSN program in the spring semester introduced the use of audio-video discussion response format. Criteria for posting the audio-video responses included a time limit of no more than 3 minutes in length. Students

were to post their initial response to the assigned discussion topic and respond to at least 2 peers. No modifications by instructors to the criteria were allowed and no text-based discussion forums were used during spring semester.

Fifty-four RN to BSN students enrolled in the spring semester were emailed a letter of invitation to participate in the study pre-test survey. The letter included a description of the study and a link to the web survey. A reminder email was sent two weeks later. Informed consent was assumed with initiation of the online survey. Students were informed that they could withdraw from the study at any time and that participation or nonparticipation would not impact their grades as data analysis was conducted after all final grades were submitted to the university. At the end of the spring semester, the same 54 students were emailed a letter of invitation to participate in the post-test survey. All survey data and demographics were collected through the web survey. Demographic data included participants age, gender, race/ethnicity, years practicing as RN, and number of online courses taken. Each survey was assigned a sequential participant number. Students were asked to generate a personal code to use for the pre-test survey and to use the same code again if they participated in the post-test survey. As an incentive to participate in the surveys, students were offered an optional \$10 credit to their university account for use in the university's bookstore. To obtain the incentive, students were provided a separate link which directed them to a separate site where the students were asked to supply their name so that credit could be applied to their student account. The link was not connected to the surveys to ensure anonymity and confidentiality for students.

2.2 Data analysis

Data were downloaded into the statistical analysis program IBM SPSS (version 22).^[14] Descriptive statistics were generated. Paired *t* tests were conducted to compare communication satisfaction with audio-video and text-based discussion responses. Cohen's *d* was calculated due to the small sample size. Chronbach alpha was used to complete the reliability testing of the ADCSS.

3. RESULTS

The majority of participants in the online pre-survey (*N* = 16) measuring satisfaction with text-based discussion responses were age 22-40 years old (50%), female (81.3%). White, non-Hispanic (56.3%), had practiced as a registered nurse 1 to 5 years (56.3%) and had previously taken 5 or greater online courses (87.5%). The majority of participants in the online post-survey (*N* = 17) measuring satisfaction with audio-video discussion responses were age 22-40 years old (70.6%), fe-

male (70.6%), White, non-Hispanic (52.9%), had practiced as a registered nurse 1 to 5 years (52.9%) and had previously taken 5 or greater online courses (82.4%). Survey response rate was low. The pre-survey response rate was 29.6% and post-survey response rate was 34.6%.

Internal reliability testing of the ADCSS pre and post surveys for this study demonstrated good Cronbach alphas of .951 pre-survey and .940 post-survey. As shown in Table 1, the Horizontal Communication subscale post-survey group mean

was significantly higher than the pre-survey group mean $t(15) = -2.39, p = .031, d = 0.56$. The Communication Climate subscale post-survey group mean was higher than the pre-survey group mean, though not statistically significant $t(15) = -.92, p = 0.37, d = 0.25$. The Leading Communication subscale post-survey group mean was negligibly lower than the pre-survey group mean $t(15) = .095, p = 1.93, d = 0.04$. Means and standard deviations for each item in the 3 subscales is provided in Table 2.

Table 1. Comparison of survey subscales between response formats

Subscale	Pre-Survey Text Format	Post-Survey Audio-video Format
	M (SD)	M (SD)
Horizontal Communication	3.55 (.95)	3.94 (.63)*
Communication Climate	3.73 (.77)	3.92 (.75)
Leading Communication	4.22 (.79)	4.19 (.63)

Note. * $p < .05$; M = Mean; SD = Standard Deviation.

Table 2. Means and standard deviations of survey subscale items

Subscale items	Pre-Survey Text Format	Post-Survey Audio-video Format
	M (SD)	M (SD)
Extent horizontal communication:		
Is interesting	3.69 (1.0)	3.65 (.93)
Facilitates studies	3.31 (1.1)	3.59 (1.1)
Is positive	3.69 (1.0)	4.24 (.56)
Amount is about right	3.75 (.85)	3.94 (.66)
Extent communication climate:		
Stimulates enthusiasm-meet course goals	3.56 (.81)	3.71 (1.1)
Makes me identify with it	3.56 (.89)	3.76 (1.0)
Peer attitude is health	3.75 (.86)	3.94 (.66)
Provides information to complete work	4.06 (.85)	3.94 (.83)
Leading communication: extent to which:		
Instructors trust my content	4.25 (.74)	4.29 (.69)
Instructors open to ideas in discussion	4.13 (1.2)	4.24 (.66)
Amount of instruction about right	4.06 (.85)	4.18 (.73)
Instructors handle conflicts	4.22 (.92)	4.06 (.74)

Note. M = Mean; SD = Standard Deviation.

4. DISCUSSION AND CONCLUSION

The Horizontal Communication subscale post-survey group mean was significantly higher than the pre-survey group mean, indicating students were satisfied with the extent to which communication was positive, accurate, and free flowing. Specifically, students' group mean increased from 3.69 to 4.24 related to the extent communication was positive. In the end of course evaluations, one student shared "I like video discussion. I liked being able to see my classmates in an online class." This concept is supported in the litera-

ture. Research on text-based only responses has revealed that students can have difficulty discerning the essence of a peer's reply and reported it was difficult to avoid taking a response from a peer in the wrong way;^[15] however studies exploring audio and audio-video format have found students reported less misinterpretation of peer responses, improved ability to express emotion and personality, which can lead to positive communication.^[6,7] The item for the extent communication facilitates studies was nearing disagree (dissatisfaction) when text-based responses were utilized; but with

audio-video responses the group mean increased by 0.28. No student comments in the end of course evaluations pertained to facilitation of studies. This increase may be related to the increase in mean for positive communication with audio-video responses. If students perceive communication to be positive, this in turn could enhance the learning experience. The majority of our survey participants were ages 22-40. This age group has been reported as embracing interactivity and immediacy of online communications whereas older students may find online communication as intimidating.^[16] Simmonds et al.^[16] also found that as students' age decreased, there was an increase in preference for tools allowing more means for online communication. In our study, the item for extent communication was about right also improved and neared satisfaction with audio-video responses. In our requirements for the audio-video discussion forums, the responses were to be no longer than 3 minutes, and students were to provide at least 3 posts (initial response and 2 or more peer responses) so this item confirmed for faculty that the number of responses and criteria for length appeared to be well accepted by students.

The Communication Climate subscale post-survey group mean was higher than the pre-survey group mean but was not statistically significant. The increase in mean with the audio-video responses suggests students were increasingly approaching satisfaction with the extent to which communication using audio-video responses motivated and stimulated them to meet course goals and identify with the online discussions. Online learning communities are characterized by shared goals and interests, as well as good communication.^[13] Hung and Chou^[13] reported in their validation of the ADCSS that asynchronous discussion stimulated students' enthusiasm for meeting course goals and strengthened their identification with the discussion, explaining this finding may center on the importance of creating opportunities for active interaction. Thus, the increase in means for the present study related to communication climate, may be related to the faculty creating opportunities for active interaction that was more personable, positive and satisfactory through the audio-video format. The increase in the item for the ability to identify with the discussions may be due to the affordance of audio-video allowing students to see and hear their peers. Written communication has been shown to present difficulties in establishing an 'identity' within the virtual classroom.^[10] The increase for the Communication Climate subscale item related to peer attitude being healthy may be explained in that students using audio-video discussion can observe facial expression, body language and voice intonation of a peer's posting, which improves the recipient's ability to discern the intent of the discussion response. Instead of taking a peer re-

sponse in the wrong way and viewing the intent as unhealthy, as may happen with text-based responses,^[7] the student can incorporate the visual and audio cues to determine the intent of the response.

The Leading Communication subscale post-survey group mean was negligibly lower than the pre-survey means, demonstrating students' experience of satisfaction with instructors' openness to ideas, attention to discussion content, and offering of guidance remained consistent with both text-based and audio-video discussion responses. Instructors interactions to lead and promote online discussion correlates with students' communication satisfaction level,^[13] a critical factor for perceived learning in online courses.^[17] The analysis of individual items for this subscale revealed that three of the four items demonstrated a slight increase in mean with audio-video format; however, for the item 'extent to which instructors handle conflicts' the mean decreased slightly. Hew^[18] reported that handling conflicts was not of great importance to the online student when compared to instructors providing information and perspectives about the discussion board topic. For our study, a plausible explanation for a decrease in instructors' handling conflicts may be related to students having trouble with the new format. The researchers received several emails the first few weeks of the new audio-video format from students who were experiencing technological difficulties and requesting that audio-video format no longer be required; however, faculty continued to implement the audio-video criteria for responses while offering support and guidance. In the end of course evaluations, one student shared that "I at first had some reservations regarding the AV responses but after doing them a few times and getting constructive feedback, I felt a lot better about them." A second student shared "It's all do-able. Any logistical problems are considerably resolved with maximum support from the instructor." These student comments are congruent with Clark et al.^[8] who reported that students voiced difficulty in uploading video posts; yet, students were willing to overcome this issue and after creating a few videos, students began to describe the postings as easy.

4.1 Limitations

Limitations for this pilot study include the small convenience sample of RN to BSN students restricted to one southwestern university and are not generalizable to other student populations. In addition, students were asked to create a secret code to enter on the pre-survey and use the same code if completing the post-survey; unfortunately, students did not follow through with this request resulting in the inability of the researchers to directly match students' data who participated in both surveys. Participants in the post-survey group may

have been different than the participants in the pre-survey group presenting a threat to validity. The collection of only quantitative survey data limits the ability of the researchers to fully explain the survey findings beyond support from previously published studies and comments posted by students in the end of course evaluations. The ADCSS is a promising tool for measuring student satisfaction with asynchronous discussion boards in higher educational settings; however, to our knowledge the tool has only been assessed for validity and reliability with Taiwanese college students. American students may have different expectations for participating in asynchronous discussion forums. In addition, the scale was only validated with purely text-based discussion formats.

4.2 Recommendations

The results of this study suggest that when the RN to BSN students in our program used audio-video discussion responses, their satisfaction with the extent to which communication was positive, accurate and free flowing among students increased; however, this pilot study only utilized surveys to collect data on students' communication satisfaction within the discussion forums. Conducting qualitative interviews along with survey data would have better supported the findings of this study to capture students' thoughts on asynchronous discussion formats, such as what may be helpful or prohibitive for the learning experience and overall satisfaction; thus, a future study to consider is a mixed method design. To address the issue of small sample size, a future study could be expanded to include other institutions offering RN to BSN

programs, or to recruit from all levels of the nursing program (pre-licensure through masters) to increase the potential participant pool. Evaluating student choice in how responses are created in discussion forums, such as the option to use text-based or audio-video responses, may also improve communication satisfaction. In addition, the ADCSS tool's validity should be evaluated for use in student populations within the United States as well as with asynchronous discussions that use audio-video responses versus text-based responses.

Although our study was limited by a small sample size and low power ($N = 16$ pre-test, $N = 17$ post-test) the findings may be of interest to online nurse educators who are seeking innovative strategies to improve student communication satisfaction within asynchronous discussion forums. With further research, the use of audio-video discussion responses may provide a promising alternative to the traditional text-based responses related to communication satisfaction.

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CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

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