Relationships Between Online Student Engagement Practices and GPA Among RN-to-BSN Students

Kathryn E. Rioch
Jennifer L. Tharp
National University of Health Sciences, The King's College

Abstract
The purpose of this quantitative, correlational study was to investigate the relationships between perceived online student engagement and self-reported grade point average (GPA) among post-licensure, undergraduate nursing students. Participants for this study were RN-to-BSN students at a mid-sized university in the Midwest. Approximately 110 students were contacted for participation, with 27 complete student responses ($N= 27$). Study participants were predominately 36 years or older (63%), full-time students (55.6%), and female (77.8%). The Community of Inquiry survey instrument by authors Arbaugh et al. (2008) measured perceived student engagement. Significant, positive correlations among the variables of cognitive presence ($r_s= .467$, $p= .014$), teaching presence ($r_s= .448$, $p= .019$), and self-reported GPA were determined among RN-to-BSN students. Significant effect differences were found between student engagement groups and self-reported GPA ($p< .05$); thus, within this study, student engagement significantly related to academic outcomes. Subsequently, the utilization of institution standards that heighten online student engagement could relate to improved student academic outcomes for RN-to-BSN students.

Keywords: Online student engagement, Community of Inquiry, nursing students

More than 600 Registered Nurse to Baccalaureate (RN-to-BSN) programs are offered exclusively or partially online in the United States (American Association of Colleges of Nursing [ACCN], 2019). RN-to-BSN programs allow an academic pathway for associate degree nurses with professional licensure to complete their baccalaureate in nursing within one to two years (ACCN, 2019). The Institute of Medicine (IOM) aims to increase the percentage of registered nurses in the US with a baccalaureate nursing degree to meet growing demand, and progress is underway (Hampton & Pierce, 2016; Perfetto & Orsolini, 2019). Since the IOM recommendation commenced within the last decade, enrollment in post-licensure baccalaureate programs has increased by 69% (Altman, 2016). Merrell et al. (2020) concluded the demand for RN-to-BSN programs continues to grow as health care employers express a preference for BSN-prepared nurses, and as states legislatures indicate they may require nurses to obtain their BSN degree within ten years of licensure. The IOM posits that this expanded education of the nursing workforce creates the potential to reduce health disparities and improve patient outcomes within an increasingly complex health care environment (Altman, 2016).

Growth in online RN-to-BSN programs has contributed to the IOM's nursing education advancement (Perfetto & Orsolini, 2019). However, despite online education growth, student persistence in online courses varies (Deschaine & Whale, 2018; Su & Waugh, 2018; Knestrick et al., 2016). Knestrick et al. (2016) reported that nearly 50% of online nursing students who dropped a course or took a leave of absence also withdrew from their university. Cipher et al. (2017) similarly determined that online RN-to-BSN students who withdrew from a course were 22.8% less likely to graduate. Barriers to graduation among RN-to-BSN students may include disruptions with family balance, lack of connection to the program and/or institution, and financial cost (De Leon, 2018; Kennel & Ward-Smith, 2017).

Perceived connections to institution, faculty, and student peers define elements of student engagement (Kuh, 2016; Astin, 1999). Within a qualitative case study utilizing exit survey data, Delaney (2018) concluded that online RN-to-BSN students who completed their degree were more likely to report high perceptions of institutional fit between student and program, continuous connection and access to faculty, and a fostered sense of community among program peers. Moreover, from a meta-analyses of 19 RN-to-BSN studies, significant positive relationships were found between online student engagement and course performance (Perfetto, 2019). Within these 19 reviewed studies, RN-to-BSN students who spent more time interacting with their online courses were more likely to achieve higher grades (Perfetto, 2019). Despite this connection, little information exists on relationships between RN-to-BSN online student engagement and GPA.

Purpose of Study

The purpose of this quantitative, correlational study was to explore the relationships between student engagement and GPAs to learn more about RN-to-BSN students' online engagement practices. The Community of Inquiry (CoI) survey instrument was used to measure perceived students' engagement for each CoI model scale, subscale, and survey item. The research questions that guided this study were:

To what extent do relationships exist between perceived online student engagement practices and self-reported GPA among RN-to-BSN students?

a. To what extent do relationships exist between perceived teaching presence and its subscales and self-reported GPA among RN-to-BSN students?

b. To what extent do relationships exist between perceived social presence and its subscales and self-reported GPA among RN-to-BSN students?

c. To what extent do relationships exist between perceived cognitive presence and its subscales and self-reported GPA among RN-to-BSN students?

d. To what extent do relationships exist between singular CoI survey items and self-reported GPA among RN-to-BSN students?

Review of Literature

This literature review examines the Community of Inquiry (CoI) by Garrison et al. (1999) as the conceptual framework of the study along with the main variables of online student engagement and self-reported GPA. Additionally, this section provides an overview of student engagement practices relevant to the RN-to-BSN population.

Student Engagement and the Community of Inquiry

Measures of student engagement involve conceptual frameworks that encompass physical and psychological opportunities to connect with academic coursework (Astin, 1999; Kuh, 2016). Larreamendy-Joerns and Leinhardt (2006) defined online engagement as practices that include meaningful interactions and connections between the student and course material, peers, and the instructor to include cognitive and social elements. Garrison et al. (1999) developed the CoI model as a conceptual framework for collaborative learning and effective online classroom experiences, and therefore a conceptual framework for this study as well.

The CoI model is exclusive to online pedagogy and relies on the interactive communication of instructors, students, and the learning management system to create three scales that impact the learning process: cognitive presence, social presence, and teaching presence (Garrison et al., 1999; Garrison & Arbaugh, 2007; Garrison et al., 2010). Teaching presence represents the relationship between instructor and student, course guidance, and structured feedback (Garrison et al., 1999; Garrison & Arbaugh, 2007). Teaching presence includes three subscale measures: instructional design and organization, discourse facilitation, and direct instruction (Garrison & Arbaugh, 2007; Garrison et al., 2010). Social presence represents meaningful interactions among participants and the development of a relevant learning community (Garrison et al., 1999; Garrison & Arbaugh, 2007). Subscale measures of social presence involve emotional expression, open communication, and group cohesion (Garrison & Arbaugh, 2007; Garrison et al., 2010). Cognitive presence represents critical thinking and application of learned material (Garrison et al., 1999; Garrison & Arbaugh, 2007). Cognitive presence includes subscale measures to represent various stages of the critical thinking process, including triggering event, exploration, integration, and resolution (Garrison et al., 1999; Garrison & Arbaugh, 2007; Garrison et al., 2010). When all three elements and their respective subscales are combined, they are likely to cultivate student engagement through critical thinking and dynamic learning (Garrison et al., 1999; Garrison & Arbaugh, 2007). Reviewing the scales of cognitive, social, and teaching presences provides a foundation to

improve pedagogy and enhance online student engagement (Redstone et al., 2018). Figure 1 illustrates the three scales of the CoI model.

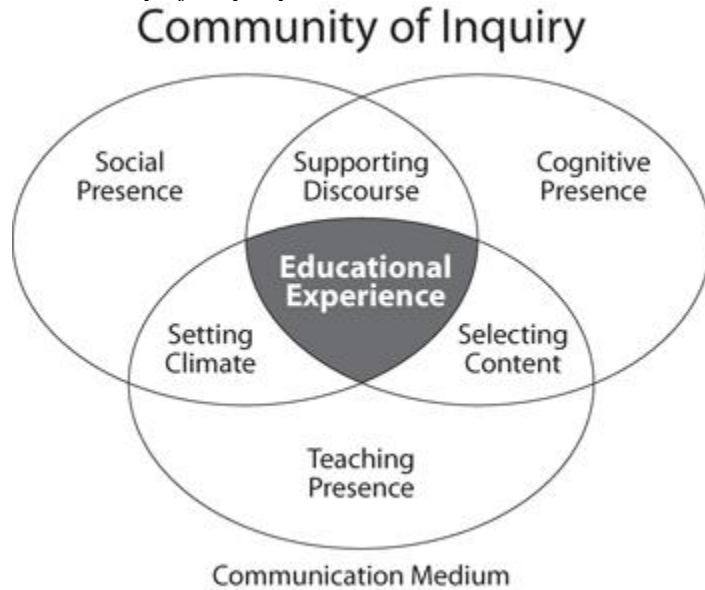**Figure 1**

Community of Inquiry Model

Figure 1. Community of Inquiry Model. Adapted from Garrison et al., 1999, p. 88.

Student Engagement and GPA Athens (2018) demonstrated significant positive relationships between student perceptions of engagement, learning communities, and self-reported student grades, with statistically significant differences between self-reported undergraduate student grades and student perceptions of engagement (p<.001). Cumulative GPA among undergraduate students also correlates with online course success (Huntington-Klein et al., 2016; Jaggars & Xu, 2016), as well as course persistence and the likelihood to enroll in another online course (Huntington-Klein et al., 2016). In agreement, Bloemer et al. (2018) concluded that undergraduate cumulative GPA predicted success in online coursework.

Jaggars and Xu (2016) determined that increased levels of online student interaction impacted student course performance. Athens (2018) concurred with these findings; significant positive relationships existed between perceptions of engagement, learning community, and self-reported student grades (p<.001). Specific to the RN-to-BSN population, positive correlations were found between the time spent with online course material and student grades (Perfetto, 2019). A comparative, quantitative study involving 944 nursing students showed that nursing students' higher levels of course performance correlated with their reports of higher engagement levels (Hampton & Pearce, 2016).

Student Engagement and Online Nursing Students
Hampton et al. (2017) determined patterns in preferred teaching style within a mixed-methods study of 217 nursing students. Of the online nursing students, 76% preferred instruction methods of instructor videos, narrated presentations, or live stream sessions versus synchronous

instruction or non-narrated presentations. Moreover, the strength of perceived teaching presence correlated to higher levels of student engagement and course motivation (Hampton et al., 2017).

In a quasi-experimental comparison study, London (2018) concluded that RN-to-BSN students were more likely to report course, instructor, and program satisfaction with routine, text-based feedback from course instructors. Significant differences, however, existed between teaching style preferences of older and younger nursing students. Hampton et al. (2017) noted differences between age and preferred collaborative modalities; older students preferred the discussion forums and asynchronous learning whereas younger students preferred interactive games and live stream collaboration. In a quantitative, correlation study utilizing the CoI survey instrument among 239 RN-to-BSN students, Olson and Benham-Hutchins (2019) determined that higher levels of cognitive presence were found with the greater degree of group projects whereas lower levels of cognitive presence were associated with greater online presentations and papers. Despite preferential differences in teaching style and class activities, online nursing students with higher reports of connection to the instructor are more likely to report higher levels of student engagement (Hampton & Pearce, 2016; London, 2018).

Methods

Study Sample

After approval by the university institutional review board and nursing program, a convenience sample of current RN-to-BSN students at a singular, mid-sized institution in the Midwest was recruited for participation during the summer and fall semesters of 2020. Convenience sampling is common among professional nursing program literature to assess perceptions, attitudes, and behaviors of student engagement and preferred learning practices (London, 2018, Hampton et al., 2017; Merrell et al., 2020; Carlon et al., 2012). Approximately 90 RN-to-BSN students were recruited in the summer semester and an additional 20 students were recruited in the fall; summer recruitment involved contacting all program cohorts whereas the fall recruitment targeted only new program enrollees to increase participation and avoid repeat participation. In total, approximately 110 students were contacted for participation with 29 initial responses and a total response rate of 26.3%. Two student responses were incomplete and subsequently discarded from the study results; thus, this study's sample included 27 complete student responses (N= 27).

Student demographic and characteristic data are reported in Table 1. Most study participants were 36 years or older (63%), full-time students (55.6%), and female (77.8%). No data on ethnicity or race was collected to avoid potential program or student identifying data. Two students reported no prior experience with online coursework; however, 92.6% of student participants had previously taken at least one online course. Most participants were currently enrolled in either one (51.9%) or two (40.7%) online courses at the time of the survey.

Table 1
Student Demographic Characteristics (N= 27)

Variables	Subcategories	Frequency and (Percentage)
Age	18-36 yrs.	10 (37%)
	>36 yrs.	17 (63%)
Gender	Female	21 (77.8%)
	Male	6 (22.2%)
Enrollment Status	Full Time	15 (55.6%)
	Part Time	12 (44.4%)
Number of Online Courses Currently Enrolled	1 online class	14 (51.9%)
	2 online classes	11 (40.7%)
	3 or more online classes	2 (7.4%)
Number of Online Courses Previously Taken	0, first online class	2 (7.4%)
	1-2 online classes	4 (14.8%)
	3 or more online classes	21 (77.8%)
GPA	Mostly A's	12 (44.4%)
	A's and B's	13 (48.2%)
	Mostly B's or below	2 (7.4%)

Note: Mostly A's = GPA 3.75 or higher, A's and B's = GPA 3.25-3.74, Mostly B's and below = 3.24 or lower (U.S. Department of Education, 2019).

Instrument

The Community of Inquiry model by Garrison et al. (1999) served as a framework to measure student engagement within this study, so the corresponding study instrument was utilized. Developed and validated by authors Arbaugh et al. (2008)*,* the CoI survey instrument consists of 34 items divided into three scales: cognitive, social, and teaching presence. Subscales within teaching presence included design and organization, facilitation, and direct instruction (Arbaugh et al., 2008). Subscales within social presence included affective expression, open communication, and group cohesion (Arbaugh et al., 2008). Lastly, subscales within cognitive presence included triggering event, exploration, integration, and resolution (Arbaugh et al., 2008). A five-point Likert scale measured the degree of student engagement: 1= strongly disagree, 2= disagree, 3= neutral, 4= agree, and 5= strongly agree.

The CoI survey instrument consistently yields reliable and valid results over a decade of research (Stenbom, 2018; Redstone et al., 2018; Kozan, 2016). Between 2007 and 2018, over 200 articles published by 224 different authors utilized the CoI survey as an instrumentation method (Stenbom, 2018). Within the articles, published in 47 different journals, sample populations ranged from 5 to 64,781 students (Stenbom, 2018). Specifically related to the

interest of this study, GPA predicted differences in student engagement within previous CoI research (Stenbom, 2018; Shea & Bidjerano, 2009).

Shea and Bidjerano (2009, 2010) argued that the CoI framework reflects collaborative learning and supports epistemic engagement as defined by Larreamendy-Joerns and Leinhardt. Since the CoI defines both cognitive and social elements of collaborative learning, Shea and Bidjerano (2009) argued the CoI model is "specifically devoted to the goal of supporting epistemic engagement" (p. 1722) and remains the "most concise descriptive model for understanding higher education online learning with an epistemic engagement pedagogical approach" (p. 1723). Notably, similarities of collaborative knowledge gains, instructor and student commitments to practical inquiry can be demonstrated between the epistemic engagement viewpoint of Larreamendy-Joerns and Leinhardt with the Community of Inquiry model (Shea & Bidjerano, 2009, 2010).

RN-to-BSN students were contacted by campus email for study participation via an anonymous Qualtrics survey link. Informed consent, provided within the survey link, was required prior to survey completion. After acknowledgement of informed consent, the Qualtrics survey consisted of six descriptive data questions including characteristics variables of age, full- or part-time enrollment, gender, number of online classes currently enrolled, number of online classes previously completed, and self-reported GPA. The complete 34-item CoI survey instrument followed: questions 1-13 encompassed teaching presence, 14-22 encompassed social presence, and 23-34 encompassed cognitive presence (Arbaugh et al., 2008). Subscales within teaching presence included the following question items: 1-4, design and organization; 5-10, facilitation; 11-13, direct instruction; 14-16, affective expression; 17-19, open communication; 20-22, group cohesion; 23-25, triggering event; 26-28, exploration; 29-31, integration; and 32-34, resolution (Arbaugh et al., 2008).

Cronbach's alpha for each scale of the survey indicated high internal consistency levels with .937 for teaching presence, .897 for social presence, and .935 for cognitive presence (Arbaugh et al., 2008). Some sub-scale survey sections also indicated high levels of internal consistency, including teaching presence design and organization (α= .906), teaching presence facilitation (α= .902), social presence effective expression (α= .838), cognitive presence triggering event (α= .823), cognitive presence exploration (α= .852), and cognitive presence resolution (α= .857).

Data Analysis

The data collected in this study from the Qualtrics survey results were analyzed through the Statistical Package for Social Sciences software (SPSS) version 22.0. Cronbach's alpha measured the average inter-item correlation. Non-parametric statistics were used due to the small study population of 27 students (Leech & Onwuegbuzie, 2019; MacFarland & Yates, 2016; Şenel Tekin et al., 2020). Spearman rank correlation coefficient [r_s] determined relationships between the CoI engagement scales and self-reported cumulative GPA values (De Winter et al., 2016). Spearman rank correlation coefficient [r_s] demonstrates lower variability with skewed datasets and provides efficiency gains for small study populations (De Winter et al., 2016). Kruskal-Wallis tests determined effect differences between student engagement practices and cumulative GPA (MacFarland & Yates, 2016). Kruskal-Wallis analysis is the non-parametric

version of the one-way ANOVA and appropriate to assess differences in multiple independent groups within a non-normal distribution (MacFarland & Yates, 2016).

Results

A correlation analysis was conducted using the Spearman rank correlation coefficient to examine relationships between self-reported GPA and perceived online student engagement practices. The Kruskal Wallis H-test analyzed the relationship between self-reported GPA, CoI scale, and subscale composite scores. Mean scale and select subscale composite scores are found in Table 2.

Table 2
Descriptive Statistics of Community of Inquiry Scales and Subscales (N=27)

	Minimum	**Maximum**	**Mean**	*SD*
Teaching presence (13 items)	3.08	5.00	4.28	.570
Social presence (9 items)	2.56	5.00	4.00	.670
Cognitive presence (12 items)	2.92	5.00	4.21	.522
Teaching presence: Design & organization	2.25	5.00	4.35	.684
Teaching presence: Facilitation	3.00	5.00	4.22	.620
Social presence: Affective expression	1.33	5.00	3.80	.926
Cognitive presence: Triggering event	2.67	5.00	4.10	.583
Cognitive presence: Exploration	3.33	5.00	4.32	.595
Cognitive presence: Resolution	2.00	5.00	4.21	.655

Note: SD= standard deviation; Likert scale of 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

Teaching Presence

Table 3 indicates the results of the CoI scale and GPA relationships. A positive, statistically significant relationship was found between self-reported cumulative GPA and perception of teaching presence (r_s= .467, p= .014). Study participants who reported higher engagement levels within the scales of teaching presence were also more likely to self-report higher GPAs.

Positive, significant relationships were also found between self-reported GPA and the perceived engagement subscales of design and organization (r_s= .460, p= .016), facilitation (r_s= .439, p= .022), triggering event (r_s= .538, p= .004), exploration (r_s= .393, p= .042), and resolution (r_s= .432, p= .024). Thus, study participants with higher levels of perceived student engagement within the subscales of design and organization, facilitation, triggering event, exploration, and resolution were also more likely to self-report higher GPAs.

Cognitive Presence

A positive, statistically significant relationship was also found between self-reported cumulative GPA and perception of cognitive presence (r_s= .448, p= .019). Study participants who reported higher engagement levels within the scales of cognitive presence were also more likely to self-report higher GPAs.

Social Presence

No significant relationship was found between GPA and social presence.

Table 3
Results of Significant Correlation between Community of Inquiry Scales and GPA

Variables	**N**	**Rs**	**P**
Teaching Presence	27	.467	.014*
Social Presence	27	.392	.081
Cognitive Presence	27	.448	.019*
Teaching presence: Design & organization	27	.460	.016*
Teaching presence: Facilitation	27	.439	.022*
Social presence: Affective expression	27	.256	.198
Cognitive presence: Triggering event	27	.538	.004*
Cognitive presence: Exploration	27	.393	.042*
Cognitive presence: Resolution	27	.432	.024*

Note: *p< .05, two-tailed

CoI Survey Items

Further exploring the relationship between perceived online student engagement measurements and self-reported cumulative GPA, specific item questions yielded significant results. Table 4 demonstrates the positive, significant relationships between singular item questions within various subscales and self-reported GPA. Again, student participants with higher perceived engagement levels reflected in survey Items 1, 2, 6, 9, 10, 11, 13, 23, 24, 25, 26, 27, and 29 were more likely to self-report higher GPA values.

Table 4

Significant Relationships Between COI Survey Items and GPA

Scale/Subscale	Item No.	Item	N	Rs	P
Teaching presence: Design & organization	1	The instructor clearly communicated important course topics.	27	.486	.010*
Teaching presence: Design & organization	2	The instructor clearly communicated important course goals.	27	.423	.028*
Teaching presence: Facilitation	6	The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me learn.	27	.483	.011*
Teaching presence: Facilitation	9	The instructor encouraged course participants to explore new concepts in this course.	27	.415	.031*
Teaching presence: Facilitation	10	Instructor actions reinforced the development of a sense of community among course participants.	27	.392	.043*
Teaching presence: Direct instruction	11	The instructor helped to focus discussion on relevant issues in a way that helped me learn.	27	.407	.035*
Teaching presence: Direct instruction	13	The instructor provided feedback in a timely fashion.	27	.413	.032*
Cognitive presence: Triggering event	23	Problems posed increased my interest in course issues.	27	.461	.016*
Cognitive presence: Triggering event	24	Course activities piqued my curiosity.	27	.487	.010*
Cognitive presence: Triggering event	25	I felt motivated to explore content related questions.	27	.487	.010*
Cognitive presence: Exploration	26	I utilized a variety of information sources to explore problems posed in this course.	27	.432	.024*
Cognitive presence: Exploration	27	Brainstorming and finding relevant information helped me resolve content related questions.	27	.437	.023*
Cognitive presence: Integration	29	Combining new information helped me answer questions raised in course activities.	27	.420	.029*

Note: *$p< .05$, two-tailed. Adapted from Arbaugh et al., 2008.

The Kruskal-Wallis H-test evaluated whether differences exist between perceived student engagement groups and self-reported GPA. Significant differences between self-reported mean GPA scores among perceived student engagement groups were found within the following

survey Items at p< .05: 1 (the instructor clearly communicated important course topics), 6 (the instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me learn), 24 (course activities piqued my curiosity), and 27 (brainstorming and finding relevant information helped me resolve content-related questions).

For Item 1, the Kruskal-Wallis test revealed a significant difference of means (H= 9.218, p= .010). A post hoc pairwise comparison found that mean self-reported GPA was significantly different between perceived student engagement group 4 "agree" and group 5 "strongly agree" (p= .002). For Item 6, the Kruskal-Wallis test indicated a significant difference of means (H = 8.073, p= .045). A post hoc pairwise comparison found that mean self-reported GPA was significantly different between perceived student engagement group 4 "agree" and group 5 "strongly agree" (p= .025). Significant differences were also found between Groups 2 "do not agree" and 5 (p= .030).

For Item 24, the Kruskal-Wallis test revealed a significant difference of means (H= 6.271, p= .043). A post hoc pairwise comparison found that mean self-reported GPA was significantly different between perceived student engagement group 4 "agree" and group 5 "strongly agree" (p= .023). For Item 27, the Kruskal-Wallis test showed that at there was a significant difference of means (H= 9.158, p= .010). A post hoc pairwise comparison found that mean self-reported GPA was significantly different between perceived student engagement group 4 "agree" and group 5 "strongly agree" (p= .005). Relevant results from the Kruskal-Wallis analyses are found in Table 5 and Figure 2.

Table 5

Kruskal-Wallis H-test Among Student Engagement Groups

Item No.	Student Engagement Scale	Student Engagement Subscale	Student Engagement Group (*n*)	H	*P*
1	Teaching Presence	Design & Organization	2 (2) 3 (0) 4 (13) 5 (12)	9.218	.010*
6	Teaching Presence	Facilitation	2 (1) 3 (3) 4 (12) 5 (11)	8.073	.045*
24	Cognitive Presence	Triggering Event	3 (2) 4 (16) 5 (9)	6.271	.043*
27	Cognitive Presence	Exploration	3 (1) 4 (13) 5 (13)	9.158	.010*

Note: *p< .05, Student Engagement Groups 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

Figure 2

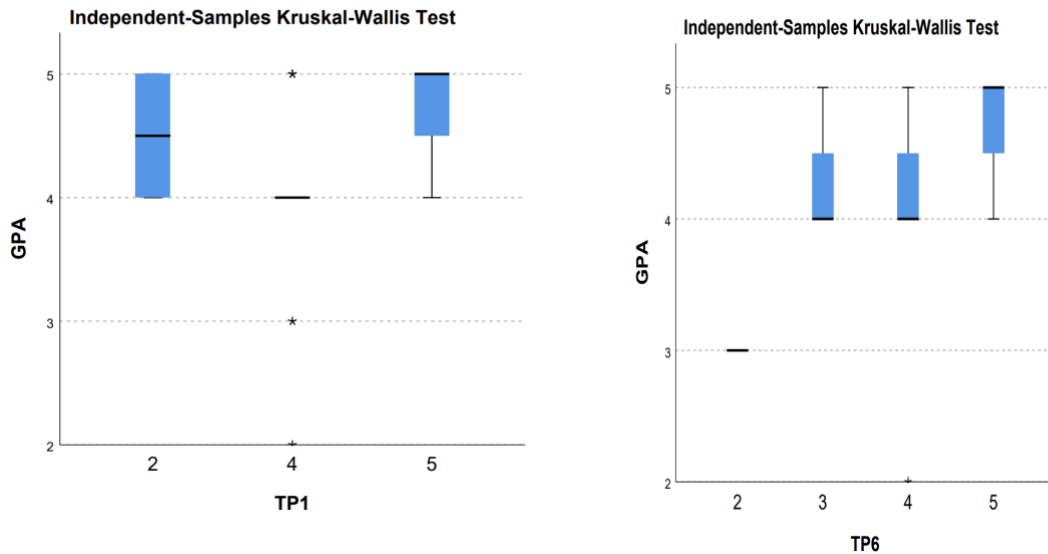*Box Plot of Items 1, 6, and Cumulative GPA*

Figure 2. Results Kruskal-Wallis H test. For item 1, there was a statistically significant difference in GPA between the different student engagement groups of $X^2(2)= 9.218$, p= .010*. For item 6, there was a statistically significant difference in GPA between the different student engagement groups of $X^2(3)= 8.073$, p= .045*. TP1= Teaching presence item 1. TP6 = Teaching presence 6. Student engagement groups 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree. GPA= grade point average. 2= mostly B/C's, 3= mostly B's, 4= mostly A/B's, 5= mostly A's.

Discussion

This study explored relationships between perceived student engagement and self-reported GPA among a convenience sample of online RN-to-BSN students. The data imply that some of the variances in reported cumulative GPA can be accounted for by perceptions of online student engagement within this study population. Subsequently, the utilization of institution standards that heighten online student engagement could relate to improved student academic outcomes for RN-to-BSN students.

Students with higher GPAs are described as focused, attentive, and actively engaged in learning; subsequently, students with higher GPAs are more likely to graduate and achieve degree completion (Schreiner et al., 2012; Chatterjee et al., 2018). Knestrick et al. (2016) found that undergraduate GPA was a strong predictor of online nursing student persistence and concluded that for every unit increase of 0.1 in GPA, student attrition rates decrease by a unit value of 2.5%. In this study, self-reported GPA significantly correlated with item questions related to student connection and interest in the course material.

No significant relationships were determined with perceived social presence and self-reported GPA. This finding is consistent with its theoretical framework. Social presence developed to include meaningful interactions and establish a relevant learning community (Garrison & Arbaugh, 2007; Garrison et al., 2010). Despite its relevance to generative knowledge, Garrison and Arbaugh (2007) caution that social presence cannot stand alone to

facilitate learning. This discrepancy is unlike the other constructs of cognitive and teaching presence; cognitive and teaching presence have the potential to facilitate learning independently (Garrison & Arbaugh, 2007).

Recommendations

This study suggests the importance of maintaining higher levels of student engagement within online RN-to-BSN programs. This finding aligns with other research suggesting significant relationships between the utilization of best-practice frameworks, student perceptions of engagement, and course content quality (Anderson et al., 2015; Bigatel & Edel-Malizia, 2017). Based on this discovery, online instructors, administrators, and instructional designers might consider the following actions to strengthen student engagement practices with online RN-to-BSN programs: 1) create clear alignment of course learning outcomes with professional goals, 2) maintain strong instructor facilitation, visibility, and access with a priority focus on timely and relevant feedback, 3) increase instructor knowledge of best-practice standards and provide support to implement these strategies within course design, and 4) provide partnership opportunities between instructors and instructional designers to promote alignment with instructional practice and course learning goals.

Clear Course Alignment

The relationship between course learning outcomes and professional goals aligns with several findings in this study, including positive, significant relationships found between self-reported GPA, perceived teaching presence, and its subscales of design and organization. Moreover, some variance for GPA could be accounted for by the survey Item 1, with significant effect difference between student engagement groups. Yang et al. (2017) reported that students were more likely to complete an online course if it aligns with their individual and professional needs. The more students can connect with the course information, the more likely they are to stay enrolled (Yang et al., 2017). Thus, students' perceptions influence engagement and engagement influenced the likelihood of course completion (Su & Waugh, 2018; Bloemer et al., 2017; Bloemer et al., 2018).

Instructor Visibility and Feedback

The variables of perceived teaching presence, its subscale facilitation, and self-reported GPA demonstrated positive, significant relationships. Some variances in self-reported GPA could be accounted for by Item 6, with significant effect differences between student engagement groups. Again, this finding concurs with other literature on the significance of the relationship between student engagement, access to the instructor, and quality of instructor-student interactions (Watson et al., 2017; Athens, 2018). Watson et al. (2017) suggested that students' perceived educational quality included access to the instructor and the establishment of multiple virtual office hours to promote engagement and interaction. Within the authors' quantitative study of 624 students, results suggested diverse modes of communication and timeliness of feedback significantly correlated to the perceived quality of interaction between instructor and student (Watson et al., 2017).

Instructor feedback is a predictor of student engagement (Athens, 2018; Bigatel & Edel-Malizia, 2018). Athens (2018) concluded that meaningful and timely instructor feedback was also a predictor for higher student engagement levels. From their mixed methodology study of

485 undergraduate students, Bigatel and Edel-Malizia (2018) concluded that higher engagement levels were present when the instructor provided prompt feedback within 72 hours of completed activities, provided students with reflective learning opportunities, and assessed student learning by diverse methods.

Best Practice Standards

Implementing standard practice guidelines for online courses could improve dynamic learning practices, educational quality, and student engagement (Anderson et al., 2015; Watson et al., 2017). This study determined significant, positive correlations between the variables of perceived cognitive presence, its subscale triggering event, and self-reported GPA. Significant effect differences with item 24 among student engagement groups, which again accounts for some of the variances with self-reported GPA.

A longitudinal, quantitative study of 339 undergraduate nursing students by Anderson et al. (2015) suggested a significant relationship exists between the utilization of *First Principles on Instruction* and student perceptions of online course quality. Similarly, a quantitative study of 624 students by Watson et al. (2017) concluded that online students prefer instructional strategies suggested by the *Seven Good Principles for Good Practice in Undergraduate Education* and the *Quality Matters Rubric*. In both studies, students' perceptions of quality education align to best-practice standards; thus, the use of standards could improve the pedagogical approaches that lead to student engagement in online courses (Watson et al., 2017; Anderson et al., 2015).

Partnership Between Instructional Designers and Instructors

Finally, RN-to-BSN programs might consider purposeful partnership opportunities between instructors and instructional designers to promote alignment with instructional practice and course learning goals. Within this study, significant, positive correlations between the variables of perceived cognitive presence, its subscale exploration, and self-reported GPA. Moreover, significant effect differences were found among student engagement groups with item 27. Anderson et al. (2015) emphasized the importance of collaboration between instructional designers and instructors to pair expert content with course development models to heighten student engagement practices among online nursing students. Overall, some literature suggests that clear course directions and goals, connections between course material, and perceived course relevancy correlated with higher student engagement (Athens, 2018; Chen et al., 2017; Alvarez-Bell et al., 2017).

Limitations and Considerations

This study's limitations include the use of a convenience sample, small sample size, and use of self-reported instrumentation. The use of self-reported survey instrumentation and self-reported GPA among a convenience sample could result in non-response and self-reporting bias (Privitera & Ahlgrim-Delzell, 2019; Caskie et al., 2014). A quantitative study of 194 undergraduate students by Caskie et al. (2014) determined that students' self-reported GPAs significantly correlated with university records. However, Caskie et al. (2014) noted that reporting differences could exist in the lower GPA and lower self-efficacy groups; within the authors' sample, males underreported GPA whereas females overreported GPA. Subsequently, Caskie et al. (2014) concluded that potential bias might exist when utilizing students' self-reported GPA. Marley and Platau (2017) disagreed with potential bias determinations and

determined within their quantitative study of undergraduate students; self-reported GPA significantly correlated with actual university records.

Significant findings in this study warrant further investigation with larger student populations. However, this study's results add to the literature in demonstrating a connection between online student engagement and academic outcomes despite limitations.

Declarations

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

The author(s) assert that approval from an ethics review board (IRB) at Maryville University.

The authors declared that they received no financial support for the research, authorship, and/or publication of this article.

References

Altman, S. H. (2016, February 22). *Assessing progress on the Institute of Medicine report: The future of nursing*. National Center for Biotechnology Information. https://www.ncbi.nlm.nih.gov/books/n/nap21838/?report=reader

Alvarez-Bell, R., Wirtz, D., & Bian, H. (2017). Identifying keys to success in innovative teaching: Student engagement and instructional practices as predictors of student learning in a course using a team-based learning approach. *Teaching and Learning Inquiry: The ISSOTL Journal*, *4*(2), 128-146. https://doi.org/10.20343/teachlearningqu.5.2.10

American Association of Colleges of Nursing. (2019). Fact sheet: Degree completion programs for registered nurses, RN to master's degree and RN to baccalaureate programs. www.aacn.nche.edu/media-relations/ DegreeComp.pdf

Anderson, G., Tredway, C., & Calice, C. (2015). A longitudinal study of nursing students' perceptions of online course quality. *Journal of Interactive Learning Research, 26*(1), 5-21.

Arbaugh, J. B., Cleveland-Innes, M., Diaz, S. R., Garrison, D. R., Ice, P., Richardson, J. C., & Swan, K. P. (2008). Developing a community of inquiry instrument: Testing a measure of the Community of Inquiry framework using a multi-institutional sample. *The Internet and Higher Education*, *11*(3-4), 133–136. https://doi.org/10.1016/j.iheduc.2008.06.003

Astin, A. W. (1999). Student involvement: A developmental theory for higher education. *Journal of College Student Development*, *40*(5), 518-529.

Athens, W. (2018). Perceptions of the persistent: Engagement and learning community in underrepresented populations. *Online Learning*, *22*(2) 27-58. https://doi.org/10.24059/olj.v22i2.1368

Bigatel, P. M., & Edel-Malizia, S. (2017). Using the "indicators of engaged learning online" framework to evaluate online course quality. *TechTrends*, *62*(1), 58–70. https://doi.org/10.1007/s11528-017-0239-4

Bigatel, P., & Edel-Malizia, S. (2018). Predictors of instructor practices and course activities that engage online students. *Online Journal of Distance Learning Administration, 21*(1), 1-19.

Bloemer, W., Day, S., & Swan, K. (2017). Gap analysis: An innovative look at gateway courses and student retention. *Online Learning, 21*(3), 5-14. https://doi.org/10.24059/olj.v21i3.1233

Bloemer, W., Swan, K., Day, S., & Bogle, L. (2018). Digging deeper into the data: The role of gateway courses in online student retention. *Online Learning, 22*(4), 109-127. https://doi.org/10.24059/olj.v22i4.1515

Carlon, S., Bennett-Woods, D., Berg, B., Claywell, L., LeDuc, K., Marcisz, N., Mulhall, M., Noteboom, T., Snedden, T., Whalen, K., & Zenoni, L. (2012). The community of inquiry instrument: Validation and results in online health care disciplines. *Computers & Education, 59*, 215-221. https://doi.org/10.1016/j.compedu.2012.01.004

Caskie, G. I., Sutton, M. C., & Eckhardt, A. G. (2014). Accuracy of self-reported college GPA: Gender-moderated differences by achievement level and academic self-efficacy. *Journal of College Student Development*, *55*(4), 385-390. https://doi.org/10.1353/csd.2014.0038

Chatterjee, A., Marachi, C., Rai, C., & Yeung, F. (2018). Using logistic regression model to identify student characteristics to tailor graduation initiatives. *College Student Journal, 52*(3), 352-360.

Chen, B., DeNoyelles, A., Patton, K., & Zydney, J. (2017). Creating a community of inquiry in large-enrollment online courses: An exploratory study on the effect of protocols within online discussions, *Online Learning 21*(1), 165-188. https://doi.org/10.24059/olj.v21i1.816

Cipher, D. J., Mancini, M. E., & Shrestha, S. (2017). Predictors of persistence and success in an accelerated online RN-to-BSN program. *Journal of Nursing Education, 56*(9), 522-526. https://doi.org/10.3928/01484834-20170817-02

Delaney, M.C. (2018). Adult nursing students persisting toward degree completion: A case study of an RN to BSN accelerated program. *Nursing & Primary Care*, *2*(4), 1–7. https://doi.org/10.33425/2639-9474.1073

De Leon, C. T. T. (2018). Navigating the storm: integrative review of attrition factors among undergraduate nursing students. *Health Notions*, *2*(9), 918-926.

De Winter, J.C.F., Gosling, S., & Potter, J. (2016). Comparing the Pearson and Spearman correlation coefficients across distributions and sample sizes: A tutorial using simulations and empirical data. *Psychological Methods, 21*(3), 273-290. http://dx.doi.org/10.1037/met0000079

Deschaine, M.E., & Whale, D.E. (2017). Increasing student engagement in online educational leadership courses. *Journal of Educators Online, 14*(1). Deschaine & Whale - Journal of Educators Online (thejeo.com)

Garrison, D. R., Anderson, T., & Archer, W. (1999). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, *2*(2-3), 87–105. https://doi.org/10.1016/s1096-7516(00)00016-6

Garrison, D. R., & Arbaugh, J. B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *The Internet and Higher Education*, *10*(3), 157–172. https://doi.org/10.1016/j.iheduc.2007.04.001

Garrison, D.R., Cleveland-Innes, M., & Fung, T.S. (2010). Exploring causal relationships among teaching, cognitive, and social presence: Student perceptions of the community of inquiry framework. *Internet and Higher Education, 13*(1-2), 31-36. https://doi.org/10.1016/j.iheduc.2009.10.002

Hampton, D., & Pearce, P. (2016). Student engagement in online nursing courses. *Nurse Educator, 41*(6), 294-298. https://doi.org/10.1097/NNE.0000000000000275

Hampton, D., Pearce, P. F., & Moser, D. K. (2017). Preferred methods of learning for nursing students in an on-line degree program. *Journal of Professional Nursing*, *33*(1), 27–37. https://doi.org/10.1016/j.profnurs.2016.08.004

Huntington-Klein, N., Cowan, J., & Goldhaber, D. (2016). Selection into online community college courses and their effects on persistence. *Research in Higher Education*, *58*(3), 244–269. https://doi.org/10.1007/s11162-016-9425-z

Jaggars, S. S., & Xu, D. (2016). How do online course design features influence student performance? *Computers & Education*, *95*, 270–284. https://doi.org/10.1016/j.compedu.2016.01.014

Kennel, K.D., & Ward-Smith, P. (2017). Academic persistence among nursing students: A concept analysis. *Journal of Nursing Education and Practice, 7*(11), 62-68. https://doi.org/10.5430/jnep.v7n11p62

Knestrick, J.M., Wilkinson, M.R., Pellathy, T.P., Lange-Kessler, J., Katz, R., & Compton, P. (2016). Predictors of retention of students in an online nursing program. *The Journal for Nurse Practitioners, 12*(9), 635-640. http://doi.org/10.1016/j.nurpra.2016.06.011

Kozan, K. (2016). The incremental predictive validity of teaching, cognitive and social presence on cognitive load. *Internet and Higher Education, 31*, 11-19. https://doi.org/10.1016/j.iheduc.2016.05.003

Kuh, G. D. (2016). Making learning meaningful: Engaging students in ways that matter to them. *New Directions for Teaching and Learning*, *2016*(145), 49-56. https://doi.org/10.1002/tl.20174

Larreamendy-Joerns, J., & Leinhardt, G. (2006). Going the Distance With Online Education. *Review of Educational Research*, *76*(4), 567–605. https://doi.org/10.3102/00346543076004567

Leech, N.L., & Onwuegbuzie, A.J. (2019). A call for greater use of nonparametric statistics. *Research in the Schools, 25*(2), xiii-xxvi. http://www.msera.org/publications-rits.html

London, J. (2018). Use of Asynchronous Audio Feedback in Discussion Boards With Online RN-BSN Students. *Nurse Educator*, *44*(6), 308–311. https://doi.org/10.1097/nne.0000000000000633

MacFarland, T.W., & Yates, J.M. (2016). *Introduction to nonparametric statistics for the biological sciences.* Springer.

Marley, R., & Platau, S. (2017). Empirical evidence on the validity of using accounting research subjects' self-reported GPA as a proxy measure of actual GPA. *International Journal of Critical Accounting*, *9*(3), 193-205. https://doi.org/10.1504/ijca.2017.088716

Merrell, M.A., Probost, J.C., Crouch, E., Abshire, D.A., McKinney, S.H., & Haynes, E.E. (2020). A national survey of RN-to-BSN programs: Are they reaching rural students? *Journal of Nursing Education, 59*(10), 557-565. https://doi.org/10.3928/01484834-20200921-04

NY State Senate Bill S6768. NY State Senate. (2019, March 1). https://www.nysenate.gov/legislation/bills/2017/s6768

Olson, C., & Benham-Hutchins, M. (2019). Exploring online RN-to-BSN student perceptions of learner presence. *Nursing Education Perspectives*, *41*(2), 92–96. https://doi.org/10.1097/01.nep.0000000000000529

Perfetto, L. M. (2019). Preparing the Nurse of the future: Emergent themes in online RN-BSN education. *Nursing Education Perspectives*, *40*(1), 18–24. https://doi.org/10.1097/01.nep.0000000000000378

Perfetto, L.M., & Orsolini, L. (2019). Determining the rate of educational advancement of associate degree nursing guidelines: A replicable method to establish the AND as pathway to the baccalaureate in nursing. *Teaching and Learning in Nursing, 14*, 77-84. https://doi.org/10.1016/j.teln.2018.11.007

Privitera, G.J., & Ahlgrim-Delzell, L. (2019). *Research methods for education*. Thousand Oaks, CA: Sage Publications.

Redstone, A.E., Stefaniak, J.E., & Luo, T. (2018). Measuring presence: A review of research using the community of inquiry instrument. *The Quarterly Review of Distance Education, 19*(2), 27-36.

Schreiner, L. A., Louis, M. C., & Nelson, D. D. (2012). *Thriving in transitions: A research-based approach to college student success.* National Resource Center for The First Year Experience.

Şenel Tekin, P., Ilgaz, H., Afacan Adanır, G., Yıldırım, D., & Gülbahar, Y. (2020). Flipping elearning for teaching medical terminology: A study of learners' online experiences and perceptions. *Online Learning, 24*(2), 76-93. https://doi.org/10.24059/olj.v24i2.2030

Shea, P., & Bidjerano, T. (2009). Community of inquiry as a theoretical framework to foster "epistemic engagement" and "cognitive presence" in online education. *Computers & Education*, *52*(3), 543–553. https://doi.org/10.1016/j.compedu.2008.10.007

Shea, P., & Bidjerano, T. (2010). Learning presence: Towards a theory of self-efficacy, self-regulation, and the development of a communities of inquiry in online and blended learning environments. *Computers & Education*, *55*(4), 1721–1731. https://doi.org/10.1016/j.compedu.2010.07.017

Stenbom, S. (2018). A systematic review of the Community of Inquiry survey. *The Internet and Higher Education, 39,* 22-32. https://doi.org/10.1016/j.iheduc.2018.06.001

Su, J., & Waugh, M.L. (2018). Online student persistence or attrition: Observations related to expectations, preferences, and outcomes. *Journal of Interactive Online Learning, 16*(1), 63-79.

U.S. Department of Education. (2019, January). *Web tables-profiles of undergraduate students: Attendance, distance and remedial education, degree program and field of study, demographics, financial aid, financial literacy, employment, and military status.* National Center for Education Statistics. https://nces.ed.gov/pubs2019/2019467.pdf

Watson, F. F., Castano Bishop, M., & Ferdinand-James, D. (2017). Instructional strategies to help online students learn: Feedback from online students. *TechTrends*, *61*(5), 420–427. https://doi.org/10.1007/s11528-017-0216-y

Yang, D., Baldwin, S., & Snelson, C. (2017). Persistence factors revealed: Students' reflections on completing a fully online program. *Distance Education, 38*(1), 23-36. https://doi.org/10.1080/01587919.2017.1299561