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Applying a Community of Inquiry Instrument to Measure Student Engagement in Large Online Courses

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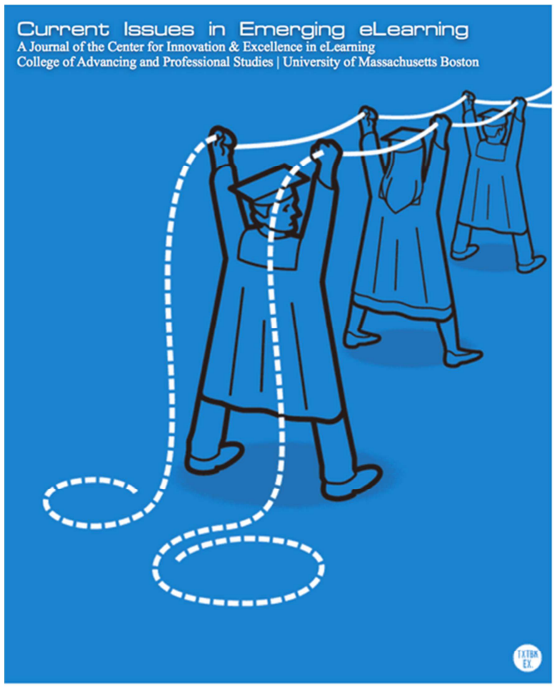

Volume 3, Issue 1

Special Issue on MOOC Design and Delivery: Opportunities and Challenges

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APPLYING A COMMUNITY OF INQUIRY INSTRUMENT TO MEASURE STUDENT ENGAGEMENT IN LARGE ONLINE COURSES

Carol A.V. Damm
Brandeis University

ABSTRACT

The similarity of structure shared by Massive Online Open Courses (MOOCs) and traditional online college courses creates the opportunity to evaluate MOOC and related course offerings using a validated evaluation instrument, the Community of Inquiry (CoI) survey, to measure Teaching, Social, and Cognitive Presences (Garrison, Anderson, & Archer, 2000) in college-level online courses. In this study, the survey has been adapted to evaluate instances of student engagement in large online courses offered at low cost by a publishing firm. The courses suffer from two of the standard problems associated with MOOCs: high dropout rates and inconsistent participation among all but a small percentage of learners. In addition, the design of courses—the module structure, the assignments and activities—and the large class sizes are similar to those of MOOCs. Study participants were students of eight online courses offered consecutively by the publisher between January 2014 and May 2015. The study uses a mixed methodology based on the validated CoI survey to answer the following questions:

- Will low engagement rates in large online courses correlate with weak social presence, teaching presence, and/or cognitive presence as measured by this Community of Inquiry instrument?
- Can a student's engagement or non-engagement with a large online course be measured effectively with this CoI instrument?

The data reveal that students in these publisher-offered courses have positive perceptions of Teaching and Cognitive Presence. However, they have an ambivalent to negative perception of Social Presence.

KEYWORDS: MOOCs, Community of Inquiry, CoI, engagement, disengagement, teaching presence, social presence, cognitive presence, course completion, learning community

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*, 87−105.

APPLYING A COMMUNITY OF INQUIRY INSTRUMENT TO MEASURE STUDENT ENGAGEMENT IN LARGE ONLINE COURSES

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INTRODUCTION

Massive open online instructor-led courses (MOOCs) have become part of the landscape of course offerings through public and private universities. They differ from online courses that may make up part of a degree program offered by a college or university. The most obvious difference is that, currently, a student who enrolls in a MOOC will not receive credit for a degree from the institution offering the course. Rather MOOC participants may receive a certificate of completion, either for free or for a fee substantially lower than traditional tuition rates. Most, if not all, courses offered on the various MOOC aggregators—such as, edX, Coursera, Iversity—are free unless a student wants to receive a certificate acknowledging successful completion of the course. Some MOOCs are bundled together to offer a certificate of mastery in a particular field or topic. Another difference between traditional online courses and MOOCs is that the open enrollment of courses can lead to large class sizes ranging from the hundreds to the tens of thousands. Moreover, many MOOCs allow a student to enroll past the start date of the course as well as to continue working on the course several weeks or months past the final week of the course.

In other ways, these courses are similar to credit-bearing online university courses. MOOCs are instructor-led or facilitator-led. They are presented on a learning management system (LMS). They offer students the opportunity to connect with each other and with the instructor or facilitator through a discussion board (DB). Some open courses require students to post work on the DB and to give feedback on their peers' work, as is common in college-level online courses. The intellectual material and assignments are presented on the LMS. Often, written assignments must be submitted through this platform, or tests must be taken and graded on the LMS. Ultimately, the LMS represents a virtual classroom. It is the space where learning happens and where this learning gets evaluated.

This similarity of structure shared by MOOCs and traditional online college courses creates the opportunity to evaluate MOOC and related course offerings using a validated evaluation instrument developed to measure Teaching, Social, and Cognitive Presences in college-level online courses. This instrument, the Community of Inquiry (CoI) survey, has been developed and used to

determine the efficacy of traditional online courses. In this study, the survey has been adapted to evaluate instances of the relatively new learning model represented by MOOCs. The research provided in this study focuses particularly on student engagement in a large online course by using a mixed methodology based on the validated Community of Inquiry (CoI) survey to answer the following questions:

- Will low engagement rates in large online courses correlate with weak social presence, teaching presence, and/or cognitive presence as measured by this Community of Inquiry instrument?
- Can a student's engagement or non-engagement with a large online course be measured effectively with this CoI instrument?

BACKGROUND

The advancement of technologies in the past decade has enabled this new industry of large online courses that offer video and audio streaming of pre-recorded lectures, e-books, discussion boards, automated grading of exams and written assignments, and open access. Pedagogical and andragogic approaches have had to evolve in order to harness the technology effectively to enable students to engage with and absorb material in this virtual environment. As Anderson and Dron explain, "a learning management system that sees the world in terms of courses and content will strongly encourage pedagogies that fit that model and constrain those that lack content and do not fit a content-driven course model" (2011).

In most MOOCs, the design of instruction is informed by cognitive-behaviorism, an approach that came out of the early twentieth century: "[Udacity, Coursera, edX] exhibit common defining characteristics that include: massive participation; online and open access; *lectures formatted as short videos combined with formative quizzes; automated assessment and/or peer and self-assessment* [italics added] and online fora for peer support and discussion" (Glance, Forsey, Riley, 2013, p. 2). Of necessity, this tried and true approach to content-based instruction creates both formal assessment and self-assessment that allow an instructor or an institution to determine if the learner has successfully mastered the topic.

These large online classes may also take a constructivist approach. Constructivism refers to the learning process wherein new knowledge is "constructed" and absorbed by the learner. According to constructivist theory, learners construct meaning through the process of integrating new knowledge with existing knowledge and/or experience. This approach assumes the importance of peer interaction for effective learning, such as the interaction that might occur on DBs or through group assignments. As instructional designers, educators, and researchers have assimilated this theory into curriculum design, they have modified it to account for the ever-growing complexities of relationships and networks in an increasingly connected world. The Community of Inquiry (CoI) model has evolved out of a constructivist view of online learning.

CoI advocates assert that certain elements are crucial for a successful online experience in higher education: social presence, teaching presence, and cognitive presence (Garrison, Anderson, & Archer, 2000). Social presence refers to the student-to-student relations and interactions or group dynamics. Teaching presence is the design and implementation of the curriculum as facilitated by the teacher. Cognitive presence refers to "the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication" (Garrison et al., p. 89). Figure 1 (directly below) diagrams these overlapping elements of a Community of Inquiry.

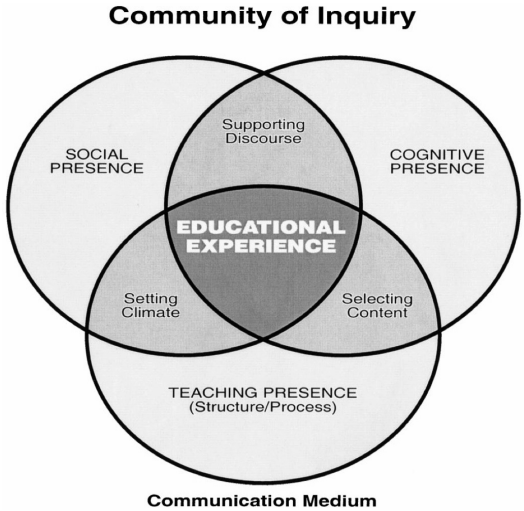

Fig. 1: Elements of an educational experience. (Garrison et al.)

This CoI model has informed the primary focus of research in the field, as described below. Using the CoI model as their framework, researchers Arbaugh et al. (2008) designed a survey that "has been extensively validated in a wide range of universities with very large samples in two countries" (Rubin, Fernandez, 2013, p. 118). The surveys were conducted over three years and included a large student population (875 students across 44 online courses with a response rate of 35.5%). The researchers were able to corroborate that all three presences existed in the majority of online courses examined in their study.

RESEARCH

A U.S. book publisher (BP) offers online courses with an average course participation of 400 students on a commercial learning management system. The courses are headlined by authors of popular books that this organization publishes, and courses are facilitated by staff and by the authors, the latter of whom are also educators or consultants in their fields. Courses are produced using a course design template developed by the staff at BP.

The courses suffer from two of the standard problems associated with Massive Online Open Courses (MOOCs): high dropout rates and inconsistent participation among all but a small percentage of learners. In addition, the design of BP courses—the module structure, the assignments and activities—and the large class sizes are similar to that of MOOCs. However, unlike MOOCs, which are usually free, BP's large online courses require the learner to pay for the course when registering; those who choose to earn continuing education credits pay an additional fee. The registration fee averages between $175 to $200 per course. Therefore, a student's commitment to a BP course could be associated with the commitment level exhibited by students in a tuition-bearing online course. Registration has been successful enough to justify expanding offerings. However, the publisher wants to increase participation and user engagement, if that is possible. They would like to encourage a vibrant community of learners. In the interest of better understanding how students engage with their courses, BP agreed to share data from previous and ongoing courses for the purposes of this research project.

One challenge of an online course is to keep students motivated and ensure their absorption of the material. The large number of students who register for Massive Online Open Courses (MOOCs) but do not complete them, and/or do not stay engaged throughout, has been a principal component of the criticism of the efficacy of this course genre for making quality education available to all. The average dropout rate—disengagement—of students of MOOCs is 85% (Hobson and Young, 2015). Even when students of MOOCs pay for certification or pay to take a course, the percentage of students who drop out is higher than one would expect among a group whose members have committed financially to receive acknowledgment of successful completion of a course. As Anant Agarwal, CEO of edX explains, among those who pay to receive certification for completion of a MOOC, on average only 60% successfully complete the course (Hobson, et al., 2015).

Since the large online courses offered by the publisher also have a high rate of disengagement, despite the fact that students pay for the course and certification, analysis of data from these courses provides the opportunity to measure students' engagement with this model of education, a situation which has allowed me to investigate whether or not aspects of these courses affect students' disengagement.

The investigation entailed a case study of courses offered by the publisher. The study used mixed methodologies. The course design and implementation were analyzed through the Community of Inquiry (CoI) model that asserts the following elements to be crucial for a successful online experience in higher education: social presence, teaching presence, and cognitive presence (Garrison, Anderson, & Archer, 2000).

ANALYSIS OF CONTEXT

PARTICIPANTS

Study participants were students of eight online courses offered consecutively by the publisher between January 2014 and May 2015. BP advertised the courses on its website, in its e-newsletter, in several publications that had been identified to reach the target audience, and in online publications and websites that were frequented by the same target audience. The ages of members of this audience ranged from early 20s to 60s and older. No demographics were polled for this study.

COURSE STRUCTURE

The courses consisted of six to eight modules that had to be taken consecutively in order to advance through the course. The courses were available for six months, but enrollment closed one month after the course began. All of the courses were presented on a commercial learning management system (LMS) designed to reflect the publisher's aesthetics. (The courses will not be referred to by name in this study in order to retain the publisher's anonymity. They have been coded as BPC-#. The numbers run consecutively by date from the first to the last course included herein.)

The structure of each course required the student to complete a quiz or reflection before the next module was unlocked and made accessible to the student. All other activities were voluntary. Assignments in some courses included a guided practice or contemplation relevant to the topic with a recommended activity such as journal writing, meditation, or reflection practice. Each module began with a BP-produced video of the author speaking to the camera or to an audience. Additional videos from other sources were included in some modules of some BP courses. The students would read chapters from a book, which served as the textbook for the course. This book was accessed through the course shell in the LMS in e-book format. Some BP courses included additional readings in the lesson. An outline of one representative module was structured as follows:

1) Lesson 1: Title and Outcomes
2) Watch: Video
3) Read: Chapters, Articles
4) Practice: Contemplations, Self-assessment
5) Explore: Discussion

THE INSTRUCTOR AND FACILITATOR

The instructor of each course was an author whose books are published by BP. He or she was scheduled to work actively on the course only during the first six to eight weeks, in accordance with the six to eight modules that made up a course.

This period will be referred to as the "scheduled" portion of a course. Within this timeframe, he or she would respond to the discussion board and/or send emails that reflected on discussion threads or topics from the lesson. The author also offered two to three live audio conferences for all interested students. In the conference call, the instructor would address a discussion thread or expand on a topic introduced in the lesson, and/or would simply answer questions posed by students. These conference calls were recorded and made available to all students within the LMS course shell.

An instructional designer and administrative staff at BP facilitated technical problems, conference call and course logistics, scheduling issues, and general communication. The instructional designer oversaw facilitation of the course by daily reviewing the discussion threads, communicating weekly with the students through email, and ensuring that the author was cognizant of relevant discussions and general engagement with the course.

PEER-TO-PEER ENGAGEMENT

The primary vehicle for peer-to-peer engagement was the discussion board. In welcoming enrolled students, the facilitator encouraged them to introduce themselves through a post on the board. Learners could respond to each other's posts and receive emails with new posts and responses by subscribing to the discussion board. Each module included an assignment to post to the discussion board in response to questions relevant to the lesson's topic. The discussion board post was not mandatory.

METHODOLOGY

COI INSTRUMENT

Based on the assumption that 15–20% of the student population per course were engaged throughout the course (as the publisher's staff recounted to me anecdotally), I used the CoI survey to measure students' perception of the three presences within seven courses with initiation dates that ran from February 2014 to March 2015. Because the structure and content of the online courses had been consistent throughout this timeframe, a single survey could cover the elements of student engagement in all of the seven courses whose participants completed the survey.

With the intent to drill deeper into students' engagement, I developed an additional questionnaire to interview students for an ongoing course—coded for this study as BPC-8—which began in April 2015. This eighth course ran concurrently with the research period for this study; students of this course were not invited to respond to the online CoI survey. In adapting the framework of the CoI survey, I developed interview questions to capture each one of the categories found in the CoI survey (See Appendix C). I conducted the interviews on the

telephone using Skype and recorded them for my later transcription and coding. The interviews consisted of an initial conversation lasting 15 to 20 minutes, on the average, at three weeks into the scheduled course. This was followed by an additional interview conducted after the final scheduled week to answer questions that might have gone unanswered in the first interview and to discover if the students had changed any of their responses to the questions as the course progressed.

In light of my evolving understanding of how the three presences manifested in these seven courses, I revised the original CoI survey to reflect all of the elements identified within the CoI model as critical to engagement: instructor and facilitator presence, peer-to-peer engagement, and course structure and materials. In addition, I grouped questions by category in order to make the survey appear to be shorter, since I believed that potential respondents might have been deterred from filling out the survey, which included the 34 questions in the original CoI survey (See Appendix A). Re-grouping the questions enabled me to compile a survey that appeared smaller while including all of the original CoI survey's questions (See Appendix B). Below is an example of how I revised questions 32 to 34 in the original survey.

Resolution

32. I can describe ways to test and apply the knowledge created in this course.
33. I have developed solutions to course problems that can be applied in practice.
34. I can apply the knowledge created in this course to my work or other non-class related activities.

I revised this category of *Resolution* under Cognitive Presence by grouping the questions under a common introductory statement and editing questions 33 and 34 to reflect how BP students would apply their knowledge, for either personal transformation or professional development (a number of students in the courses are practitioners and teachers):

Resolution

13. In reflecting on what I absorbed from the course,
    - I can describe ways to use and apply the knowledge created in this course.
    - I have practiced skills or applied knowledge gained from this course in professional life.
    - I have practiced skills or applied knowledge gained from this course in my personal life.

ITERATIVE PROCESS: AN ADDITIONAL INSTRUMENT

Having determined the methodology, I began the process of data gathering by confirming the engagement or disengagement of students, class to class, to determine whether the rate of 15–20% was consistent across all of the classes. Findings proved otherwise. The rates of engagement fluctuated from as low as 10% to as high as 36%. (The most recent courses remained open and available for participants until September 2015 and October 2015, respectively. Therefore, engagement rates calculated for these courses in this study report would likely increase, if calculated to include the engagement of those students who completed the courses after the scheduled portions.) Figure 2, below, gives an overview of the percentage of students who completed the final lesson of all eight courses that were part of this study.

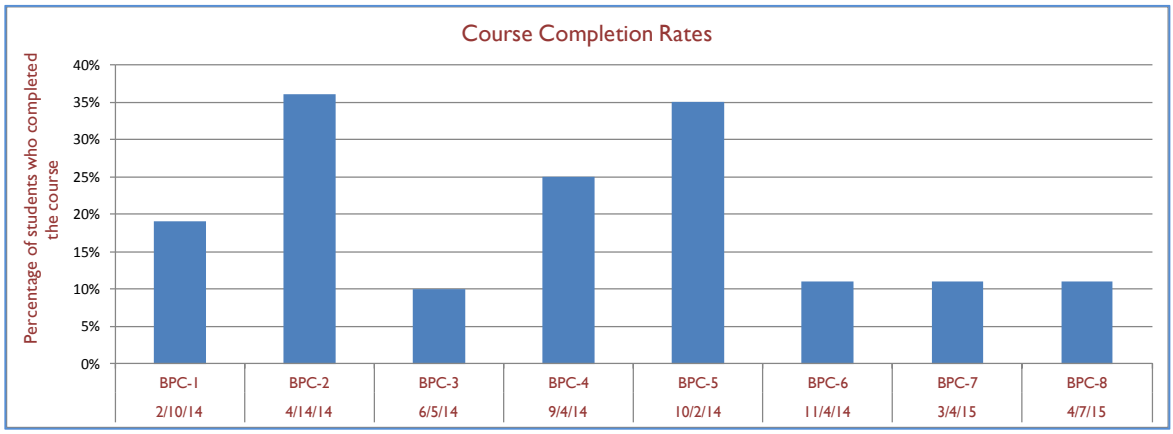

Fig. 2: Course completion rates

Notably, however, the accounting of rate of completion did reveal a consistent trend in what will be called the "dropout" rate. Within the LMS, the administrator could view and count each lesson that the student completed. When counting how many students dropped out at Lesson One or dropped out at Lesson Two, the percentages fluctuated widely. What occurred consistently is that by Lesson Three of a course, 50–70% of the students had dropped out. (The percentages might have decreased for BPC-7 (58%) and BPC-8 (67%) for those students who completed the course after the scheduled portion.)

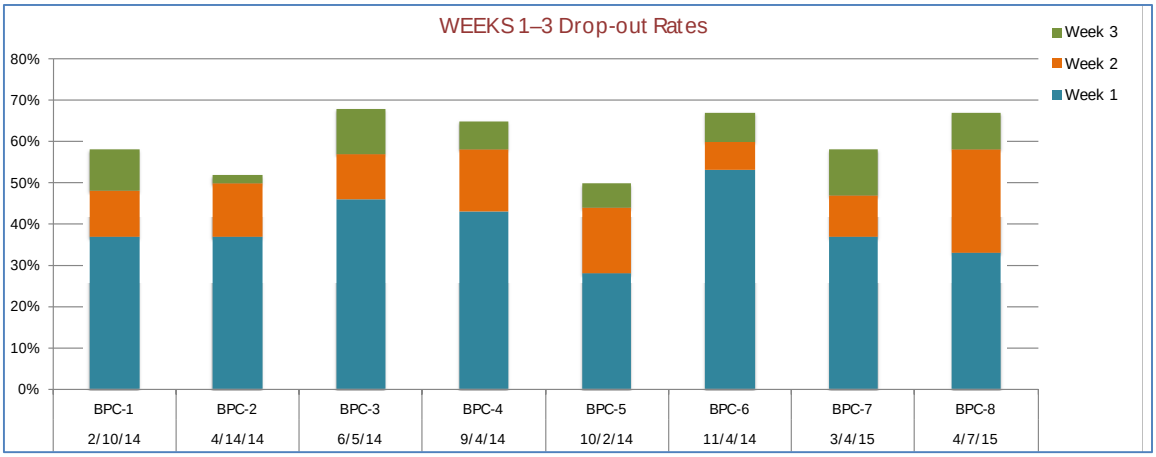

Fig. 3: Week 1–3 dropout rates

The graph in Figure 3 presents the percentage of students who dropped out of courses after completing Lesson Three. This trend revealed two possible concerns about the chosen methodology: 1) A large percentage of the students (50-70%) may not have participated long enough in the course to answer fully all of the questions in the CoI survey; and 2) these students may not have been motivated to fill out a long survey, so survey participation numbers would be low.

In order to address the fact that students who disengaged from courses early in a course might not be motivated to complete the survey, I revised the study methodology to include analysis of data from a second survey, called Disengagement Questionnaire (DQ). Students in each of the seven courses examined were separated into two lists. Students who completed Lesson Four through the end of a course received the full-length version of the modified CoI survey. Since these students had remained engaged for an extended portion of the course, I understood their input to be of high value in seeking to identify aspects of the course that led to engagement. Conversely, students who dropped out at the Third Lesson or earlier received the DQ that consisted of four questions (see Appendix D). This second survey focused on what may have caused or influenced students to disengage, to drop out. This short disengagement survey included questions about students' level of engagement with the instructor, with each other, and with course structure and materials.

Communications

First, all of the publisher's staff email addresses were removed from the email lists. Some staff had signed up to participate. Others had enrolled to review the course, while some were administrators of the course. All communications began with emails to the students in BP courses. These emails explained the purpose of the independent research, invited them to participate, and included the offer of a

discount from the publisher. This one-time discount on a single item available on the BP website would be given to all of those who participated in the study by filling out the surveys or by answering questions in a telephone interview. A follow up email reminded students who had not responded that they could still participate. The two surveys were accessed through an online platform.

RESULTS

COMPARISON BETWEEN INSTRUMENTS OF STUDY PARTICIPANTS

The analysis of the data first required a general overview of the relationship among the three different data sources before considering the relevance of any single data set. In particular, the research involved questioning the relationship of the data from the Disengagement Questionnaire (DQ) and from CoI Interviews (Interview) to data from the full (albeit modified) CoI Survey (CoI). For instance, were the same proportions of respondents from each course represented in the data for both the CoI and the DQ? Did the engagement and disengagement rates of interview participants from BPC-8 correspond with the overall engagement and disengagement rates in the course?

NUMBER OF STUDY PARTICIPANTS

The percentage of respondents to the number of sent email requests was most robust for the full CoI survey at 23% response rate. By comparison, the response rate for the questionnaire (DQ) sent to those who dropped out by the third lesson was 12%, approximately half the response rate of those completing the full CoI survey. However, the overall number of responses was robust—CoI, 228; and DQ, 173. In contrast, the number of respondents for the interviews was low. Initially 29 students volunteered to take part in the interviews. Only 20 students scheduled a time when requested—a 7% response rate.

	CoI	DQ	Interviews
Requests sent	1003	1481	298
Respondents	228	173	20
Percentage response	23%	12%	7%

Table 1: Percentage of respondents to email requests to complete surveys and participate in interviews

PROPORTION OF RESPONDENTS IN COI AND DQ COMPARED TO OVERALL STUDENT POPULATION

As noted in Table 1, student responses in the CoI were highest in number and percentage. In addition, the proportion of students who responded per course was consistent with the proportion of students enrolled in all of the courses. The largest difference in proportion between overall students and number of respondents is 5%, found in the course coded as BPC-3. Notably, only 14% of respondents were enrolled in this course whereas the population of the course constituted 19% of the overall student population. This relatively low response rate reflects the high dropout rate (68%) of this course. A disproportionately large percent of the email queries (24%, as shown in Figure 6) were sent to students who dropped out of BPC-3 by the third lesson of the course and who therefore received the DQ.

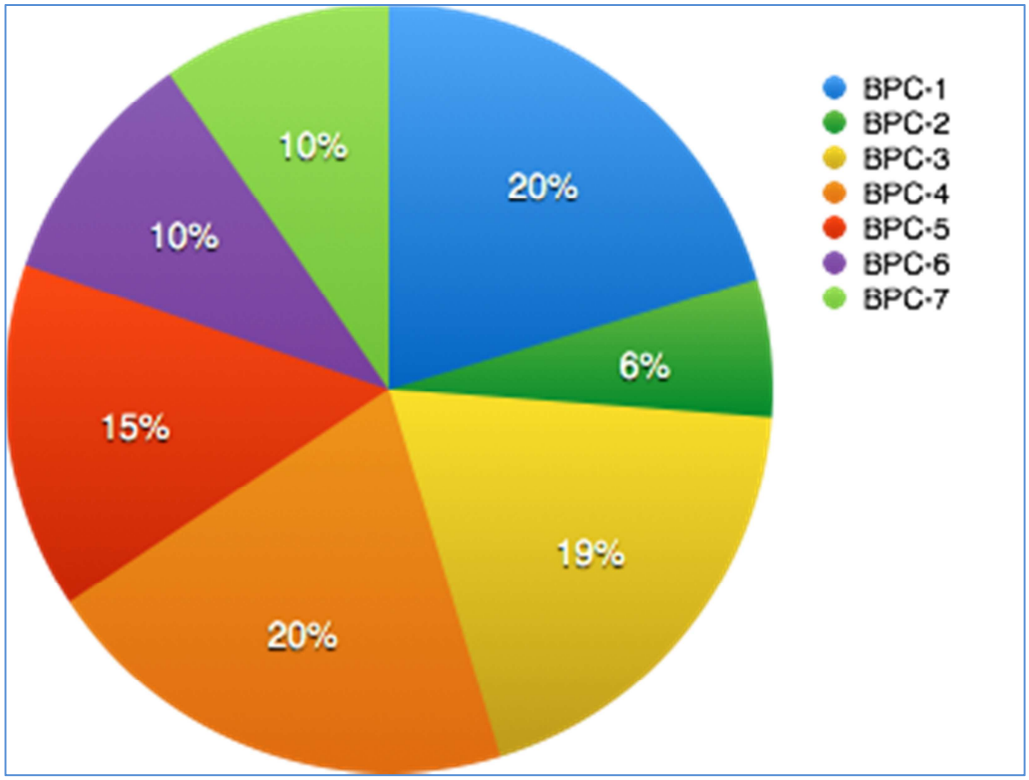

Fig. 4: Proportion of students enrolled in all classes from January 2014 to March 2015

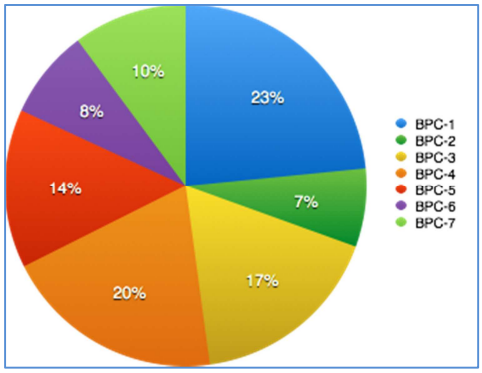

Fig. 5: CoI: Proportion of students per course sent email queries to participate in the study

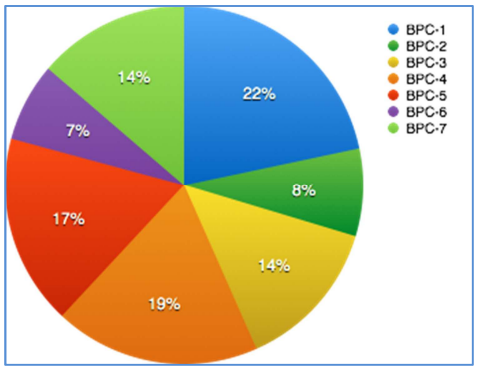

Fig.6: Proportion of respondents to Community of Inquiry survey, per course

Likewise, the proportion of students who responded per course to the DQ closely corresponded to the proportion of students enrolled in all of the courses. The largest difference between overall students and number of respondents is 5%, found in the courses coded as BPC-3 and BPC-4. In addition, in the case of BPC-3 respondents, there is a 6% disparity between the proportion of students who received the email query (24%) and the number of respondents (18%).

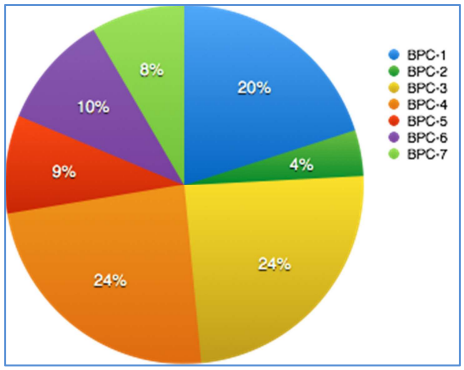

Fig. 7: DQ: Proportion of students per course sent two email queries

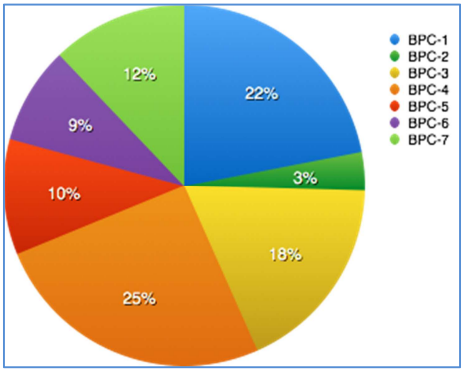

Fig.8: Proportion of respondents to Disengagement Questionnaire, per course

Engagement of Interviewees

Twenty-nine students who had enrolled in the course coded as BPC-8 volunteered to be interviewed for this study. However, only 20 followed through by signing up for a time to be interviewed. One individual considered the scheduling process "too complicated." Two other volunteers had not started the course, so they declined. Six others who initially volunteered never replied in any fashion when

invited to sign up for an interview time. At the time when the scheduled portion of BPC-8 was complete, nine interviewees were still working through the first three lessons of the class, and 11 interviewees were working within the last three lessons, with the remaining seven interviewees having completed the course.

	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Completed
Interviewees	1	6	2	2	0	2	7

Table 2: Number of consecutive lessons completed within HAR by interviewees

Comparison of the dropout rates for the twenty interviewees versus the entire student population in the BPC-8 course reveal that the students who were interviewed had a higher completion rate. Specifically, the completion rate for those who interviewed was 35% as compared to 11% for the class as a whole. The interviewees were more engaged in the course than the general student population.[1] Of the ten students who took part in follow-up interviews after the scheduled portion was complete, all of those who had not completed the course in its entirety stated that they were still active in the course and intended to complete the course within the ensuing six-month time period throughout which the BPC-8 would remain accessible.

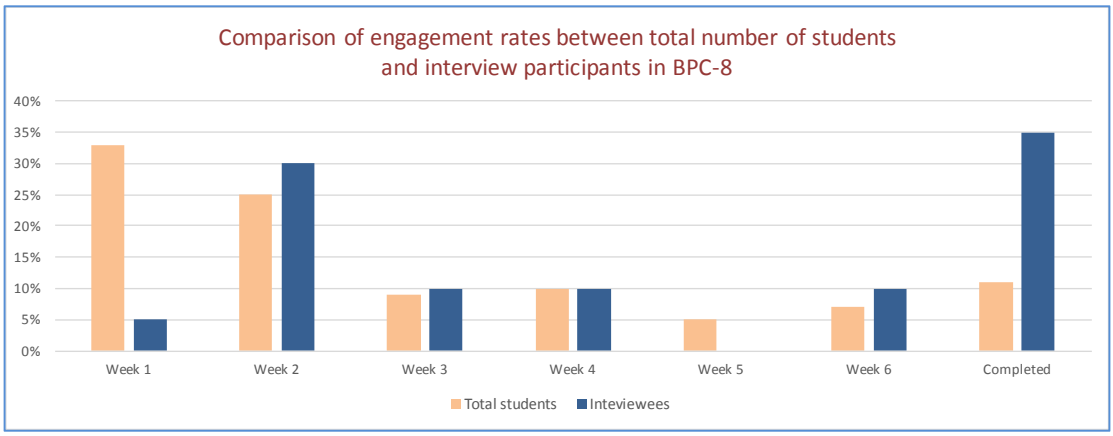

Fig. 9: Comparison of engagement rates between the total number of students (in beige) and interview participants (in blue) in the BPC-8 course.

[1] As a reminder, 67% of the students in this course might not have continued after Lesson 3 (see Figure 2), a trend of disengagement in BP courses. Since the course was to remain available for several months, the percentage of students who dropped out within the course's first three lessons might have decreased significantly after the completion of this study.

Since the majority of interview participants remained more engaged than the general course population throughout the scheduled portion of the course, it could be expected that they would be more engaged in each of three areas of engagement defined with the CoI model. The insights from the interviews could have relevance for triangulating results of the CoI survey but would yield no insights with regard to results of the DQ survey, since the DQ survey was administered to and completed by students from the course at large, all of whom disengaged by the third lesson of the course.

Results from CoI full survey

The CoI survey included introductory background questions bearing on the following three data sets:

1) the course that the student chose to review for the survey;
2) the student's general motivation for taking the course
   — personal or professional reasons;
3) whether the student completed the course

Students who had not completed the course were urged to complete an open-ended response to explain their reason(s) for not completing the course. (The DQ survey focuses on this question.)

In response to the CoI survey, 85% of CoI survey respondents indicated they had enrolled in the courses for personal development; 15% of respondents indicated having enrolled for professional development. Of those who completed the survey, 72% had completed the courses. Of the 28% who did not complete the course, those who chose to explain reasons for not completing provided the following reasons through their open-ended answers:

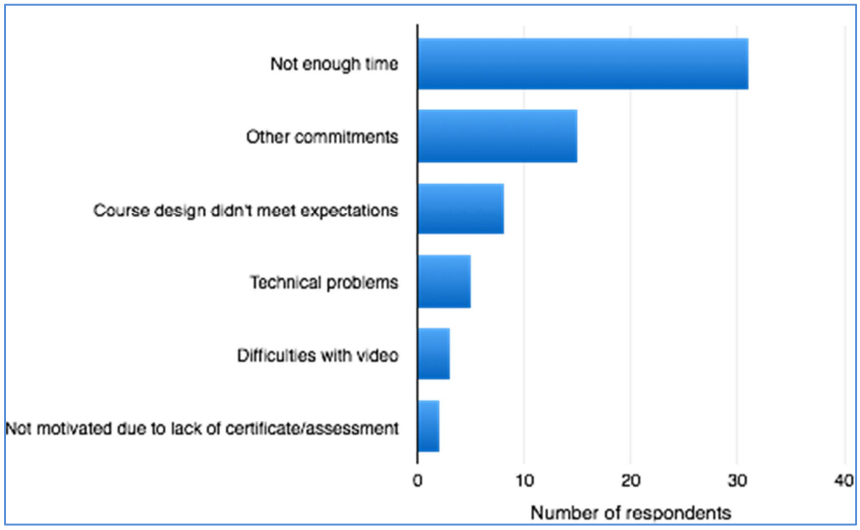

Fig. 10: Reasons for not completing the course

		Strongly agree	Agree	Neutral	Disagree	Disagree	Not applicable
Teaching Presence	1. Clear Lesson Outcomes	132	55	28	9	0	2
	2. Clearly documented instructions	148	52	15	9	2	0
	3. Clearly documented dates	166	44	7	4	2	3
	4. Clearly explained course topics	157	46	14	5	1	2
	5. Lessons designed for engagement	96	45	55	17	3	10
	6. Lessons designed to keep on task for learning	118	54	33	13	6	2
	7. Contributed to community among participants	69	48	73	18	8	0
	8. Responses helped me to learn	109	51	35	7	6	18
	9. Feedback helped me understand strengths and weaknesses	55	27	57	21	14	52
	10. Feedback relevant to the discussion	98	44	41	9	5	29
Social Presence	11. Got to know other participants	12	18	71	40	38	47
	12. Formed distinct impressions of course participants	15	32	71	30	41	37
	13. Online communication excellent for social interactions	16	26	73	45	36	0
	14. Converse through the online medium	14	19	76	50	51	16
	15. Participated in course discussions	14	35	70	49	38	20
	16. Interacted with individuals	8	20	65	51	57	25
	17. I felt comfortable disagreeing with others	11	30	80	10	7	88
	18. My point of view acknowledged by others	16	21	73	9	7	100
	19. Online discussion developed sense of collaboration	14	34	75	24	26	53

Cognitive Presence	20. Learning increased by discussion questions	42	76	56	24	9	19
	21. Learning was increased by homework practices	91	86	32	9	3	5
	22. Learning was increased by videos	159	48	10	3	4	2
	23. Learning was increased by assigned readings	158	55	9	1	1	2
	24. Video and readings provided context	151	53	12	2	2	6
	25. Online discussions helped me appreciated different perspectives	47	58	54	30	11	26
	26. Combining new information helped me answer questions in activities	72	69	61	3	3	18
	27. Learning activities helped integrate content into daily or professional life	107	72	33	6	3	5
	28. Reflection on course content helped me understand fundamental concepts	118	76	24	2	1	5
	29. I can use and apply the knowledge gained in this course	110	73	28	6	4	5
	30. I have practiced skills/applied knowledge in professional life	86	66	29	7	7	33
	31. I have practiced skills/applied knowledge in personal life	120	74	21	7	1	1

Table 3: Results from Community of Inquiry full survey

The results from the CoI survey reveal an overall positive view of the publisher's courses in the areas of Teaching and Cognitive Presences. However, the ratings for Social Presence were less favorable than the ratings for other measures. Table 3 above provides cumulative results of the CoI survey.

Table 3 shows the totals of responses to the options provided for each question on the CoI full survey. Tables 4 through 6 show the consolidated responses to CoI survey questions related to the three Presences, and the corresponding scatter charts (Figures 11 through 13) provide a clearer representational view of the students' engagement. In order to simplify the charts, the results for "Strongly agree" and "Agree" were combined as were the results for "Strongly disagree" and "Disagree." The other two categories in the chart are "Neutral" and "Not applicable." These charts show that students find strong Teaching and Cognitive Presences. The scatter chart of data from the questions

addressing Social Presence shows the inverse of the other two charts. *The numbers on the x-axis refer to the number to the right of the question under the "#" column in the tables below*.

Teaching Presence		#	Agree	Neutral	Disagree	Not applicable
Design and Organization	1. Clear Lesson Outcomes	1	187	28	9	2
	2. Clearly documented instructions	2	200	15	11	0
	3. Clearly documented dates	3	210	7	6	3
Facilitation	4. Clearly explained course topics	4	203	14	6	2
	5. Lessons designed for engagement	5	141	55	20	10
	6. Lessons designed to keep on task for learning	6	172	33	19	2
	7. Contributed to community among participants	7	117	73	26	0
Direct Instruction	8. Responses helped me to learn	8	160	35	13	18
	9. Feedback helped me understand strengths and weaknesses	9	82	57	35	52
	10. Feedback relevant to the discussion	10	142	41	14	29

Table 4: Consolidated responses to Teaching Presence

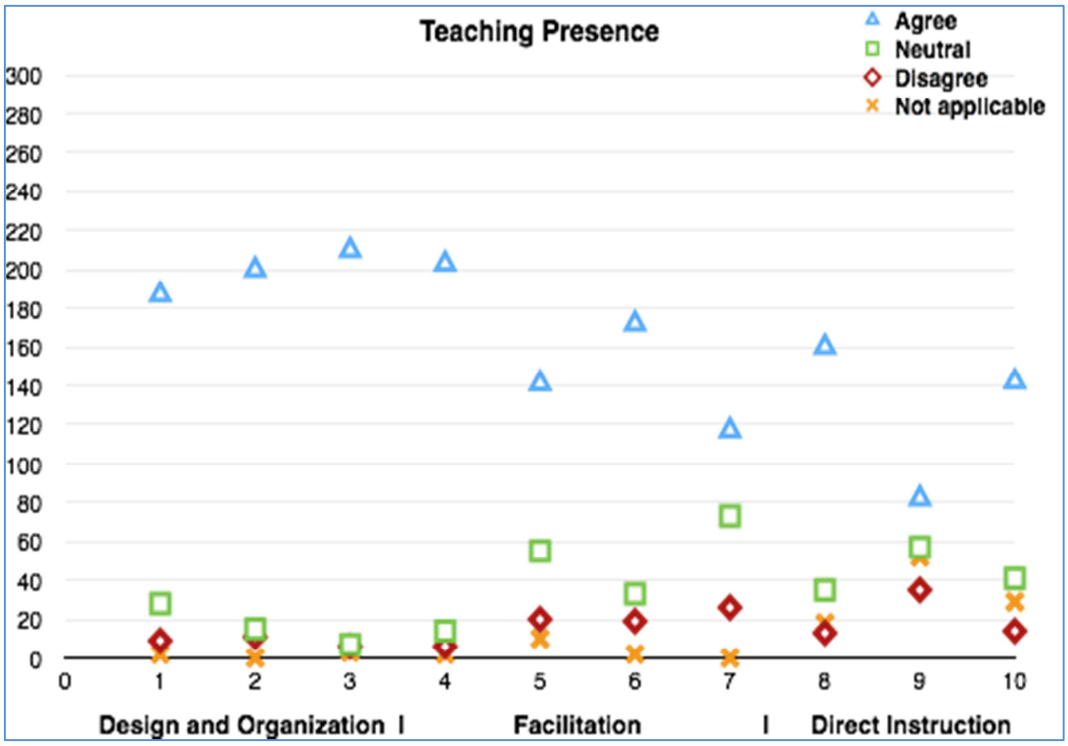

Fig. 11: Scatter chart of responses to Teaching Presence

Cognitive Presence		#	Agree	Neutral	Disagree	Not applicable
Triggering Event	20. Learning increased by discussion questions	1	118	56	33	19
	21. Learning was increased by homework practices	2	177	32	12	5
	22. Learning was increased by videos	3	207	10	7	2
	23. Learning was increased by assigned readings	4	213	9	2	2
Exploration	24. Video and readings provided context	5	204	12	4	6
	25. Online discusssions helped me appreciated different perspectives	6	105	54	41	26
Integration	26. Combining new information helped me answer questions in activties	7	141	61	6	18
	27. Learning activities helped integrate content into daily or professional life	8	179	33	9	5
	28. Reflection on course content helped me understand fundamental concepts	9	194	24	3	5
Resolution	29. I can use and apply the knowledge gained in this course	10	183	28	10	5
	30. I have practiced skills/applied knowledge in professional life	11	152	29	14	33
	31. I have practiced skills/applied knowledge in personal life	12	194	21	8	1

Table 5: Consolidated responses to Cognitive Presence

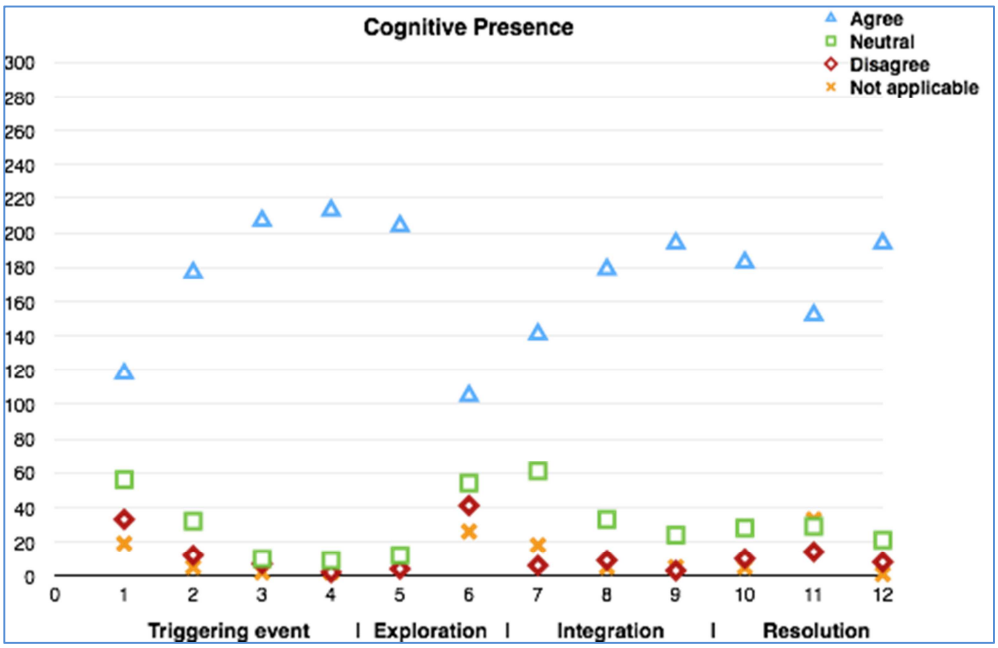

Fig. 12: Scatter chart of responses to Cognitive Presence

Social Presence		#	Agree	Neutral	Disagree	Not applicable
Affective expression	11. Got to know other participants	1	30	71	78	47
	12. Formed distinct impressions of course participants	2	47	71	71	37
	13. Online communication excellent for social interactions	3	42	73	81	0
Open Communicatio	14. Converse through the online medium	4	33	76	101	16
	15. Participated in course discussions	5	49	70	87	20
	16. Interacted with individals	6	28	65	108	25
Group Cohesion	17. I felt comfortable disagreeing with others	7	41	80	17	88
	18. My point of view acknowledged by others	8	37	73	16	100
	19. Online discussion developed sense of collaboration	9	48	75	50	53

Table 6: Consolidated responses to Social Presence

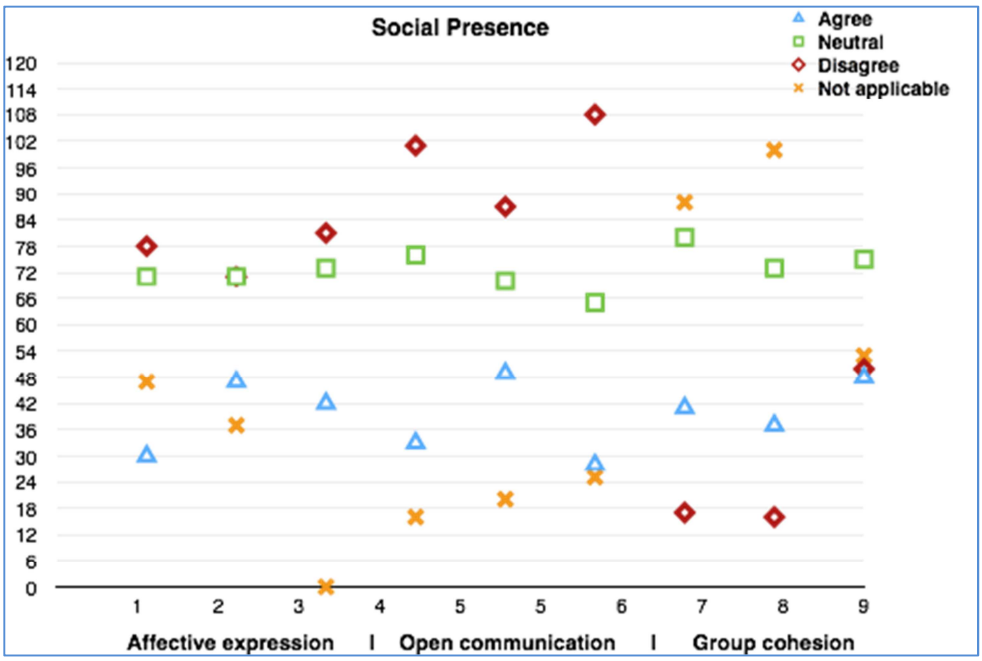

Fig. 13: Scatter chart of responses to Social Presence

CoI full survey respondents consistently selected the "Neutral" and "Not applicable" categories more frequently when addressing questions pertaining to Social Presence than when addressing questions pertaining to Cognitive and Teaching Presences.

INTERVIEW RESULTS

The interview questions were designed to address learners' perceptions regarding each category covered in the CoI model. However, because the answers were open-ended, they created a unique set of variables to be analyzed. As was true, generally, for respondents of the CoI survey, the students interviewed had a robust engagement rate relative to the overall student population (see Figure 9). However, interview participants were unlike the CoI participants in that half (50%) of the interviewees enrolled for professional development purposes while the other half enrolled for personal reasons.

The bar graphs below address interview results relating to the variables created for each Presence. For the responses to questions addressing the Teaching Presence, variables fell under two primary categories: interaction with the instructor and weekly contribution by the instructor. I deemed irrelevant a third category: Satisfaction with response from the course facilitator or instructor when queried by student. Students were asked about receiving feedback from any questions they may have put to the facilitator or instructor. However, interview data indicated that only two students asked questions. These two students asked only one question each and both questions pertained to technical support for course communications, thus deemed irrelevant to the course topics. I therefore conclude that responses to inquiries had no significant influence on learners' levels of engagement with or absorption of the material. When asked to give feedback regarding weekly contributions on the part of the instructor, students indicated that instructors made few contributions to the discussion boards but students indicated they read the instructor's weekly emails initiated during the third week of the class. Overall, the students provided positive feedback regarding the instructor's presence. When asked if they would like more interaction with the instructor in forums other than the discussion board, conference call, or weekly emails, six students asserted additional interaction forums were not necessary. Six students stated they would have preferred more interactions but could not define the form such interaction might take; six students wanted the opportunity to interact with the instructor on an individual basis; and two students would have preferred video conferences rather than the existing audio conferences to enable a more dynamic experience with the instructor and fellow students. The graph in Figure 14, below, represents interview data regarding perceptions of Teaching Presence.

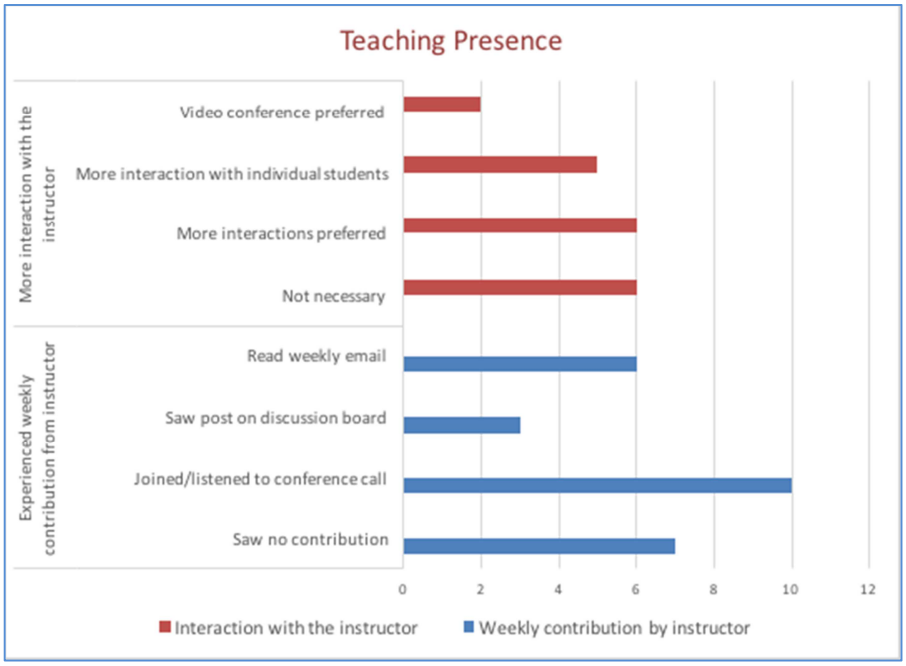

Fig. 14: Teaching Presence as described in interviews

The interview questions bearing on Social Presence elicited information on learners' perceptions regarding the following:

1) Posting to the discussion board;
2) Experiences with inhibitions about responding to posts;
3) The ability to sense different personalities;
4) Feeling of being part of the community.

Eight out of 20 respondents indicated they posted regularly to the discussion board while 11 out of 20 read their classmates' posts on a regular basis; five of the respondents (25%) indicated they were not interested in engaging through the discussion board while seven had responded to a classmate's post at least one time. When asked what might inhibit them from posting, interviewees' responses varied, including these inhibiting factors: wanting anonymity, desiring a smaller class size, not having enough time, finding that the discussions were not engaging, feeling there was a lack of feedback to their own posts, and finally, not being interested in the discussion forum. An interviewee might have named more than one of the inhibitors listed above. Half of the interviewees stated they were not inhibited in any way.

When asked if they could sense their classmates' personalities from the discussions, ten respondents (50%) said "Yes" while the other 50% were either ambivalent or replied in the negative. When asked if they felt part of a learning community, eight out of 20 said "No," five were uncertain, and six responded affirmatively. One student did not respond. Figure 15 represents these findings.

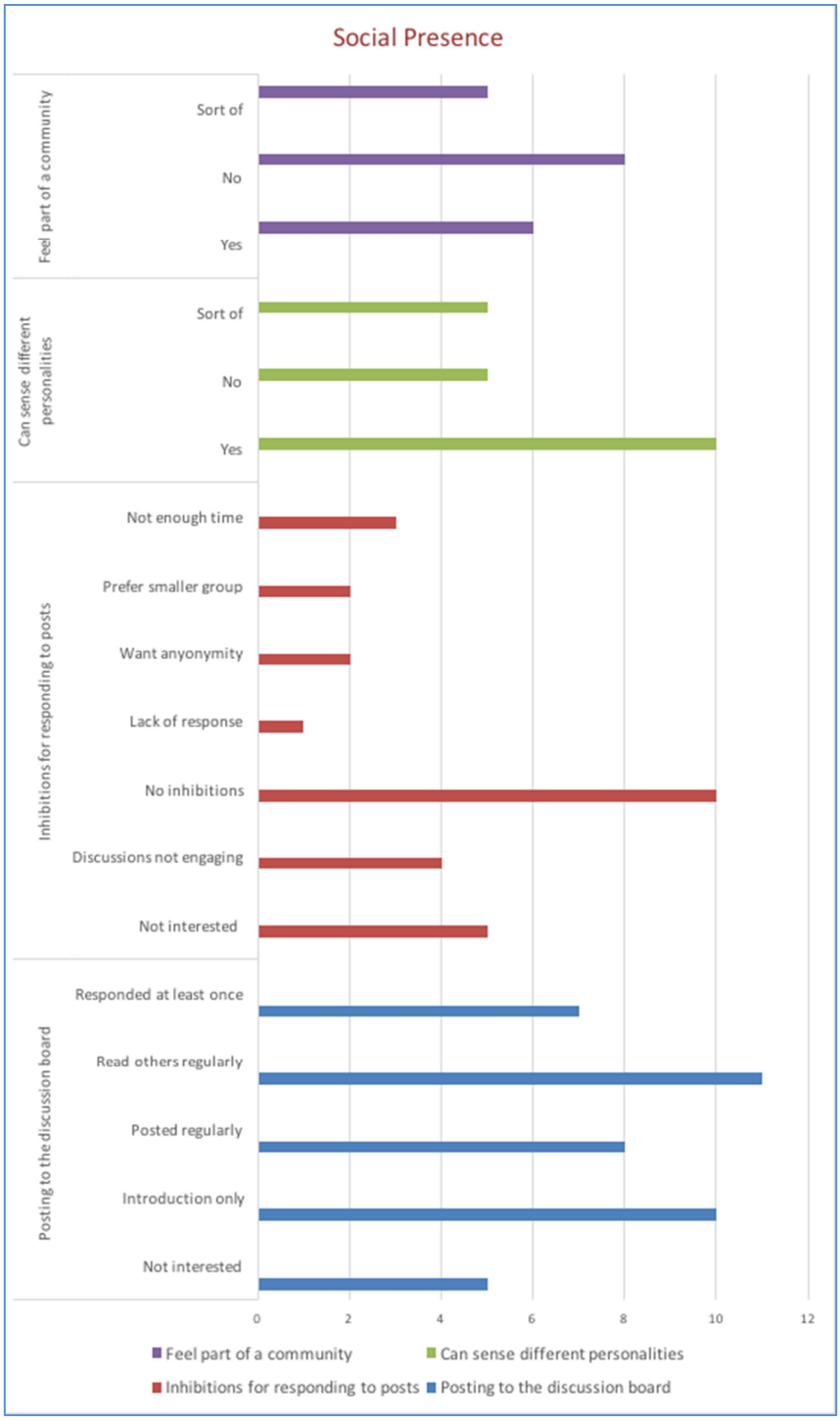

Fig. 15: Social Presence as described in interviews

Interview questions regarding Cognitive Presence focused on:

1) Appropriate instructional videos;
2) Relevant assignments and practices;
3) Insights from classmates;
4) Students' application of knowledge.

In contrast to the nuanced responses interviewees provided in response to questions regarding Social Presence, their replies to interview questions regarding Cognitive Presence were straightforward. All interviewees agreed that the assignments and practices were relevant to the weekly lessons. On a par with this feedback, 17 out of 20 respondents indicated they had found the videos engaging. Only one student indicated the videos were not engaging. Two of the four students who mentioned that the videos contained distracting elements had experience in video production. Only two students replied that they had not applied what they learned. Finally, a minority of five students indicated they had gained insights from their classmates' posts on the discussion board. The rest indicated they were either not interested in or had gained no insight from classmates' discussion posts. Figure 16, provides a graphical representation of these interview findings regarding Cognitive Presence.

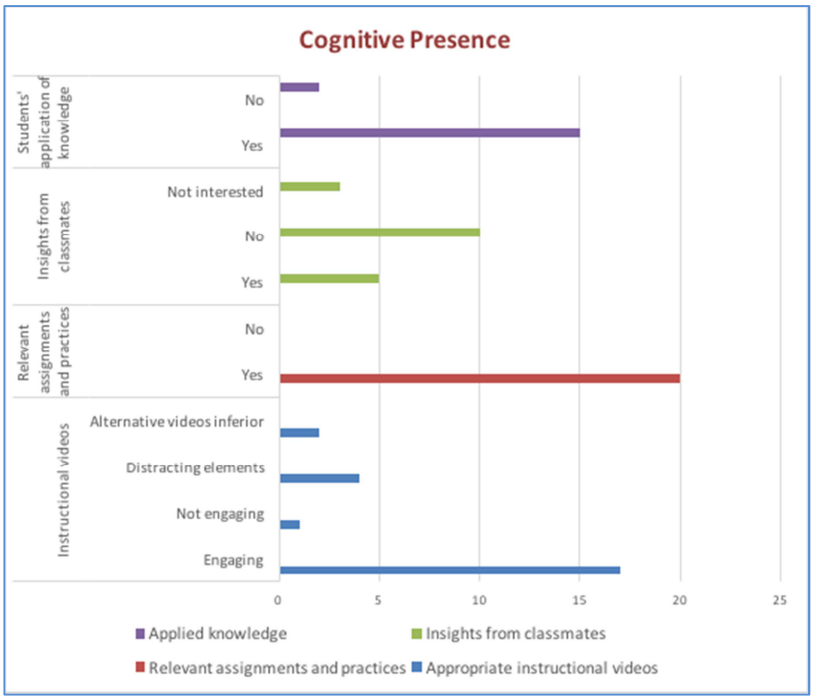

Fig. 16: Cognitive Presence as described in interviews

As part of the introduction to the interview, the students were asked if they had taken an online course prior to enrolling in BPC-8. Most of the interviewees (80%) had participated in online courses. This same question was asked of students who filled out the Disengagement Questionnaire (DQ). Among students who completed the DQ, responses were nearly evenly split with 52% indicating they had previously taken an online course and 48% indicating the BP course had been the first online course in which they had participated. Figure 17 represents this data graphically.

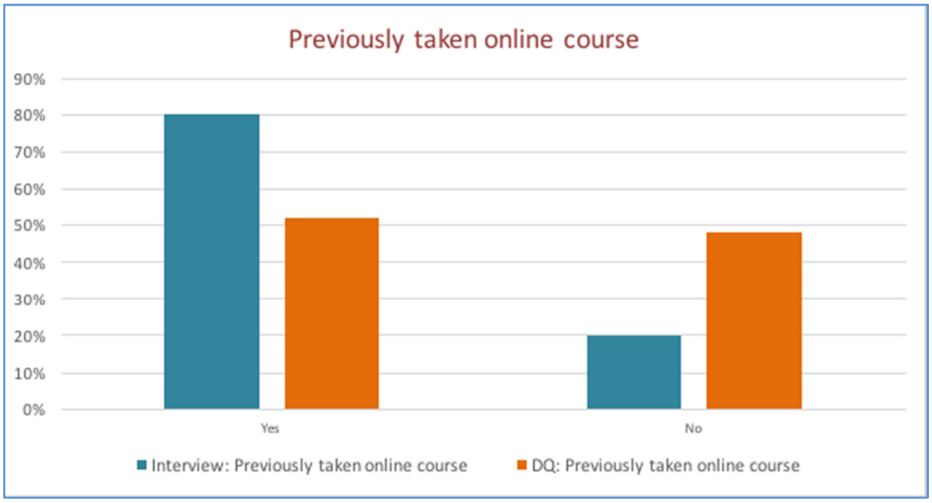

Fig. 17: Percentages of students interviewed and responding to the Disengagement Questionnaire who had previously taken an online course

DISENGAGEMENT QUESTIONNAIRE RESULTS

The DQ was limited in scope and designed to gain better understanding of what caused students to drop out of a course for which they had paid a registration fee. The students were given a selection of responses to determine levels of engagement with the instructor, with the materials, and with their peers. They also had the opportunity to give an open-ended response. Including both the given responses and the responses to open-ended answers, 57% of the students (99 out of 173) responded that "other commitments" had caused them to disengage from the course. The other variables from "technical problems," "structure confusing," "didn't meet expectations," and so on down the list were selected at a response rate of 17% or less. The chart in Figure 18 lists all of the reasons DQ respondents indicated had led them to disengage from BP courses by the third lesson.

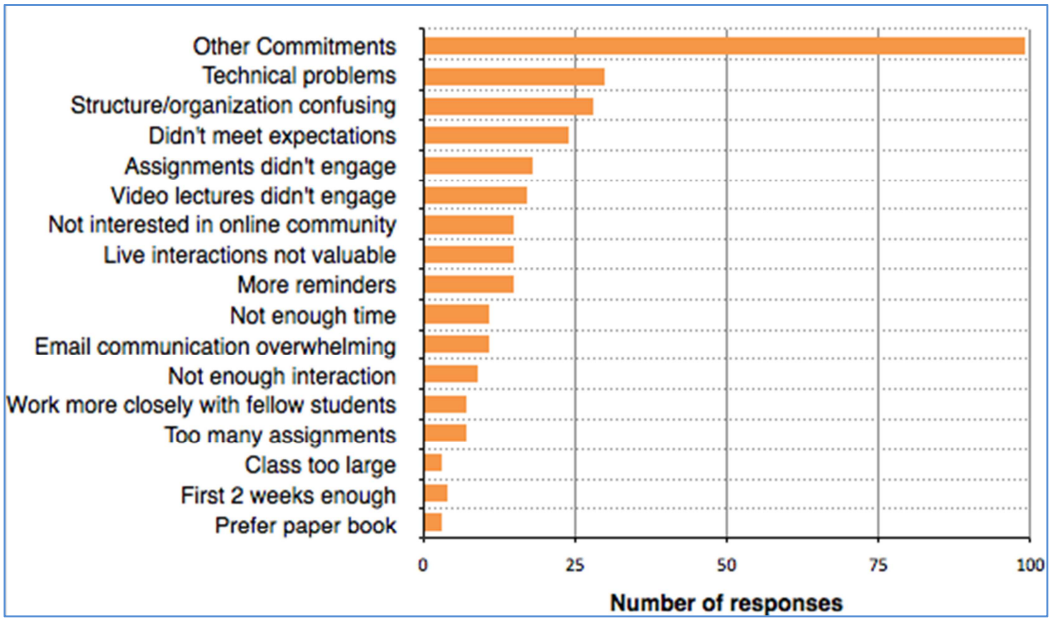

Fig. 18: Reasons for disengaging from courses by the third lesson

The primary reason for early disengagement selected by DQ respondents, "Other commitments," corresponds with the open-ended answers CoI survey respondents provided for disengaging. CoI survey data indicate respondents' primary reasons for disengaging were "Not enough time" and "Other commitments." (See Figure 10).

DISCUSSION

For the purpose of analyzing study results, it is helpful to recall that the focus of this research has been to ascertain if low engagement rates in large online courses correlate with learners' perceptions of a weak Social Presence, Teaching Presence, and/or Cognitive Presence as measured through variants of the Community of Inquiry instrument. In addition, an underlying consideration is whether the study substantiates the use of the CoI survey as a tool to measure a student's engagement or non-engagement in a large online course.

The data reveal that students in BP courses have positive perceptions of Teaching and Cognitive Presences (as shown in Figures 11 and 12). However, they have an ambivalent to negative perception of Social Presence (as shown in Figure 13). To a degree, these student perceptions are similarly borne out within the data collected through interviews. Interview data indicate that even the highly engaged students were ambivalent about interacting with each other through the discussion boards, the only venue provided for creating a Social Presence among

peers. The responses to the interview questions posed about Social Presence (shown in Figure 15) were more nuanced than were responses to questions about Teaching and Cognitive Presences. The responses regarding the materials and activities implemented in the course are unequivocally positive.

Students have a generally positive view of the course design. What they perceive as limiting are the options for peer interaction and for the formation of learning community. This view can be summed up in the following comment by one of the interviewees:

> It doesn't feel like I'm going through the course with other people. It's overwhelming. In [an online course offered by a different organization], they broke us up into smaller groups and we developed an understanding of who folks are. It was in smaller group discussions that I think helped me feel more connected with fellow students and the instructor. I can't track that many people [in the BPC-8 course].

The findings from this study can inform the implementation of BP courses. The study data indicate that large class size does adversely affect how students interact with each other. Furthermore, this finding is consistent with literature in the field. In a literature review of research on evaluating social presence, David Annand of Athabasca University explains that, in one study he reviews, "the main technique that produced the observed effects [strong social presence] was the one-on-one peer review, not group-based interaction, and this was an unexpected result" (p. 44). Annand further elaborates "that instructional design focusing learners on a major course requirement [through the discussion board] was the essential element contributing to the development of higher-order cognitive presences and that one-on-one peer review activities that require neither collaborative activities nor intentional creation of social presence are preferable" (p.45). In other words, use of the discussion board contributes more to fostering learners' perceptions of Cognitive Presence than to promoting Social Presence; a discussion board may not be an effective forum for creating a wider community of learners. Alternative or additional forms of interaction should be considered if a goal of the publisher's online course program is to create a learning community within individual courses.

While the CoI does reveal a weakness of low Social Presence in the design and implementation of BP courses, a correlation cannot be directly linked to low engagement rates. Both the CoI survey and DQ markedly reveal that most students disengage from a course due to personal conflicts: other commitments or not enough time. Even so, some who indicated they had disengaged due to "other commitments," also took issue with the class size, course design, and peer interaction. One respondent made the following comment:

> I believe that there were too many participants and e-mails. We could have been put into smaller groups and communicated with one another about the material, and then also offer questions to the instructor and have time with the instructor as well. I also believe that something was missing (not sure what) but maybe to hold the participants accountable, send reminders on benchmarks, have workshop leaders to help make the course more interactive, and so on. I just gave up after having read the book. It [the course] was complicated as well.

Because the observations provided by this study are few in number, the correlations established in the study in regard to BP courses bear replication both for further examination of this context and if (or when) applied for study of other contexts.

CONCLUSION

In conclusion, the Community of Inquiry survey can effectively measure students' engagement within a large online course to assess the efficacy of its design and implementation; however, the survey cannot conclusively determine if low engagement rates are due to an inability to engage students through strong peer interaction. The amount of data gathered for this study allows one to further investigate students' engagement in individual courses, which could enrich the analysis. Some courses had higher registration fees. It would be interesting to see if a correlation could be drawn between higher registration fees and higher engagement rates. The scope of the research reported herein has limited the focus to an overview of the design and implementation. Other limitations to this study were caused by inconsistencies of background questions between the CoI survey, the Interviews, and the Discussion Questionnaire. Each instrument had a different focus which dictated the choice of questions. However, the three instruments could have been better coordinated. For instance, an opportunity was lost by not asking respondents of the CoI if they had previously enrolled in an online course, although I did pose this question to DQ and interview respondents. The interviewees were more engaged than the average of students in the course in which they were enrolled and proportionately more of them had experience with taking an online course than students who responded to the DQ. If CoI respondents had been queried and were found to be proportionately more experienced as well, then the research could have noted correlations regarding engagement levels of students with experience in online courses.

While this research has been informative in determining strengths and weaknesses in the publisher's online courses, it has not shown correlation between students' disengagement and the design and implementation of large

online courses in general. However, the data and analysis could inform the development of an instrument and/or study that could help determine if a course could be designed such that within the first three weeks of active group study, students remained sufficiently motivated or engaged with the instruction to complete the course.

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APPENDIX A

Community of Inquiry Survey Instrument, draft v14
(https://coi.athabascau.ca/coi-model/coi-survey)

Teaching Presence

Design & Organization

1. The instructor clearly communicated important course topics.
2. The instructor clearly communicated important course goals.
3. The instructor provided clear instructions on how to participate in course learning activities.
4. The instructor clearly communicated important due dates/time frames for learning activities.

Facilitation

5. The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn.
6. The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking.
7. The instructor helped to keep course participants engaged and participating in productive dialogue.
8. The instructor helped keep the course participants on task in a way that helped me to learn.
9. The instructor encouraged course participants to explore new concepts in this course.
10. Instructor actions reinforced the development of a sense of community among course participants.

Direct Instruction

11. The instructor helped to focus discussion on relevant issues in a way that helped me to learn.
12. The instructor provided feedback that helped me understand my strengths and weaknesses.
13. The instructor provided feedback in a timely fashion.

Social Presence

Affective expression

14. Getting to know other course participants gave me a sense of belonging in the course.
15. I was able to form distinct impressions of some course participants.
16. Online or web-based communication is an excellent medium for social interaction.

Open communication

17. I felt comfortable conversing through the online medium.
18. I felt comfortable participating in the course discussions.
19. I felt comfortable interacting with other course participants.

Group cohesion

20. I felt comfortable disagreeing with other course participants while still maintaining a sense of trust.
21. I felt that my point of view was acknowledged by other course participants.
22. Online discussions help me to develop a sense of collaboration.

Cognitive Presence

Triggering event

23. Problems posed increased my interest in course issues.
24. Course activities piqued my curiosity.
25. I felt motivated to explore content related questions.

Exploration

26. I utilized a variety of information sources to explore problems posed in this course.
27. Brainstorming and finding relevant information helped me resolve content related questions.
28. Online discussions were valuable in helping me appreciate different perspectives.

Integration

29. Combining new information helped me answer questions raised in course activities.
30. Learning activities helped me construct explanations/solutions.
31. Reflection on course content and discussions helped me understand fundamental concepts in this class.

Resolution

32. I can describe ways to test and apply the knowledge created in this course.
33. I have developed solutions to course problems that can be applied in practice.
34. I can apply the knowledge created in this course to my work or other non-class related activities.

5 point Likert-type scale

1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

APPENDIX B

Revised CoI Survey

Introductory Questions

I registered for (list of courses to select from)

My reason for registering was for (select all that apply)

- Personal development
- Professional development
- Other (explain)

Did you complete the course?

- Yes
- No
- If no, please explain what caused you to discontinue the course.

The following questions will be measured on the Likert scale below:
1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, Not applicable

Teaching Presence

Design & Organization

The facilitator

- Clearly documented important lesson outcomes.
- Clearly documented instructions on how to participate in the course.
- Clearly documented important dates, such as the live calls with the instructor.

Facilitation

The instructor or facilitator

- Explained course topics in a way that helped me clarify my thinking.
- Designed the lessons so that I remained engaged and participated in dialogue.
- Designed the lessons so that I kept on task in a way that helped me to learn.
- Created the opportunity to explore new concepts in this course.
- Contributed to a sense of community among course participants.

Direct Instruction

The instructor or facilitator

- Provided responses that helped me to learn.
- Provided feedback that helped me understand my strengths and weaknesses.
- Provided feedback relevant to the discussion.

Social Presence

Affective expression

While participating in the activities and discussions,

I experienced getting to know other course participants.

I was able to form distinct impressions of some course participants.

I found online communication to be an excellent medium for social interaction.

Open communication

I felt motivated to

Converse through the online medium.

Participate in the course discussions.

Interact with individual course participants.

Group cohesion

When taking into consideration the group dynamics in the course,

I felt comfortable disagreeing with other course participants while still maintaining a sense of trust.

I felt that my point of view was acknowledged by other course participants.

Online discussions help me to develop a sense of collaboration.

Cognitive Presence

Triggering event

My interest in the course

Was increased by the discussion questions.

Was increased by the homework practices.

Was increased by the video lectures.

Was increased by the assigned readings.

Exploration

While working on homework practices or responding to the discussion question,

Video content and readings provided helpful context.

Online discussions were valuable in helping me appreciate different perspectives.

Integration

In applying what I learned in a lesson,

Combining new information helped me answer questions raised in course activities.

Learning activities helped me to integrate an understanding of the content into my daily life or professional practice.

Reflection on course content and discussions helped me understand fundamental concepts in this class.

Resolution

In reflecting on what I absorbed from the course,

I can describe ways to use and apply the knowledge created in this course.

I have practiced skills or applied knowledge gained from this course in professional life.

I have practiced skills or applied knowledge gained from this course in my personal life.

APPENDIX C

Interview Questions

First Opening/Warming:

1. Have you taken an online course before?

Why did you choose this course?

Were you familiar with the instructor's writings and/or practice before registering for the course?

Instructor Presence

Do you think the instructor has contributed to the course discussion on a week-to-week basis? In what way?

When you have asked a question of the instructor or facilitator, are you satisfied with the response and the timeliness of the response?

Would you like more interaction with the instructor or facilitator? If yes, what would you suggest?

Social Presence

Did you post to the discussion board? How often? Did you read the other posts? Did you respond to posts, whether a follow-up to a response on your post or to someone else's post?

Did anything inhibit your response, such as a delayed response from a classmate, not enough time in the week, a discomfort with posting in an online forum?

Do you feel like you can sense the different personalities of your classmates based on the discussion posts?

Do the discussion board postings make you feel that you are part of a group with a similar interest in the topic? (Ask for more explanation)

Cognitive Presence

What did you think of the author's videos in each lesson? Did you find them insightful, engaging?

Were the assigned readings and homework practices relevant to the week's topic?

Did your classmates' postings on the discussion board further advance your grasp of the topic in the lesson? Did you gain a different perspective?

Have you applied what you've learned so far in your daily life?

APPENDIX D

Disengagement Questionnaire

1. I registered for (list of courses to select from)

– Had you taken an online course prior to enrolling in the [publisher's] course?
  Yes
  No

– I didn't complete the course because: (check all that apply)
  Other commitments arose that took priority over the course.
  I was able to get everything that I needed from the course in the first two weeks.
  There wasn't enough interaction with the instructor.
  I did not find the live interactions with the instructor (on the forums or on calls) valuable
  There were too many assignments.
  The assignments/homework practices didn't engage me.
  I was not interested in participating in the online community.
  The video lectures didn't engage me.
  I would like to have worked more closely with my fellow students.
  I found the structure/organization of the course confusing.
  I encountered technical problems with accessing the course.
  I found the email communication from the courses overwhelming.
  I would like to have received more reminders about course assignments and lectures.
  Other

– If given the time and opportunity, would you sign up again for an online course offered by [the publisher]?
  Yes
  No

AUTHOR BIO

[i] **Carol A.V. Damm** is an Instructional Designer at Graduate Professional Studies, a division of the Rabb School of Continuing Studies at Brandeis University. She provides course design and development support, consultation in effective pedagogy for both online and face-to-face course environments, and faculty training and professional development to a wide range of faculty subject matter experts, including part-time fully-online instructors and full-time campus-based research faculty. She also develops and supports the creation of dynamic learning content to enhance online teaching and learning. Carol's research interests center on effective course design to support differentiated learning styles and the assessment of online and face-to-face courses to evaluate student engagement and students' success in meeting course outcomes.