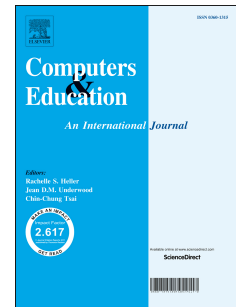


Accepted Manuscript

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PII: S0360-1315(19)30004-1

DOI: <https://doi.org/10.1016/j.compedu.2019.01.004>

Reference: CAE 3511

To appear in: *Computers & Education*

Received Date: 10 May 2018

Revised Date: 27 December 2018

Accepted Date: 6 January 2019

Please cite this article as: Blaine A.M., Interaction and presence in the virtual classroom: An analysis of the perceptions of students and teachers in online and blended Advanced Placement courses, *Computers & Education* (2019), doi: <https://doi.org/10.1016/j.compedu.2019.01.004>.

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Interaction and presence in the virtual classroom: An analysis of the perceptions of students and teachers in online and blended Advanced Placement courses.

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Abstract.

Interaction has been shown to be a key component to the success of online and blended learning, so it is crucial to understand how teachers and students perceive the interaction within online and blended secondary courses. Using a qualitative content analysis approach to student and teacher focus group transcripts, this study focuses on student and teacher perceptions of interaction in Virtual Advanced Placement courses across a state in the northeastern United States. Viewed through the lenses of social and teaching presence components of the community of inquiry model, students and teachers perceived the interaction within the course very differently, with teachers reporting largely favorable views of the interaction and students generally viewing the interaction in opposing ways. Results of this study suggest that a fourth presence, learning presence, warrants consideration since without it areas of student experience in online and blended coursework remain unaccounted for. Results of this coding scheme show that we can do more to communicate both the expectations and the process of communication between students and teachers in online and blended coursework, especially at the secondary level.

1. Introduction

This study explores the similarities and differences in how teachers and students in new Virtual Advanced Placement (VAP) courses perceived the interaction within those contexts. I used the community of inquiry framework's social and teaching presences to guide the organization and results of the coding process. While evaluating the VAP project, I began to see that the quality and frequency of interaction between students and teachers within the blended and online contexts covered under the grants varied widely. In some cases, students and teachers seemed to be far apart in their views of how the course was progressing, and, specifically, how

successfully the students and the teacher were interacting within the course. Using the framework of the community of inquiry model, I analyzed the reported perceptions of interaction using two of the three component presences: teaching and social presence. Through the process of coding for social and teaching presence, I found that an emerging presence, learning presence, was useful in explaining the entire student experience in these courses.

1.1 Definition of Terms

Online distance education can be defined as an educational context in which the teacher of record and the student are separated by space and time. Many of the courses in this study were run as purely online distance education courses, where the teacher and the students never or very rarely met, but the educational experience took place through the learning management system.

Blended learning, because of the variety of possibilities and contexts, can be more difficult to define. Bernard, Borokhovski, Schmid, Tamim, and Abrami (2014) point out the difficulty in defining blended learning. These researchers offer a definition of blended learning, which defines it as the combination of two distinct and separate modes of delivering instruction: a traditional approach to education and online education. Bernard et al. (2014) further posit percentages of face-to-face instruction time and online learning time, but this can be problematic when facing the real time experience of a blended learning classroom. For the purposes of the current study, I define blended learning as the combination of online learning and traditional face-to-face instruction. Blended learning can be thought of as the wide spectrum of possible combinations between traditional face-to-face education and online distance education. The variations for learning can be tailored to the context of the educational environment and the real time context of the students and the teachers.

1.2 Research question

This study is guided by the following research question: what is the difference in the ways that students and teachers perceive interaction and the quality of social and teaching presence in online and blended courses? Prior to developing this research focus, I began to see in the focus groups that there was some difference in how students spoke of their experience interacting with their teachers and how the teachers spoke of that interaction experience. My hypothesis as I started to code the transcripts was that I would find meaningful differences in how students and teachers each spoke of their interactions in the Virtual AP courses.

1.3 Research Context

The Virtual Advanced Placement (VAP) program began in 2013 as an attempt to increase statewide online distance education offerings. Through Race to the Top funds, the state granted funding to 17 educational agencies in 2013-2014 and 20 in 2014-2015, and contracted with a university to evaluate the effectiveness of the programs in 2013. This study began as a part of that evaluation, which included conducting focus group interviews at the grantee sites up to twice a year over the two year period: those focus group interviews are the basis of my data analysis for the current study.

The stated goal of the Virtual AP program was “to develop the capacity of local school districts and other eligible applicant entities to provide virtual learning (online and blended) Advanced Placement coursework to eligible students” (New York State Department of Education, 2012). The state wanted to increase access to Advanced Placement coursework for students who may not ordinarily be able to take an AP course, and chose to invest in growing the online distance learning capacity within the state. The grants were awarded to five different grantee classifications: large cities, medium-sized cities, small cities and towns, single Boards of

Cooperative Educational Services (BOCES), and BOCES consortia. Because many of the Virtual AP program grantees were either large districts or a BOCES, students participated in the Virtual AP program from over 100 schools across the state (Sandoval, Burch, Fenty, Allio, Blaine, Burch, VandenBroek & Whitson, 2015).

As we started to visit the schools and evaluate the courses put into place in schools, we realized that the courses varied widely in how they were designed. Courses ranged in design from fully online distance education courses to traditional courses plus added discussion forums and technology components. The variance of the courses, while a strength in the form of online courses, is also a complication when it comes to understanding interaction within the courses because the design and context of the courses studied were so different.

Not only was there variety when it came to the courses, but the contexts within the schools and BOCES also varied. Over 100 schools were involved in the Virtual AP program, and that meant variety in terms of hardware and software used in the courses, where students participated in the course, how the course was built into their schedules, access and connectivity to the internet with their technology, as well as add/drop policies for students taking the courses. All of the variables that were at play show the flexibility of online blended distance education in general, but that flexibility can be a limitation in qualitative research because the context of when students and teachers were reporting could be so varied from one course to the next.

1.4 Interaction and Online Learning

With the rapid expansion and implementation of blended and online distance education coursework in K-12 settings, we need a better understanding of the specific differences in how students and teachers perceive the level of interaction in these classes. The literature shows that high quality and frequent interaction in K-12 online settings is important to student success

(DiPietro, 2010; Hawkins, Graham, & Barbour, 2012; Woods, 2002), but less is known about what groups of students and teachers have to say about the nature of interaction in these courses. This study attempts to provide more detail to the phenomenon of the perception of interaction in online distance education courses, attempting to consolidate in coding the various perceptions and reasons for positive and negative instances of interaction in the courses.

As the technology that drives distance education continues to evolve, researchers need to pay particular attention to the needs and lived experiences of students in these courses (Barbour, 2008). Interaction between students and teachers has been studied and proven to be a crucial part of the online course both for students and teachers in the (Hawkins, Graham, Sudweeks, & Barbour, 2013). Because of the distance in time and place involved in many online courses, some have claimed that **the interaction that takes place in a virtual course does not fare well when compared to a face-to-face course** (Driscoll, Jicha, Hunt, Tichavsky, & Thompson, 2012). What is clear from the research is that carefully designed and intentional interaction can be effective in supporting students working through online courses, especially since students, even within a seemingly homogenous group, can have very different perceptions of interaction (Ware, 2004). However, more teacher-student interaction does not always mean more satisfaction on the part of students (de la Varre, 2012), though the frequency and quality of teacher-student interaction can play a significant role in course completion rates (Hawkins, Graham, Sudweeks, & Barbour, 2013; Cavanaugh et al., 2009).

Students often need different levels of interaction in online courses in order to be successful, so a personalized approach to that interaction can work well (Woods, 2002). Vonderwell (2003) wrote that instructors need to be careful with how they structure interaction with students, as sometimes quick feedback may not always result in deep inquiry on the part of

the student. Much of the interaction of an online distance education course, even more so than a blended course, is created in the planning stage of the lessons and activities. Skilled online teachers anticipate student concerns and address them up front, but secondary online teachers need to be especially responsive to student concerns because some students will quickly give up if they become frustrated (DiPietro, 2010).

Teachers can model the types of interaction that they use within the course, and that can have an impact on how students interact with each other. Boling and Beatty (2010) found in studying an Advanced Placement English class that how the teacher modeled the interaction for students started to improve the level of discourse in the course. Even advanced level students will struggle in an online distance education environment without the proper supports in place, leading to high attrition rates and low course performance (Beese, 2014). Ingerham (2012) suggested that the less advanced a student is, the more synchronous communication and assistance the student is likely to need, though the role of the instructor may shift to more of a “technical resource” (p. 74) than the traditional role.

Cole, Shelley, and Swartz (2014) found that lack of interaction was the main source of dissatisfaction within online courses. Student satisfaction with a course does not necessarily mean that significant learning took place in that course (Driscoll et al., 2012), but student reports of their specific interaction experiences can indicate some areas where we can do better in designing educational experiences in this domain. Interaction in online and blended courses can come in many forms, and some students and teachers prefer asynchronous modes of communication because it can provide flexibility in their learning and teaching schedule (Murphy, Rodríguez-Manzanares, & Barbour, 2011), which is a benefit of online instruction. However, synchronous and asynchronous forms of interaction in online distance education

courses can serve different, though independently valuable, ends (Cook, Dickerson, Annetta & Minogue, 2011).

One area where researchers and practitioners have found promise in program design for online distance education is in the form of course facilitators who can provide immediate response to students in a face-to-face environment: these facilitators have been seen as enhancing the flexibility of distance learning while also addressing the needs of students in the course (de la Varre, Keane, & Irvin, 2011). However, the work of a course facilitator, sometimes called a mentor, needs to be carefully planned, and students need to meet on a regular basis with their course facilitator in order for that set-up to be successful (Beese, 2014). In addition to careful planning, facilitators need to be trained in the theory and purpose of online learning, in addition to specific training on the learning management system they are working with at their site (DiPietro, 2010). When trained well and used effectively, course facilitators can be an important part of the planning and instructional process (Kirby & Driscoll, 1997).

1.5 Community of Inquiry

The concept of a community of inquiry has a winding history, but it starts with C.S. Peirce and his discussion of the community of inquiry in reference to the scientific community of inquirers who further scientific discovery through collective values and ideals (Charles Sanders Peirce, 1839-1914). Dewey (1993) took that ideal and placed it in the classroom, as a group of individuals collectively searching for meaning and learning in a classroom setting. Lipman (1991) popularized the concept to refer to the reflective practitioners in a classroom setting and borrowed from Dewey to describe the reflective practice in the classroom. Garrison (2016) locates collaborative constructivist as the basis of the theory behind community of inquiry, and sees Vygotsky (1978) and Dewey (1993) as influencing this line of thought. Defining the

framework, Garrison (2016) writes that it aims to “study and understand the influence of a purposeful learning environment on the cognitive processes of the individual. This is accomplished through the concurrent considerations of three interdependent elements—cognitive, social, and teaching presence” (p. 58). Underlying the framework is the fundamental assumption that thinking and learning is collaborative and accomplished within a community, so any attempt to account for learning in a setting needs to account for the interlocking collaboration between these three presences.

The three presences work together to accomplish this collaborative learning. Cognitive presence is the way that learners construct meaning and critical thinking collaboratively, “defined by the practical inquiry model and [consisting of four phases]: triggering event, exploration, integration, and resolution” (Akyol & Garrison, 2008, p. 4).

Social presence can be defined as the ability of participants in an online course to “project themselves socially and emotionally” into the virtual space, representing themselves as “real people” instead of robots (Garrison & Arbaugh, 2007, p. 159). Garrison, Anderson, and Archer (2000) write that social presence is an integral part of any learning that takes place in the course. For a community of inquiry to work, there needs to be a sense of community building within the course, and the social element of the class contributes to the shared sense of mission within the virtual environment (Garrison, Anderson, & Archer, 2000). Social presence means that the atmosphere of the learning environment is one in which students feel challenged and pushed in academic ways, not necessarily that all participants feel comfortable all of the time. Teaching presence is the presence that brings all of this together, and includes the “design, facilitation and direction of cognitive and social processes for the purpose of realizing personally

meaningful and educationally worthwhile outcomes” (Anderson, Rourke, Garrison, & Archer, 2001, p. 5).

Teaching presence is not necessarily or always the domain of the official teacher of the course, and part of the community aspect of the community of inquiry means that some participants in the course will pick up the mantle of teacher to drive the inquiry forward. As with brick and mortar courses, there are times within the community of inquiry-driven course during which students teach content as much as the official teacher. However, typically, there is at least one teacher who is organizing and designing the learning experiences that move the discourse in educative directions. Anderson et al. (2001) outlined three main roles of a teacher that contribute to teaching presence: instructional design and organization, facilitating discourse, and direct instruction. As with Anderson et al. (2001), Garrison and Arbaugh (2007) contend that teaching presence largely takes place prior to students entering the course in the design stage and then the rest of the teaching presence is in facilitation and direct instruction. A teacher’s presence should increase interaction and show students how they are progressing in the course (Garrison & Arbaugh, 2007).

1.6 Learning Presence

As shown in figure 1, the community of inquiry model is the intersection of three presences or elements of the classroom: social presence, teaching presence, and cognitive presence. Though cognitive presence is the ultimate goal of the educational experience, the three presences combine to create a social constructivist educational experience (Vaughan, Cleveland-Innis, & Garrison, 2013). Some researchers have urged a need for a fourth presence, learning presence, which seeks to accommodate the motivation, individual skills, and self-regulation abilities of the learner into the larger model of the community of inquiry (Shea & Bidgerano,

2010; Shea, Hayes, Smith, Vickers, Bidgerano, Pickett, Gozza-Cohen, Wilde, & Shoubang, 2012; Hayes, Smith, & Shea, 2015; Pool, Reitsma, & van den Berg, 2017; Wertz, 2014), though others have claimed that this goes against the fundamental principles of the social constructivism inherent in the creation of the community of inquiry model (Garrison & Akyol, 2013). Shea and Bidgerano (2010) have argued for the inclusion of learning presence, which is based on the ideas of self-regulated learning and self-efficacy, ideas tied to social cognitive theory and the work of Bandura (1986) and Zimmerman (2000), among others. In their study, they found a strong correlation between the traditional three presences of the CoI framework but also with learning presence.

Learning presence attempts to take into account the idea that the learner in the online learning context deserves its own part in the framework due to the importance of the learner's self-regulation, self-efficacy, and motivation to master the demands of online and blended education. Though the few studies that include this fourth presence in the CoI framework are intriguing and bring into the fold an interesting new dimension for understanding online and blended learning constructs, I felt that the research into this fourth presence was too nascent to initially code for this. I did not initially set out to validate the learning presence addition to the community of inquiry: numerous studies and 15 years of coding have validated the approach of the three-presence framework for studying virtual learning, though Shea and Bidgerano's (2010) learning presence has promise for expanding the applicability of the current framework. The results of the current study involving the Virtual AP courses may work to validate the contention that learning presence should be more widely considered.

After coding for the traditional community of inquiry's teaching and social presence, there were some coding categories that were not accounted for in teaching and social presence,

and I found that learning presence helped to account for the coding left out of either learning or teaching presence, and I return to this line of thought in the results and discussion sections of this article.

2. Methods

2.1 Focus groups

Our research team chose to conduct focus groups because of some of the inherent limitations of time and space in active schools. A focus group can be defined as “a selected set of people gathered by a researcher with the purpose of facilitating a discussion on a particular topic” (Glesne, 2016, p. 296). Focus groups can provide rich qualitative data in the course of the meeting (Bernard, 2006), but they can be limited in depth compared to one-on-one interviews with a research subject (Glesne, 2016). This can be because individuals do not want to go into personal matters in front of a group of people or because the researcher feels compelled to back off of a sensitive subject because of the confidentiality of ethical dilemmas that arise when speaking in a group (Glesne, 2016).

Though there are limitations to focus group interviewing, there are also advantages compared to individual interviews. Focus group interviews are used heavily in evaluation research, which this study began as, “where participants express multiple perspectives on a similar experience” (Glesne, 2016, p. 123). Selection into focus groups was all-inclusive: all students and teachers who participated in the Virtual AP courses had the opportunity to participate in the focus groups as well.

It is difficult to directly compare this focus group study to others since much of the research on interaction in online and blended learning environments has been conducted at the post secondary level. Much of the research into perceptions of interaction in these environments

has been focused on survey research (Barbour, 2008; Cavanaugh et al., 2009; Cook, Dickerson, Annetta, & Minogue, 2011; Hawkins, Graham, Sudweeks, & Barbour, 2013), or individual case studies (de la Varre, 2012; Ingerham, 2012; Johnson, 2008; Woods, 2002; Vonderwell, 2003; Beese, 2014; Ware, 2004). DiPietro (2010) conducted interview research on teacher perceptions of their K-12 virtual school experience with 16 teachers. Murphy, Rodriguez-Manzanares, and Barbour (2011) researched the perceptions of 42 high school distance education teachers using semi-structured interviews. With the dearth of studies in this particular method and area of research, it makes it difficult to compare this study with others, both in results, methods, and quantity of focus groups.

2.2 Qualitative content analysis

I chose to use qualitative content analysis in this study for several reasons, but it was most useful as a method to systematically analyze the large number of transcripts that we were left with after conducting the focus groups. Berelson (1952) writes that “content analysis is a research technique for the objective, systematic, and quantitative description of the manifest content of communication” (p. 18). Qualitative content analysis (QCA) (Schreier, 2012) is a version of content analysis that is more useful to use on documents or images that are more open to interpretation and when the researcher wants to examine and describe latent content rather than simply manifest content. Mayring (2014) describes QCA as a mixed methods approach since it contains “qualitative and quantitative steps of analysis” (p. 6).

Qualitative content analysis, as the name suggests, is a more qualitative and interpretive version of content analysis, and can be described as “a method for describing the meaning of qualitative material in a systematic way” (Schreier, 2012, p. 1). Though researchers using QCA sometimes argue that there is a lack of method to using the coding structure (Elo & Kyngäs,

2008), there is often equal misunderstanding when trying to apply the method as compared to applying grounded theory. Since there are some similarities between grounded theory methods and QCA, researchers occasionally claim they are using grounded theory when in fact they are using a method more akin to QCA (Cho & Lee, 2014).

With QCA, searching for patterns in the coding process can be done using two different approaches to coding: inductive and deductive. Inductive coding indicates going into the transcripts fresh and without any preconceived coding categories, but rather allowing the transcripts and the data to speak for themselves. Deductive coding can be useful when there is something specific that the researcher is looking for within the texts, and the coding categories are then created beforehand, or as often created from previous research, and then the coding researcher reports on the results of the coding found in the texts based on those already created codes. Elo and Kyngäs (2008) suggest that "if there is not enough former knowledge about the phenomenon or if this knowledge is fragmented, the inductive approach is recommended" (p. 109).

The unit of analysis for this study was the entire focus group transcript, and the unit of coding was a complete thought expressed in the focus group. Many times, the complete thought was a sentence, but if the thought continued on then I included subsequent sentences expressed by the same person within the same code. If the student or teacher started to express a separate thought then I ended the code and coded the next section under a different coding category, if a different coding category applied.

Whereas in many content analysis studies, the coding frames are standardized and applied to the documents deductively, most QCA studies employ coding frames that are data-driven and data-dependent. In other words, the coding needs to directly fit the data (Schreier,

2012). QCA can be started with an inductive round of coding, but then after refining the coding frame the researcher will apply a “consistent set of codes” (Heikkilä & Ekman, 2003, p. 138). The systematic nature of QCA is what tends to set it apart as a method of coding, analyzing, and interpreting data, while still maintaining the subtlety of meaning within each code (Down-Wamboldt, 1992). Though many researchers start off with inductive coding, the coding frame and second round of coding “reduces data” (Schreier, 2012, p. 7) because it separates those sections of the text covered by the coding categories and ignores all that is irrelevant to the research questions.

There were 38 transcripts derived from the student focus group interviews and 38 transcripts derived from the teacher focus group interviews, for a total of 76 transcripts. In the student focus groups, there were a total of 253 students among all transcripts, and there were a total of 103 teachers that participated in the focus groups.

During the first round of coding, I coded deductively for instances of positive and negative interaction within the transcripts, dividing any reports of interaction into either positive or negative coding categories.

During the second round, I coded inductively: from the second round of coding, I ended with 47 coding categories. Figure 2 shows the coding categories Student Negative Interaction, Teacher Negative Interaction, Student Positive Interaction, Teacher Positive Interaction, and the coding categories that fell under those umbrella categories. The four top categories represent the first round of coding, and the sub-categories are the result of the second round of coding. Using the community of inquiry model as my framework, I then organized the coding categories as either social presence or teaching presence (not shown in the coding frame). However, there

were some categories that would not seem to fit into either social or teaching presence, a result I will return to later.

For the deductive coding of positive and negative instances of interaction reported by students and teachers, I deductively coded the documents and coded any reports of interaction as either a positive report or a negative report. From there, I inductively coded within the positive and negative codes, looking for explanations within those categories. Following are two examples of coding instances with explanations of rounds of coding. After the second round of coding, I reviewed all codes for consistency, both in meaning and adherence to QCA. Schreier (2012) suggests that if there is no possibility to have a second coder, then allowing for a lapse of time between rounds of coding can be a way of validating the coding for transcripts.

The first example is from a student who took three Virtual AP courses through a BOCES: AP Micro Economics, AP United States Government and Politics, and AP Biology. This example was initially coded as a positive instance, and then later coded more specifically as Quick Response Time to explain why the comment was positive. The following student commented that her experience with the responsiveness of the teachers was that,

I think it's been really nice with these higher-level courses that our teachers are really comfortable with giving us their contact information. I mean our teachers are very good about, here's my email, here's my cell phone number if you need something, if you have any questions let me know and we usually can hear back from our teachers within half an hour most of the time, so it's very nice.

The next example is from a teacher, whose comment was initially coded as a negative instance of interaction, and then later specifically coded as More Face-to-Face Time. The following teacher, reporting on her experiences teaching AP Spanish through a BOCES, said that,

I did extend myself in the other two assignments that I had online in past years. I physically went out and met the kids. I had to do that, that was me, and it was awesome connecting with them and then there's like, "Oh, now I know who's on the other end. This is what she looks like." And I really, really wanted to do that this time, but the kids were signed up and coming on and it was so close to school starting that the opportunity just wasn't there. Now, during the school year it would be great if I had off they had off so I can go out and meet them or meet them at the mall, let's do lunch, something. I still agree that and firmly believe that that would be a huge piece, a missing link.

These short examples are meant to show the progression of the coding from deductive coding of positive and negative coding categories to the more specific inductive coding for the sub-categories.

3. Results and Discussion

3.1. Introduction

Coding results suggest that students and teachers had different perspectives of the positive and negative interaction present in the Virtual AP courses. Since research has proven the importance of frequent and high quality interaction in online distance education courses (Hawkins, Graham, Sudweeks, & Barbour, 2013; de la Varre, Keane, & Irvin, 2011; Beese, 2014; Kozma, Zucker, Espinoza, McGhee, Yarnall, Zalles, & Lewis, 2000), it is important that teachers understand clearly how their students experience the interaction in online and blended classes.

3.2. Community of Inquiry and Interaction

The research question for this study asks what is the difference in the ways that students and teachers perceive interaction with regard to the quality of social and teaching presence in

online and blended courses? Table 1 below shows at a glance where the coding categories fell within the community of inquiry and which codes fell outside of the presences contained within the community of inquiry.

Table 1 shows, on the left side, the coding categories that fit into social presence, teaching presence, and which fit into both of those presences. The section labeled “social and teaching” refers to coding categories that I placed into both community of inquiry presences. If they fit into one presence and not the other, then I placed it in the corresponding single presence cell. The categories are also split into positive and negative categories at the top portion of the table. For coding categories that fit into neither social nor teaching presence, nor for that matter cognitive presence, then I initially placed that in the “neither” cells in the table, which I later used as part of learning presence. The numbers in parenthesis next to the coding category represent the number of coded instances followed by the document spread. Document spread refers to the number of transcripts in which I found the coding category. For example, under the category of Social and Teaching Presence, within the Student coding categories, “Teacher or Facilitator in the Building (21-13)” means that there were 21 instances of coding for this category across 13 student focus group transcripts.

In observing the coding category table, two groups of codes stand out as significant, and those are the groupings that count for both social and teaching presence and the groupings that count in the “neither” boxes, as in they are outside of the explanatory power of the community of inquiry. I’ll discuss both of these categories briefly below.

3.3. Social and Teaching Presence Categories

When the expressed experiences of students and teachers involved reference to actions that impact both social and teaching presence, these actions potentially have a broad impact on

the class as a whole, but the positive and negative side of these categories are expressed in different ways. On the negative side of the combined category, there are three categories expressed for students and only one for teachers.

For students, the most coded category, Lack of Teacher Presence, is present along with Lack of Teacher Response. Both of these codes are references to general characteristics of teaching presence and response in the course. Contrast that with the positive side of the combined codes for students, and we see a more nuanced story. Whereas the negative aspects of the course are expressed, in terms of coding categories, in generalities, the positive side for students is a list of specific successful actions taken by the school and the district. There are two general coding categories of Strong Guidance/Teacher Presence and Strong Relationship with Teacher, but there are also the specific and more actionable codes of Teacher or Facilitator in the Building, Quick Response Time, and Meet Face-to-Face Occasionally. Because these five codes overlap into both social and teaching presence, they ought to be taken seriously in both practical and research contexts. The three categories of Teacher or Facilitator in the Building, Quick Response Time, and Meet Face-to-Face Occasionally are actionable in at least two ways: these are actions a district can design into a new online course or build into an existing course (importantly, a course that is already running as well), and they are also fruitful directions for research into why these are important and to what extent they are important to students taking online distance education classes.

We see a similar trend for teachers when looking at the coding categories included in the combined social and teaching presences, with seven coding categories on the positive side and one on the negative side. For the negative, teachers responded that they needed more face-to-face time with their students, which is a general coding category, similar to the negative on the

student side. On the positive side for the combined social and teaching presences, there are seven coding categories that fit into that section for teachers: Strong Guidance/Teacher Presence, Meet Face-to-Face Occasionally, Relationship Building, Peer Support, Quality Feedback, Teacher in the Building, and Quick Response Time. Of those seven, four are directly actionable in a practical sense: Meet Face-to-Face Occasionally, Quality Feedback, Teacher in the Building, and Quick Response Time. The other three categories can be influenced by attention to the four, since one way to have strong teaching presence and relationships with students is by taking some of the actions outlined in the four other coding categories.

Beyond the established community of inquiry categories of social and teaching presence, an important result of this study is what cannot be accounted for in the current community of inquiry presences, and that is the topic I turn to now. There are 14 categories that fit into neither social nor teaching presence. Two of those categories are labeled as Face-to-Face Classroom, which I used to code instances where it was clear to me that the students and teachers were not experiencing any form of online or blended distance education. Those categories are not included in the final results of this study and were taken out of the table. Of the remaining 12 categories, 8 of those coding categories have to do in some way with the student's motivation to do well in the class: Preference of Online Interaction (7-5), Preparation for College (4-4), Increase in Motivation (3-3), Motivated Students (6-5), Lack of Student Initiative (4-3), Decrease in Motivation (2-2), Lack of Student Preparation (5-3), and Lack of Motivation (4-4).

3.4. Learning Presence

The community of inquiry may be in need of revision to be able to account for the perceived experiences of students and teachers in these Virtual AP courses. Because of the interactive nature of the community of inquiry framework and its basis in social constructivism,

the theoretical framework may not yet be able to completely explain and organize all of the experiences of students and teachers in online distance education courses. Kozan and Caskurlu (2018) have identified four additional presences, along with several expansions on the three existing presences, that researchers have proposed through the years as revisions to the original community of inquiry framework. One of the presence additions is learning presence, which would account for the eight codes that focus on the students' motivation and what they bring to the learning experience.

Strategies that increase students' self-efficacy and self-regulation can aid them in perceived success within courses. Zimmerman (1989) writes that the student's role in manipulating variables in her own learning can lead to improved or diminished perceptions of self-efficacy. Proponents of the traditional community of inquiry framework can contend that those strategies are first taught through the teacher or through the general community of the class, and that may sometimes be the case. Indeed, the teacher can model the self-regulation strategies that might lead to success in the online course, which can be a successful strategy for any learner (Zimmerman, 1989), but there is evidence in the coding that many of the reports on motivation and self-efficacy in the transcripts point to students regulating themselves and perceiving their own self-efficacy within the course.

Within the community of the classroom, learning presence can also account for students regulating their behaviors and strategies themselves without direct help from the teacher. Hayes, Smith, and Shea (2015) write that learning presence can and should also account for co-regulation (when one student provides scaffolding and strategies to another) and shared regulation (when a group of learners collectively chooses goals and strategies), in addition to self-regulation. It appears that the community of inquiry framework cannot sufficiently explain

the phenomenon in online distance education of when students actively regulate their own learning in this way, whether individually or as a group. The teaching of self-regulation strategies may be especially important for students who are new to online asynchronous learning environments and to students working in a blended learning environment. The teacher can lay the groundwork of teaching self-regulation strategies in the face-to-face encounters in class, especially early on when teaching the processes and structures of the class. Lee, Tsai, Chait, and Koht (2014) argue that this should be the preferred way of teaching self-regulation strategies to students in a blended learning environment, rather than sending them right to the asynchronous learning environment without strategies in hand for them to be successful.

Regardless of the preparation laid out by the teacher, the online classroom provides an environment in which students will have to rely on their own perceptions of self-efficacy and their own strategies of self-regulation in order to be successful. Especially since not all learners are successful in self-regulating their own learning processes within online learning settings (Azevedo, Guthrie, & Seibert, 2004), it may be necessary for course designers, evaluators, and researchers to be sure that built into each course there are structures that encourage students' self-efficacy and self-regulation, recursively reinforcing these strategies and perceptions as students move through the course (Means, Toyama, Murphy, Bakia, & Jones, 2009). Inan, Yukselturk, Kurucay, and Flores (2017) found that students' self-regulation was important to their success in the course, especially planning. Planning, in this context, focused on the students' ability to set goals, control their environment, identify learning strategies, and goal setting.

Garrison and Akyol (2013) have argued against the inclusion of a fourth presence in the framework because this would violate the social constructivist approach of the original

framework. However, Wertz (2014) also argues for the inclusion of learning presence as the community of inquiry framework evolves and writes that the inclusion of learning presence does not violate the social constructivist approach, but it does acknowledge the individual contributions of the learner. McCaslin (2009) puts the concept of co-regulation within a social constructivist lens and argues that this is an important part of student development, one in which a novice student learns from an expert as they both develop their emerging identities and motivations throughout the course. When focusing on self-regulation, co-regulation, and socially shared regulation and placing that within either social constructivism or social cognitive theory, the difference is more on whether the emphasis is placed on the individual (social cognitive theory) or on placing that individual within the cultural and historical context of the moment (social constructivism) (Hadwin & Oshige, 2011). In other words, the concept of a fourth presence in the community of inquiry, under the umbrella of learning presence, is compatible with the social constructivist lens that it has previously been seen through.

The roles of students in an online course are distinct from the roles that teachers play in these settings, especially when students take on not only their own self-regulation, but take on more of an instructional approach to other students (Shea, Hayes, & Vickers, 2010; Hayes, Smith, & Shea, 2015). Students can then provide adaptive scaffolding in the role of expert and novice, providing in the moment supports that may not be otherwise possible in asynchronous online courses (Azevedo, Cromley, & Seibert, 2004). This adaptive scaffolding can play an important role in co-regulation throughout the course.

Recently, Pool, Reitsma, and van den Berg (2017) found that the online student's experience is unique to other forms of education and requires a different form of task and time management, which are important components to self-regulation. Instructors can help students

work to develop self-regulation strategies and self-efficacy in online coursework, especially since there is a strong connection between these two components and success in online courses (Lynch & Dembo, 2004; Bradley, Browne, & Kelley, 2017). Though self-regulation strategies have been studied in education for a long time, it has been less explored in online and blended settings, though it is clear that online instructors and students play very different roles in the course (Shea et al., 2012).

The secondary setting is one in which students especially need structures in place that allow them to develop self-regulatory strategies. Zimmerman (2000) has argued that students who have not been provided the support at home to develop self-regulation strategies are at a particular disadvantage to students who have parents that consistently monitor and provide feedback on academic progress and skills. A teacher can be critical in helping students to develop self-regulation strategies that they can use across domains (Zimmerman, 1989). A blended learning context can provide the independence and increased control essential to developing critical thinking. Along with the increased control that a blended learning context encourages is a scaffolded acceptance of responsibility for constructing meaning and understanding (Garrison & Kanuka, 2004).

As researchers, we need to keep pace with the changing landscape of online distance education and accept the many forms of learning contexts as deserving of research and attention. As more virtual and blended courses are integrated and implemented into secondary schools, we must study the quality and frequency of interaction within those courses. The community of inquiry framework, together with learning presence, can provide a useful construct for studying these courses. Many new courses are being designed with the community of inquiry framework in mind, so the research can pair with design to test the course's effectiveness towards those

aims. The community of inquiry theoretical framework offers a structure to center the design, implementation, evaluation, and research of online and blended courses. This can be of particular use to continuing to study courses at the secondary level, as the utility of implementing and then evaluating these courses can be accomplished within the same framework.

4. Conclusion

The idea of creating an ideal online course that works for everyone is fraught with difficulty and complicating factors (Carr-Chellman & Duchastel, 2000), and perhaps the greatest strength of designing online courses at any educational level is the flexibility to fit the course with the educational context and the needs of the student (Burge, Gibson, & Gibson, 2011). Online learning in the United States is growing at exponential rates (Watson, 2008), and the need to understand effective interaction within online and blended courses is self-evident.

A common assumption among many in the public and in education is that students know immediately how to navigate technology, but this digital native myth has been debunked (Margaryan, Littlejohn, & Vojt, 2011). Students and teachers alike need guidance on how to conduct effective interaction in online courses and other environments, and teachers and administrators would do well not to assume that students would thrive in this environment, because that is far from always the case. Another assumption that some virtual teachers make is that students want to be left alone to work through the content and that the teacher is there when the student needs help (Hawkins, Graham, & Barbour, 2012), but within the responses given by the participants of this study, that is also not the case. Since there is a distance between the teacher and the students, structures and practices need to be set in place and carried out with discipline and care to fulfill the needs and expectations of both the students and the teachers.

This study began with the following research question: what is the difference in the ways that students and teachers perceive interaction and the quality of social and teaching presence in online and blended courses? In brief, as shown through the results of this qualitative content analysis, my initial hypothesis was shown to be correct in that students and teachers had widely differing views on how interaction and the courses in general were developing. Generally, in terms of the social and teaching presence categories, teachers were positive in their view of the interaction in the courses and students had a negative view of the interaction in the courses. However, the more surprising result of this research is the validation of an additional presence to the community of inquiry in the form of learning presence, which would more fully take into account the experience of the learner in the online and blended learning environment.

4.1. Limitations

One limitation of this research involves how the study began in the first place and the possible effect of that beginning on the consequent results of the analysis. This study started off as an evaluation, so some teachers may have been guarded about saying anything negative about their teaching and the course design. This could have impacted how teachers answered the questions since they may have perceived that the evaluation team was there to judge their effectiveness in teaching the Virtual AP courses at their district. Teachers have grown wary of evaluations of all stripes, so there may have been more guarded answers than if we had conducted a pure research project without the evaluation component.

Another limitation is the use of focus group interviews as the primary data source. Glesne (2016) explains that focus group interviews are useful because participants can “express multiple perspectives on a similar experience, such as the implementation of a particular policy” (p. 123), but these styles of group interviews may not elicit the necessary depth or confidentiality that are

useful when garnering perspectives on an issue. The focus groups may have been prone to a kind of groupthink, when one student or teacher would be passionate about a topic and then the conversation would steer in that direction before being drawn back by the interviewers, which could possibly limit other perspectives during the course of the focus group interview. There is strength in allowing the group conversation to go in different directions as well, but the depth of a one-on-one interview is simply not possible with a focus group model of data collection. Ultimately, we wanted to hear from as many participants in the program as we could with the limited resources and time that we had available to us, and this was the best method to do that during the scheduled site visits.

Another limitation within this study is the fact that teachers are potentially being blamed for things that were not in their control during the course, since teaching presence encompasses areas that were not always under the control of the teacher running the course. For example, we know through conducting the focus group interviews that some teachers did not participate in designing the courses they ended up teaching, and much of the teaching presence codes encompass the design of the course since that plays a major role in how the course is taught. There were other aspects of teaching presence that can be out of the control of the teacher, since many times the pacing, scheduling, and context of how the course is run is not decided by the teacher. This is a limitation of the coding, but also possibly a limitation of the community of inquiry framework and its application to the K-12 online learning environment. Most of the studies that have used the community of inquiry framework to research online learning have used it in post-secondary settings, and many times those settings have more autonomy of schedule and design for both the students and teachers involved in the course.

Further, there were some courses that had some students in a blended format, some online, and some face-to-face: I consider this flexibility in course design a strength of online learning, but it does pose a limitation to a study that involves so many courses and coding for interaction within the courses. Though this was not a comparison study of courses, the variety of the course design creates a limitation because the nature of interaction within a course is then unique to the course design of the class and the context of the school and the participants involved.

This leads to a related point, and that is that this evaluation also constituted trying to understand the individual contexts of courses within hundreds of schools across the state, which was a difficult undertaking and limited the depth of understanding into any one course and any one context. Some contexts included, for instance, rural schools that provided limited internet access and attendant infrastructure for students and teachers to faithfully carry out the aims of the grant for which they applied. These varying constraints and contexts can pose problems for researchers trying to determine the barriers to interaction within online and blended courses. This is a particular problem for secondary courses run through public schools, since often the post-secondary researcher can operate under the assumption that the infrastructure issues can be taken care of by the adult learner in the learning context.

Schreier (2012) discusses the advantages and disadvantages of having more than one person coding when using qualitative content analysis, and in the end, each code is an interpretation of the data latent in the transcripts. Qualitative research is not typically regarded as having generalizability, but many times researchers have a second and sometimes third person code the transcripts to improve the validity of the results and strengthen the subsequent argument. However, that was not possible with this study.

4.2. Future Research

Future research may include the need to learn more about how learning presence may help to shed light on some aspects of online learning not currently explained or tested within the community of inquiry framework. Learning presence may be especially important as the community of inquiry is applied more to the K-12 field of online distance education study. The variety of learners who could potentially learn in an online environment in the K-12 setting make understanding the learner's perspective more important than ever.

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Table 1

Coding categories, results, and discrepancies

		Positive	Negative
Social Presence	Student	Good Support Network (5-4)	Lack of Community (12-8)
	Teacher	Good Support Network (21-10)	Lack of Community (9-7) Lack of Support Network (6-4) Lack of Student Response (4-3)
Social and Teaching Presence	Student	Teacher or Facilitator in the Building (21-13) Quick Response Time (19-13) Strong Guidance/Teacher Presence (8-6) Meet Face-to-Face Occasionally (7-5) Strong Relationship with Teacher (1-1)	Lack of Teacher Presence (81-20) Lack of Teacher Response (14-11)
	Teacher	Strong Guidance/Teacher Presence (28-15) Meet Face-to-Face Occasionally (11-9) Relationship Building (11-8) Peer Support (6-6) Quality Feedback (6-4) Teacher in the Building (6-5) Quick Response Time (4-4)	More Face-to-Face Time (9-6)
Teaching Presence	Student	Teacher Flexible (10-7) Scheduling and Pacing (2-2)	Poor Scheduling and Pacing (21-10) LMS Issues (18-11) Lack of Teacher Preparation (10-5)
	Teacher	Unique Benefits of Online Interaction (22-11) Teacher Flexible (16-13) Effective Scheduling and Pacing (10-7) Effective Course Design (5-4) Effective LMS (5-4)	Scheduling and Pacing (12-7) LMS, Technical Issues (10-6)
Neither	Student	Preference of Online Interaction (7-5) Preparation for College (4-4) Increase in Motivation (3-3)	Learning Differences (9-6) Technical Issues (7-5) Lack of Student Initiative (4-3) Decrease in Motivation (2-2)
	Teacher	Motivated Students (6-5)	Lack of Student Preparation (5-3) Lack of Motivation (4-4) Lack of Access (2-2) Primary Contact Issue (1-1)

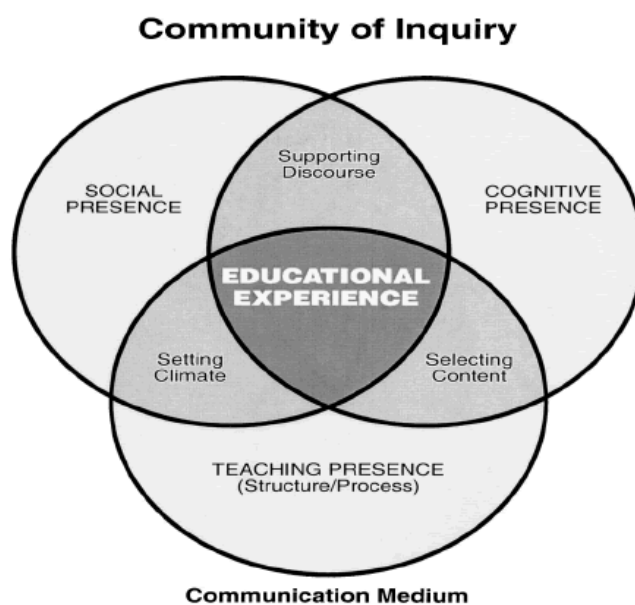


Figure 1. Community of inquiry model (Garrison, Anderson, & Archer, 2000)

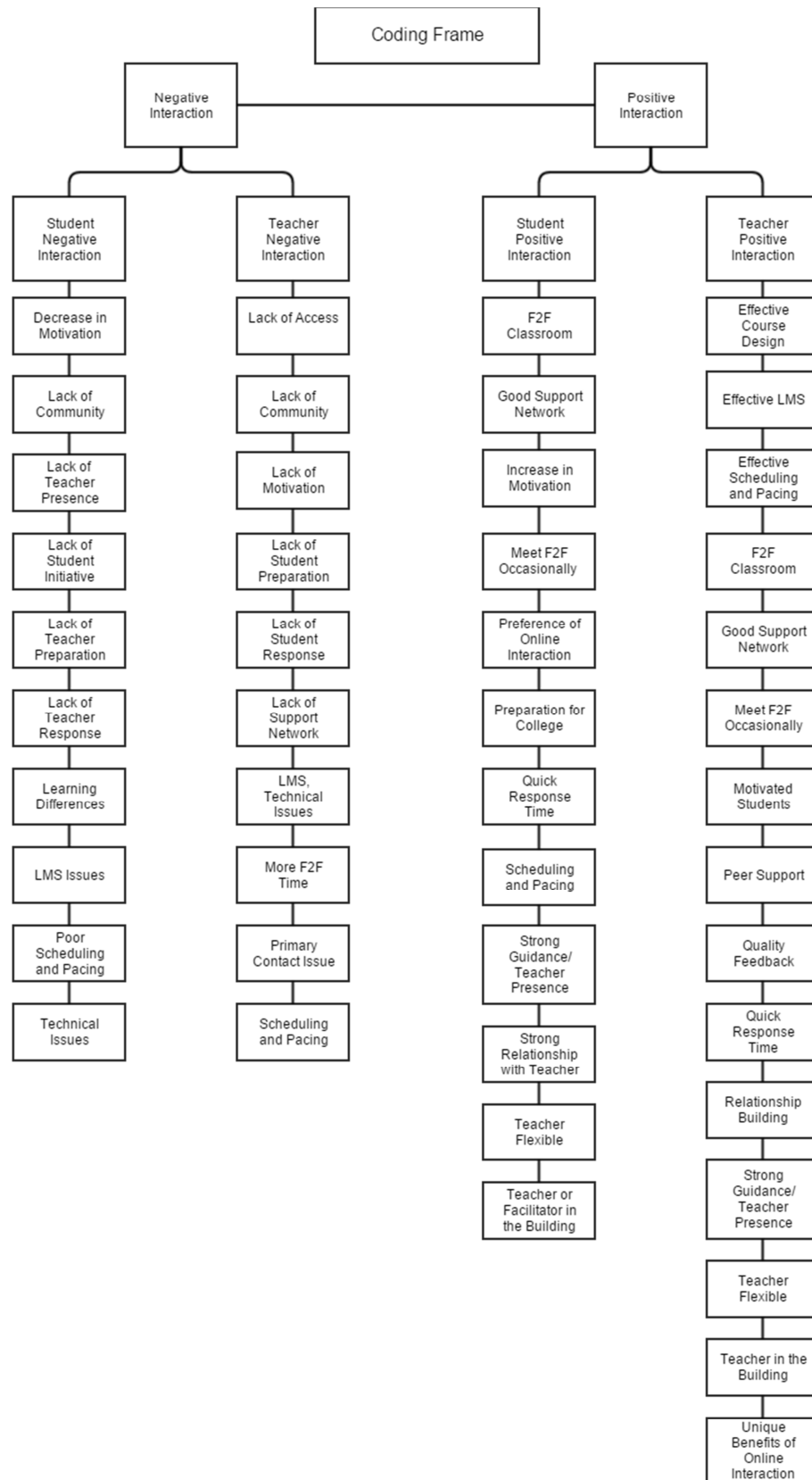


Figure 2. Coding frame

Highlights.

- Interaction is fundamental between students and teachers in online courses
- Students and teachers reported very different experiences of interaction in courses
- Some coding could not be accounted for using the community of inquiry model
- Learning presence should be considered as a revision to the community of inquiry

Keywords.

Distance education and telelearning, learning communities, improving classroom teaching, secondary education, interactive learning environments