International **R**eview of **R**esearch in **O**pen and **D**istributed **L**earning
Volume 17, Number 3

April – 2016

Teacher Perceptions of Learner-Learner Engagement at a Cyber High School

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Abstract

Distance education has historically contained little or no learner–learner interactions. Currently the Internet allows for unprecedented levels of learner–learner interaction and has the potential to transform how students learn online. However, many courses offered online focus more on flexibility and independence than on interaction and collaboration. Often it is up to the teacher to decide how much learner–learner interaction their courses contain. However, little research has examined how online high school teachers perceive, value, and facilitate learner–learner interactions. This case study used teacher surveys and interviews at a full-time online charter high school to examine teacher perceptions of learner–learner interactions. The analysis identified four student behaviors that positively impact student engagement and learning: befriending, motivating, instructing, and collaborating. Teachers also identified several drawbacks to learner–learner interactions such as bullying and cheating. Furthermore, there appeared to be tension between providing for students' individual needs and requiring collaborative learning opportunities.

*Keywords***:** K-12 online learning, cyber schooling, collaboration, peer tutoring

Introduction

The number of K–12 students enrolling in online courses has grown dramatically in the past decade. Most of these students supplement their face-to-face coursework with one or two online courses but students are increasingly taking all or most of their coursework online. Currently there are about 200 full-time online programs, known as cyber schools, in the United States enrolling about 200,000 students (Gill et al., 2015). This growth has occurred despite lower performance outcomes than their face-to-face counterparts (Freidhoff, 2015; Miron, Gulosino, & Horvitz, 2014; Watson, Murin, Vashaw, Gremin, & Rapp, 2013). As a result, it is increasingly important that researchers closely examine the instructional strategies that cyber schools employ, especially the quantity and quality of human interactions and support.

Anderson (2009) explained, "Distance education has always been to a great degree determined by the technologies of the day….As these technologies have developed, distance education has evolved in parallel

to support new forms of interaction, pedagogy and support services" (p. 111). When K–12 distance education programs began in the 1920s, learning materials were mailed to students who then mailed the completed work back to the instructor for grading (Clark, 2007). Eventually instructors began to personally communicate with students more frequently using phones and fax machines but students tended to have no communication with other students in the course (Barbour & Mulcahy, 2004; Russell, 2004). As a result, these courses focused on providing students with a customized learning experience that allowed students to master the material at a pace that worked best for them (Garrison, 2009).

The most dramatic changes in distance education followed the advent of the Internet. The Internet not only allowed for a dramatic increase in levels of instructor feedback and communication, it enabled high levels of learner–learner interactions. Garrison (2009) explained that many online instructors have retained a focus on student independence and flexibility while others have shifted to more collaborative and constructivist approaches to learning. This is reflected in the instructional strategies employed at cyber charter schools. Gill et al. (2015) obtained survey responses from 127 cyber school principals and found that 60% of the principals reported that their schools frequently used "individualized, student-driven independent study" instructional methods while only 21% reported that their courses frequently contained "collaborative learning involving two or more students working together" (p. 10).

Bandura (1986) argued that learning is extremely hindered when students rely solely on their individual efforts. Similarly, Vygotsky (1978) explained that teachers, more abled peers, or both, can assist students in the learning process by modeling correct behavior and scaffolding student learning using psychological and physical tools. Interaction between similarly abled peers can also result in learning environments where "meaning is constructed and shared" (Garrison, 2011, p. 10). Social presence and personal connections that are established through meaningful interactions can also be a prerequisite to more cognitive outcomes (Borup, West, Graham, & Davies, 2014; Garrison, Anderson, & Archer, 2000; Shea & Bidjerano, 2009). Furthermore, learner–learner interactions can help to promote creativity and other important skills that are becoming increasingly valuable in the workplace (Sawyer, 2007; West, 2009). Inversely, the lack of meaningful interactions can leave students feeling isolated and unmotivated to learn (Palloff & Pratt, 2007).

Understanding teacher perceptions of learner–learner interactions is especially important because meaningful collaboration and communication are unlikely to occur in online learning environments without teacher direction (Borup et al., 2014; Garrison et al., 2000). However, little is known regarding how teachers perceive or value learner–learner communication at cyber high schools. This research addressed this gap by examining teachers' perceptions of and experiences with learner–learner interaction at a full-time online high school.

Literature Review

The Adolescent Community of Engagement (ACE) framework was used as a lens for examining teacher perceptions of learner–learner interactions (Borup et al., 2014). The ACE framework hypothesized that online adolescent students' affective, behavioral, and cognitive engagement would likely increase if there

existed high levels of teacher, parent, and peer engagement. Teacher and parent engagement are beyond the scope of this study and this article will only focus on peer engagement. The authors of the ACE framework identified three indicators of peer engagement: instructing, collaborating, and motivating. Research regarding these three aspects of peer engagement is limited and is indicative of K–12 online learning research in general. Barbour (2014) explained that online learning courses have "been around for approximately twenty-five years, but related research literature had not kept pace with its growth" (p. 31). Nevertheless, the existing research provides important insights into the nature and benefits of peer engagement.

Instructing

The ACE framework hypothesized that student engagement would likely increase when peers instruct each other using their previously obtained knowledge and skills (Borup et al., 2014). Learning online can be especially challenging because students need to simultaneously learn both the course content and how to learn online (Lowes & Lin, 2015). Although it is largely the responsibility of the online teacher to ensure that students learn the content and skills necessary to be successful in an online learning environment, students can assist each other in the development of skills and knowledge with or without the teacher's direction (Garrett Dikkers, Whiteside, & Lewis, 2013; Oliver, Osborne, & Brady, 2009).

Garrett Dikkers et al. (2013) found that 89% of 214 surveyed online high school teachers and 82% of 174 surveyed online high school students reported that sharing student knowledge and experiences with other students was important. One teacher elaborated that she valued peer tutoring because it provided students with opportunities to show leadership and that some students were more likely to ask for assistance from a peer than from their teacher. In fact, some students felt that at times peers could explain the content more effectively than their teacher and believed that they learned the material more effectively when they taught it to others. These findings support Borup, Graham, and Davies' (2013) survey research at a full-time online high school that identified a significant positive correlation between the time students spent interacting with their peers and their end-of-course grade.

Researchers have also found that teachers used grouping strategies in an attempt to facilitate peer instructional opportunities. For instance, a teacher in Garrett Dikkers et al. (2013) research explained that she liked to "hook up the students who have the [technological] knowledge and experience with those who do not as much as possible" (p. 163). Similarly Lewis, Whiteside and Garrett Dikkers (2014) recommended that online programs carefully develop programs that pair struggling students with a student volunteer or "virtual buddy" who can work with the student one-to-one. Archambault et al. (2010) added that these types of grouping strategies can be especially important for at-risk students—especially in upper grades. Furthermore, Oliver et al. (2009) found that it was common for students in a brick-and-mortar setting who were enrolled in the same online course to engage in peer tutoring. As a result, Oliver et al. (2009) recommended that online programs leverage peer-to-peer tutoring opportunities at students' brick-and-mortar schools as a way to lighten some of the tutoring pressures off of teachers. However, research on the benefits of peer instruction has been mixed. For instance, Zucker (2005) surveyed 230 students and found that only 46% reported that their interactions with other students helped them to learn the course material, whereas 83% of the 63 student survey respondents in

Borup et al.'s (2013) research reported that learner–learner communication helped them to learn the content.

Collaborating

The ACE framework hypothesized that students are more likely to engage in courses when given collaborative learning opportunities that allow them to construct new knowledge jointly with their peers (Borup et al., 2014). The International Association for K–12 Online Learning (iNACOL) also included the need to provide students with collaborative learning opportunities as a standard for quality online courses (iNACOL, 2011) and Ferdig, Cavanaugh, DiPietro, Black, and Dawson (2009) highlighted teacher-facilitated student collaboration as a best practice for K–12 online courses.

One challenge to effective collaboration is that online communication tends to be asynchronous and text-based—typically in emails or on discussion boards (Beldarrain, 2008; Garrett Dikkers et al., 2013). Asynchronous discussion boards allow students to reflect between messages and provide all students equal time to participate (Graham, 2006; Pytash & O'Byrne, 2014). However, the increased level of communication can make it more burdensome to read all of the messages—especially for those students with low reading abilities (Tunison & Noonan, 2001). Pytash and O'Byrne (2014) added that online students can become frustrated using discussion boards during some stages of collaboration because ideas are exchanged slowly and lack a sense of urgency and synergy. Similarly less than 10% of the students in Beldarrain's (2008) research reported that discussion boards were their preferred way to "communicate and collaborate with others" (p. 102) and requested that discussion boards be replaced with more synchronous tools such as instant messaging, cell phones, and video conferencing. Lowes (2014) summarized, "The well-known affordances of online learning—having the time to reflect before 'talking' (i.e., posting)—are therefore counterbalanced by the constraints of time and distance" (para. 5).

Although the flexibility inherent in "virtual collaboration … addresses many of the difficulties inherent in traditional, face-to-face collaborative efforts" (Jones & Green, 2012, p. 27), collaborative learning opportunities appear to be less common online than in face-to-face environments and can vary across content areas (Kozma et al., 2000). For instance, Oliver, Kellogg, and Patel's (2010) quantitative case study found that online math students reported significantly fewer opportunities for group collaboration than online students in other content areas. This appeared to be a result of the visual nature of math and the need for synchronous communication. Similarly, Oliver and Weeks' (2015) found that credit recovery courses tended to be mastery-based and provided few collaborative opportunities to students. Johnston, Greer, and Smith (2014) also found that providing collaborative learning opportunities for students with disabilities was especially lacking—despite the high need for these students to learn socially with peers—because of the need to personalize instruction at students' ability level. Mosier (2010) argued that the flexible nature of online learning should be better leveraged to provide students with collaborative learning opportunities regardless of these types of barriers. For instance, Johnston et al. (2014) suggested that programs explore ways to group students based on their ability and cognitive levels rather than age and hypothesized that these types of groups would be less stigmatized in an online environment where a student's age is less obvious to peers. Weiner (2003) also explained that students' culture and race are less obvious online which reduces levels of prejudice and discrimination that some students may feel in face-to-face collaborative learning environments.

Teachers have also reported drawbacks to student collaboration. For instance, collaborative projects can make it difficult for them to assess individual students (Roberts & McInnerney, 2007). Teachers in DiPietro's (2010) study also believed that online learner–learner interactions resulted in cheating—probably more than the teachers were aware. Similarly, two teachers in Oliver et al.'s (2010) study were reluctant to have students collaborate because they believed that some students used "collaboration as a crutch to derive answers from peers" (p. 439). As a result, DiPietro (2010) emphasized the need for instructors to closely monitor learner–learner interactions and to establish a culture of respect and academic honesty. Unlike the research above, Lowes (2014) examined actual discussion board comments and found little evidence of meaningful collaboration on course projects. Instead, students divided projects into sections that students completed individually.

Motivating

Lastly, the authors of the ACE framework explained that students have the ability to motivate their peers (Borup et al., 2014). It is difficult to over emphasize the importance of motivation in K–12 online learning. Weiner (2003) argued "the key ingredient to online learning lies solely within motivational issues" (p. 46). Moore (1989) argued that learner–learner interactions have a larger motivational impact on adolescent learners than on adults. Furthermore, Bandura (1986) found that high standing students have an especially high impact on their peers' motivation—often unintentionally.

Students' ability to motivate their peers is closely related to the concept of *social presence* (Garrison et al., 2000); Borup et al. (2014) identified social presence as an *enabling variable* because it enhances students' ability to impact their peers' engagement. Social presence has been defined as the ability of students to convey their full personality and themselves as "real people" in mediated communication (Garrison et al., 2000, p. 89). Although most online communication is text-based, Rourke et al.'s (2001) analysis of discussion board comments confirmed that social presence could be established through sustained communication even though non-verbal communication cues are absent.

Teachers and students perceptions of have been mixed. Zucker (2005) surveyed 230 students and found that only 32% reported that their interactions with other students had a motivational effect on their learning, whereas 80% of 62 students in Borup et al.'s (2013) research found them to be motivational. Although the majority of 214 teachers and students in a study by Garrett Dikkers et al. (2013) responded positively, more teachers than students viewed emotional connections (78% vs. 58%) and community cohesion (72% vs. 65%) as important. The students who valued an emotional connection and sense of community with their peers commonly reported that it had a motivational effect that enabled them to complete more of the coursework. Inversely, Weiner (2003) found that when students' social interactions were low, students tended to feel a sense of loss, isolation, and frustration. However, some students in Garrett Dikkers et al.'s (2013) research reported that forming emotional connections with others in the course was "nice to have" but not necessary (p. 162). One student explained that she enrolled in an online learning course specifically to be distanced from her peers because she found them to be distracting in her brick-and-mortar school. Another student failed to see a connection between student interaction and learning saying "student interaction is something most students enjoy, but that's for outside the classroom, because the classroom is for learning" (Garrett Dikkers et al., 2013, p. 163).

In summary, little research has examined peer engagement in K–12 online learning environments. The existing research highlights the importance of students who instruct, motivate, and collaborate with their peers but there can be disagreements between students and teachers regarding the importance of these activities. Researchers have also highlighted some of the obstacles of peer engagement that can make it more challenging to facilitate in online environments. Furthermore, students who stand to benefit the most from peer engagement (e.g., at-risk students and students with disabilities) appear to have the fewest opportunities to interact meaningfully with their peers. Teachers are in the position to overcome some of these barriers but little research has sought to understand teachers' perceptions of and experiences with peer engagement in their online courses. This research addressed this need by examining teacher perceptions of peer engagement at a full-time online charter school. More specifically, this research was guided by the following questions:

- Based on instructor perceptions, what are the roles that students play in their peers' online learning?
- What are the obstacles that instructors perceive that prevent students from positively impacting their peers' engagement in an online learning environment and how do instructors work to overcome those obstacles?

Methods

A case study methodology was used for this research. Stake (2010) stated that the goal of case studies is not to identify generalizable findings but to understand one thing well. Merriam (1998) explained that a case study's object of inquiry should be "a single entity, a unit around which there are boundaries" (p. 27). The boundary established for this case study was teacher perceptions of peer engagement at a full-time online charter school.

Setting and Participants

Mountain Heights Academy (MHA) was selected as the setting for this research. At the time of the research MHA enrolled 381 students who were taught by 21 teachers. Most of the students (86%) took all or most of their courses at MHA and 15 of the teachers taught full-time at MHA. MHA estimated that 21% of their student body was previously homeschooled, 15% was labeled economically disadvantaged, and 12% participated in special education programs.

Although all of the courses at MHA were taught fully online, the school provided monthly optional face-to-face activities including service projects, academic fieldtrips, and social activities such as school dances. Previous survey research conducted at MHA found that students had high levels of interactions with their peers (Borup et al., 2013) making MHA an especially appropriate setting for this research.

Data Collection and Analysis

All 21 teachers were asked to complete an online survey and answer the following open-ended question: "In your opinion what are the different roles or responsibilities that peers play in a student's online learning?" Teachers were then required to rank their responses in order of "importance to achieving positive learning outcomes." Eleven teachers were then sampled to participate in an interview. Teachers across all content areas (two English teachers, two math teachers, two social studies teachers, two science teachers, two elective teachers, and a special education teacher) were sampled in an attempt to obtain maximum variation in teacher perceptions (Patton, 1980). Teachers also varied in their online teaching experience. Four teachers were completing their first year at MHA, six were finishing their second year, one was finishing her third year, and none had K–12 online teaching experience prior to teaching at MHA. Nine of the teachers previously taught in a brick-and-mortar setting for an average of 5.8 years. During their interviews, teachers were asked to elaborate on their survey responses and provided rich examples and experiences. Interviews were transcribed and the transcriptions were sent to participants who then checked them for accuracy.

Survey responses and interview transcripts were analyzed using elements of the constant comparative coding method (Glaser, 1965). Glaser (1965) explained that the "defining rule for the constant comparative method" (p. 439) is that during analysis the researcher should code the data into as many categories as possible while comparing each incident with those previously coded. Following, the different categories were integrated into categories based on their properties. An external researcher also reviewed the coding regularly during the analysis to discuss the identified themes and any disagreements were discussed until resolved.

Findings

Survey

Fourteen teachers completed the survey by listing and ranking the roles that students fulfilled in helping their peers to engage in online learning environments. In total, teachers listed 42 responsibilities. In four cases two of an instructor's responses were similar in nature and the responses were collapsed into one response (e.g., "collaboration" and "group work"). The 40 resulting responsibilities were then coded based on their similarities into four categories: (a) collaborating, (b) instructing, (c) befriending, and (d) motivating (Table 1).

Table 1

Teacher-Reported Responsibilities of Peers

Responsibility	No. of teachers	Average rank	Standard deviation
Motivating	12	1.9	0.7
Befriending	12	3	1.0
Collaborating	9	1.5	0.5

Instructing	7	2.3	1.4

Teachers most commonly listed motivating and befriending responsibilities. Nine teachers identified collaborating and on average ranked it the highest. Instructing was only listed by half of the teachers and had a relatively high standard deviation indicating that teachers somewhat disagreed with regards to the importance of peer instruction. In summary, more teachers recognized the affective benefits (i.e., motivating and befriending) than the academic benefits (i.e., collaborating and instructing) of learner–learner interactions.

Interviews

Results from the interview analysis are discussed in four sections: (a) befriending, (b) motivating, (c) instructing, and (d) collaborating. Pseudonyms were used to protect teachers' identity.

Befriending. Teachers generally agreed that it was important for students to form friendships and have positive social interactions with their peers. Julia summarized that "all teenagers want to feel valued by their peers." These relationships also appeared to form the foundation for other types of peer engagement. However, teachers identified three primary obstacles that students encountered when attempting to form a personal connection with their peers. Teachers also shared how they worked to help students overcome those barriers.

First, teachers explained that students' physical separation proved a major obstacle to students forming close relationships with their peers. As a result, MHA encouraged students to attend optional face-to-face activities. The activities could center on academic, service, or social activities. Regardless of their intended purpose, there appeared to be a social element in the activities. Lisa explained that adolescent students "are social at that age and they like to get out and see each other" and that once they have met face-to-face they were more likely to "chat with them [online]." Although the face-to-face activities were an important means for developing a sense of community among students, Lisa found that "some of them don't really seek out the opportunity to be involved that way." Although MHA varied the locations of these activities so more students could access them across the state, teachers acknowledged that it was impractical for students living in "the remote regions of the state" to regularly attend.

Second, teachers found that online interactions were less social than face-to-face communication. Teachers explained that some students used social media to overcome this obstacle. However, MHA also recognized how distracting social media can be for students and blocked Facebook on the students' computers. Instead MHA encouraged students to use Jewel Social for social interactions with their peers. Samantha explained that Jewel Social was maintained by MHA and was "kind of similar to Facebook." Lisa described Jewel Social as "an online hallway" where "kids can go and just chat and have that social connection with one another." However, it appeared that students were drawn more to external social media sites, such as Twitter, that MHA did not block from their computers. Megan added that students communicated regularly using Google Chat but that teachers were not privy to those communications—which may explain why it proved a popular option for students. Google Chat was so popular that Megan raised a concern that some students were "chatting constantly making it so [other students] can't focus."

Third, teachers found that some students were resistant to communicating with their peers even when they were provided opportunities to do so. Angela stated, "We have some [students] who are really loners—they don't necessarily want to have the interaction with their classmates." Stephanie added that some students wanted to isolate themselves from their peers because "they've been bullied in their other schools." In fact, Rachel explained that some students enrolled in MHA specifically to "get out of certain social situations." As a result teachers would commonly start their courses with structured icebreaker activities that incentivized students to have social interactions in a safe and monitored environment. In some cases these activities required students to communicate using audio or video. For instance, Alex had her students introduce themselves using VoiceThread because it allows students to "hear their voice."

Motivating. The analysis of the interviews identified a close relationship between students' ability to form friendships with their peers and their motivation to academically engage in learning activities. Angela explained that students are more "active in the course if they have a friend to go through the course with." Perhaps Rebecca best identified this connection when she said:

> I think if [students] at least know a couple of other students that they could chat with or ask questions if they have a problem it makes them feel more included, more secure…. I would say that it would make them less likely to give up.

Inversely, Alex believed that when students have not formed relationships with their peers they feel like they are working on a "faceless computer" making the courses "boring" to the student.

Teachers also found that students would motivate others using praise and encouragement. For instance, Julia shared the following example of how students used Twitter to send encouragement to their peers: "They'll say, 'Oh, I'm just having trouble with my math today. I just can't get motivated.' And they'll Tweet it out or whatever and you'll see another Tweet, 'You can do it, you're a great student! You'll be fine!'"

Teachers facilitated student praise by posting exemplar student work and allowing students to make comments regarding the project. Lisa shared,

> Part of [student encouragement] takes place in the "strut your stuff" wall where I put things up and then the kids notice who is there and they always comment like, "Oh yeah! I really liked this!" or "That was cool how you did that." or "I didn't think about it that way."

Angela added that she had students post their projects on forums and believed that students "generally put more effort into those [projects] because they know that everyone's going to see it and people are going to be responding to it."

Instructing. In addition to befriending and motivating their peers, teachers explained that students could share their previous knowledge with other students who required additional instruction and tutoring—with or without teacher direction. For instance, Stephanie explained that students would contact their peers during difficult assignments to "talk to each other and fill each other in on those missing gaps of content information." Some teachers also helped to facilitate these informal interactions

by creating open forums where students could post questions and receive answers from their peers. Similarly, Rachel created an open forum that allowed students to write out math problems on a virtual whiteboard and found that "students get on there and work together every now and then but it's just informal and up to them." Peer instruction appeared especially valuable in math courses where it was difficult for instructors to tutor all of their students individually.

Teachers also worked to facilitate more formal opportunities for peer instructing. Teachers required students to review each other's work before submitting it for final grading. Alex explained that students did not naturally provide quality feedback to their peers, but their feedback improved when she set clear expectations and she noted that "some of [her] students are amazing peer editors." National Honors Society members were also encouraged to complete service hours throughout the year by tutoring students in the subjects in which they excelled. Rebecca believed that her Spanish students "really benefited" from the peer tutoring they received. However, this tutoring program appeared to have mixed results. Rachel believed that the program benefited both the tutored student as well as the person doing the tutoring and attempted to have student-led study groups in her math class. However, she found that the attendance to these peer sessions dropped quickly because students would rather wait and attend one of her study sessions:

> They like knowing that I'm there and being the teacher obviously gives me more validity in what I'm saying…even if the other students know it really well. I thought that they would like the student-led ones more because it was their peers, but no.

Stephanie summarized she had "mixed feeling on the whole National Honors Society peer tutoring" and the success of the program was dependent on the difficulty of the course and the level of trust and comfort students had with their peers.

Collaboration. Unlike peer instruction, student collaboration did not require one student to have more knowledge and skills than the other because students worked together to co-construct knowledge. This typically occurred in discussion board activities and collaborative projects. Most teachers required students to participate in discussion board activities. Activities typically required students to "post their initial response to the discussion question and then … respond to two other students." Julia explained that she required her students to participate in a discussion board activity in each weekly module to ensure "ongoing dialogue." Teachers commonly stated that these discussions were a critical component to students' learning and made the course more enjoyable for teachers and students. Angela also believed that discussions were more meaningful online than face-to-face because students have more time "to process their answers and think about why they're saying what they're saying and why they believe what they believe."

Teachers recognized that students' comments could also lack quality and depth. For instance, John found that at times his government students' comments lacked authenticity "because a lot of times [students] are giving the answer they think [the teacher] want[s] to hear versus what they're actually thinking and feeling." In response, John attempted to design discussion board prompts using authentic scenarios that directly related to his students lives. Megan also found that she had to be especially thoughtful when creating online discussion board prompts. She explained that in a face-to-face environment if the teacher

asked a "bad question" or if the question was not "resonating" with students, the teacher could quickly ask a better question. In contrast, due to the asynchronous nature of online discussion, online teachers would not "know for a little while" if their discussion prompts were effective. As a result, Megan found that she had to closely monitor student comments and intervene when the discussion prompt failed to illicit meaningful dialogue.

Although most teachers integrated online discussions into their courses, student collaboration on projects and assignments was less common. Most teachers valued collaborative projects but also encountered obstacles that prevented them from requiring students to collaborate on course projects. The most common obstacle was that students were working at different paces. Although MHA set weekly deadlines, teachers instituted a grace period that provided students with one additional week to submit assignments without penalty. John explained that he and the other teachers would "encourage [students] not to work in the grace period" except for emergencies. However, Rachel found that a large portion of her students would "basically take the first week in the quarter as a freebie week … and start out basically a week behind." This appeared to complicate requiring student collaboration and some teachers only made collaboration an option for students who took the initiative themselves. Angela described the tension that she felt between requiring collaboration and providing students with a flexible learning environment:

> If I could force them all to do [collaborative projects], I would, but it's kind of an unwritten policy that you can't make them do group work just because so many of our students work at different times…but I see the value in it. Generally when students work together on a project, it's better than when they work alone.

Unlike most teachers, Stephanie required students to participate in a collaborative project during her first year teaching at MHA and said "it failed miserably" due to the logistics of assigning group members. Following her experience Stephanie began "making working together optional and letting them pick who they wanted to work with."

The value that teachers placed on collaboration varied and some teachers advocated for collaboration more than others. Christine stated, "I haven't done a lot of group projects. I know some of the other teachers do that but biology doesn't really lend itself to a lot of group projects." Similarly, Julia valued collaboration but found her Fitness for Life course needed to be more "individualized" and Rachel explained that in math "lessons don't seem to lend to group work as much" as other content areas. Lisa, the special education teacher, added that collaboration was especially difficult because some individualized education plans (IEPs) required students to work at their own pace making collaboration "more stress than it is worth." Stephanie, a science teacher, appeared to be the strongest advocate of optional collaboration but admitted that she was "really hesitant [her] first year to do collaborative assignments" because she thought that it would make it more difficult to assess students individually. She later discovered that it has been "a little bit easier" to individually assess students in an online environment than it was in a brick-and-mortar environment.

Drawbacks of Peer Engagement. Although teachers agreed that learner–learner interactions generally benefited student learning and engagement, teachers found that it was also possible that students' interactions with their peers could actually harm their learning in some cases. For instance, just

as students' positive interactions with their peers resulted in friendships and increased motivation, negative interactions appeared to leave students feeling isolated and unmotivated. For instance, John described one student who was bullied by others in his course that "affected her ability to do her work and to log into [the course]." When teachers learned of bullying they referred the involved students to school counselors. Rachel believed that some students unintentionally bullied their peers, "When they think of bulling, they think of beating a kid up. They don't understand that cyberbullying is actually bullying." Lisa added that some students unintentionally made inappropriate comments to their peers because they are unfamiliar with netiquette and needed to be taught "how to be respectful when you are communicating with each other through the written word."

Cheating was also a major concern for teachers who fostered peer-to-peer instruction and collaboration. For instance, Megan was open to having her students collaborate on assignments "as long as they are each doing their piece and not cheating." Those who worked to foster student collaboration explained that it required them to maintain a "close eye" for signs of cheating. Lisa found it somewhat difficult to discern academic dishonesty because she could not "monitor exactly what [students] are doing." Samantha also found that some students would actually complete the assignment for their peers when they were attempting to tutor them in the content, requiring her to "talk to them about cheating and how helping and cheating are two separate things." Although bullying and cheating were major concerns, they did not appear to be pervasive or outweigh the overall benefits of peer engagement in their courses.

Discussion

This research examined the benefits and obstacles to meaningful learner–learner interaction at MHA, a full-time online charter high school. Analysis of teacher surveys and interviews found that teachers largely valued learner–learner interactions as a way for students to feel socially integrated into their learning environment. Teachers also believed that students' social interactions had a motivational effect on students. This perception is supported by previous research conducted at this same setting that found a significant positive correlation between the amount of social interaction that students reported and their end-of-semester grade (Borup et al., 2013). Garrison et al.'s (2000) Community of Inquiry (CoI) framework provides some insight into this finding. Their CoI framework hypothesized that a certain amount of social presence is necessary for students to co-construct knowledge together because students need to feel comfortable communicating with each other prior to having meaningful content-centered discussions. Similarly, the ACE framework explained that social presence is an "enabling variable" because it increases the likelihood that others would impact student learning (p. 21). Teachers in this research reported that students' engagement and learning were impacted by their peers' befriending, motivating, collaborating, and instructing efforts. However, none of these efforts are likely to be impactful if students fail to establish online social presence. As a result, teachers should facilitate learner–learner interactions that encourage social presence early in the course.

Garrison (2011) also stated that too much social presence could actually be detrimental to the learning environment because it can "inhibit disagreement and encourage surface comments and the distraction of social banter" (p. 40). Teachers in this research expressed a similar concern that the social aspects at

MHA could prove distracting for some students. However, it was difficult for teachers to know how much time students spent interacting with their peers because it largely occurred outside of the learning management system. As a result, parents who physically monitor students' learning at home may be in a better position to recognize when social interactions become distractions for students (Borup, Stevens, & Hasler Waters, 2015; Halser Waters, Menchaca, & Borup 2014).

More harmful than providing distractions, teachers found that in some cases social interactions between students provided them the opportunity to bully one another. This did not appear to be a large issue and in some cases may have been unintentional because students did not know how to properly communicate using text or misunderstood what behaviors constituted bullying in an online learning environment. Cyber bullying can be especially harmful for online students because many choose to enroll in online courses as an escape from bullying at their pervious brick-and-mortar school (Beck, Egalite, & Maranto, 2014; Sorensen, 2012). Dawley, Rice, and Hinck (2010) also found that online teachers commonly requested more professional development on the psychology of online learning, including cyber bullying. Harms, Niederhauser, Davis, Roblyer, & Gilbert (2006) summarized, "Cyber-bullying and flaming behaviors can have powerful reverberations in adolescent students learning the power of words" (para. 39). As a result, more research is needed that identifies best practices for preventing and stopping cyber bullying in online settings.

Teachers also recognized that learner–learner interactions could directly impact students' learning when students helped to instruct their peers. Moore and Fetzner (2009) recommended that institutions should "encourage peer tutoring because it encourages students to turn to each other so those who are reluctant to approach the teacher don't feel lost; peer tutoring or peer review also tends to give students greater confidence in negotiating their own learning" (p. 9). Mosier (2010) added that peer-tutoring programs could help time-limited teachers meet the needs of their students without added assistance. In their three-year, mixed methods case study examining online at-risk students, Lewis et al. (2014) described one program where struggling students were paired with peers who provided them with additional support. The researchers hypothesized that this type of program may be part of "the formula for success for helping at-risk students succeed" (p. 8). MHA teachers in this article found that their peer tutoring program was received by students with mixed results. The effectiveness of MHA's program appeared to depend on the nature of the course content and the level of trust that the student had in the peer tutor. Additional research should examine successful peer tutoring programs. This type of research has the potential to identify guiding principles for school administrators and teachers who wish to implement similar programs.

Teachers struggled to require collaboration while still allowing students to learn at a personalized pace. Although teachers recognized the value of collaboration, student projects were predominantly completed individually. This finding supports national survey research by Gill et al. (2015) that found only 21% of the 127 surveyed full-time online programs reported that they frequently facilitated "collaborative learning involving two or more students working together" (p. 10). Previous research has highlighted that collaborative online courses lose some of the advantages of self-paced instruction and make it more difficult for students to learn and master the content at a pace independent of other students (DiPietro, Ferdig, Black, & Preston, 2008; Oliver et al., 2010). Teachers are often asked to provide students with the

best from both worlds. For example, when describing effective instructional design of K–12 online courses, Repetto and Spitler (2014) recommended that programs use an any-pace model that would provide students ample time to master specific learning objectives and then stated that "programs also should foster positive interaction and collaboration among students through cooperative learning opportunities incorporated into the curriculum" (p. 120). However, more research is needed that highlights best practices on how to blend these different approaches.

MHA attempted to find a balance in flexibility and collaboration by setting weekly due dates with a grace period that allowed students to submit assignments a week late without penalty. Similarly, students in Weiner's (2003) case study found that the lack of intermediate deadlines limited their interactions with other students and recommended that programs set "loose deadlines to ensure that all students are on the same lessons to share their thoughts with one another" (p. 48). However, teachers at MHA found that flexible deadlines allowed students to discuss course topics in meaningful ways but not enough to coordinate collaboration on course projects. As a result, online programs would likely have to set common hard deadlines in order to foster rich collaborative opportunities for students.

Lastly, Garrison (2011) stated, "The information age and a networked world have forced educators to rethink the educational experience" (p. 18). However, some teachers in this case study saw little value in fostering collaborative learning activities and several teachers highlighted potential drawbacks to online collaboration, such as cheating. As a result, if administrators wish to promote more collaborative learning environments they will also need to understand teacher perceptions and work to resolve teacher concerns. The correct balance between individual and collaborative projects will also likely vary between content areas and more research is needed that explores this phenomenon in specific content areas.

Conclusion and Recommendations for Future Research

Online learning courses are increasingly providing students with high levels of learner–learner interactions. However, little research has examined how these interactions can impact students' learning in K–12 online learning environments. This case study addressed this need by examining teacher perceptions of learner–learner engagement at a full-time online charter high school. Teachers described four student behaviors that impacted student engagement: befriending, motivating, instructing, and collaborating. Befriending and motivating focused on the affective aspects of learning and were believed to have formed the foundation for students to effectively instruct their peers and collaborate with each other—supporting previous research that has shown a connection between affective and cognitive course outcomes. Teachers also identified several obstacles and potential drawbacks to meaningful learner–learner interaction. For instance, meaningful collaboration appeared to require more structure and uniform pacing. Furthermore, just as positive social interactions fostered a sense of community and increased motivation, negative interactions created a sense of isolation and unmotivated students. Instructing and collaborating also afforded students opportunities to cheat. DiPietro (2010) summarized that, "Just as the formation of community can encourage student motivation and engagement within a course, negative interactions with students can have the opposite effect" (p. 340). Teachers believed that

at times these negative interactions were the result of student misunderstandings and could be prevented if students better understood their roles and how to avoid common pitfalls.

The findings from this research support the ACE framework's (Borup et al., 2014) claim that students can positively impact their peers' learning through motivating, instructing, and collaborating activities and that these activities are enabled and enhanced once students have established a level of social presence and befriending behaviors have occurred. However, the findings from this case study should be understood within the context of the research setting and cannot be generalized to other online learning environments. Ultimately, the contextualized nature of case studies "demands the experience and insight of a reflective and knowledgeable teacher who can translate principles and guidelines to the contingencies and exigencies of their unique contexts" (Garrison, 2011, p. 5). Additional research conducted in other learning environments that address the limitations of this research would provide additional insights that make the translation between theory and practice easier. For instance, data collection for this research was limited to surveys and interviews. Although insightful, surveys and interviews ultimately provide a limited and filtered view of a phenomenon and future researchers should seek to obtain other types of data. As an example, Lowes' (2014) research is particularly insightful because she analyzed actual discussion board comments that students made while collaborating. Another limitation of the current article is that it relied exclusively on teacher perceptions and future research should seek to also understand the perceptions of students and parents. Obtaining data from students can be especially difficult and previous researchers have found that online students can be reluctant to share their thoughts and feelings with researchers (Garrett Dikkers et al., 2013). Although difficult, a coordinated research effort is required to better understand the nature of peer engagement and identify best practices that have the potential to positively impact learning outcomes for online students.

Acknowledgements

I gratefully acknowledge Dr. Charles R. Graham's feedback concerning the research design. I also appreciate the teachers and administrators at Mountain Heights Academy who made this research possible.

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