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Online Students' Perceptions and Utilization of a Proximate Community of Engagement at an Online Independent Study Program

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A dissertation submitted to the faculty of
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Doctor of Philosophy

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ABSTRACT

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Engagement at an Online Independent Study Program

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Distance learning has provided solutions for students for more than a century. Students access distance learning due to issues with access, credit recovery need, or need for flexibility in location, time, pace, or duration of instruction. Recent advances in technology and instructional designs allow more interactive and synchronous instruction. Researchers suggest that designs using collaborative-constructivist approaches result in deeper learning and increased student satisfaction. Such courses implement theories based on interactions, creation of communities, and learner-centered design. The increase in online curriculum offered and, in some cases, required for K-12 students indicates a need to consider learning characteristics of adolescent learners. Adolescent learners are not as self-regulated, metacognitive, and technologically capable as adult learners. Communities and interactions require the involvement of parents or other involved adults to encourage learner engagement. New theories are emerging concerning learning engagement by adolescents including the *adolescent community of engagement* (ACE) framework.

This dissertation reports two studies of K-12 online students enrolled in independent study courses. The researcher applied the elements of the ACE framework as a lens to study independent study students' experiences with a local community of support. Could students benefit from the curation and support of a *proximate community of engagement* (PCE)? The first study found that students perceive that a PCE would be helpful to learning when they enroll. The second study found that students completing a course organically accessed a PCE during their course experience, even without coaching and curation activities. Credit recovery students were more likely to perceive value in a PCE but actually created and used such a community at the same level as other learners. Parents and teachers were most often identified as the local support students would, and did engage. Future research was suggested to identify ways to encourage PCE curation, the most effective and supportive PCE interactions, and best practices to train and support members of the PCE.

Keywords: independent study, adolescent, online courses, online community, adolescent community of engagement, proximate community of engagement

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Chapter 1: Description of Research Agenda and Structure of the Dissertation

The research reported in this dissertation examined the experience of adolescent students enrolled in online independent study high school courses. Students have had access to distance education for nearly a century (Clark, 2013). "The primary purpose of distance education, expanding access to curriculum and providing educational choices, has changed little over time" (Clark, 2013, p. 555). Students enroll in distance education courses to meet the requirements for graduation (Patrick & Powell, 2009). One of the major reasons that schools provide online courses is to improve graduation rates (Picciano & Seaman, 2010; Watson & Pape, 2015).

Technologies now afford more interactive, interdependent, and supportive online courses using collaborative–constructivist approaches supporting deeper learning (Akyol, Vaughan, & Garrison, 2011). For practical reasons, however, students choose online independent study because they "value the freedom and independence of time and place" and the freedom to "move through a course of studies at a time and pace of their choice" (Anderson, 2008, p. 52). This research is part of an agenda to respond to the practical student motivations to meet the requirements for graduation in a flexible manner and identify "a theory of online learning that accommodates but does not prescribe any particular format of time and place 'boundedness,' and that allows for appropriate substitution of independent and community-centred learning" (Anderson, 2008, p. 52).

The Proximate Community of Engagement (PCE)

The studies reported in this dissertation explored the possibility of a learning design framework that provides this accommodation through the investigation of the experiences of adolescent students enrolled in online independent study high school courses offered by a large university in the western United States. The main claim underlying this study is that successful

independent study students will access a *proximate community of engagement* (PCE) when a learning community is not structured and made available from the course provider. The researcher suggested that students receive, or could receive, the benefits of collaboration, interaction, and support designed into interdependent online courses through engagement with a proximate learning community while completing an independent study course. This study tested that claim.

Proximate is defined as "next or nearest in space or time" or "very near; close" (Proximate, n.d.). A proximate community of engagement is curated by a student, or a student's advocate, to assist the student as he or she completes an independent study course. The members of the community are generally near the student geographically and temporally, interested in the student's success, available to interact with the student, and are not part of a community organized and provided by the independent study course supplier. Researchers have found that online course providers acknowledge this need for proximate support and often expect a parent to fulfill the "teacher function," sometimes as the "primary 'teacher'" (Barbour, 2009, p. 13), a "co-educator," or "learning coach" (Hasler Waters, & Leong, 2014, pp. 33-34), and possibly an on-site facilitator or mentor (Borup & Drysdale, 2014; de la Varre, Irvin, Jordan, Hannum, & Farmer, 2014) while the online "teacher is largely a curricular help desk and grader" (Barbour, 2009, p. 13).

Online Courses and Independent Study

This dissertation considered research examining the reasons that students enroll in online courses and, more specifically, why students choose an independent study format course when enrolling. The review of the literature identifies several reasons for this choice classified as elective or required. Elective reasons include needed flexibility, access to courses not available

at the local school, accelerated learning, conflict avoidance, homeschooling, and missed credits due to extracurricular activities or avocations (Ahn, 2011; Borup, Graham, & Davies, 2013; Erb, 2004; Farrell, 1999; Hasler Waters, Menchaca, & Borup, 2014; Rice, 2006; Shea, Li, & Pickett, 2006; Snyder, 1997; Watson, Pape, Murin, Gemin, & Vashaw, 2014). Required reasons include safety and security concerns, students who are homebound, and those with family responsibilities which prevent attending a regular school (Ahn, 2011; Daum & Buschner, 2014; Erb, 2004; O'Hanlon, 2009; Shea, Li, & Pickett, 2006; Staker, 2011; Wicks, 2010).

Flexibility is the reason that students choose independent study format courses (Beck, Egalite & Maranto, 2014; Pastore & Carr-Chellman, 2009). Specifically, students are seeking a course experience with limited required interactions with others either because of time constraints or preference. This needed flexibility prevents students' participation in more interactive online courses if they are to meet their timely graduation goals and are a major reason for choosing independent study format courses (Anderson, 2008).

Schools and vendors supplying online courses are motivated to provide them in order to respond to the student demand mentioned above. Other motivations include meeting timely graduation requirements required by state accountability rules, meeting state mandates requiring students to complete an online course as a graduation requirement, customize learning to individual students, and to garner efficiencies and cost-savings. (Nastu, 2011; Staker, 2011; Trotter, 2008; Watson & Pape, 2015). Gill et al. (2015) found that a significant majority (76%) of virtual charter schools they studied were using self-paced courses and that "the instructional method used most frequently in online charter schools is individualized, student-driven independent study" (Gill et al., 2015, p. 9).

Adolescent Online Students

The research plan included an examination of the characteristics of adolescent students

enrolling in online courses by considering the literature related to learner attributes. Glass

(2009) wrote that courses offered for credit recovery are the most prevalent form of virtual

education. The literature identifies characteristics of credit-recovery learners that present

challenges in the design of online courses, particularly noting deficiencies in self-regulation and

persistence (Barbour & Reeves, 2009). The researchers considered credit recovery learners and

investigated whether credit-recovery students differed in their perception and use of a support

community when compared to non-credit recovery students.

Online Learning Frameworks

The literature reviewed for this study included an analysis of the current frameworks

supporting successful learning in online courses. Those frameworks suggest that the best

learning occurs in collaborative-constructivist models (Akyol et al., 2011) facilitated by

community interactions (Anderson, 2008; Langenhorst, 2012; Moore, 1989; O'Leary & Quinlan,

2007) through the creation of communities of inquiry and engagement (Borup, West, Graham, &

Davies, 2014; Garrison, Anderson, & Archer, 2000). The interactions and community structures

supporting adolescent learners were important elements considered in this study.

The *adolescent community of engagement* (ACE) suggested by Borup et al. (2014) has

been suggested as an effective framework for adolescent online learners. The ACE framework is

focused on student engagement and suggests that increased engagement by teachers and parents

will promote increased engagement by the student. The elements of an ACE framework

community (roles, functions, interactions and activities) indicate engagement by the community

supporting the student and are detailed in Borup et al. (2014). This research used the elements of

the ACE framework to identify the operation of these same elements within a proposed proximate community of engagement.

Structure of Dissertation

The structure of this dissertation follows an approved journal-ready article format that includes two articles submitted to peer-reviewed journals, which are included as Chapters 2 and 3 in this dissertation. The articles report two different studies, drawn from two independent student samples, which were conducted using the elements of the ACE framework to identify and report on the perception and use of a proximate community of engagement (PCE) by participating students. The lead investigator developed the research plan from the review of the literature, developed the survey instruments and interview script, engaged with the online learning staff of the course provider, performed analysis per the research plan, and then prepared the articles to report the research. The three co-authors on both articles provided mentoring, guidance related to the research plan and analysis, and editorial support for the articles.

Chapter 4 provides a summary, discussion of the findings, and implications for practice and research resulting from these studies. Following chapter four is a dissertation reference list which includes all citations in the non-article chapters of the dissertation. Appendix A is an extended literature review and associated reference list, and appendices B-D are the instruments used to collect the data for the studies.

Chapter 2 – first article. The first article is included as chapter two of this dissertation and is titled "Online Student Perceptions of the Need for a Proximate Community of Engagement at an Independent Study Program." The article was published in the *Journal of Online Learning Research* (Oviatt, Graham, Borup, & Davies, 2016) in the Special Issue on Supporting Students in K-12 Online and Blended Learning Environments. The article reports a

quantitative study where a voluntary sample of students enrolling in an online independent study course were surveyed. The instrument was used to gather data the researchers analyzed to assess students' perception of the need to receive help from others if they were going to be successful in their online course. The survey items identified specific interactions or activities associated with the roles and functions described in the ACE framework and asked the student if they believed those activities or interactions would be important to their success. When students reported that they perceived such a need, the survey further asked that the students to identify the person(s) with whom the student expected to interact to receive that help. Based on their response, the person(s) identified were classified by role (teacher, parent, peer) and location (distant or proximate). The article also reported the statistical analysis performed by the research team to identify significant differences between credit-recovery and non-credit recovery student groups.

Chapter 3 – second article. The second article is included as chapter three of this dissertation and is titled "Online Student Use of a Proximate Community of Engagement at an Independent Study Program." This article has been submitted to a journal publishing research in online learning and is under review as of the date of this dissertation. The chapter is formatted according to journal guidelines for author submittals, which required APA 6th ed., single-spaced format and is included in that format in this dissertation.

This article reports a mixed-methods (quantitative and qualitative) study consisting of surveys of administered to a voluntary sample of students completing an independent study course, and nine semi-structured interviews with student/parent pairs who volunteered for the interview at the completion of the survey. This study investigated whether students actually participated in a proximate community when completing their course. The survey instrument was adapted from the survey used in the first study. This instrument asked students if they had

actually participated in any of the interactions or activities associated with the roles and functions described in the ACE framework. When student reported such interactions, the student was then asked to report the person(s) with whom they interacted. The location of the person(s) with whom they interacted were classified as distant or local (proximate). As with the first article, statistical calculations were performed by the research team to identify significant differences between credit-recovery and non-credit recovery student groups.

A credit recovery learner is enrolled in a course they previously attempted and failed (Watson & Gemin, 2008). Non-credit-recovery learners are students who are taking the course for another reason. Any findings of significance were thought to have implications for the designs of courses, student support, and coaching to help curate and access a proximate community based on their group classification. The findings are reported in each article and summarized in Chapter 4 of this dissertation.

Chapter 4 – overall conclusion and discussion. Generally, the underlying claim that successful students create a proximate community when one is not available from the course provider was substantiated in the research. There is evidence that making students aware of the specific ways in which they can receive help from a PCE will increase the frequency of those interactions. The overall conclusion and discussion considers instructional design elements that could help students understand the benefits of creating a PCE and provide coaching on best practices to curate and engage with the PCE.

Appendices A-D. This dissertation includes four appendices. An extended literature review is found in Appendix A. The literature review considers research pertinent to online learning designs and associated frameworks and provides context for the research beyond that

which is reported in the two articles. The primary foci of the extended literature review research were:

1. The history of distance education and why schools created distance education options (moral obligation to teach children).

2. The reason that students take online courses (the need to meet graduation requirements).

3. Why some choose independent study format courses when more interactive and collaborative, constructivist format courses are available (flexibility and/or constraints that prohibit enrollment in more interactive courses if students are to graduate on time).

4. A consideration of student characteristics of those enrolling in online courses, and of those who are most successful in online courses.

5. A discussion of the prevailing theoretical frameworks supporting best pedagogical design of online courses leading to deep and effective student learning (collaborative-constructivist interactive communities supporting student engagement).

6. An outline of the ACE framework for encouraging the engagement of adolescent learners and the identification of roles, functions, tasks, and activities within the ACE community.

Appendix B is the survey instrument administered for the first article (Chapter 2). Appendix C is the survey instrument administered for the second article (Chapter 3). Appendix D is the script for the semi-structured interviews conducted for the second article (Chapter 3).

The information gathered in this study is intended to provide guidance for students and their adult advocates in the successful creation of proximate learning communities and adds to

the existing knowledge of best practices for teaching online. Adding these findings to the existing literature benefits those students whose best, and sometimes only option for completing a course and achieving timely graduation requires the flexibility offered by an independent study format course. These findings may also inform policy-makers of ways that a proximate community structure can be engaged to help satisfy the persistent student need for access to independent study format courses while deriving the benefits of support, instruction, and mentoring traditionally provided through more interdependent formats of online instruction. The proximate community of engagement serves as a framework to guide students as they curate and use the support available to successfully complete their course.

Chapter 2: Online Student Perceptions of the Need for a Proximate Community of

Engagement at an Independent Study Program

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Online Student Perceptions of the Need for a Proximate Community of Engagement at an Independent Study Program

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Abstract

Research suggests that collaborative learning designs, which require interaction with teachers and peers, can promote engagement and learning for online courses. Many K-12 students seek supplemental online courses to meet graduation requirements and desire flexibility, which often conflicts with required interactions. This paper asserts that online independent study learners may create a proximate community of engagement (PCE) to provide the benefits of collaboration and interactions. Using the adolescent community of engagement (ACE) framework as a lens for identifying interactions, this study surveyed K-12 independent study students to assess their perception of the need for interaction with a support community while completing an online course. Results showed that students perceive the benefits of such a community and plan to receive support from parents, teachers, and counselors proximate to their location. The perception of the need was significantly greater for students taking a course for credit recovery than those taking the course for the first time. Course providers can coach independent study students and family on how to create a proximate community of engagement.

Online Student Perceptions of the Need for a Proximate Community of Engagement at an

Independent Study Program

K-12 online enrollments and course providers continue to increase (Gemin, Pape, Vashaw, & Watson, 2015). These courses provide more educational choices for students, particularly those unable to access traditional face-to-face instruction in schools and those who are required to recover credits they failed to earn in a face-to-face course (Clark, 2013; Gemin et al., 2015). However, online courses tend to have lower pass rates compared to similar face-to-face courses (Michigan Virtual University, 2014; Miron & Gulosino, 2016).

Historically, distance education courses required students to learn independently with little or no immediate interactions or support from their teachers and peers. As communication technologies improved so did the levels of support and interactions that programs were able to provide students. Researchers suggest that courses that are community focused and require interactions result in greater student presence, engagement, and persistence (Garrison, Anderson, & Archer, 2000; Moore, 1989; Rovai, 2002). These potential benefits come at the cost of restricting the flexibility in the time, location, and pace of learning which students value in choosing independent study courses (Anderson, 2008), particularly students who need to recover course credits for graduation.

Independent study courses are especially challenging for adolescent learners, particularly those who have previously experienced failure. Adolescent learners tend to have fewer of the self-regulation and metacognition skills required to successfully learn in a highly flexible learning environment (Barbour & Reeves, 2009). Thus these students are most likely to be successful if they have a local support system (Borup, Graham, & Davies, 2013). Many online providers now require that students be provided with an onsite facilitator, and research has

focused on district-provided support structures. However, because many independent study programs do not provide significant support systems, the burden is often on the students themselves to curate their own local support system. Research to date has largely ignored the support systems that are curated by the students independent of the course provider (Borup, Graham, & Velasquez; 2013; Drysdale, Graham, & Borup, 2014; Gill et al., 2015; Hasler Waters, Barbour, & Menchaca, 2014; Hawkins, 2011). Song, Singleton, Hill and Hwa Koh (2004) stressed the importance of understanding online students' perspective—especially considering students are unlikely to seek support if they do not first understand how it would benefit their learning.

An important first step in this research agenda is to examine how students perceive their support needs. Credit recovery students' perceptions are likely different from those of students who are not recovering credit, due to their learning attributes and previous learning experiences (Oliver, Osborne, Patel, & Kleimann, 2009). We addressed this research need by examining student perceptions of their support needs while enrolled in courses offered by a large independent study program. More specifically, we asked the following research questions:

1. What types of supports are perceived as important (or needed) by students who enroll in supplemental independent study online courses?

2. When students report that they perceive the importance of specific types of support, who do they believe will provide that support?

3. Are there significant statistical differences in the perceptions depending on the student motivation for enrollment (credit-recovery or non-credit-recovery students)?

Literature Review

This review of pertinent literature begins by considering the chronology of research in online courses in higher and adult education and K-12 schooling and by identifying theoretical frameworks supporting the design of online instruction in both these educational contexts. The focus then moves to issues of motivation: what reasons students have to enroll in online courses, why they choose supplemental independent study, and how that choice may conflict with best practices in online course design. After identifying reasons that flexible supplemental independent study courses will continue to be demanded, the researchers suggest a framework that considers creating a locally interactive community to support online enrollments.

Flexible Online Learning

Supplemental online courses are required when a student needs to acquire credits in order to meet graduation requirements. Students turn to options including "after school and summer programs, internships and independent study" (NCSL, 2012, Introduction ¶1) to receive the needed credits. Students generally choose these options because constraints of time and location prevent timely graduation using in-school options. Constraints include course(s) unavailable at their school, overloaded class schedules, and graduation deadlines inconsistent with regular academic periods (term or semester), in addition to family, employment, medical, emotional, or school discipline and security (bullying) issues that prohibit participation in a regular school (Ahn, 2011; Erb, 2004; Langenhorst, 2012; Patrick & Powell, 2009; Staker, 2011; Watson & Gemin, 2008; Wicks, 2010).

Many states have partially responded to this need for flexibility by creating online schooling opportunities for K-12 students, which include establishing or authorizing virtual schools for supplemental courses and online charter schools for full-time enrollment. These

schools employ instructional designs derived from successful online courses in higher education, employing interaction, collaboration, and community structures to support learning.

Virtual schools offering supplemental courses may experience difficulty establishing meaningful relationships with students and their parents. Such relationships are transactional, often lasting only as long as the student is enrolled in the course. Many of them are shallow and temporary, resulting in a sense of isolation for both the student and the teacher, which makes it difficult to provide and maintain effective communities supporting learning and engagement (Hawkins, 2011; Hawkins, Graham, & Barbour, 2012). By contrast, fully-online schools (typically online charter schools) are established and operate using many of the same policies and practices as brick-and-mortar charter schools, affording teachers and students time to develop lasting relationships and community (Gill et al., 2015; Hasler Waters, 2012).

Virtual and online charter schools using interactive instruction are widely available to students; however, many choose online courses from providers that employ an independent study model with the greater flexibility that meet their needs (Anderson, 2008). These self-paced, student-directed courses are designed to use rich learner-content interaction without required synchronous interactions and uniformed pacing. Self-paced independent study provides flexibility in the time and location of coursework and in the pacing and duration of the course. The format allows students to study at the time and pace convenient for them and "avoid the time constraints imposed by synchronous or paced learning" (Anderson, 2008, p. 349), which was their reason for taking the online course.

Even full-time online charter schools are being impacted by the student preference for flexibility provided by independent study models. Gill et al. (2015) found that 76% of the online charter schools in their study are relying on individualized, self-paced, student-driven courses (p.

9). The courses have been structured to support collaborative learning, but the schools are adopting the student-directed and student-paced independent study model to ensure flexibility, offer a more personalized learning experience, and respond to cost and funding pressures (Nastu, 2011; Staker, 2011; Trotter, 2008; Watson & Pape, 2015). The student preference for these courses and their adoption by online charter schools provides evidence that independent study format courses will continue to be an important option for online students and providers. The ongoing demand provides incentive for researchers to identify effective strategies to incorporate collaborative community support elements into independent study courses so that learners derive the learning benefits such instructional designs provide.

Attributes of Adolescent Learners and Credit Recovery Students

Metacognition and self-regulation have been described as students' ability to plan, monitor, and modify their cognition while managing and controlling their efforts in the course and persisting through distractions (Pettyjohn, 2012). Successful students must identify cognitive strategies that work for them (Pintrich & De Groot, 1990). These educationally significant skills are less developed in adolescent learners than in adults, and adolescents require more support, structure, and quality interaction to be successful (Borup, Graham, & Davies, 2013). The increased need for structure and interactions is reflected in the way that states have organized their virtual schools, using teacher-led courses and providing support for required interactions (Gemin et al., 2015). This support is intended to address adolescents' lower levels of metacognition and self-regulation and to encourage the persistent student engagement needed for desired learning achievement.

Motivations for enrolling in supplemental courses can be categorized as either credit-recovery (CR) or non-credit-recovery (NCR) issues (Watson & Gemin, 2008). Credit recovery

occurs when a student is repeating a course he or she previously attempted and failed (Watson & Gemin, 2008)—the most prevalent reason for student enrollment in supplemental online courses (Glass, 2009; Watson & Gemin, 2008; Watson, Pape, Murin, Gemin, & Vashaw, 2014; Wicks, 2010). Watson and Gemin (2008) observed that nearly 20% of online course enrollments in one large virtual school were for credit recovery (p. 8), while other investigators found credit recovery accounting for as much as 62% of student enrollments in online courses (iNACOL, 2013).

Students needing credit recovery exhibit the same characteristics as other adolescent students, but many face additional challenges. Many credit recovery learners have less developed skills for self-regulation and metacognition, weaker motivation for engagement in courses, lower levels of technical literacy, and more limited internet access compared to other adolescent students (Oliver et al., 2009; Roblyer & Marshall, 2002; Watson & Gemin, 2008). Credit recovery students have often "missed" credits due to outside pressures including poor family structures, employment needs, or medical or emotional concerns (Watson & Gemin, 2008).

These less developed learner attributes and challenging life and family circumstances mean that support may be even more important for credit-recovery learners than would be sufficient for adolescent students in general. Understanding the impact of these differences is important to helping credit-recovery learners succeed. Earlier we observed that students are unlikely to seek support if they do not first understand how it could benefit their learning. Understanding specific perceptions of CR and NCR students concerning their need for support may be important when attempting to help them identify and draw upon available resources to curate a support community.

Student Support Systems Frameworks and Research

The adoption of online courses in higher education preceded the widespread use of such courses for K-12 students; therefore, the early researchers on the effectiveness of online education studied courses offered by higher education institutions (Cavanaugh, Barbour, & Clark, 2009). Researchers have examined different pedagogical approaches and curriculum designs and suggest that collaborative-constructivist design frameworks asking members of a community to act together to solve authentic problems provides better learning outcomes (Boling, Hough, Krinsky, Saleem, & Stevens, 2012; Garrison & Akyol, 2013; Gunawardena, 1995).

Research suggests that collaborative constructivist models rich in community interactions result in increased learning (O'Leary & Quinlan, 2007; Rovai, 2002). Some of the frameworks proposed for effective online education include designs considering transactional distance and its related constructs of structure, dialogue, and autonomy (Moore, 1972; 1973); interactions involving learners, content, and members of a learning community (Moore, 1989); and the online community of inquiry supporting student engagement (Garrison, Anderson, & Archer, 2000). These frameworks guide course design employing activities, communication strategies, and collaboration to support the co-construction of meaning. Implementing some of these interactions and peer co-construction activities can be difficult in online courses, since students enter and exit the course at different times (Anderson, 2008), though researchers have suggested that building a sense of community under these conditions would still be possible (Haythornwaite, Kazmer, Robins, & Shoemaker, 2000).

When transferring these frameworks from higher education to K-12 courses, differences in the students and in the education environment that prevent direct application of higher

education strategies to K-12 students must be considered. Young adult college students and adolescent high school students differ in their levels of maturity and in their development of significant learning skills such as self-regulation, internal locus of control, independence and autonomy, and metacognitive abilities (Barbour & Reeves, 2009; Borup et al., 2013).

Many investigations in K-12 online courses have been conducted within highly structured cyber and virtual schools designed to support collaboration and interaction (Borup, Graham, & Drysdale, 2013; Borup, West, Graham, & Davies, 2014; Curtis, 2013; Drysdale, Graham & Borup, 2014; Hasler Waters, 2012). The structure and policies of these schools required interactions with teachers and other students. Research investigating supplemental course enrollments in virtual schools demonstrated disconnectedness associated with independent study course designs (Hawkins et al., 2012; Gill et al., 2015).

Research shows that on-site facilitators or mentors are an important resource to assist students with online courses; they may be especially helpful for credit-recovery learners, particularly if the mentor is a certified teacher in the subject area or receives appropriate professional development (Borup & Drysdale, 2014; Freidhoff, Borup, Stimson, & DeBruler, 2015; Taylor et al., 2016). Trained facilitators proximate to the student have improved student performance in an online course (Borup & Drysdale, 2014; Cavanaugh, 2013; Hannum, Irvin, Lei, & Farmer, 2008). Local or online facilitators are responsible for "fostering relationships, monitoring, and instructing" the students (Borup & Drysdale, 2014, p. 335).

Frameworks supporting instructional designs of online higher education that have previously guided designs for K-12 online courses have not addressed the differences in the learners' ability. More recent frameworks have been proposed to guide the design of online courses specifically for adolescent learners. Harms, Niederhauser, Davis, Roblyer, and Gilbert,

(2006) provided a conceptual framework considering application of communication theories and strategies in K-12 virtual schooling. Pazhouh, Lake, and Miller (2015) proposed a policy framework to guide regulation of charter schools offering full-time online enrollment to K-12 students.

Adolescent Community of Engagement (ACE)

One of the frameworks proposed to help adolescent learners recommends developing a wider community of engagement, stressing presence and interaction involving teachers, students, and peers (Garrison, Anderson, & Archer, 2000; Moore, 1989). Borup (2014) and his colleagues added the presence and interaction of parents within the learning community. Their proposed adolescent community of engagement (ACE) has been suggested as a framework for designing online adolescent instruction that encourages student engagement and improved learning. Figure 1 illustrates this framework, which asserts that increasing presence and engagement by teachers and parents supports increased engagement by the student.
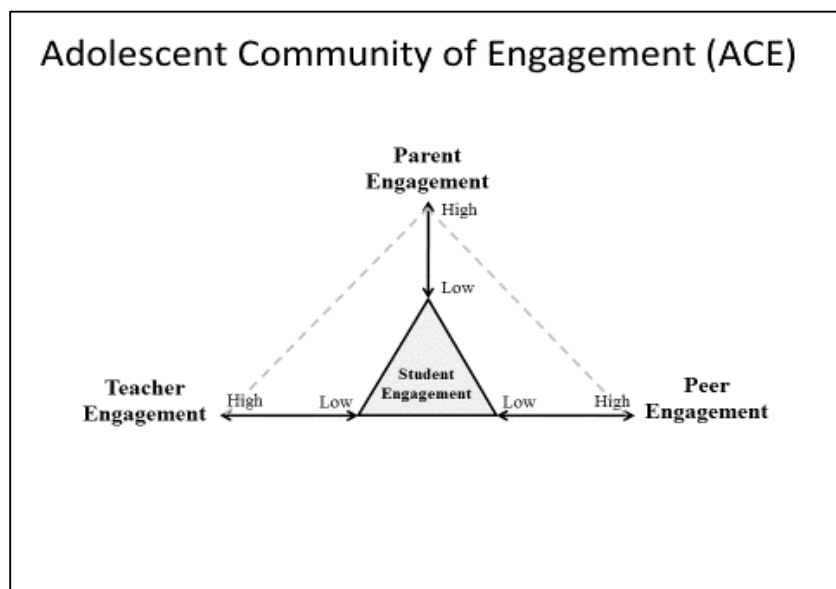
Figure 2.1. ACE framework from Borup et al. (2014, p. 111)

The ACE framework (Borup et al., 2014) proposed three different community roles external to the student: teacher, parent, and peer. From literature studying effective online instruction, framework elements were identified: roles, tasks, functions, and activities. The activities (actions or interactions) lead to increased engagement and learning. For example, the elements defined for the teacher role include the following:

- Three different functions (facilitating interaction, organizing and designing course materials, and instructing students)

- Ten different tasks, such as nurturing student relationships, monitoring and motivating student engagement, and providing intellectual and scholarly leadership

- Thirty-two actions or interactions, such as facilitating parent-instructor interactions, asking questions, or providing constructive feedback

The ACE framework suggested that while the roles of teacher, parent, and peer are performed by different actors, they often overlap in supporting engagement. Table 2.1 summarizes the different functions proposed for the ACE framework and shows the overlap of the roles when providing the functions.

Each of the roles has specified functions, tasks, and actions.

- Teacher role: three functions, 10 tasks, and 32 different actions or interactions

- Parent role: three functions, seven tasks, and 23 different actions or interactions

- Peer role: two functions, two tasks, and five different actions or interactions (Borup et al., 2014).

The detailed elements described in the ACE framework can be used as a lens for examining the operation of a learning community.

Table 2.1

Overlapping Roles and Functions in ACE Framework

		ACE Role		
Function	Task	Teacher	Parent	Peer
Facilitating (monitoring & motivating)				
	Nurturing	X	X	
	Monitoring	X	X	
	Motivating	X	X	X
	Facilitating discourse & communication	X		
	Volunteering		X	
Organizing				
	Organizing materials and environment	X	X	
	Designing materials	X		
	Organizing timeliness and schedule	X	X	
Instructing				
	Providing instruction	X	X	X
	Offering assignment help	X	X	X
	Collaborating			X

Need for this Research

Students' needs for flexibility and providers' responses to those needs mean students will continue to demand self-paced and student-driven independent study courses. The lack of significant research investigating K-12 students' experience in these online courses represents a gap in the literature that suggests a need for additional study.

Pettyjohn (2012) suggested that the prevalence of online courses provides challenges for course designers, asserting that "a clear understanding of the factors that contribute to high school students' success or failure in online courses can help course designers, instructors, and

school leaders improve and appropriately support online learning" (p. 14). Research that identifies designs that accommodate the student need for flexibility while also providing access to the benefits of collaborative communities of inquiry and engagement will benefit students' experiences and promote success.

Research Objectives

Researchers have observed that even when independent study students are isolated, they are not alone (Potter, 1998). However, the available literature shows a scarcity of research on the nature of student interactions with nearby individuals when completing an independent study course. Many online schools rely on parents to act as a significant instructing and monitoring resource (Gill et al., 2015; Michigan Virtual University, 2014). We suggest that successful independent study students participate in some form of interactive community supporting their engagement as they complete an independent study course. This community is not provided by the course supplier, but is staffed by resources curated locally by the learner. We refer to this support community as the proximate community of engagement (PCE). Our research attempts to identify the existence and study the functioning of this proximate community.

To identify the elements of a PCE, we used the ACE framework (Borup et al., 2014) to identify the presence of common elements in a functioning PCE. The purpose of the ACE community is to support student engagement and improve learning outcomes. If the community interactions described in the ACE framework are found in students' local interactions with those in their community, the PCE can be shown to exist.

Methodology

This research was conducted with the distance learning program of a large university in the western United States that offers online independent study high school courses in both a teacher-led interactive format and a self-paced student-led independent format. Students enrolled in either format have up to one year from the date of enrollment to finish the course. We emailed all students enrolling in the self-paced online independent study courses during the data collection period and invited them to participate in this study by completing an online survey. The students were adolescent students enrolling in high school courses to meet both core and elective credit requirements for graduation.

Instrumentation

We developed a new self-report survey instrument derived from the elements of the ACE framework to assess students' perceived need for a PCE. The preparation of the instrument began by analyzing each activity (action or interaction) suggested in the ACE framework, judging the likelihood that each activity would be perceivable by the student and would require a resource in a PCE. Activities were excluded if they were considered too difficult for the student to operationalize or perceive, or not sufficiently transparent for a researcher to observe. Independent study courses rely heavily on learner-content interactions, described by Moore (1989) as the "defining characteristic of education" (p. 2). Such courses include online interactions with the course materials in their design rather than interactions with another person. Any activities the researchers anticipated to exist within the structured course design were excluded from the instrument.

One or more survey items were then created to measure each included activity. The resulting 18 survey items used a six-point Likert scale. When students responded in agreement

with a survey item, indicating that they perceived a need for the interaction described (*someone to help with . . .*), they were presented a list of individuals who could provide that support and asked to select all persons they thought would provide that help for them.

Once the instrument was prepared, two separate steps were taken to assure the researchers that the survey items accurately reflected the presence of the underlying interactions or activities the instrument was intended to measure. The first was an expert review by the lead developer of the ACE framework, who suggested changes for clarity. The second was the administration of the instrument using a think-aloud protocol (Ericsson & Simon, 1984; Fonteyn, Kuipers, & Grobe, 1993) to a student enrolling in an online course at the offices of the course provider. These two reviews resulted in improvements adding clarity to the survey items provided assurance that the instrument could be relied upon to provide evidence of the targeted activity or interaction.

Data Analysis

Descriptive statistics were calculated for the demographic and Likert-style items to measure frequencies of perceived need for each ACE activity assessed. Because the data would best be considered ordinal in nature, we performed a Pearson Chi-Square calculation to compare the responses by the CR and NCR students to identify significant differences between the perceptions of these two groups (see Table 2). This allowed us to statistically compare the response distributions of the two groups to determine whether observed differences in their responses were substantive and not simply due to chance. The Pearson Chi-Square was considered significant at the .05 level.

Table 2.2

Data Collection and Analysis Methods for Study

Research questions	Data collection method	Analysis method
1, 2	Likert-style survey items 9-25 assessing the student's perception of the importance of different activities	Descriptive statistics/frequencies
3	Comparison of data for Likert-style items 9-25 grouped as credit-recovery or non-credit-recovery student response.	Pearson Chi-Squared test

Findings

Email invitations were sent to 3,961 students who were enrolled in a self-paced independent study course during the two data collection periods. Survey responses were received from 1,131 students, a response rate of 28.6%. Surveys on which the participants did not answer a majority of the items were considered incomplete and not included in the data analysis. If participants answered all but one or two items, their surveys were included because they were considered substantially complete. The final data set included a total of 1,009 surveys. The number of responses for the different items ranged from 1,004 to 1,009 (see Table 2.3).

Research Question #1: ACE Framework Elements Perceived as Important

We measured whether students perceived the importance of engaging with a proximate community based on their perception of the need to receive help through interactions with others. In the ACE framework, individuals acting in the roles of teacher, parent, and peer interact with the student through participation in various course activities. Using the descriptions of the interactions or activities defined for each role in the ACE framework, we asked if students agreed that this activity would be important as they completed their course. For analysis we

organized the survey data according to the three primary functions described for the ACE roles: instructing activities, organizing activities, and monitoring and motivating activities. These align closely with the facilitator roles described in the literature (Borup & Drysdale, 2014; Borup et al., 2014).

The peer role in the ACE framework is fulfilled through interactive participation in a community of student peers. Such peer interactions overlap both the instructing and motivating functions. The students interact as peers by collaborating (a) to share previous knowledge and co-construct meaning (instructing) and (b) to provide stimulating and encouraging interactions (motivating). For purposes of this report, the activity of collaboratively participating in the peer community was categorized as an instructing activity.

Table 2.3 reports the data in each of the three categories, showing the agree/disagree responses for each item. All percentages reported are the percentage of students surveyed who agreed at some level with the statement associated with the specific activity described in the survey item (agree, strongly agree, or very strongly agree). Items on which 60% or more of students agreed with the statement were considered to be valued by the students; items showing less than 60% agreement were considered as not valued. The table is reported in descending order by the overall percentage of agreement within each of the three functional categories. The table also reports the percentage of responses for each item on the Likert scale from *very strongly agree* to *very strongly disagree*.

Table 2.3

Percentages of Student Agreement with Survey Statements

Category	Item #	Survey item ("I will be more successful if someone . . .")	n	% Agree			% Disagree		
				VSA*	SA	A	D	SD	VSD
	15	Explains course readings and materials when students have questions	1,005		90.6%			9.4%	
				36.6%	20.7%	33.3%	8.2%	0.6%	0.6%
	16	Helps with questions about assignments, papers, quizzes, etc.	1,005		83.9%			16.1%	
				26.7%	22.3%	34.9%	13.7%	1.1%	1.3%
	11	Sets aside a regular time to meet	1,007		66.5%			33.5%	
				16.1%	14.0%	36.4%	29.2%	2.6%	1.7%
	10	Reviews policies of online school and course at beginning of course	1,009		65.6%			34.4%	
				12.9%	12.7%	40.0%	30.2%	2.2%	2.0%
Instructing activities	22	Helps me learn how to self-regulate and learn in an online course	1,004		63.6%			36.4%	
				19.0%	14.1%	30.5%	32.1%	2.4%	1.9%
	17	Helps by talking to provider or online teacher on my behalf if needed	1,006		60.5%			39.5%	
				14.1%	10.9%	35.5%	35.0%	2.8%	1.7%
	18	Teaches me how to use the technology and resolves technical problems	1,006		54.8%			45.2%	
				15.7%	9.0%	30.0%	34.1%	6.3%	4.9%
	23	Shows me how to search online, and other library and community resources	1,008		47.9%			52.1%	
				15.7%	9.0%	30.0%	34.1%	6.3%	4.9%
	25	(Another student) taking the same subject or course collaboratively studies with me as I complete the course	1,006		50.9%			49.1%	
				10.3%	10.2%	30.3%	39.3%	4.8%	5.1%
	9	Provides a designated place of study and access to technology and materials	1,007		86.8%			13.2%	
				35.1%	24.2%	27.5%	10.8%	1.5%	0.9%
	13	Helps set specific goals and deadlines	1,004		73.6%			26.4%	
Organizing and facilitating activities				22.7%	16.0%	34.9%	21.8%	2.8%	1.8%
	12	Helps organize and plan my time including a regular schedule to work on the course	1,008		70.1%			29.9%	
				20.8%	16.5%	32.8%	24.4%	3.4%	2.1%
	24	Arranges contacts with student peers for study and collaboration	1,006		40.2%			59.8%	
				10.2%	7.8%	22.2%	47.8%	6.5%	5.5%

Table 2.3, Continued

Category	Item #	Survey item ("I will be more successful if someone . . .")	n	% Agree			% Disagree		
				VSA*	SA	A	D	SD	VSD
	14	Checks on progress and reminds me to keep working and stay on schedule	1,005		75.7%			24.3%	
				24.2%	17.2%	34.3%	19.3%	2.6%	2.4%
Monitoring and motivating activities	20	Encourages me to keep working when feeling unsuccessful	1,005		75.3%			24.7%	
				24.1%	17.5%	33.7%	21.1%	1.9%	1.7%
	19	Encourages and praises me for staying engaged in the course	1,006		68.8%			31.2%	
				21.2%	15.2%	32.4%	26.4%	2.6%	2.2%
	21	Regularly checks my grades and provides praise and encouragement as needed	1,006		67.9%			32.1%	
				21.7%	15.0%	31.2%	26.4%	3.6%	2.1%

* VSA=Very Strongly Agree; SA=Strongly Agree; A=Agree; D=Disagree; SD=Strongly Disagree, VSD=Very Strongly Disagree

Instructing activities. Instructing activities are largely procedural; they include explaining concepts, assisting students with assignments, reviewing materials covered, tutoring, teaching a student study and self-regulation skills, and setting aside time to meet or collaborate with students. Students perceived instructing functions related to procedural and content help as most important to course success. They wanted to have someone available to answer questions about the course readings and assignments (91%) and to help with assignments, papers, and quizzes until the course was completed (84%). The procedural activities of setting aside a regular time to meet with the student (67%) and helping the student understand course policies and procedures (66%) were moderately valued by the respondents. The instructional activities associated with using and supporting the technology and collaborating or studying with other students were the least valued in this category. It is likely these activities were already familiar to the students so that they were confident in their own abilities, or they did not see the need to collaborate with other students because they had chosen an independent study course.

Organizing activities. Organizing activities and resources support effective student participation in the course. The students perceived every activity in this category as important,

with the exception of the need to help identify peers with whom the student might collaborate. A large majority (87%) strongly agreed with the importance of receiving help in arranging access to a designated place for study and obtaining adequate internet resources, equipment, and materials. They also considered help in setting specific goals and deadlines (74%) and in planning time for a regular schedule of study (70%) to be important. The activity of arranging collaboration with student peers had the lowest level of agreement (48%) of all the items in the survey.

Monitoring and motivating activities. Monitoring and motivating functions, which are more personal and interactive, include providing praise, feedback, and encouragement. Students perceived every activity in this category as important. Regularly providing encouraging feedback (75%) and furnishing reminders of schedules and deadlines (76%) were perceived as most important to the students. Focusing on praise, 69% of the students agreed that receiving specific praise for their continued task engagement was important; 68% of them valued praise and encouragement based on their performance.

Summary. Based on comparison of levels of agreement, students perceived support received to help understand course procedures and content, help organize their schedule, and help gain access to needed resources as most important to course success. Students also perceived personally interactive activities such as monitoring course progress and offering encouragement and praise as important to course success. Students were fairly complacent about the need for help facilitating interactions with peers, interacting with peers, and learning to use technology.

Research Question #2: Who Students Anticipate Will Provide the Important Roles or Functions

Students who agreed that an activity in the ACE framework was helpful were then asked to select from a list of potential providers who they expected would give them that support. Local options included parents and other family members, teachers and counselors at their local school, students at their school, and friends. Distant resources (assumed to be associated with the course provider) were online teachers/tutors and fellow students enrolled in the course. Students also had the option to identify "other" resources they believed they would ask for help.

Tables 2.4 and 2.5 report the resources the students identified when they agreed that interaction was important. Table 2.4 identifies the role (teacher, parent, peer) from the ACE framework the students identified as the support resource. Selections associated with family members were combined in the parent role; teachers, tutors, and counselors from the local school were aggregated in the teacher role. Resources the students identified when they chose the "other" option were analyzed and categorized in the parent, teacher, or peer role if appropriate; responses that could not be appropriately categorized in one of the other three roles remained in the "other" classification. Table 2.5 reports the location of the resources that students identified (local, distant, other).

Parents and teachers were identified as the perceived resource for help in at least 81% of the responses for all non-peer-specific survey items; responses to some items indicated expectations for parent and/or teacher help more than 90% of the responses. Parents were the resource indicated most frequently for every item except "explaining course readings and materials when the students have questions," for which 42% of the responses selected teachers and 40% selected parents.

Students expected local resources (family, teachers, peers) to provide most of the interactions they agreed were important (see Table 2.5). More than 80% of the responses identified a local person who they expected to support their learning in the categories of both organizing and facilitating activities and monitoring and motivating activities. One exception was the location of help with the organizing activity of "arranging contact with other students." The online teacher or online student peer was identified as the resource in 36% of these responses.

The percentages identifying local resources were slightly lower for instructing interactions, for which students identified the online teacher and online peers more frequently. Local resources were still expected to provide help with the instructing activities in the majority of responses. Students anticipated instructing help from distant resources in more than 25% of responses to items associated with "explaining course materials" and "helping with assignments" (online teacher help) and "collaborating with another student" (online student peer help). The findings for the students' anticipation of the role and location of support providers are now reported by each of the functional categories of the ACE framework.

Instructing activities. Instructing activities offering procedural and content help, as well as help with specific course assignments, papers, or quizzes, demonstrated the overlap of teacher and parent roles. Of the student responses concerning the helping activity of "explaining readings and materials," 40% identified the parent and 42% identified the teacher. Of student responses to the item "help with assignments, papers, and quizzes," 43% identified interactions with a parent, while 40% expected help from the teacher. No other items in the survey showed such a close relationship between two different ACE framework roles.

Table 2.4

Student Identified Resource Accessed for Support

Category	Item #	Survey item ("I will be more successful if someone . . .")	N	Teacher role		Parent role		Peer role		Other
				Local	*Online*	*Parent*	*Family*	*Local*	*Online*	
	15	Explains course readings and materials when students have questions	1,609	41.7%		39.6%		13.2%		5.5%
				21.5%	*20.2%*	*31.8%*	*7.8%*	*7.3%*	*5.8%*	
	16	Helps with questions about assignments, papers, quizzes, etc.	1,475	39.9%		43.1%		12.4%		4.6%
				20.0%	*19.9%*	*34.6%*	*8.5%*	*7.3%*	*5.2%*	
	11	Sets aside a regular time to meet	990	33.9%		54.0%		7.0%		5.1%
				23.8%	*10.1%*	*47.9%*	*6.2%*	*4.1%*	*2.8%*	
	10	Reviews policies of online school and course at beginning of course	891	29.4%		60.5%		7.3%		2.8%
				20.8%	*8.6%*	*54.2%*	*6.3%*	*4.0%*	*3.3%*	
Instructing	22	Helps me learn how to self-regulate and learn in an online course	1,068	36.1%		49.6%		9.3%		5.0%
				21.4%	*14.7%*	*41.5%*	*8.1%*	*5.1%*	*4.1%*	
	17	Helps by talking to provider or online teacher on my behalf if needed	837	36.9%		55.6%		3.5%		4.1%
				23.7%	*13.3%*	*50.9%*	*4.7%*	*1.7%*	*1.8%*	
	18	Teaches me how to use the technology and resolves technical problems	881	33.7%		52.3%		10.7%		3.3%
				18.3%	*15.4%*	*42.7%*	*9.6%*	*6.6%*	*4.1%*	
	23	Shows me how to search online and use other library and community resources	821	39.3%		44.5%		12.3%		3.9%
				22.9%	*16.4*	*36.7%*	*7.8%*	*6.3%*	*6.0%*	
	25	(Another student) taking the same subject or course collaboratively studies with me as I complete the course	782	NA		NA		81.6%		18.4%
				NA	*NA*	*NA*	*NA*	*53.2%*	*28.4%*	

Table 2.4, Continued

Category	Item #	Survey item ("I will be more successful if someone . . .")	N	Teacher role		Parent role		Peer role		Other
				Local	Online	Parent	Family	Local	Online	
Organizing	9	Provides a designated place of study and access to technology and materials	1,375	26.6%		60.0%		8.1%		5.2%
				20.6%	6.0%	52.1%	7.9%	5.9%	2.3%	
	13	Helps set specific goals and deadlines	1,085	31.2%		56.8%		6.2%		5.8%
				21.1%	10.1%	50.4%	6.4%	3.9%	2.3%	
	12	Helps organize and plan my time, including a regular schedule to work on the course	1,008	28.0%		59.5%		7.0%		5.5%
				21.2%	6.7%	54.0%	5.6%	4.4%	2.7%	
	24	Arranges contacts with student peers for study and collaboration	668	40.7%		26.0%		25.1%		8.1%
				19.9%	20.8%	21.7%	4.3%	10.2%	15.0%	
Monitoring and motivating	14	Checks on progress and reminds me to keep working and stay on schedule	1,157	31.7%		58.4%		6.5%		3.4%
				21.6%	10.1%	52.1%	6.3%	3.7%	2.8%	
	20	Encourages me to keep working when feeling unsuccessful	1,346	26.3%		59.7%		10.7%		3.3%
				16.1%	10.2%	47.4%	12.3%	6.8%	3.9%	
	19	Encourages and praises me for staying engaged in the course	1,159	25.6%		62.2%		8.5%		3.7%
				15.4%	10.3%	50.3%	11.9%	5.1%	3.4%	
	21	Regularly checks my grades and provides praise and encouragement as needed	1,108	30.1%		61.4%		5.7%		2.8%
				18.9%	11.3%	51.8%	9.6%	3.5%	2.2%	

Table 2.5

Location of Student-Identified Resource Accessed for Support

Category	Item #	Survey item ("I will be more successful if someone . . . ")	N	Local			Distance		Other
				Teacher	*Parent/ family*	*Student/ peer*	*Teacher*	*Student/ peer*	
	15	Explains course readings and materials when students have questions	1,609		68.4%		26.0%		5.5%
				21.5%	*39.62%*	*7.3%*	*20.2%*	*5.8%*	
	16	Helps with questions about assignments, papers, quizzes, etc.	1,475		70.4%		25.0%		4.6%
				20.0%	*43.7%*	*7.3%*	*19.9%*	*5.2%*	
	11	Sets aside a regular time to meet	990		82.0%		12.9%		5.1%
				23.8%	*54.0%*	*4.1%*	*10.1%*	*2.8%*	
	10	Reviews policies of online school and course at beginning of course	891		85.3%		11.9%		2.8%
				20.8%	*60.5%*	*4.0%*	*8.6%*	*3.3%*	
	22	Helps me learn how to self-regulate and learn in an online course	1,068		76.2%		18.8%		5.0%
				21.4%	*49.6%*	*5.1%*	*14.7%*	*4.1%*	
Instructing	17	Helps by talking to provider or online teacher on my behalf if needed	837		80.9%		15.1%		4.1%
				23.7%	*55.6%*	*1.7%*	*13.3%*	*1.8%*	
	18	Teaches me how to use the technology and resolves technical problems	881		77.2%		19.5%		3.3%
				18.3%	*52.3%*	*6.6%*	*15.4%*	*4.1%*	
	23	Shows me how to search online, and use other library and community resources	821		73.7%		22.4%		3.9%
				22.9%	*44.5%*	*6.3%*	*16.4%*	*6.0%*	
	25	(Another student) taking the same subject or course collaboratively studies with me as I complete the course	782		53.2%		28.4%		18.4%
				NA	*NA*	*53.2%*	*NA*	*28.4%*	

Table 2.5, Continued

Category	Item #	Survey item ("I will be more successful if someone . . . ")	N	Local			Distance		Other
				Teacher	Parent/ family	Student/ peer	Teacher	Student/ peer	
Organizing	9	Provides a designated place of study and access to technology and materials	1,375		86.5%		8.3%		5.2%
				20.6%	60.0%	5.9%	6.0%	2.3%	
	13	Helps set specific goals and deadlines	1,085		81.8%		12.4%		5.8%
				21.1%	56.8%	3.9%	10.1%	2.3%	
	12	Helps organize and plan my time, including a regular schedule to work on the course	1,008		85.1%		9.4%		5.5%
				21.2%	59.5%	4.4%	6.7%	2.7%	
	24	Arranges contacts with student peers for study and collaboration	668		56.1%		35.8%		8.1%
				19.9%	26.0%	10.2%	20.8%	15.0%	
Monitoring and motivating	14	Checks on progress and reminds me to keep working and stay on schedule	1,157		83.8%		12.9%		3.4%
				21.6%	58.4%	3.7%	10.1%	2.8%	
	20	Encourages me to keep working when feeling unsuccessful	1,346		85.2%		14.1%		3.3%
				16.1%	59.7%	6.8%	10.2%	3.9%	
	19	Encourages and praises me for staying engaged in the course	1,159		82.7%		13.6%		3.7%
				15.4%	62.2%	5.1%	10.3%	3.4%	
	21	Regularly checks my grades and provides praise and encouragement as needed	1,108		83.8%		13.4%		2.8%
				18.9%	61.4%	3.5%	11.3%	2.2%	

Student responses agreeing with the need for support from teachers were equally divided regarding teacher location: Half chose a local teacher, and half preferred the distant teacher of the online course. Responses to such activities, which are specific to the course content, demonstrate the students' expectation that the teacher of the online course would be available for help. This expectation may not align with the plans of the course provider; many organizers expect a parent to provide many of these interactions (Gill et al., 2015). Overall, approximately 70% of responses identified a local resource (parent or teacher/counselor) to provide help with these instructing activities.

The survey item concerning peer collaboration was perceived as the study's least important instructing activity. Of the students who agreed on the importance of collaboration 82% identified another student as their collaborating partner, while 18% designated other friends or family collaborators. Nearly 75% of the students expecting to collaborate with student peers identified local students as their partners, with the rest expecting to collaborate with other students in the online course.

The remaining instructing activities are more personal, including matters like setting aside regular time to meet with the student, encouraging engagement, and assisting with technology. Students identified the parent role as the resource for these more personal interactions.

Organizing activities. The nature of the four organizing activities in the ACE framework places them in the student's local environment: organizing physical space, technology, time, and peer collaboration opportunities. Approximately 60% of the student responses identified the parent as the resource they would ask for support (approximately 30% identified teachers)—more than 80% of these anticipated helpers were in the students' local area.

Monitoring and motivating. The results for the monitoring and motivating activities were very similar to those for organizing activities. The four items in this category focused on offering praise, encouragement, and feedback to inspire greater engagement and performance. These actions are personal and interactive. The students identified parents for these interactions in approximately 60% of their responses to each survey item. Teachers were the helping resource identified in 25% to 30% of responses to each of the four items in this category. Students valuing interactions described as "encouraging work when the student was feeling unsuccessful" identified peers and fellow students as a resource they would access. The percentage of student responses expecting support for monitoring and motivating activities to come from local resources ranged from 83% to 85% for the different items.

Summary. Parents were the resource most often identified to help students with the activities that they perceived as important. Local resources (parents, teachers, peers) were identified as the resource for student interactions in approximately 80% of the responses. The finding suggests that students who perceive they will benefit from interactions described in the ACE framework plan to access that help from parents and other proximate resources.

Research Question #3: Differences in Credit-Recovery and Non-Credit-Recovery Students

The last research question focused on the difference, if any, between non-credit-recovery (NCR) students, who were taking the course for the first time or retaking the course to improve their grade, and credit-recovery (CR) students, who were taking the course to recover credit lost due to a failing grade in a previous course attempt.

Sample demographics. Of the 1,009 survey responses, 60 were received from CR students (5.9%). The literature suggested that credit recovery is the most prevalent reason for student enrollment in supplemental online courses (Glass, 2009; Watson & Gemin, 2008;

Watson et al., 2014, Wicks, 2010). Investigators found nearly 20% of enrollments in one large virtual school (Watson & Gemin, 2008) were CR enrollments. Researchers in another study (iNACOL, 2013) found as many as 62% of enrollments could be classified as CR. A CR student ratio of 5.9% in our sample was considerably lower than the ratio we had anticipated based on the literature. This percentage implies that the sample for this study differs from samples typical of other studies and thus creates challenges with generalizing the findings to other independent study students and providers.

The low CR ratio in this sample may result from differences in the student population served by this course provider when compared to the students from other providers participating in other studies. It may also be substantially affected by the selection criteria for those invited to participate in the survey. Enrolling students who were associated with institutional customers (districts, charter schools, private schools) so that their enrollment was billed to the institution were not included. This distinction was made in an effort to sample only those students who were truly independent study learners and not likely to have had access to a ready-made community structure provided by the enrollment-paying institution. It is possible that institutional customers may enroll students for credit recovery purposes more than students who enroll (or are enrolled) independently. These criteria may have introduced bias towards NCR enrollments in the sample.

Statistical results. Of the 18 items included in the survey, eight were statistically significant at the .05 level. Of the 10 items that were non-significant, the percentage of agreement of the CR and NCR groups was virtually the same, or the distribution of the responses across the three options (*agree, strongly agree, very strongly agree*) was approximately the same for each group. Table 2.6 reports the statistical measures for the eight survey items that were

significant at an alpha of .05 when comparing the responses from the CR and NCR groups. The

table is sorted in ascending order by the calculated *p-value*. Table 2.7 reports the percentage of

agreement and the distribution of the strength of agreement in responses for the eight items

which were significant.

Table 2.6

Results of Chi-Squared Test

Category	Item #	Survey item ("I will be more successful if someone …")	n	χ^2	p	η^2
Monitoring Motivating	21	Regularly checks my grades and provides praise and encouragement as needed	1,006	16.192	.006	.016
Instructing	11	Sets aside a regular time to meet	1,007	15.419	.009	.015
Monitoring Motivating	19	Encourages and praises me for staying engaged in the course	1,006	14.397	.013	.014
Monitoring Motivating	20	Encourages me to keep working when feeling unsuccessful	1,005	13.251	.021	.013
Monitoring Motivating	14	Checks on progress and reminds me to keep working and stay on schedule	1,005	13.097	.022	.013
Organizing	9	Provides a designated place of study and access to technology and materials	1,007	12.692	.026	.013
Instructing	10	Reviews policies of online school and course at beginning of course	1,009	12.014	.035	.012
Instructing	15	Explains course readings and materials when students have questions	1,005	11.467	.043	.011

Table 2.7 shows the factors comparing the CR and NCR groups that contribute to the

findings of significance. Finding significance is affected by both the overall difference in the

percentage of students in each group agreeing with the statements and by the distribution of the

strength of that agreement across the Likert scale between the two groups. For example, the

difference in the responses by the CR and NCR groups to the question of whether students

thought it would be helpful if "someone encouraged and praised me for staying engaged in the

course" (Item 19) was significant ($\chi^2(5) = 14.397$, p = .013, η2 = .014, which is considered a small effect size). The significance was affected by both level of overall agreement (81.7% of the CR students agreed, while only 68% of the NCR students agreed) and by the difference in the distribution of the strength of agreement (38.3% of CR students *very strongly agreed*, while only 20.1% of NCR students agreed that strongly).

The difference in the responses between the CR and NCR groups for Item 15, which asked students if they perceived it would help if "someone explained course readings and materials when [they had] questions" was also significant ($\chi^2(5) = 11.467$, p = .043, η2 = .011, which is considered a small effect size). However, in this instance, the percentage of overall agreement was virtually the same for the CR and NCR groups (90.0% and 90.7% respectively), but the strength of agreement was different. Of the CR students, 73% *strongly* or *very strongly* agreed with this statement, compared to 53% of the NCR students who agreed that strongly. The significant difference for this item did not result from the overall levels of agreement, but from the distribution of the strength of agreement between the two groups.

Overall, a significant difference indicates that a difference was found in the groups' perceptions of the importance of support from those fulfilling the different roles. The results appear to indicate that CR students value these interactions more than the NCR students for each of these significant items. CR students may be responding to their previous failure as they believe that more interaction and help from others will enable them to succeed in this attempt. This is an encouraging result for supporting these CR students with a community of engagement. The responses indicate that they are likely to accept help if they can identify those willing to provide it and to receive coaching in how to establish those relationships and interactions when they enroll.

Table 2.7

Results of Chi-Squared Test: Agree Responses by Student Type

Category	Item #	Survey item ("I will be more successful if someone. . . ")	p	n	VSA	SA	A	n	VSA	SA	A
				CR students Agree %				NCR students Agree %			
Monitoring Motivating	21	Regularly checks my grades and provides praise and encouragement as needed	.006	60	41.7%	78.3% 10.0%	26.7%	946	20.4%	67.2% 15.3%	31.5%
Instructing	11	Sets aside a regular time to meet	.009	60	31.7%	70.0% 15.0%	23.3%	947	15.1%	66.3% 13.9%	37.3%
Monitoring Motivating	19	Encourages and praises me for staying engaged in the course	.013	60	38.3%	81.7% 18.3%	25.0%	946	20.1%	68.0% 15.0%	32.9%
Monitoring Motivating	20	Encourages me to keep working when feeling unsuccessful	.021	59	42.4%	86.4% 16.9%	27.1%	946	22.9%	74.6% 17.5%	34.1%
Monitoring Motivating	14	Checks on progress and reminds me to keep working and stay on schedule	.022	59	37.3%	76.3% 22.0%	16.9%	946	23.4%	75.7% 16.9%	35.4%
Organizing	9	Provides a designated place of study and access to technology and materials	.026	60	51.7%	91.7% 25.0%	15.0%	947	34.0%	86.5% 24.2%	28.3%
Instructing	10	Reviews policies of online school and course at beginning of course	.035	60	25.0%	75.0% 16.7%	33.3%	949	12.1%	65.0% 12.4%	40.5%
Instructing	15	Explains course readings and materials when students have questions	.043	60	40.0%	90.0% 33.3%	16.7%	945	36.4%	90.7% 19.9%	34.4%

Discussion and Implications

The purpose of this study was to determine whether students perceived the need for support from a proximate community of engagement (PCE) in completing an online independent study course. The study further asked if there was a difference in the perceptions of the need for such help between CR or NCR students.

Overall, the study confirmed that students enrolling in an online independent study course believed that interacting with a local PCE would be important to their success in the course and that they planned to access that support from local resources more frequently than from the distant resources of the course provider. Results also showed that students thought they would access a PCE comprised of parents and their local teacher and/or counselor.

The study findings suggested that students taking the course for credit recovery tend to value PCE interactions more than do students taking the course for other reasons. Pettyjohn (2012) found that credit recovery students were often discouraged and doubtful when beginning their online coursework, that many had suffered environmental, family, and self-regulation issues that made academic success unlikely. She observed that these students seek those they trust when they need to find support or to share successes. Trusting relationships helped CR students in the study develop ownership and autonomy, and the support staff became their trusted partners. Franco and Patel (2011) found that students who had previously failed and were forced to attend courses with younger students suffered from low self-esteem. These authors suggested that associations with and support from a community who expressed confidence that a student could succeed created a "greater confidence in [his or her] own abilities" (p. 25).

CR students' perception of a greater need for help may come from recognizing the issues that caused their failure during their previous attempt at the class. They may be aware that trusted help and support will likely lead to greater success. The results of this study show that

they recognize the support proximate resources could offer, providing the on-site facilitator functions of mentoring and instructing (Borup & Drysdale, 2014; Borup et al., 2014).

Implications for Practitioners

The students' perception of the need for help and the resources that they identified to provide that help should be considered by designers and instructors of online independent study courses. Evidence suggests that collaborative courses with interaction to support the students in constructing meaning achieve the best learning outcomes. Students in this study perceived the need to engage in the activities of the ACE framework with a proximate community, a finding that indicates students would be willing to access community support if it can be curated. This finding also aligns with results of previous research and with the expectation of many course providers that students will receive parental help with their schoolwork and that parents will provide instructional support and also monitor and encourage student engagement (Gill et al., 2015; Hasler Waters, Menchaca, & Borup, 2014; Woodworth et al., 2015). Researchers have found that specific training and instruction in processes of facilitation will improve its effectiveness (Davis et al., 2007; Hannum, Irvin, Lei, & Farmer, 2008; Staker, 2011).

Recognizing this critical responsibility, many virtual schools and course providers have prepared materials to assist parents or mentors to understand their important roles as they assist their students in online coursework. Examples include the *Supporting Students—A Parent's Guide* website provided by the North Carolina Virtual Public School (NCVPS, n.d.), the Ohio Virtual Academy's *Parent Handbook* (OVA, 2015), the Florida Virtual School's *Student and Parent Handbook* (FLVS, 2016), and documents included in the toolkit prepared by Michigan Virtual University (Michigan Virtual University, 2014).

The Michigan Virtual University (MVU) toolkit includes documents intended to assist those providing on-site support for online students. The *Parent Guide* (Michigan Virtual University, 2016a) is designed to help "parents, guardians, counselors and others who want to help students decide whether online courses are a good option" (Michigan Virtual University, 2016a, Introduction). Materials in the guide help students and their advocates decide whether they are prepared for and the supports they might need in order to succeed in online courses. It also informs the on-site supporter or facilitator of the support that will be required. The *Student Guide* (Michigan Virtual University, 2016b) provides information "from teachers, mentors, and students who have personal experience with online teaching and learning" that helps students "know what [they] are getting into and what kind of support [they] will need to be successful" (Michigan Virtual University, 2016b, Introduction). *Mentor Fundamentals* (Michigan Virtual University, 2016c) is a publication "full of practical, research and experience-based best practices for [those] who provide on-site support for online learners" (Michigan Virtual University, 2014, pp. 7-8). These resources are examples of guides instructional designers and course providers can create to support students' success by preparing them and their proximate communities of support.

The greater sense of need for support expressed by CR learners in this study indicates their readiness to accept help in order to succeed. The special needs and challenges faced by CR students should be considered in designing on-site support materials for those who may participate in the student's proximate community. The need for building trust and mitigating some of the environmental and self-efficacy concerns confronted by CR students (Pettyjohn, 2012) may require additional best-practice-based mentoring and facilitation guidance for on-site supporters. The difference in the levels of support needed and the nature of that support may

require greater investment by the parent or other local individual(s) helping the CR student.

Consequently, different mentoring and coaching materials may need to be provided for the

student and proximate supporters based on the CR or NCR status of the student. Screening

questions to determine the CR or NCR status could be added at the time of enrollment to help

providers and facilitators decide which guidance materials will be most helpful.

Adolescent students and their advocates may require coaching on successfully curating a

proximate support community. Student responses in this study acknowledged the people the

students believed they would interact with to receive the help they perceived as important.

Students may need guidance on methods to procure assistance as they prepare for the course.

Instructional designers should consider introductory lessons and assignments at the beginning of

each course to coach the students (and their parents or advocates) in the processes of identifying

proximate resources and enlisting the support that will help students succeed. Most students in

this study identified a parent as the resource they planned to access most often. Parents need to

be engaged and informed of their role in that community and the commitment required. The

actual creation of a proximate support community could be further supported by making the

curation and information activity an element of the students' grade.

Implications for Research

The previous implications section of this report identified some research needed to better

support the curation and effective operation of a proximate support community. The *Parent*

Guide and *Mentoring Fundamentals* publications provided by MVU (referenced above) are

research and experience based examples. Additional research will identify other recruitment,

communication, and training activities that students and their advocates can use to curate an

effective proximate support community. This study shows that students perceive the need for

ACE framework activities. Additional research on the proximate individuals who will most effectively engage with the student in those activities, as well as the best practices to identify and recruit those participants, will enrich the community-building activities designed into the course.

In this study, the ratio of CR and NCR students participating differed from the ratio expected based on the literature. The percentage of CR students was much lower than expected. Reasons for this may have included the criteria for selecting students, the timing of the survey administration, and peculiarities of the provider. This weakness has implications for the usefulness of transferring these findings to other online course providers and students. Future research with data collected from a more general pool of students during different parts of the semester or term or from other schools may provide a balanced mix of CR and NCR students more consistent with the literature and add to the evidence of differences between the two student enrollment groups. Such differences might also confirm the strength of the perception findings in this study.

Future research opportunities might confirm the finding that students will engage in a PCE. Such studies might collect data from students at the end of their course to see if and how they actually used a PCE. Studies could also be designed that measure the degree to which students used the PCE and the effects of the frequency and quantity of that interaction on their learning achievement. Another helpful study could examine the frequency and quantity of interactions with the different resource persons in the PCE (teacher, family, counselor, peer, etc.) as correlated to student performance in the course.

This study and others that could follow will inform the best practices that can be implemented in the course design to curate a proximate community and coach the student, along with parents and other advocates, in recruiting an effectively functioning PCE. The research will

suggest the individuals with whom the student should interact, the nature of effective

interactions, and the content and frequency of preferred interactions in order to maximize the

possibility of success in the online course.

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Chapter 3: Online Student Use of a Proximate Community of Engagement at an

Independent Study Program

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Online Student Use of a Proximate Community of Engagement

at an Independent Study Program

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Abstract

Research has suggested that independent study students may benefit from engaging with a proximate community of engagement (PCE) while completing an online course and that they perceive that such engagement will help them succeed. A total of 1,055 Independent Study students participated in a survey at the completion of their course to assess the level at which they actually interacted with a PCE. Survey findings were confirmed with follow-up interviews with students and their parents to triangulate survey data. Findings revealed that students in the study interacted with a PCE when completing the course. The percentage of students actually engaging with a PCE was lower than the percentages of students from a previous study who perceived that such engagement would be helpful. The research suggests that students made aware of the benefits of a PCE at the beginning of the course, and who receive coaching to curate that community as an assignment in the course, will be more likely to receive the learning benefits of community engagement. Future research to confirm the value of engaging with a proximate community, identifying most helpful and effective interactions, and helping students curate such a community were proposed.

**Online Student Use of a Proximate Community of Engagement
at an Independent Study Program**

K-12 online courses are often used to increase access and support timely graduation by providing "the freedom and independence of time and place" (Anderson, 2008, p. 52). Credit recovery, or a repeat enrollment in a course which the student had previously attempted and failed (Watson & Gemin, 2008), is the most frequent reason students enroll in an online course (Glass, 2009; Watson & Gemin, 2008; Wicks, 2010). The majority of K-12 online enrollments are also used to supplement students' face-to-face course work and researchers estimated that there were 2.7 million students enrolled in 4.5 million supplemental courses in the 2014-15 school-year (Gemin, Pape, Vashaw, & Watson, 2015).

Online course designs generally employ methods of delivery with different degrees of required interaction (Barbour & Reeves, 2009). Research has suggested that interactive, community-centered courses may provide greater learning achievement than traditional independent study models of distance education (Boling, Hough, Krinsky, Saleem, & Stevens, 2012; Garrison, Anderson, & Archer, 2000). However, increasing the levels of interaction between instructors and students offers less student flexibility--the reason why many students seek online courses (Anderson, 2008). As a result, many supplemental course providers have resisted requiring more learner interactions at the cost of student flexibility. In fact, even full-time online charter schools organized similar to their brick-and-mortar counterparts depend heavily on independent study courses (Gill, et al., 2015; Hasler Waters, 2012).

Research on structured communities supporting adolescent learners proposes interactions in learning communities as critical to learning success. Borup, West, Graham, and Davies (2014) proposed the adolescent community of engagement (ACE) framework which identified critical roles, functions, and activities or interactions within a community of engagement for adolescent students enrolled in online courses. The ACE framework posits "that as parents, teachers, and peers become more engaged, students are more likely to increase their engagement" (Borup et al., 2014, p. 112). Although independent study courses do not require much human interaction, Anderson (2008) observed that students engaged in independent study are not alone, often having access to peers and family members who support and assist them. Students could derive some of the benefits of community-centered learning through interacting with people nearby (parents, teachers, other adults, students, other peers) while still maintaining the high level of flexibility that they require. Oviatt, Graham, Borup, and Davies (2016) labeled such a community of local individuals supporting online independent study learners a proximate community of engagement (PCE). A PCE may be even more important for credit recovery (CR) enrollments, defined as students who have previously failed a course and are attempting the course again. Oviatt et al. (2016) found that online CR students value support from a PCE more than their non-credit-recovery (NCR) peers. However, CR students may be less inclined to seek support or less aware that support is needed or available (Oliver, Osborne, Patel, & Kleimann, 2009).

Although previous research found that students perceive the value of establishing a PCE (see Oviatt et al., 2016), little is known regarding how successful they are at actually establishing one. Using the interactions and activities described in the ACE framework as a foundation, this

study used self-report surveys and semi-structured interviews with students and their parents to document evidences of student use of a PCE and sought to identify differences in the use of a PCE based on whether the student was enrolled for CR or NCR reasons. Specifically, the study asked three research questions:

1. Which specific interactions or activities described in the ACE framework were utilized by the students as they completed an independent study course?

2. Who interacted with the students, in what ACE framework activities/roles did they function, and where were they located (proximate, distant)?

3. Are there significant statistical differences in the level of participation in specific ACE framework interactions based on a student's CR or NCR classification?

Literature Review

This review of the literature examines the characteristics of adolescent learners important to course designs, particularly credit recovery learners, and then consider the roles and functions served by participants in the adolescent community of engagement (ACE) framework and pertinent research specific to the benefits of each role in the community.

Adolescent Student Support

Adolescent students tend to have fewer self-regulation and metacognitive abilities than adults and require more support and higher quality interactions to persist to course completion (Barbour & Reeves, 2009; Borup, Graham, & Davies, 2013a, 2013b; Cavanaugh, Barbour, & Clark, 2009; Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer, 2004; Moore, 1989). For instance, adolescent learners have not developed the abilities that allow them to recognize learning challenges and adopt cognitive and behavioral strategies that allow them to successfully complete the learning tasks without support (Pintrich & De Groot, 1990). Supporting adolescent students may require providers to understand whether the student has selected the supplemental course for credit recovery (CR) or non-credit recovery (NCR) reasons (Oviatt et al., 2016).

Watson and Gemin (2008) define CR as a repeat attempt in a course that the student previously completed and failed. CR is the most common reason for enrollment in supplemental courses (Glass, 2009; Watson & Gemin, 2008). An iNACOL, (2013) study found that 62% of supplemental course enrollments were credit recovery. Watson and Gemin, (2008) observed that "many educators are finding that online and blended learning are effective ways to reach students who fail one or more courses, become disengaged, or who seek an alternative to traditional education" (Watson & Gemin, 2008, p. 3). Adolescent CR students face challenges in addition to those mentioned earlier for adolescent students in general. These additional challenges may include lower self-confidence due to previous failure, lower levels of technical literacy and access to technology, and challenging life and family circumstances that affect their ability to adequately attend classes (either physically or online) without additional support and encouragement (Oliver et al., 2009; Roblyer & Marshall, 2002; Watson & Gemin, 2008).

NCR reasons for taking the course can be either elective, or required. Elective reasons include: flexibility, accessing courses not available at their local schools, accelerated learning

opportunities, conflict avoidance, homeschooling, and recovering missed credits due to extra-curricular activities or avocations (Ahn, 2011; Borup, et al., 2013b; Erb, 2004; Farrell, 1999; Hasler Waters, Menchaca, & Borup, 2014; Rice, 2006; Shea, Li, & Pickett, 2006; Snyder, 1997; Watson, Pape, Murin, Gemin, & Vashaw, 2014). Required reasons include: concerns about safety and security, homebound students; and those with family responsibilities not allowing school attendance (Ahn, 2011; Daum & Buschner, 2014; Erb, 2004; O'Hanlon, 2009; Shea, Li, & Pickett, 2006; Staker, 2011; Wicks, 2010). Earlier research shows that CR students perceive the need for support at significantly higher levels than NCR students (Oviatt et al., 2016).

The ACE Framework

The ACE framework (Borup et al., 2014) identifies specific roles fulfilled by different actors in an online learning community. Those roles are: the student, the teacher, peer learners, and the parents. The framework suggests that a greater level of engagement by the three roles external to the student (i.e. teachers, peer learners, and parents) will lead to a greater level of engagement by the student (see Figure 3.1). Greater affective, behavioral, and cognitive student engagement is the goal of the ACE framework.
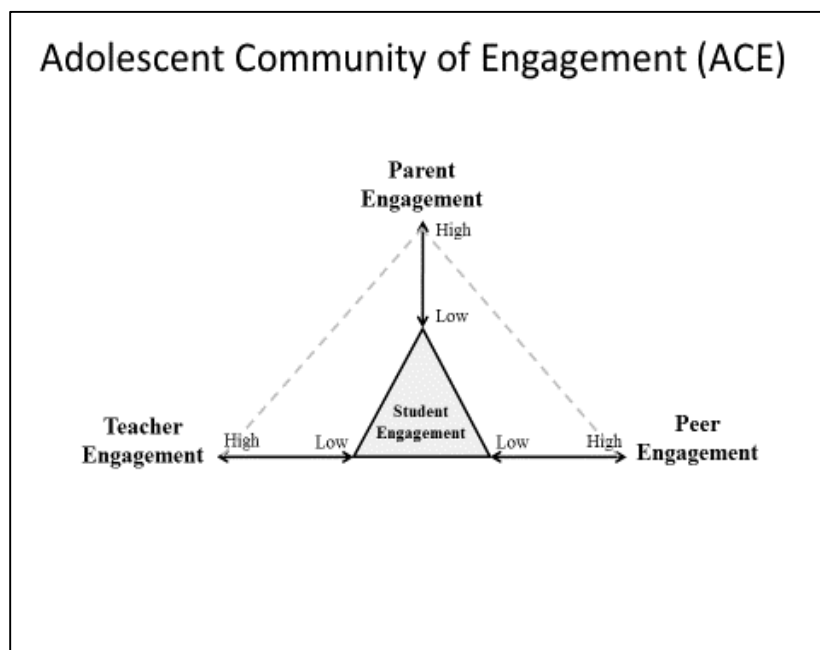
Figure 3.1 ACE framework from Borup et al. (2014, p. 111)

In the following sections, we will discuss the unique functions and interactions associated with each role in the ACE framework. Although this article focuses on a community of engagement in an independent study context, research examining independent study courses is especially limited and we have included research examining other learning models in our review.

The elements of the ACE framework are:

- Roles (teacher, parent, peer),
- Functions served by each role as they interaction with the students, and

- Activities or interactions that promote student engagement.

The functions described in the ACE framework often overlap and can be performed by supporters acting in each of these roles (see Table 3.1).

Table 3.1
Overlapping Roles and Functions in ACE Framework (Borup et al. 2014)

Function	Task	ACE Role		
		Teacher	Parent	Peer
Facilitating (Monitoring & Motivating)				
	Nurturing	X	X	
	Monitoring	X	X	
	Motivating	X	X	X
	Facilitating Discourse & Communication	X		
	Volunteering		X	
Organizing				
	Organize Materials and Environment	X	X	
	Designing Materials	X		
	Organize Timeliness and Schedule	X	X	
Instructing				
	Provide Instruction	X	X	X
	Assignment Help	X	X	X
	Collaboration			X

Table from Oviatt et al. (2016, p. 340)

Borup et al. (2014) added that the functions and activities can vary greatly across programs and depends in part on the learning model used. In an independent study context, research showed that students perceived help from parents and teachers proximate to their location would improve the chances of successfully completing their online course. The research also revealed that students expected to rely on their parents most frequently for help in nearly every activity or interaction described in the ACE framework (Oviatt et al., 2016).

Teacher Role

Teacher engagement in the ACE framework includes efforts to design the course materials and deadlines, provide instruction, and to facilitate interaction (Borup et al., 2014). O'Leary and Quinlan (2007) noted that pervasive online teacher-student interaction must exist if a course is to be effective. The functions and activities of the teacher in an independent study course differs dramatically from that required in more collaborative, community-centered courses. Most teacher-student interactions designed in an independent study course are distant and asynchronous and a "lack of actual teaching . . . occurs" (Barbour 2009, p. 13). Independent study course designs rely on learner-content interactions to replace much of the instructing activity performed by teachers in more collaborative courses (Moore, 1989). Students interact primarily with the course materials for these instructing activities (Barbour, 2009) though providers expect some instructing support from the parents (Hasler Waters & Leong, 2014; Stevens & Borup, 2015).

The teacher responsibility for facilitating interaction includes nurturing, motivating, and mentoring. These engagement activities can be performed by teachers or on-site facilitators (Borup, Graham, & Drysdale, 2014) and may "be performed by one or more individuals depending on the context and the instruction model" (Borup et al. 2014, p. 113).

Parent Role

The parent engagement in the ACE framework includes "facilitating interaction, organizing students' environment, and instructing students" (Borup et al., 2014). As mentioned previously, virtual schools expect the parent to assume some teacher responsibilities in an independent study course, particularly facilitating interaction through mentoring students and providing instruction (Barbour, 2009; Hasler Waters and Leong, 2014). Hasler Waters and Leong (2014) described parents in online course settings as a "co-educator" (p. 33) or "learning coach" (p. 34). The limited interactions between the online teacher and the student in an independent study course means that parents need to interact frequently in order to effectively fulfill their co-educator duties (Hasler Waters, & Leong, 2014).

Parents are not content experts. In their review of parental engagement literature, Stevens and Borup (2015) cautioned that parents' provision of instructional support may be important but that they "typically lack the content expertise to directly instruct students on specific course material, especially in older grades" (p. 111). They further encouraged online programs to understand the "benefits and drawbacks of parental instructional support and to work with parents so that they understand and fulfill their roles in ways that facilitate – not inhibit – student learning" (p. 112).

In another study, Borup (2016) noted that teachers are supportive of the instructional activities (tutoring) provided by parents "if the parents had the knowledge and the skills to do so" (p. 77). Other researchers have cautioned that there is a continuum of parent involvement where parents can be so uninvolved that students are not supported, or too involved such that students are not required to learn on their own (Hasler Waters & Leong, 2014; Hasler Waters, et al., 2014). Schools and teachers must design courses which allow parents to adequately perform appropriate co-educator functions while also recognizing and facilitating those functions that require the teacher's expertise (Hasler Waters, 2012). Virtual schools requiring parent involvement must have school policies requiring communication between the school and the parent (Cavanaugh et al., 2009) and provide training and supports for parents as facilitators, instructors, motivators and articulate communication guidelines (Hasler Waters et al., 2014). Hasler Waters and her colleagues noted that research presently does not "clearly . . . define variables associated with parental involvement in K-12 online learning" (Hasler Waters et al., 2014, p. 318) and that "studies . . . hint at how parents might fill in a much needed gap when teachers are not present" (p. 320).

Virtual schools are responding to the expectation of parental involvement in mentoring students by developing parent mentoring guides (Michigan Virtual University, 2016a; OVA, 2015) and parental contracts (FLVS, 2016). These materials explain school policies and parent support expectations so that they adequately fill the gap identified by Hasler Waters et al. (2014).

Peer Role

Peer engagement in the ACE framework is expressed through collaboration that provides instructing and motivating support. Parent and teacher roles overlap and are present in online courses regardless of format but peer collaborative learning interactions are less frequently designed into self-paced courses (Gill et al., 2015). Required peer collaborations negatively impact the flexibility students are seeking when they enroll in an independent study course (Anderson, 2008) but are viewed as an important best practice for online courses (Ferdig, Cavanaugh, DiPietro, Black, & Dawson, 2009; iNACOL, 2011).

Students acting as peers are critical participants in collaborative, constructivist, community-centered courses (Kreijns, Kirschner, & Jochems, 2003). Student peers can provide instruction from their own knowledge (Gunawardena, Lowe, & Anderson, 1998) and also act to motivate other learners (Moore, 1989). Researchers reported that students appreciated engagement with peers believing that they these interactions were valuable to their learning (Borup et al., 2013a) and that they learned more when given the opportunity to teach other students through peer-tutoring, peer review, and peer feedback and assessment (Corrigan & Graciun, 2012; Garrett Dikkers, Whiteside, & Lewis, 2013). Research also showed a positive correlation between learner-learner interactions and course outcomes (Borup et al., 2013a). The lack of peer interactions intentionally designed into independent study courses prevents students from deriving many of the benefits associated with peer engagement in the research. Oviatt et al. (2016) found that students do not perceive as much value in peer interactions as they do parent and teacher interactions, but may interact if peer interactions are suggested in the course design and peers are available to them locally.

These three ACE framework roles external to the student help adolescent students engage and persist in an online course. This research was intended to identify the degree to which these three roles acted in the experience of online independent study students. Understanding whether the students received help, who helped them, and the proximity of that help to the student has important implications for the design of independent study courses to improve student success.

Methodology

The researchers used a mixed methods design combining both quantitative and qualitative data sources with a goal of a study whose "strength . . . is greater than either qualitative or quantitative research" (Creswell, 2009, p. 4). The specific approach was a survey and phenomenological "sequential explanatory design" (Creswell, Plano Clark, Gutmann, & Hanson, 2003) where quantitative survey data was collected and then follow-up qualitative semi-structured interviews were conducted to triangulate survey data for accuracy and to better understand the students' experiences curating and interacting with a proximate support community.

Setting and Participants

The non-random voluntary sample for this study consisted of adolescent students completing an online independent study high school course offered through the distance education program of a large university in the western United States. The program offers courses

in an instructor-led format requiring synchronous interactions, and an independent study self-paced, student-led format in which synchronous interactions are available but not required. Email invitations were sent to all students completing an independent study version of a high school. Email invitations were sent to all students completing an independent study version of a high school course during the data collection period inviting them to participate in an online survey and offering an incentive for their participation. Students completing the survey were offered an additional incentive at the end of the survey recruiting volunteers to participate in follow-up interviews. Detailed sample information and response rates are reported in the findings below.

Instrumentation

The data collection instruments included a self-report survey and a script prepared for semi-structured interviews.

Self-report survey instrument. Study participants completed an online self-report survey asking if they participated in activities described in the ACE framework (Borup et al., 2014). The survey was adapted from the instrument developed for a study of student perceptions of the value of participating in a proximate community of engagement (Oviatt et al., 2016). Some teacher-student interactions from the ACE framework are observable in more collaborative courses such as "ask questions" or "draw attention to certain concepts" (Borup et al., 2014, p. 116) but are unlikely to be observed in an independent study course. These interactions are designed as learner-content interactions in the course and were excluded from the survey. Other activities and interactions suggested in the ACE framework, such as the parent role activity of "help[ing the student] develop . . . social and behavioral skills" (Borup et al., 2014, p. 118) were judged too difficult to operationalize or observe and were also excluded from the survey. The resulting instrument included 18 items intended to measure whether the student participated with a proximate community in one of the ACE framework activities.

Once the instrument was prepared, two separate steps were taken to assure the researchers that the survey items accurately reflected the presence of the underlying interactions or activities the instrument was intended to measure. The first was an expert review by the lead developer of the ACE framework, who suggested changes for clarity. The second was the administration of the instrument using a think-aloud protocol (Ericsson & Simon, 1984; Fonteyn, Kuipers, & Grobe, 1993) to a student enrolling in an online course at the offices of the course provider. These two reviews resulted in improvements adding clarity to the survey items provided assurance that the instrument could be relied upon to provide evidence of the targeted activity or interaction.

Qualitative interview script (triangulation). The intent of this study was to identify actual student engagement with a PCE. The literature suggests that parents and students do not always perceive their interactions the same way (Borup et al., 2013b). The interviews were intended to confirm the reported interactions. The interview script was derived from the survey instrument, one interview question per survey item. Teaching assistants and tutors from the course provider were trained and conducted the interviews.

Data Analysis

The data analysis plan is outlined in Table 3.2. The calculations and qualitative analysis approach are explained below.

Table 3.2
Plan for Data Collection and Analysis Methods for Study of ACE Framework

Questions	Data collection method	Analysis method
1, 2	Survey items 9-25 asking about student participation in a specific activity interacting with a member of a proximate community and the person(s) with whom they interacted.	Descriptive statistics/frequencies
3	Survey items 6-8 to categorize the student into the CR or NCR group for analysis and compare data for items 9-25 grouped by student demographic strata.	Calculate Chi-Square statistics to identify significant differences between CR & NCR group responses.
1-3	Semi-structured interview of students and a parent	Independent rater review of responses to confirm survey answer. A follow-up iterative process of coding the responses to identify key themes, similarities, and differences across the data (Glaser, 1965; Ezzy, 2002).

Quantitative survey analysis. We calculated descriptive statistics for each survey item to measure the frequencies of help received. We further analyzed the data to identify differences between credit-recovery (CR) and non-credit-recovery (NCR) students. The variables for comparison were categorical (i.e. Yes or No; Teacher, Parent, Peer or Other; Local, Distant or Other). We performed a Fisher's Exact test calculation in the categorical variables of Yes or No (2x2 = CR or NCR, Yes or No) when analyzing the actual use of the support community. Chi-square statistic calculations were used to compare the distributions of those with whom a student interacted between the CR and NCR groups. These calculations were 2x4 (Cr or NCR x Role [Teacher, Parent, Peer, Other]) and 2x3 (CR or NCR x Location [Local, Distant, Other]). Results were considered significant at the .05 level.

Qualitative interview analysis. Follow-up interviews were conducted with student/parent pairs in an effort to triangulate the survey responses through interviews. The interviewer used the student's survey responses and modified the interview questions to confirm the student's response. Interview answers were recorded, transcribed, and entered into an Excel spreadsheet. The lead author and two members of the research department of the course provider independently evaluated the interview transcripts. When a student's and/or parent's interview response indicated that the student's survey response was accurate, the response was considered confirmed. Where the student or parent response to the interviewer indicated that the student's

survey response was not accurate, then the response was considered in conflict. These three independent ratings were then compared for reliability. The same three independent raters then attempted to analyze the interview responses using constant comparative coding (Glaser, 1965; Ezzy, 2002) to identify common themes or patterns emerging from the interview transcripts regarding the nature of interactions with the different members of the support community.

Findings

The course provider in this study provides supplemental online courses and generally does not provide a full-time option for high school students. The supplemental nature of the relationship has resulted in minimal response rates when the provider has attempted collecting data from students and parents after course completion in the past. This pattern was observed in the low response rates experienced in this study, particularly the response to interview requests.

Survey and Interview Responses

A total of 7,148 emails were sent to students who completed an independent study course during the two periods of data collection. A total of 1,264 students clicked through the link to begin the online survey. Of those students, 1,088 actually completed the survey, a response rate of 15.2%. The survey data was reviewed and surveys which were not substantially completed were removed from the data set. We considered a survey substantially complete if the student left two or fewer survey questions unanswered. A total of 1,055 surveys were considered substantially complete and comprised the data set for our analysis. The number of responses included in the data set varied from 1,046 to 1,055 for the different survey items (see Table 3.3).

A total of 128 student/parent pairs indicated an initial willingness to participate in a follow-up interview. The provider research team analyzed the quantitative survey responses to identify a purposeful sample from those willing participants which would reflect the overall mix of different survey answers. A total of 57 student/parent pairs were invited to participate in an interview of which nine student/parent pairs ultimately agreed to be interviewed. The nine student/parent pairs participating in the interview may not be representative of the overall population of respondents but the insights gained from the interviews was considered valuable.

The quantitative and qualitative findings are reported in the narrative for each of the research questions that follow. Any names used are pseudonyms and no personally identifiable information was provided to the researchers.

Research Question #1: ACE Framework Elements Used

Students completing a course were asked if they received help from others acting in the roles described in the ACE framework. The analysis that follows is organized by the three primary functions served by those acting in these roles in the ACE framework: instructing activities, organizing and facilitating activities, and monitoring and motivating activities. These three primary functions align with the facilitator roles described in the literature (Borup & Drysdale, 2014; Borup et al., 2014) and align with the report in an earlier PCE study (Oviatt et al., 2016). Peer interactions are an important element in the ACE community and occur as students participate in instructing activities (collaborating to share previous knowledge and co-

construct meaning) and motivating activities (providing encouragement and stimulate engagement). Collaborative peer interactions were categorized as an instructing activity for these findings.

Table 3.3 reports the survey responses for each item in the survey organized by the three functional categories. The data is sorted by the percentage of yes responses to the survey items in descending order. Items where greater than 50% of the students answered yes (they received help) were classified as very helpful to the students. Items where students reported that they had been helped in 40% - 50% of the responses were classified as moderately helpful. Those items where less than 40% of the students reported that they had received help were classified as of limited help to the students.

Instructing activities. Only one instructing activity was considered very helpful to the students. Just under 60% of the students reported interacting with someone who reviewed the policies of the online school and course at the beginning of the course. There were two instructing activities that were classified as moderately helpful. Those activities were receiving help from someone who explained course materials when the student had questions (49%), and receiving help from someone who answered their questions about assignments, papers, and quizzes (40%). The least helpful instructing activities were help learning to search for items online or in other resources (19%) or collaborating with another student in the course (13%). Qualitative data suggests that the students did not seek help with searches because they were confident in their own abilities. One student, Latisha, reported that interactions intended to help her search for information online or in other resources "would not have been helpful" because "she knew how to search on Google and go to the library." Another student, Kathy, said, "I didn't feel like I really needed to learn how to Google."

Students also reported that they did not participate in peer collaboration because they expected to work independently and preferred independence when choosing to enroll in the course. Wanda, a mother of a student, said, "I much prefer the way that [course provider] does it where you sign up, you either do it or you don't. … Both of us [student and parent] prefer the independent part of the independent study." Alex, Wanda's child said, "nobody helped me but I preferred that." Even though the students did not collaborate with peers, when asked if they thought that peer collaboration would have been helpful, students said that there might be value in "hear[ing another student's] view and what they had to say on the subject" or that a peer "might have insight that I don't." These responses suggest that the students understood that peer interactions could have assisted their learning.

Organizing and facilitating activities. Students reported that they were provided a designated place of study and access to needed technology and materials in 76% of the responses. This was the only organizing and facilitating activity categorized as very helpful. The frequency was borne out in the interviews where eight of the nine students reported that they had received such help. Help included parents who "made sure that I got a computer that had capabilities to get me on the internet and stuff" and a counselor who provided an "empty English storage closet" so that the student could "have a quiet space and do some of the online interview things."

Table 3.3
Reported Student ACE Framework Interactions with Support Community

Category	Item #	Survey item ("Did someone …")	n	Yes n	Yes %	No n	No %
	10	Review the policies of the online school and course with you at beginning of course?	1,054	627	59.5%	427	40.5%
	15	Explain course readings and materials when you had questions?	1,052	511	48.6%	541	51.4%
	16	Help you with questions about assignments, papers, quizzes, etc.?	1,052	420	39.9%	632	60.1%
	22	Help you learn how to self-regulate and learn in an online course?	1,046	297	28.4%	749	71.6%
Instructing interactions	11	Set aside a regular time to meet with you?	1,053	291	27.6%	762	72.4%
	18	Teach you how to use the technology and resolve technical problems?	1,051	267	25.4%	784	74.6%
	17	Talk to the provider or online teacher on your behalf?	1,050	241	23.0%	809	77.0%
	23	Show you how to search online, and in other library and community resources?	1,051	194	18.5%	857	81.5%
	25	Taking the same subject or course collaboratively study with you as you completed the course?	1,049	133	12.7%	916	87.3%
	9	Provide a designated place of study and access to technology and materials?	1,055	805	76.3%	250	23.7%
Organizing and facilitating interactions	13	Help you set specific goals and deadlines?	1,055	456	43.2%	599	56.8%
	12	Help you organize and plan your time and create a regular schedule to work on the course?	1,052	401	38.1%	651	61.9%
	24	Arrange contacts with student peers for study and collaboration?	1,049	64	6.1%	985	93.9%
	19	Encourage and praise you for staying engaged in the course?	1,049	679	64.7%	370	35.3%
	14	Check on your progress and remind you to keep working and stay on schedule?	1,055	656	62.2%	399	37.8%
Monitoring and motivating interactions	20	Encourage you to keep working when you were feeling unsuccessful?	1,046	607	58.0%	439	42.0%
	21	Regularly check your grades and provide praise and encouragement as needed?	1,049	516	49.2%	533	50.8%

Interactions helping the student to set specific goals and deadlines seemed to be moderately helpful. Students reported receiving such help in 43% of the survey responses. Eight of the nine students interviewed reported receiving help with these activities including parents or counselors sitting down with the student at the beginning of the course, when they were falling behind, and "my mom just kept badgering me until I finished it."

The other two organizing and facilitating activities, help with planning time and creating a regular schedule for course work (38%) and arranging contacts with student peers (6%) were least helpful to the students. Five of the nine students interviewed received help planning a regular schedule. One of the students who did not receive such help told the interviewer "I was more behind than I would have liked. But if I was told that I should make it a daily class, and make it a priority then I probably would have." None of the interviewed students reported someone helped them make contacts with another student for collaboration or study but indicated that they believed peer collaboration would have helped them "understand a concept I'm struggling with" or would have helped them "better understand and remember the things I studied" though students did not believe that such collaboration was necessary.

Monitoring and motivating activities. Monitoring and motivating activities were most frequently utilized by the students. Three of the four activities appeared to be very helpful to the students: receiving encouragement and praise for engagement (65%), checks on progress and reminders to stay on schedule (62%), and encouragement to keep working when students were feeling unsuccessful (58%).

The fourth interaction in this category, regular checks on grades providing praise and encouragement as needed (49%), was at the high end of the moderately helpful classification. These monitoring and motivating activities tend to be more personal and interactive and are generally more available to the students from local resources, particularly parents, teachers and counselors. This may account for the higher rates of utilization of a PCE for the monitoring and motivating activities.

Common patterns in interview responses included interactions where parents or school personnel regularly asked the student about their progress and preparation. Chris told the interviewer "my parents and . . . teacher at school just regularly checked in on me to make sure I was staying on top of things." Kathy, reported an incident when her "principle pulled me off to the side one day during lunch and like asked me where I was in the course. I said still lesson one and he said, 'Oh we can't see that on our side.' I said, 'yeah, it will be done tonight.'" Jane said that her mother would check on her preparations and offer encouragement and support. She said, "when I would be taking self-check, if I didn't have a good enough grade she would have me go back and re-take it until I had a grade I was happy with." When preparing for her final exam, Jane said, "I was a little nervous about it so she sat down with me and helped me study for it and feel more comfortable about taking the exam." These interview responses indicate that the concerned engagement and interaction by the student's parents and school personnel provided encouragement and motivation for the student to persist and increased their engagement.

Summary. Students in this study selected a self-paced, student-led course with minimal required interactions. Students expected to work independently which is reflected in the lower levels of reported interactions in instructing and the organizing/facilitating activities. The

activities most helpful to the students were those related to the course content (explanations of course policies, content and assignments), providing place and technology resources, and interactions providing motivation and engagement through monitoring of student performance and offering encouragement.

Research Question #2: Who Interacted with the Student?

Students responding that they had received help through an ACE activity were prompted with a list of people with whom they may have interacted. Local options included parents and other family members, teachers or counselors at their local school, students at their local school, and their friends. Distant options included teachers and tutors from the course provider, and distant student peers enrolled in the online course. Students were asked to select all those with whom they interacted. Family members were included in the parent role. Teachers, counselor, and TA/tutors were included in the teacher role. Students were also given the option to identify an "other" individual with whom they interacted. When a student chose the "other" option, they were asked to describe that person with whom they interacted. These "other" resources were analyzed and categorized in the parent, teacher, or peer role or left in the other category as appropriate. Table 3.4 reports the roles from the ACE framework with whom the students reported interactions.

Overall, students reported that they received help from the parent role more than twice as frequently as they received help from those acting in the teacher or peer roles. Two survey items were exceptions to this finding. The atypical items measured peer-related activities described in the ACE framework.

Student interactions receiving help arranging contacts with other students (an organizing and facilitating function) reported that help came equally from parents (42%) and peers (42%). Those students reporting that they had collaborated with another student (an instructing function) identified a peer student as the person with whom they interacted in 99.4% of responses.

Instructing activities. The instructing activities in the ACE framework are those where parents most often act in the place of the traditional teacher role providing instruction, answering content and course questions, helping with learning and study skills, and monitoring student progress.

ACE roles providing support in instructing activities. Those acting in the parent role interacted most frequently with the students for every instructing activity in the survey except the activity of collaborating with peers. Parents were identified in approximately two-thirds of the survey responses for non-peer instructing activities. Parents were engaged to help the student learn self-regulation skills, including how to learn in an online course (76%), to speak to the online school or instructor on behalf of the student (71%), and show the student how to search resources (68%).

Table 3.4
Reported Independent Study Student Interactions by ACE Framework Roles

Category	Item #	Survey item ("Did someone …")	n	Teacher role		Parent role		Peer role		Other
				Local	*Online*	*Parent*	*Other family*	*Local*	*Online*	
	10	Review the policies of the online school and course with you at beginning of course?	736	29.9%		66.6%		3.0%		0.5%
				26.8%	3.1%	61.8%	4.8%	1.9%	1.1%	
	15	Explain course readings and materials when you had questions?	642	22.6%		64.0%		11.1%		2.3%
				10.9%	11.7%	55.9%	10.1%	7.8%	3.3%	
	16	Help you with questions about assignments, papers, quizzes, etc.?	529	17.8%		66.4%		13.0%		2.8%
				9.8%	7.9%	55.4%	11.0%	8.5%	4.5%	
	22	Help you learn how to self-regulate and learn in an online course?	360	18.9%		76.1%		4.4%		0.6%
				12.2%	6.7%	65.6%	10.6%	3.8%	0.6%	
Instructing interactions	11	Set aside a regular time to meet with you?	338	31.4%		62.1%		3.8%		2.7%
				28.1%	3.3%	58.0%	4.1%	3.0%	0.8%	
	18	Teach you how to use the technology and resolve technical problems?	300	30.0%		64.7%		4.7%		0.7%
				10.7%	19.3%	59.0%	5.7%	3.7%	1.0%	
	17	Talk to the provider or online teacher on your behalf?	237	27.0%		70.9%		1.7%		0.4%
				20.3%	6.7%	69.6%	1.3%	1.7%	0.0%	
	23	Show you how to search online, and in other library and community resources?	225	25.8%		68.4%		4.9%		0.9%
				17.8%	8.0%	58.7%	9.7%	4.0%	0.9%	
	25	Taking the same subject or course collaboratively study with you as you completed the course?	164	NA		NA		99.4%		0.6%
				NA	NA	NA	NA	72.0%	27.4%	

Table 3.4, Continued

Category	Item #	Survey Item ("Did someone …")	n	Teacher role		Parent role		Peer role		Other
				Local	*Online*	*Parent*	*Other family*	*Local*	*Online*	
Organizing and facilitating interactions	9	Provide a designated place of study and access to technology and materials?	1,073	23.6% *21.8%*	*1.8%*	70.6% *65.2%*	*5.4%*	5.5% *3.7%*	*1.8%*	0.3%
	13	Help you set specific goals and deadlines?	529	22.7% *19.5%*	*3.2%*	73.9% *67.7%*	*6.2%*	2.8% *2.3%*	*0.5%*	0.6%
	12	Help you organize and plan your time and create a regular schedule to work on the course?	463	20.3% *18.1%*	*2.2%*	74.9% *69.5%*	*5.4%*	3.9% *2.6%*	*1.3%*	0.9%
	24	Arrange contacts with student peers for study and collaboration?	81	14.8% *9.9%*	*4.9%*	42.0% *35.8%*	*6.2%*	42.0% *28.4%*	*13.6%*	1.2%
Monitoring and motivating interactions	19	Encourage and praise you for staying engaged in the course?	913	16.2% *13.5%*	*2.7%*	77.6% *68.6%*	*9.0%*	5.8% *4.8%*	*1.0%*	0.4%
	14	Check on your progress and remind you to keep working and stay on schedule?	780	18.2% *16.4%*	*1.8%*	78.2% *72.8%*	*5.4%*	2.6% *1.6%*	*1.0%*	1.0%
	20	Encourage you to keep working when you were feeling unsuccessful?	809	14.0% *11.4%*	*2.6%*	78.6% *69.0%*	*9.6%*	7.2% *5.9%*	*1.3%*	0.2%
	21	Regularly check your grades and provide praise and encouragement as needed?	606	13.4% *11.6%*	*1.8%*	83.8% *77.7%*	*6.1%*	2.0% *1.5%*	*0.5%*	0.8%

One student said that her parent helped her learn how to learn in the online course by providing

> a head start with what I should focus on, then the rest of the time I was supposed to work on it on my own and figure out what works best for me and eventually I got the hang of what worked and what didn't work and how often I needed to work to progress at the level I needed.

Another student said that her parent "used the online chat" and "instant messaged the program [provider]" when there were questions about things that were unclear.

The instructing activities with the highest percentage of support from teachers included setting aside a regular time to meet with the student (31%), providing technical support (30%), and reviewing the policies of the online school or course with the student (30%). Kris reported that "every week we had a check-in of how far I've gone, what lessons I need to do . . . to meet these [course] checkpoints." Christopher said that he met "every three weeks . . . with the teacher and discussed how things were going."

Location of individuals providing help. Table 3.5 reports the location of the person who provided help to the students. The majority of the students identified individuals acting in the parent role (a local resource) and teacher role (a local or distant resource) as the source of help for instructing activities. Students reported receiving help from a local teacher or counselor more than twice as frequently as help received from the distant online instructor. The course-specific interactions of help with technology support (19% distant vs 11% local) and answering questions about the course readings and materials (12% distant, 11% local) were the only items where the online instructor helped more than a local teacher. One instructing activity, collaborating with another student, is peer-specific. Students who collaborated with another student identified a local student peer in 73% of the responses with 27% identifying a distant student. This finding suggests that some students were enrolled in the course with local peers who formed a proximate community to support one another.

Organizing and facilitating activities. One of the four facilitating and organizing activities occurs when someone who arranges interactions with peers. The students who received this help reported the help from parents and peers equally (42% of responses for each). Students identified a teacher in 15% of responses for this activity. Students relied more on parents and local teachers for help with the other organizing and facilitating activities. These activities involve organizing and planning place, technology, and other resources; or helping the student plan and schedule their time and course activities. Students reported receiving this help from parents and teachers in more than 94% of responses for each of these three organizing activities. Parents provided at least 71% of the help for each item and students reported help from local resources in at least 96% of their responses.

Table 3.5
Location of Student Identified Resource Accessed for Support

Category	Item #	Survey item ("I will be more successful if someone …")	n	Local			Distance		Other
				Teacher	*Parent/ family*	*Student/ peer*	*Teacher*	*Student/ peer*	
	10	Review the policies of the online school and course with you at beginning of course?	736		95.3%		4.2%		0.5%
				26.8%	*66.6%*	*1.9%*	*3.1%*	*1.1%*	
	15	Explain course readings and materials when you had questions?	642		82.7%		15.0%		2.3%
				10.9%	*64.0%*	*7.8%*	*11.7%*	*3.3%*	
	16	Help you with questions about assignments, papers, quizzes, etc.?	529		84.7%		12.5%		2.8%
				9.8%	*66.4%*	*8.5%*	*7.9%*	*4.5%*	
	22	Help you learn how to self-regulate and learn in an online course?	360		92.2%		7.2%		0.6%
				12.2%	*76.1%*	*3.9%*	*6.7%*	*0.5%*	
Instructing interactions	11	Set aside a regular time to meet with you?	338		93.2%		4.1%		2.7%
				28.1%	*62.1%*	*3.0%*	*3.3%*	*0.9%*	
	18	Teach you how to use the technology and resolve technical problems?	300		79.0%		20.3%		0.7%
				10.7%	*64.6%*	*3.7%*	*19.3%*	*1.0%*	
	17	Talk to the provider or online teacher on your behalf?	237		92.8%		6.8%		0.4%
				20.3%	*70.9%*	*1.7%*	*6.8%*	*0.0%*	
	23	Show you how to search online, and in other library and community resources?	225		90.2%		8.9%		0.9%
				17.8%	*68.4%*	*4.0%*	*8.0%*	*0.9%*	
	25	Taking the same subject or course collaboratively study with you as you completed the course?	164		72.0%		27.4%		0.6%
				NA	*NA*	*72.0%*	*NA*	*27.4%*	

Table 3.5, Continued

Category	Item #	Survey item ("I will be more successful if someone …")	n	Local			Distance		Other
				Teacher	*Parent/ family*	*Student/ peer*	*Teacher*	*Student/ peer*	
	9	Provide a designated place of study and access to technology and materials?	1,073		96.1%		3.6%		0.3%
				21.8%	*70.6%*	*3.7%*	*1.8%*	*1.8%*	
Organizing and facilitating interactions	13	Help you set specific goals and deadlines?	529		95.7%		3.8%		0.6%
				19.5%	*73.9%*	*2.3%*	*3.2%*	*0.6%*	
	12	Help you organize and plan your time and create a regular schedule?	463		95.7%		3.5%		0.9%
				18.1%	*74.9%*	*2.6%*	*2.2%*	*1.3%*	
	24	Arrange contacts with student peers for study and collaboration?	81		80.2%		18.5%		1.2%
				9.9%	*42.0%*	*28.4%*	*4.9%*	*13.6%*	
	19	Encourage and praise you for staying engaged in the course?	913		95.8%		3.7%		0.4%
				13.5%	*77.5%*	*4.8%*	*2.7%*	*1.0%*	
Monitoring and motivating interactions	14	Check on your progress and remind you to keep working and stay on schedule?	780		96.2%		2.8%		1.0%
				16.4%	*78.2%*	*1.5%*	*1.8%*	*1.0%*	
	20	Encourage you to keep working when you were feeling unsuccessful?	809		95.9%		3.8%		0.2%
				11.4%	*78.6%*	*5.9%*	*2.6%*	*1.2%*	
	21	Regularly check your grades and provide praise and encouragement as needed?	606		96.9%		2.3%		0.8%
				11.6%	*83.8%*	*1.5%*	*1.8%*	*0.5%*	

Monitoring and motivating activities. These activities include offering praise and encouragement and monitoring student progress. Offering encouragement and immediate feedback are important activities that promote student engagement (de la Varre, Keane, & Irvin, 2011) and is effective when provided through personal face-to-face communications (Harms, Niederhauser, Davis, Roblyer, & Gilbert, 2006). Students relied upon parents and teachers when helped in this category with at least 93% of students' responses reporting help from parents and teachers for these four items. Approximately 96% of that help came from local individuals.

Students' interview responses indicated that they valued these personal interactions. One student said that they stayed engaged when, "my parents and that teacher at the school just regularly checked on to make sure I was staying on top of things." Another student said that "they [parents] would check my grades once a month . . . and if [they] noticed that my grades were down . . . but . . . [I] didn't get on it soon enough then they would encourage me to keep working harder." Students reported that praise and encouragement were also important, especially when they were feeling discouraged and that they would not be successful. One student said "when I would get a good grade on something I would tell my parents and they'd be like 'good job.'" Another student said that she was discouraged about her grade towards the end of the course and concerned about how she would do on the final but her parents "helped me with studying tips and I was able to get it done and get the grade that I wanted."

Summary. Students received help with these activities from parents and local teachers. This finding aligns with research and provider expectations that support provided to distance learning students in online courses will largely come from parents acting in their co-educator role with course designs intended to replace the teacher with parent interactions (Barbour, 2009; Gill et al. 2015; Hasler Waters & Leong, 2014).

Research Question #3: Differences in Credit Recovery and Non-credit Recovery Students?

The third research question asked if there were statistically significant differences in the responses to the different items between non-credit-recovery (NCR) and credit recovery (CR) students. The analysis investigated significant group differences in the help students received, the role with whom students interacted, and the location of the individual(s) who helped.

There were 1,055 survey responses included in the data set. Of the total responses, 70 were from CR students (6.6%). The literature identified credit recovery as the most prevalent reason students take supplemental courses (Glass, 2009; Watson & Gemin, 2008; Watson et al., 2014, Wicks, 2010) and reported ranges from 20% of enrollments in one large virtual school (Watson & Gemin, 2008) to 62% in another study (iNACOL, 2013). The observed proportion of CR students in this study (6.6%) is much lower than expected. This is consistent with another study in partnership with the same course provider (Oviatt et al., 2016). As with that study, the smaller proportion of CR students may be due to the difference in the student population attracted to this particular provider, the sampling criteria, or the times of the school year in which the data was collected. The difference in both studies "creates challenges with generalizing the findings to other independent study students and providers" (Oviatt et al., 2016, p. 354).

Statistical Calculations and Results

The survey included 18 items associated with the elements of the ACE framework. Because some of the expected cell values were less than five, a Fisher's Exact statistic was calculated comparing the frequency of reported student interactions by CR and NCR groups for each item. Chi-square statistics were calculated to identify significant differences between the groups in the help reported by activity or interaction, ACE role providing help, and the location of the person(s) with whom the student interacted (local or distant). Differences were considered significant at an alpha of .05.

The effect size (association) of the statistic was calculated using eta squared ($\eta 2$) for the Fisher's Exact test (frequency difference) and Cramer's V (φc) for the Chi-squared statistics reported for the differences in role and location. The effect sizes were interpreted for $\eta 2$ as small ($.0099 < \eta 2 < .0588$), medium ($.0588 < \eta 2 < .1379$), and large ($\eta 2 > .1379$) effect size (Cohen, 1969, p. 278-280). The effect sizes were interpreted for φc as small ($0.10 < \varphi c < 0.30$), medium ($0.30 < \varphi c < 0.50$), or large ($\varphi c > 0.50$) effect size (Cohen, 1992, p. 157).

Differences in frequency of interactions. There was only one survey item with a significant difference between the two groups in reported interactions with others. That survey item asked if students collaborated with another student as they completed the course. NCR students reported collaborating with another student in 13.3% of their responses while CR students reported collaboration in only 4.3% of their responses. This difference was significant using the Fisher's Exact test ($p = .04$, $\eta 2 = .03$, a small effect). All other group differences were non-significant.

Differences in frequency of interaction by role. When students reported that they had interacted with another person they also reported the person(s) with whom they interacted by ACE framework role: teacher, parent, or peer. Chi-square statistics were calculated comparing the distribution of the roles (teacher, parent, peers) with whom the students interacted by group. The effect sizes were calculated using Cramer's V (φc). There were two items on the survey where there were significant group differences in the roles with whom the students interacted. All other group differences were non-significant. The two interactions or activities were arranging contacts with other students learning how to study in an online course.

Someone arranged contacts with other students. CR students receiving this help reported that 100% of that help came from a parent. NCR students received this help from a parent (40%), a teacher (15%) and a peer or other resource (45%). The different distribution of the role providing help was significant ($\chi^2(3) = 85.7$, $p < .001$, $\varphi c = .65$, a large effect).

Someone helped learn to self-regulate and study in an online course. CR students who received help reported receiving that help from a parent (73%) or a teacher (27%). NCR students reported receiving that help from a parent (76%), a teacher (18%) or a peer or other resource (6%). That difference in the distribution was significant ($\chi^2(3) = 7.9$, $p = .049$, $\varphi c = .20$, a medium effect).

Differences in frequency of interaction by location. We derived the location of the person with whom the students interacted from role with whom the student interacted (see

research question #2). Chi-square statistics were calculated to identify significant differences between the CR and NCR groups. The effect sizes were calculated using Cramer's V (φc). There were three survey items where the difference in the response distribution was significant. Differences between the groups for all other survey items were non-significant. The three items with significant differences included arranging contacts with other students, collaboration with other students, and help with questions about assignments, papers, and quizzes.

Someone arranged contacts with other students. CR students receiving this help identified a parent (local) in 100% of responses. NCR students reported received this help from a local resource (80%) or a distant or other resource (20%) in their responses. This difference in the location of the person providing help was significant ($\chi^2(2) = 22.2$, p < .001, $\varphi c = .33$, a medium effect).

Collaborated with other students. CR students who collaborated with another student reported collaborating with a local student in 100% of their responses. NCR students reported collaboration with local students (71%) or distant students or other resources (29%). This difference in the location of help between the two groups was significant ($\chi^2(2) = 33.9$, p < .001, $\varphi c = .41$, a medium effect).

Someone helped with questions about assignments, papers, quizzes, etc. CR students reported receiving help with this item from local resources (87%), distant resources (5%) or other resources (8%). NCR students reported receiving help from local resources (85%), distant resources (13%) and other resources (2%). The differences in the distribution of the responses between the two groups was significant ($\chi^2(2) = 7.2$, p = .028, $\varphi c = .19$, a small effect).

Summary of statistical calculations and results. The minimal number of survey items with significant differences between the CR and NCR groups indicates PCE interactions were similar for both groups.

Validation of Survey Results through Interview

Three independent raters reviewed the survey responses to triangulate the survey results by determining whether the interview answers confirmed or conflicted with the student's survey response. There were 161 student and 39 more parent responses in the interview transcripts pertinent to the analysis. Of the 200 total responses, 189 confirmed the student's survey response (94.5%) and 11 conflicted with the student's survey response (5.5%). Comparison of the independent rater evaluations of the confirm/conflict measurement found 100% rater agreement. The results triangulate the survey data and support survey validity.

The independent raters further attempted to identify emerging themes and patterns from the interview transcripts using constant, comparative coding (Glaser, 1965; Ezzy, 2002). The paucity of rich information available in the survey transcripts made effective use of this qualitative analysis technique impractical and we were unable to identify meaningful themes and patterns. All three members of the analysis team independently noted this deficiency and agreed that future research would require better training of interviewers and more carefully-conducted interviews to receive the desired awareness of the student experience with a PCE.

Discussion and Implications

This study revealed that students engaged the resources of a proximate community of engagement (PCE) when they completed an independent study course. This occurred without coaching or instruction at the beginning of the course. The survey and interview data showed that parents were the primary source the students turned to for help aligning with co-educator expectations in the literature (Barbour, 2009; Gill, et al, 2015; Hasler Waters & Leong, 2014). Local teachers were the second most relied-upon resource who helped the students.

The literature acknowledges this expectation for parental engagement in critical teaching responsibilities to provide educational support as mentors (or learning coaches), monitors, motivators and enforcers (Chan, Wilkinson, Graham, Borup & Skeen, 2011; Hasler Waters, 2012; Hasler Waters & Leong, 2014; Kanuka, 2008). Researchers have expressed concern about the "quality of the educational support that that parents give students" in online learning settings (Hasler Waters & Leong, 2014, p. 33). The findings in this study suggest that there may be a need to inform parents, local teachers, counselors, or other school personnel about their need to act as members of a PCE to support students.

Online course providers must give the parents the information and tools they need to understand and act in their crucial teacher functions (Stevens & Borup, 2015) and researchers note that and frequent teacher-parent communication is important (Cavanaugh et al., 2009). One interesting example of this importance was revealed in this study. Analysis of parents' interview responses indicate that the communicated expectations from the course provider were either inadequate or may have been ignored. These communications concerned expectations for the frequency of student activity, critical deadlines, and the nature of the LMS tools available. The deficiency in these communications and the quality of the educational support provided by the parents and other local school resources has implications for course design and research.

Implications for Practitioners

Weiner (2003) observed that structure was important to student success in online courses. Cavanaugh (2013) wrote that structured courses included "clear expectations, concrete deadlines with some flexibility, outlines of course requirements" (p. 175). Hasler Waters and Leong (2014) noted that parents may need training in their roles supporting the students if the online schools are going to rely upon them as co-educators. Lack of training and clarity of communications may affect the quality of the student's experience and learning achievement.

Student and parent confusion about course structure. Students in this study struggled to understand how to best manage their efforts in the course. This resulted from a lack of clarity concerning expectations and deadlines, and the capabilities of the LMS that support meeting those expectations. Interview responses showed that parents and students struggled to understand the course expectations and structure. One student said,

> It would be helpful if I was told in the beginning of the course, like, this should be an everyday thing. I didn't realize that until I was half way through and I was more behind than I would have liked. But if I was told that I should make it a daily class, and make it a priority then I probably would have.

This same student's parent said, "It wasn't until the end of the course that we were able to really analyze the work expected and to adequately schedule time and internet access in order to complete the course." The parent went on to say that "the hard part . . . was to know if progress was adequate. . . neither of us were aware if progress was adequate at any point during the course." Another parent reported that they got to the end of the course and were ready to take the final online but were told that they could not take the final in that class without first obtaining clearance from the online instructor and that "in the end we, we had to actually put the final off two weeks."

The tragedy in these instances is that there were eager students and supportive and engaged parents but poor communications and course structure did not allow the parents to act effectively in their co-educator role. The lack of clear communications about available tools and course expectations at the beginning of the course meant that the student and the parent had to negotiate the course and learn from the experience rather than being prepared to perform as expected by the provider. Further research revealed that the course provider offers guidance on their website to inform parents and students about these expectations and tools. Designing these communications into course content in the first lesson would better inform students and parents. Making a review of these communications a graded assignment may draw appropriate attention to expectations and tools.

Providing adequate information regarding support expectations. Anderson (2008) observed that course providers often expect parents to provide support in the place of teachers. Several online schools provide parents helpful direction through webpages (eschool, n.d.; LANV, n.d.), handbooks (FLVS, 2016; OVA, 2015), and guidebooks (Michigan Virtual University, 2016a; 2016b). These tools are intended to support student success in online courses by helping parents better act in their roles as facilitators for their students. The Ohio Virtual Academy provides a "parent compact" outlining 10 specific expectations for parents (OVA, 2015, pp. 3-4). The Florida Virtual School (FLVS) "has the expectation that parents/guardians will be involved in their child's learning . . . and begin building strong teacher-student-parent relationships" (FLVS, p. 9. Parent or Legal Guardian section). FLVS also asks the parents to monitor their student's learning gains and compliance with school policies regarding academic honesty. These publications are intended to help parents fulfill their roles. Practitioners should consider the importance of providing similar published guidance to parents and creating "contracts" that specify expectations. Designing a "discovery and agreement" process as an introductory activity in each course will draw attention to expectations and tools and promote student success.

Creating awareness of PCE advantages. Oviatt et al. (2016) found that students perceive value in help received from a PCE. This study found that students use the resources of a PCE during the course, but at much lower levels than that described in the earlier study. The differences in the findings of the two studies are described in Table 3.6.

Table 3.6
Student Perceptions and Use of Proximate Community Support

Category	Item #	Survey item ("Did someone …")	Perceived help needed[1]		Actually helped	
			n	%	n	%
Instructing interactions	10	Review the policies of the online school and course with you at beginning of course?	1,009	65.6%	1,054	59.5%
	11	Set aside a regular time to meet with you?	1,007	66.5%	1,053	27.6%
	15	Explain course readings and materials when you had questions?	1,005	90.6%	1,052	48.6%
	16	Help you with questions about assignments, papers, quizzes, etc.?	1,005	83.9%	1,052	39.9%
	17	Talk to the provider or online teacher on your behalf?	1,006	60.5%	1,050	23.0%
	18	Teach you how to use the technology and resolve technical problems?	1,006	54.8%	1,051	25.4%
	22	Help you learn how to self-regulate and learn in an online course?	1,004	63.6%	1,046	28.4%
	23	Show you how to search online, and in other library and community resources?	1,008	54.8%	1,051	18.5%
	25	Taking the same subject or course collaboratively study with you as you completed the course?	1,006	50.9%	1,049	12.7%
Organizing and facilitating interactions	9	Provide a designated place of study and access to technology and materials?	1,007	86.8%	1,055	76.3%
	12	Help you organize and plan your time and create a regular schedule to work on the course?	1,008	70.1%	1,052	38.1%
	13	Help you set specific goals and deadlines?	1,004	73.6%	1,055	43.2%
	24	Arrange contacts with student peers for study and collaboration?	1,006	47.9%	1,049	6.1%
Monitoring and motivating interactions	14	Check on your progress and remind you to keep working and stay on schedule?	1,005	75.7%	1,055	62.2%
	19	Encourage and praise you for staying engaged in the course?	1,006	68.8%	1,049	64.7%
	20	Encourage you to keep working when you were feeling unsuccessful?	1,005	75.3%	1,046	58.0%
	21	Regularly check your grades and provide praise and encouragement as needed?	1,006	67.9%	1,049	49.2%

[1] From Oviatt et al. (2016)

These two studies were conducted with the same course provider. The samples were independent and sampled at different points in the course lifecycle (upon enrollment and upon completion). It is likely that a strong suggestion-bias is present in the earlier study, which increased the percentage of students perceiving such interactions would be valuable. Students in

the present study did not have the benefit of similar questions at the beginning of the course. The earlier study suggests that such questions at the beginning of the course could influence curation of a PCE for helpful interactions. Instructional designers could increase the quantity and frequency of these helping interactions with a PCE through an introductory curating activity. Referencing an online resource such as the Student Success Toolbox (2016) is one way that students can be encouraged identify resources available to curate a PCE. Making that PCE discovery and curation process a graded assignment early in the course would help students plan, curate, and participate with a PCE as they complete the course.

Implications for Researchers

Potter (1998) observed that students may be isolated but are never alone. This study revealed that students access a PCE even when they are not instructed to do so. Parents, other family members, teachers, and counselors naturally make themselves available to students enrolled in independent study courses. Investigators can provide research-based data on the structure, nature, frequency and duration of interactions with a PCE that are most beneficial to students' success. These studies could correlate (a) the specific interactions and student engagement and learning achievement (b) the frequency of interactions and learning achievement, (c) the specific role providing help and learning achievement, and so on. Studies could also evaluate the impact of orientation activities, graded curation assignments, and published support materials on the formation and functioning of a PCE.

These PCE studies investigated student samples that were independent. Research replicating these earlier studies using a dependent sample consisting of the same students at the beginning and completion of a course will reveal the impact of suggesting available help effects actual engagement with a PCE, supporting the value of curation activities in early lessons.

Limitations and Future Research

Several variables important to the circumstances of the student and the support provided were not included in this study. Among the more important are the socioeconomic status (SES) of the student and parent, and the educational attainment of the parent. The absence of these variables limits the transferability of these findings and provides a rich area for future research of the correlation of these variables to student engagement with a PCE and parental engagement as part of the PCE. The percentage of CR students in this study was much lower than that reported in other studies and may also affect transferability to other students and providers. Phenomenological studies can be impacted by "too narrow and homogenous a sample [which] may make judgements about transferability and links to other . . . groups more difficult" (Pringle, Drummond, McLafferty, & Hendry, 2010). Research conducted with other providers could validate and improve the strengths of the findings of this study. Additional studies correlating the nature, frequency, and structure of PCE communities and interactions with student outcomes will add to the knowledge of how to best create and interact with a PCE.

Conclusion

The research on student use of a PCE shows that students perceive that help from that community would be important to their course success (Oviatt et al., 2016) and that students

naturally use these community resources without prompting or coaching (this study). Effective independent study course designs inform students about the interactions that will help them as they complete the course, and then coach them in the curation of a PCE to provide that support. Students who effectively create and interact with a PCE may derive the learning benefits associated with collaborative communities while also experiencing the flexibility prompting their enrollment in an independent study course.

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Chapter 4: Overall Conclusion and Discussion

The study of students completing their independent study course (see Chapter 3) found that students received help through a proximate community of engagement (PCE) without prompting or guidance from the course provider. This finding may confirm the claim that independent study students access a proximate community for support when one is not provided by the online school. The use of the PCE by students who were not prompted shows that students may naturally seek some of these PCE interactions as the need for help arises. It is also likely that some of the interactions and activities described for the PCE are organic to the education process (providing technology and materials or answering student questions about specific course assignments and readings).

Other interactions and activities identified in the literature as important to the support of online student learning may not be as intuitive and require planning and organization of the support effort. There are some interactions and activities suggested in the more interactive and collaborative design frameworks that are present in classrooms and collaborative online courses that are intentionally avoided by independent study students seeking temporal and physical flexibility. Such collaborative interactions suggested in the ACE framework (Borup et al., 2014) would not be perceived by the student as important without the suggestion that the interactions could be occur through participation with a PCE.

The study of students enrolling in an independent study course included in Chapter 2 (Oviatt et al., 2016) found that a large proportion of the students perceived receiving help from a PCE would be important to their course success for most of the adolescent community of engagement (ACE) framework interactions. Even though completing students reported interacting with the elements of a PCE, Table 3.6 shows these students accessed PCE support at

levels much lower that the enrolling students perceived such interactions would be helpful. Suggestion-bias is likely present in the enrolling student study and is illustrated by these differences, but also indicates that suggestion might influence the degree to which students are aware that they can access a PCE for certain interactions and activities that would help them succeed and could promote curation of an effective PCE.

One interesting finding from this study was the importance of communications provided by the online school to inform students of the schedule and work expectations, support tool availability (LMS features), and policies for communicating with the school. Students and parents interviewed for the study expressed frustration that they were required to learn about the expectations, tools, and policies as they navigated the course rather than having them clearly explained as part of the course introduction or orientation. Such information had been provided to the students and parents (or other advocates) on the school's website but they were either not informed, or did not attend to messages they received about these important features of the course experience.

Implications for Practitioners

Suggesting helpful interactions at the beginning of a course appears to increase student awareness of these helpful interactions, particularly interactions which may not be intuitive or desired by an independent study student. Research has found these community interactions and activities to be helpful and noted that parents, teachers, and peers can act together to provide support regardless of course format or physical location (Borup, et al., 2014).

Online course providers have recognized the important role of local resources, particularly parents, and have implemented tools to help students and their parents or other advocates understand the important role they play in the students' success. These include

publications to make them aware of their importance as mentors and learning-coaches, explain important school policies, and provide training (Michigan Virtual University, 2014; Michigan Virtual University, 2016a; Michigan Virtual University, 2016b; NCVPS, n.d.; OVA, 2015). Schools also use parent contracts or agreements through which parents acknowledge that they will provide the expected support (FLVS, 2016).

The research reported here recommends that instructions on the curation of a PCE be included as part of an early assignment in the course and that the actual curation be supported through a graded assignment where that community is created, acknowledged, informed, and trained. Making students and members of the PCE aware of the publications prepared to help them in their PCE activities should be part of that the curation assignment, as would their formal agreement to participate in support of the student. Including the expected schedule and work expectations, information on tools available in the LMS and other resources to help students, and policies for communications could be part of that graded lesson and should be included in the published materials.

Implications for Researchers

One of the interests included in this research was the possible difference between credit recovery (CR) and non-credit recovery (NCR) students in the perception and use of a PCE. The research team expected to find a proportion of CR students in our sample of somewhere between 20% and 60% based on the literature review. However, for both studies, the percentage of CR students was approximately 6%. The statistical analysis found significant differences between the two groups in the perception of the beneficial help available from a PCE (Chapter 2), and very few statistically significant differences in how students actually engaged with a PCE (Chapter 3). However, the CR demographics were so different than the proportion observed in

other studies that transferring the results of this research to other course providers and independent study students is not appropriate. Future research that explores these questions across several providers or at different times of the school-year would be needed to confirm the results reported here.

Other research activities were proposed that will further identify students' use of a PCE and the effectiveness of the different interactions and activities recommended from the ACE framework. The two studies comprising the dissertation research were independent samples. A study of a dependent sample of students at the beginning and end of the course could identify the power of suggesting PCE interactions when a course starts and its impact on actual curation and use of a PCE. Experimental research could also be conducted to compare two dependent samples of students where one receives PCE curation help, and the other does not to see if there is an impact on the support community they access while taking the course and on the learning outcomes.

Suggested research could also examine the impact of different training and curation activities for students and PCE actors. Investigators could consider specific PCE interactions with person(s) acting in each of the PCE roles (teacher, parent, peer) to assess the impact of support by role and the nature of the person acting in that role. The research could examine the effect of the location of those people acting in the role (distant or proximate). Research could also measure the impact of the frequency and duration of specific collaboration and community activities and interactions. Correlating all of these training, curation, and interaction variables with student learning achievement will guide development of course designs, materials, and activities that will better train proximate help and inform policies that will allow a proper functioning PCE to accommodate a theory providing independent study students with the

flexibility they desire while also helping them receive the benefits of community-centered

learning (Anderson, 2008).

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Appendix A: Extended Literature Review

Introduction

This extended literature review considers research pertinent to online learning designs and associated frameworks and provides context for the research beyond that which is reported in the two articles. The primary foci of the extended literature review research were:

1. The history of distance education and why schools created distance education options (moral obligation to teach children).

2. The reason that students take online courses (the need to meet graduation requirements).

3. Why some choose independent study format courses when more interactive and collaborative, constructivist format courses are available (flexibility and/or constraints that prohibit enrollment in more interactive courses if students are to graduate on time).

4. A consideration of student characteristics of those enrolling in online courses, and of those who are most successful in online courses.

5. A discussion of the prevailing theoretical frameworks supporting best pedagogical design of online courses leading to deep and effective student learning (collaborative-constructivist interactive communities supporting student engagement).

6. An outline of the ACE framework for encouraging the engagement of adolescent learners and the identification of roles, functions, tasks, and activities within the ACE community.

Background and Context

Education is a human right.

Article 26 of the Universal Declaration of Human Rights declares that everyone has the right to education, and that "technical and professional education shall be made generally available" (United Nations, 1948, Article 26). Compulsory education provided through public schooling began in the United States in the Massachusetts Bay Colony in the 1640s with the passage of laws related to the moral obligation of parents to properly rear and educate their

children, "transforming the moral obligation into a legal one" (Katz, 1976, p. 11). The subsequent spread of public schools and compulsory education continued across the United States through the 18th and 19th centuries until every state had adopted free public schooling and some level of compulsory attendance by the early part of the 20th century (Katz, 1976).

At the foundation of public schooling and compulsory attendance was the Puritan notion of a moral obligation to provide education. In the early years of the United States most "formal education was sponsored and controlled largely by various religious denominations and charitable organizations" (Katz, 1976, p. 14). The introduction and spread of common schools (early public schools) gained momentum with the forces of urbanization, immigration, and assimilation through the 19th century. Public education also increased in priority due to the economic advantages to both the individual and the wider community from a trained and educated population (Katz, 1976).

The Importance of High School Education for Students and Society

Compulsory attendance laws typically extended into the high school years and have played a significant role in the economic vitality of the economy (Schmidt, 1996). The literature on the impact of high school education as well as the importance to society and school accountability efforts is now considered. The literature review suggests that meeting high school graduation requirements is the major motivator for students and schools to engage in online instruction.

The impact of high school completion. Culturally, high school completion has become an important priority for individuals and the wider society. Katz (1976) wrote:

school attendance through age 18 is so universally accepted that the 900,000 to one

million teen-agers who do not complete high school each year are pejoratively labelled

dropouts, and a social stigma is attached to their having left school. An article by Gene Maeroff in the *New York Times* titled "Dropouts: Are They Really Better Off at School?" addressed the negative image projected by the media toward high school dropouts:

A few years ago a public-service ad on television showed some runners, one of them wearing boots made of lead lining up for the start of a race. The race they were about to begin symbolized their lives, and the less than subtle message was that someone who drops out of high school, like the runner in leaden boots, bears a life-long handicap. (pp. 8-9)

In their research on high school reform, Picciano and Seaman (2010) asserted that the "American high school is becoming the major concern of policymakers across the spectrum of education in the United States" (p. 4). The need for reform is evident from the failure of high schools to adequately prepare students for future education and careers. They noted that inadequate teacher preparation or the limited availability of teachers in some subject areas certainly contribute to the problems that afflict high school education. The need for reform can be traced to many of these areas of concern but the "research is conclusive that the most serious problem is the persistent low graduation rates from American high schools" (Picciano & Seaman, 2010, p. 4).

Students who drop out. Fry (2014) reported that the most recent statistics show that there were 2,215,000 young adults between the ages of 18-24 who had not completed high school and who were not enrolled in school (high school dropouts) in 2014. This number is approximately 2 million fewer that those counted in this category in 1972. Tyler and Lofstrom (2009) noted that roughly one million students decide to leave school each year. Research studying why students make the decision to drop out often points to poor school performance,

onset of early adult responsibilities, work responsibilities, family characteristics, and the characteristics of their specific school (Tyler & Lofstrom, 2009).

Costs of dropping out. Researchers found that there are economic and societal costs to the wider community and to individual students when there is failure to complete high school. Picciano and Seaman (2010) noted that "Students who dropout of high school have difficulty in ever attending and completing a college degree, thereby stagnating their livelihoods and earning capabilities" (p. 6). Census data showed that students in the U.S. who dropout earn 65%-70% less annually than those with high school diplomas (U.S. Census Bureau, 2011) and that those impacts are compounded over their lifetimes (U.S. Census Bureau, 2002).

The declining percentages of students completing high school is a concern for the economy of the nation. The growth in the level of education in the workforce is seen as one of the major contributors to the growth in the American economy in the 20th century (Golden & Katz, 2008). Other societal costs of dropping out include increased funding for entitlements, higher incarceration rates, reduction in human capability, and a loss of dignity (Northeastern University, 2009; Sum, Khatiwada, McLaughlin, & Parra, 2009; Tyler & Lofstrom, 2009).

Acknowledging education as a human right and acting on moral obligations to provide educational opportunities are powerful incentives for moral nations to expand access to education by providing public schooling for K-12 students. The individual and societal costs of failing to secure an education are powerful motivators supporting efforts to compel attendance. Some advocates have expanded consideration of the issues, costs, and benefits of education to promote universal access to pre-K and higher education. Advocates have proposed public funding of higher education similar to that provided for K-12 education (Callahan, 2014; Eskow, 2014; Love, 2015). This movement was most clearly demonstrated by President Barak Obama's

call for free community college education in his 2015 State of the Union Address (Stratford, 2015).

High School Graduation Requirements

Woodworth et al. (2015) wrote that "under the terms of the constitution [of the United States], each state is free to implement public education policies as they wish" (p. 3). As such, high school graduation requirements are a local function established by each state. Minimum graduation requirements are established by a state board of education and/or legislation. Local school districts, charter schools, and private schools may establish their own requirements for graduation but those locally enacted requirements must include the minimum requirements established by the state. The purpose of these graduation requirements is best expressed in The Revised Code of [the state of] Washington which states, "The purpose of a high school diploma is to declare that a student is ready for success in postsecondary education, gainful employment, and citizenship, and is equipped with the skills to be a lifelong learner" (Revised Code of Washington [RCW] 28A.230.090 (1)).

Reigeluth (1999) described the current paradigm for schooling as standardization similar to mass production in manufacturing. This paradigm mirrors the manufacturing incentives for achieving efficiencies when producing the needed quantities of quality products through the processing of large quantities of raw materials. In this educational paradigm, the raw materials are the masses of students whom society desires to educate. Reiguluth observed that this paradigm does not meet the needs of individual learners but assumes that all learners can sufficiently learn the same content in the same amount of time. Consequently, this paradigm for education is process-driven and holds [seat] time constant while accepting varied levels of

learning achievement. The opposite "learning-focused" approach would vary [seat] time so that the student achieves learning goals (p. 18).

The process-driven paradigm for public education results in graduation requirements that are based on seat-time rather than demonstration of mastery of learning objectives. The focus is on how the students matriculate through a learning process rather than whether they have learned. The seat-time approach requires a student to provide a transcript detailing their successful attending and passing a list of specified courses, each of which is taught over a prescribed length of time (the traditional academic term or semester) in order to qualify for graduation. Once a student provides this transcript they have met the graduation requirements. This paradigm assumes that all students will be available and capable to participate in seat-time during the traditional school day over the course of the traditional school year in a traditional school setting through the traditional number of years to complete high school. The focus is not on whether have achieved the desired learning outcomes, but whether they were available to attend and participate.

There are some students who may not fit into this process due to family and personal issues that prevent them from participating in the process as outlined. These students face a dilemma when attempting to meet graduation requirements. These students often confront the need to complete a class that cannot be fit into their class schedule in the traditional model, or the need to complete a class within a time period that is less than the traditional academic term or semester if they are to graduate "on-time." These students must take a supplemental course to meet graduation requirements if they are to achieve timely graduation. Several states are now waiving seat-time requirements for virtual schools and supplemental courses (NCSL, 2012; Watson, Pape, Murin, Gemin, & Vashaw, 2014).

Timely High School Graduation as a Performance Indicator

Perhaps the single most relied-upon metric used to measure achievement of educational goals is timely high school graduation. Current practices in support of timely graduation from high school guide many of the emerging efforts to measure school accountability. Laws are being enacted, and regulations are being promulgated, by state and federal legislation and departments of education that use timely graduation as an indicator of accountability in education systems. In December 2008, the U.S. Department of Education issued guidance providing standards for calculating the four-year adjusted cohort graduation rate that includes calculations for student mobility (U.S. Department of Education, 2008) to be used for Title I accountability calculations. Watson and Pape (2015) found that graduation rate calculations are considered in state performance assessment frameworks and that the "graduation rate is a major component of the overall score, accounting for as much as 30%" (p. 15).

Under the guidance from the U.S. Department of Education (2008), most states have introduced the four-year graduation rate as an outcome measure used to monitor school accountability (Swanson, 2008). Many states have also included a five-year graduation rate as permitted by the guidance (Watson & Pape, 2015). Picciano, Seaman, Shea and Swan (2012) wrote, "improving the graduation rate is perhaps the most important aspect of many high school reform initiatives" (p. 132). Swanson (2008) wrote:

A significant share of recent public debate in education-policy circles has revolved around the challenges we face as a nation ensuring that all students graduate from high school, diploma in-hand and well-equipped to face the world and excel in their adult lives. This is an aspiration that would apply whether an individual student's path from

high school leads to further education, occupational training, or immediately into the world of work. (p. 14)

Under school reform proposals, failure to achieve timely graduation may lead to additional scrutiny by government agencies and could lead to changes in governance of the school and impact funding (Trotter, 2008). Such accountability measures encourage proactive efforts by schools, districts, and state boards of education to encourage and promote on-time high school graduation. Regardless of the time-frame to graduation, all researchers agree that schools should be accountable to help their students achieve graduation and demonstrate learning achievement.

Some researchers in K-12 online education have suggested reform proposals expand the timely graduation calculation to a five or six-year period in order to recognize the effort of schools with a larger percentage of students affected by mobility. Student mobility is associated with challenges for all schools whether they are physical or online. Students often move from one school to another for reasons that contribute to poor academic performance and that mobility itself may be a graduation risk-factor (Watson & Pape, 2015). Students changing schools often face challenges to academic success such as poverty, employment, pregnancy, or failure in other school settings. The U.S. Government Accountability Office (2010) notes that that there are academic, social, and emotional challenges associated with students who change schools and that those challenges may be exacerbated in differences in what their new school is teaching, how it is being taught, and the lack of records that will assist students in helping these transferring students. Watson and Pape (2015) wrote that "students changing schools are disadvantaged, at-risk, or under-credited" and data from some providers indicate that 35% of high school-aged students entering their online schools "were behind in credits at the time of enrollment" (Watson

& Pape, 2015, p. 16). This mobility in online schools not only occurs between school years, but also occurs within the same school year. Watson and Pape (2016) recommended that school accountability standards for online schools reflect this particular challenge and modify performance standards to credit efforts that advance students.

While researchers suggested online school standards be modified to reflect the challenges of mobility, other researchers asserted that this view of greater student mobility within online schools is not necessarily true. Woodworth et al. (2015) contended that the online schools in their study did not have a significantly higher percentage of students affected by mobility than traditional public schools and brick-and-mortar charters. They argued that the standards for school performance should not be altered when measuring online schools for mobility.

Student mobility and intervening life circumstances present challenges for some high school students to meet the seat requirements for high school graduation. The literature next reviewed identifies distance learning as a flexible time and place response to help students meet the seat time requirements outside of the traditional schools setting.

Distance Education and Online Schooling

The need for students to receive supplemental credit has been addressed in K-12 schools through online curriculum offered in many varied formats and by many different providers. This section of the literature review considers the varied formats and providers.

K-12 Distance Education

The K-12 distance education movement began in the early 1900s with a "supervised correspondence study program" at the University of Nebraska-Lincoln (Clark, 2013, p. 555). Distance education is defined as ''institution-based, formal education where the learning group is separated, and where interactive telecommunications systems are used to connect learners,

resources, and instructors'' (Schlosser and Simonson, 2009, p. 1). Clark (2013) wrote that "the primary purpose of K-12 distance education, expanding access to curriculum and providing educational choices, has changed little over time" (p. 555). Through the years, distance education has evolved with technologies that have afforded improved timeliness, quality, and fidelity of the distance learning experience. Early correspondence teaching used printed materials and written correspondence exchanged through the medium of the mail service. Subsequent distance learning courses took advantage of new media including film, radio, television, tele-courses and airborne instruction, audio conferencing, satellite instruction, computer mediated communication (CMC), microwave, and the web. Electronic methods had replaced print methods by the early 21st century (Clark, 2013).

Online K-12 Education in the 21st Century

The early 21st century has seen a rapid expansion in online course enrollments and in the number of institutions who offer online courses. Researchers have been attempting to identify and measure the participation in K-12 online education for more than a decade. The intent of this research was to understand the nature and effectiveness of K-12 online education and identify policies which have been developed to provide governance, funding, and measure the impacts of online schooling on students and public education. In their 2004 report, Watson et al. (2004) expressed concern about the rapid growth of online education without a corresponding similarly-paced development of state-level policies associated with online instruction. They initiated research to better understand what states were "doing to address the need for policy guidance" (p. 3). In that first year, they identified online schools, and associated governance policies, in 11 different states in the U.S. They noted the presence of statewide programs and

virtual schools offering full-time and supplemental courses. This report was the first of a series

of annual reviews of K-12 online education in the Unites States.

The 2014 *Keeping Pace* report (Watson et al., 2014) reported the presence of fully online

schools in 30 states with estimated online enrollments of 315,000 students. Virtual schools were

operating in 26 states and were "providing supplemental enrollments to students across their

states . . . [which] served just over 740,000 course enrollments" (p. 5). The report observed that

students had access to fully online programs, virtual schools, or other online options in all 50

states and the District of Columbia and that 11 states had implemented choice policies, which

allowed students to take online courses from one or more providers.

In a similar study, Miron and Gulosino, (2016) identified 33 states with full-time virtual

schools (all instruction online), 16 states with virtual/blended schools (mix of online and face-to-

face instruction), and two states with only blended schools, for a total of 35 states with virtual or

blended schools operating in the 2013-14 school year. They estimated 447 full-time virtual

schools enrolled 262,000 students, and 87 blended schools enrolled 26,155 students in that same

school year.

In their 2015 report, Gemin et al. (2016) described the continuing evolution of online

course offerings for K-12 students. They wrote that "online learning has steadily become a more

integral strategy for schools and districts in their efforts to offer students greater access to the

courses they need" (p. 4). They found that the growth of online education for K-12 students has

resulted in a proliferation of online education providers and course options. They identified

providers of online programs including state virtual schools, district virtual schools, consortia

(regional service agencies), and other suppliers (public and private, non-profit and for-profit)

who provided full courses, services, and resources to students and teachers in fully online,

hybrid, and supplemental models. They estimated 462,025 students completed 815,482 online courses through state virtual schools (24) in the 2014-15 school year with students taking an average of 1.77 courses per semester. When combined with other online providers outside of the state virtual schools, Gemin and his colleagues estimated a total of 2.6 million students were enrolled in 4.5 million online courses during the 2014-15 school year.

Another indicator of the growth in online K-12 schooling comes from Ambient Insight (2012) who estimated that there were 1.6 million students in online programs in 2011 with 455,000 attending full-time, including home-schooled students. They estimated that by 2016, there would be 6.53 million students in the U.S. enrolled in "virtual and cyber charter classes outside the classroom, but within the jurisdiction of the school, and an additional 4.18 million home schooled children will be online for a total of 10.71 million online students" (pp. 10-11). It will be interesting to measure the accuracy of this projection as 2016 numbers are reported.

This growth is not without detractors. Researchers have noted the failure of many online schools to adequately educate their students (Miron & Gulosino, 2016; Molnar et al., 2015; Zimmer et al., 2003; Zimmer et al., 2009) and have criticized the involvement of for-profit Education Management Organizations (EMOs) in the operation of many full-time online schools (Miron & Gulosino, 2016; Molnar et al., 2015). These researchers have criticized the lack of educational achievement, the lack of accountable financial disclosures of the costs of educating students in virtual schools, the failure of these schools to enroll underserved populations, and the lack of state policies that provide sufficient accountability and oversight. Researchers noting these concerns recommended the adoption of several policies which address funding and accountability, strengthen oversight and school governance, provide standards and training for online teachers, address retention and attrition issues, and provide regular formative and

summative student assessments that are focused on mastery of objectives (Molnar et al., 2015; Miron & Gulosino, 2016). Miron and Gulosino (2016) recommended that "policymakers slow or stop the growth in the number of virtual schools and blended schools . . . until the reasons for their relatively poor outcomes have been identified and addressed" (p. 6).

States have invested in online education as a means to reduce the costs of educating students (Barbour, 2012; Langenhorst, 2012; Picciano & Seaman, 2009), and as a way to make education available to students in smaller schools, or non-traditional student circumstances (Langenhorst, 2012; Wicks, 2010). Another added benefit described in the literature was the possibility for online curriculum to be an effective strategy to personalize learning (Michigan Virtual University, 2014). Researchers expressed the need for additional research as virtual schools continue to expand. They noted that this educational approach is in need of rigorous study to determine impact. Researchers also suggested a need to increase the research on the inner workings of virtual schools and the nature of interactions within the schools (Miron & Gulosino, 2016).

Categorization of Online Schools in the Literature

A taxonomy defining what is meant by various terms defining elements and organizations engaged in online schooling is important to set the appropriate context for research. Watson, Murin, Vashaw, Gemin, and Rapp, (2012) observed "many terms in the field—such as . . . virtual schools, and cyberschools—do not have commonly understood definitions" and that the understanding of terms is further affected by "a complicating factor . . . of states laws . . . that many source documents use terms without defining them" (p. 7). States have authorized and funded the creation of statewide virtual schools that operate to provide online courses to students. Barbour and Reeves (2009) wrote "the most accepted definition of a virtual school is

an entity, which has been approved or accredited by a state or governing body within the state, that offers secondary-level courses through distance delivery – most commonly using the Internet" (p. 412).

State-wide virtual schools are typically intended as a source of supplemental courses for students. State laws also authorize and fund schools providing full-time programs (Watson et al., 2012). These full-time schools are typically set up as charter schools (sometimes referred to as cyber charters or cyber schools) and are structured and funded in much the same way as brick-and-mortar charter schools. Often these cyber schools must abide by the same mandated charter school policies as their brick-and-mortar cousins (Hasler Waters, Barbour, & Menchaca, 2014). Cyber charters are referred to as full-time programs because students are admitted and enrolled and the cyber school will award their diploma when the student meets the requirements for graduation (Watson, Murin, Vashaw, Gemin, & Rapp, 2011). Gill et al. (2015) estimated that there were 200 online charter schools serving 200,000 students operating in the United States during the 2012-13 school year.

In addition to statewide virtual schools, state approved charters, and full-time online programs, school districts can also provide virtual schooling for both supplemental part-time enrollment and full-time programs. School districts may organize district-wide virtual schools, or organize individual virtual schools operating much like charters (Watson, Murin, Vashaw, Gemin & Rapp, 2013). Both state-sponsored and district-sponsored online schools were authorized by governmental authority and are often funded through the same channels as brick-and-mortar schools. Consequently, one of the major concerns expressed by skeptics of online education in general, and charter/virtual schools more specifically, is the impact of these schools and their funding on the funds available for traditional brick-and-mortar schools. These skeptics

assert that if virtual schooling saves money, then such schools should be apportioned funding at lower levels reflecting with those reduced costs. This would result in appropriations and expenditures for each enrollment in virtual schools being lower than that received by traditional brick-and-mortar schools (Molnar et al., 2015).

The taxonomy used above to describe schools is one that has evolved. Barbour and Reeves (2009) noted several differing definitions of virtual schools including those suggested by Clark (2001), Russell (2004), and Watson et al. (2014). A perusal of the annual *Keeping Pace* reports issued by Watson and his colleagues (see http://www.kpk12.com/) showed an evolution of the definition of online schools, programs, and courses. Other researchers have similarly used the terms virtual school, cyber school, supplemental courses and so on with slightly differing definitions of their meaning. An understanding of what is implied when a term is used is important to contextualize the research. For purposes of this study, the following definitions for different online schools and programs were chosen:

- Virtual school – offers courses intended to be used by students to supplement their brick-and-mortar courses (Hasler Waters, Barbour, et al., 2014; Hasler Waters, Menchaca, & Borup, 2014).

- Cyber School – A state funded online school where students attend full-time. (Hasler Waters, Barbour, et al., 2014; Hasler Waters, Menchaca, et al., 2014).

- Supplemental Courses – Courses "used to augment a student's educational program or campus class schedule" (Gemin et al., 2016, p. 5).

A discussion of virtual schooling, particularly full-time online schooling, must consider the involvement of Educational Management Organizations (EMOs). Many full-time online schools are operated by a for-profit EMO who is chartered to run the school by a district, "state

agencies, regional education services or a university" (Hasler Waters, Barbour, et al., 2014). A helpful taxonomy was proposed by Hasler Waters, Menchaca, et al. (2014). They provided the following definitions of terms associated with online schooling:

- Virtual schooling – Supplemental online learning

- Cyber schooling – Full-time online learning (no brick-and-mortar)

- Online charter schooling – full-time online learning with brick-and-mortar practices

- Blended learning – Primarily brick-and-mortar based with some online work (p. 306)

The significance of what is implied with the use of these terms will become more apparent as the different formats of online courses (community-centered, collaborative constructivist, and independent study) are discussed. The structures intentionally designed into the course have implications for the structure of a community of inquiry and engagement provided with the enrollment, particularly for full-time online students.

Supplemental online courses. A supplemental enrollment occurs when a student is taking an online course from a provider, usually a virtual school, to supplement the instruction received from the school they attend full-time. Online supplemental courses are offered by a variety of different schools and in a variety of formats. Those formats are often categorized by the method of instructional delivery and may be described as independent, asynchronous, or synchronous (Barbour & Reeves, 2009).

Independent method. The independent method was described as "similar . . . to a traditional correspondence course, only with the computer mediating the experience" (Barbour & Reeves, 2009, p. 405). Greenway and Vanourek (2006) indicated that students enrolled in the

independent method often require an adult (parent or other) to provide support, instruction, and motivation. In such settings the student "is essentially teaching him or herself or being taught by a parent, with only minimum involvement from a teacher" (Barbour & Reeves, 2009, p. 405). Gill et al. (2015) found that this method is significant in the teaching modalities emerging in cyber charter schools.

Asynchronous method. The asynchronous method is the normal pattern followed in virtual schools. In this method the student works offline in lessons and learning activities designed in the course and then submits assignments. The teacher then reviews the assignments and provides feedback through the course management system. The teacher is more involved in the course than in the independent method course but the student still experiences a "great deal of independence (and even isolation)" (Barbour & Reeves, 2009, p. 406).

Synchronous method. This method is similar to a face-to-face classroom with the teachers and students interacting in real time facilitated by technology such as chats and messaging, video and audio of lectures, and virtual whiteboards.

As these methods move from the independent study model towards the increased real-time interactions and communications in the fully synchronous model there are more restrictions on the independence of the learner (Anderson, 2008). The school and format chosen by the student typically depends upon their reasons for enrollment. Many of these reasons reflect the student's need for flexibility due to restrictions on the time available to participate in and/or complete the course. That flexibility was the likely driver of the enrollment decision. Their ability to succeed in the course often depended on the match of the method of instruction, their personal characteristics as a learner, and the time available.

Adolescent Student Characteristics and Credit Recovery

This section of the literature review discusses student and educator motivations for online schooling, particularly more independent format courses. The characteristics of adolescent students, especially those needing credit recovery are discussed with consideration of how the less-developed learning attributes of these students may require more support in an independent study setting.

Reasons Students Take Online Courses and Schools Offer Them

Students enroll in online courses for many different reasons. Ultimately, all of those reasons exist because the student needs to enroll in supplemental courses to meet graduation requirements. Patrick and Powell (2009) cited an evaluation of an online program in the State of Washington which reported that 33% of the students enrolled in online courses offered by the virtual school would not have graduated from high school without the online course option. In her review of then existing literature regarding K-12 online instruction, Rice (2006) found student motivations for taking online courses were "convenience, flexibility in scheduling, credit recovery, accelerated learning opportunities, conflict avoidance, and the ability to take courses not offered at a local school" (p. 434).

Credit recovery supplemental enrollments. The most common reason for enrollment in supplemental courses was credit recovery (Glass, 2009; Watson & Gemin, 2008). Credit recovery is defined for the purposes of this study as a repeat attempt in a course that the student previously completed and failed (Watson & Gemin, 2008). An iNACOL, (2013) study found that 62% of supplemental course enrollments were for credit recovery. Watson and Gemin, (2008) observed that online credit recovery programs had the goals of helping students meet graduation requirements and to graduate on time. Online programs can be used to help students

who have dropped out return to school. They further observed that "many educators are finding that online and blended learning are effective ways to reach students who fail one or more courses, become disengaged, or who seek an alternative to traditional education" (Watson & Gemin, 2008, p. 3).

Non-credit recovery supplemental enrollments. Researchers have cited non-credit recovery reasons that students take supplemental online courses. Reasons cited included:

- Desire to enroll in advanced placement or other courses not offered at the school that they regularly attend (Ahn, 2011; Erb, 2004; Hasler Waters, Menchaca, et al., 2014; Shea, Li, & Pickett, 2006).

- The need to receive credits missed due to already full class schedules because of interests and extracurricular activities outside of academics such as avocations, athletics, etc. or who have already entered their chosen profession (Ahn, 2011; Erb, 2004; Shea, Li, & Pickett, 2006; Watson et al., 2014; Woodworth et al., 2015).

- Homebound and other students needing to receive missed credits because health-related issues (Ahn, 2011; Staker, 2011; Wicks, 2010).

- Students with family responsibilities (caregiving, employment, etc.) which do not allow them to attend during regular school hours or throughout entire academic periods (Daum & Buschner, 2014; O'Hanlon, 2009; Shea, Li, & Pickett, 2006; Woodworth et al., 2015).

- Students needing credits due to concerns about safety and security (bullying, crime, etc.), or with negative experiences with academics, teachers, administration at the school they were attending (Erb, 2004).

- Students who are, or were homeschooled, and where parents are seeking to supplement their instruction (Borup, Graham, & Davies, 2013b; Farrell, 1999; Snyder, 1997; Watson et al., 2014).

These reasons for enrollment were classified as non-credit recovery enrollments for purposes of this study. The literature on adolescent student learning characteristics is now considered. Learning characteristics can impact the degree to which students can succeed in an online course, particularly a course employing asynchronous independent methods. Adolescent students seeking credit recovery may have learning characteristics and support needs that differ from those of adolescent students generally.

Characteristics of Adolescent Students

Students who succeed in online courses "tend . . . to be abstract learners who are intrinsically motivated and possess an internal locus of control" (Simonson, Schlosser, & Orellana, 2011, p. 139). Learners must autonomously "decide what to learn, how to learn, and how much to learn" and "exercise degrees of self-management" if they are to be successful in distance education (Moore, 2013, p. 68). Langenhorst (2012) found that successful students were self-directed, avoid distractions, have beliefs in their learning ability, and adapt to learning online. He goes on to note that students have to "become active, self-directed learners in an online environment" (p. 37) when a teacher is not physically present.

The ability to self-direct and work autonomously, as well as to manage and organize learning strategies (metacognition), is important to student learning in online settings. This is particularly true as the method of instruction moves on the scale from synchronous to independent. Barbour and Reeves (2009) observed that successful online learners exhibit learning attributes typically associated with adults "who have independent orientations towards

learning, who are highly motivated by intrinsic sources, and who have strong time management, literacy, and technology skills" (p. 413).

Differences Between Adult and Adolescent Learners

Children learn differently than adults and often need an adult to help them learn beyond their own capabilities (Hasler Waters & Leong, 2014). A child's orientation towards learning differs from adults (Barbour & Reeves, 2009) and children often have weaker internal locus of control, fewer meta-cognitive skills, and lower self-regulation skills (Borup et al., 2013a; Moore, 1993, 2007; Rice, 2006; Cavanaugh, 2007). Autonomy is important in online learning and most children are not ready to learn autonomously. Structure in the course is important to offset the lack of proximate access to an adult (teacher) who can provide guidance (Barbour & Reeves, 2009). Barbour (2009) indicated that adolescent students who succeed in online schooling were "highly motivated, self-directed, self-disciplined, independent learner[s] who could read and write well, and who also had a strong interest in or ability with technology" (p. 17).

In summary, adolescent students are likely to have lower levels of self-regulation and metacognition which inhibit their ability to work autonomously and remain engaged in the course. Those who succeed have learned to be motivated, self-directed, self-disciplined, confident in their abilities, and familiar with technology. They also benefit from an adult who can provide guidance and benefit from structure in the absence of a teacher to assist them. Those who are helped with structure and successful experience are more likely to persist and succeed in an online course.

Assessing Adolescent Learner Preparation for Online Learning

These characteristics of adolescent students must be factored when considering online courses. Such courses offer flexibility and provide possibilities for "tailor[ing] the pace of

instruction to the needs and desires of an individual student" (Gill et al., 2015, p. 9) in order to customize a student-centered experience. But not all students can succeed in online instruction. Research in policies and practices in online charter schools recommended evaluating online students for their probable chances to succeed in an online course (Gill et al., 2015; Woodworth et al., 2015). Woodworth and his colleagues suggested that "online schools may be the best option for some students . . . [but] may not be the best option for all students" (Woodworth et al., 2015, p. 2). Their research sought to identify characteristics of students likely to succeed in online schools.

Adolescent Credit-Recovery Student Characteristics

Credit recovery learners often share characteristics that make persistence and success in online courses more difficult. These characteristics were previously described for adolescent students in general but may be even less-developed in credit recovery students. These characteristics include poorly developed skills for self-regulation and meta-cognition, weaker motivation for engagement in courses, lower technological and technical literacy, and limited internet access (Oliver, Osborne, Patel, & Kleimann, 2009; Roblyer & Marshall, 2002; Watson & Gemin, 2008). Educators find online learning can be effective in reaching students who fail courses, become disengaged, or desire an alternate education. Using online courses to help credit recovery students stay in school and graduate on time will help states meet accountability goals (Watson & Gemin, 2008). These student characteristics are important to researchers and practitioners identifying and implementing effective course designs for credit recovery students.

The most common concern expressed in connection with online courses is the high attrition rate (Carr, 2000; Patterson & McFadden, 2009). Carr (2000) observed that persistence in online programs is often as much as 20% lower than that of traditional programs. Rice (2006)

wrote that the attrition rate could be as high as 50%. Stevens and Borup (2015) stated "this attrition phenomenon is currently under-researched, but some researchers have pointed to adolescent students' lack of self-regulation and metacognitive skills that make it difficult for them to fully and consistently engage in online learning environments" (p. 99).

Learning Community Impact on Adolescent Course Attrition

The expansion of online courses in K-12 education has prompted ongoing research to identify the most effective ways to support online learners. Much of this research in online education has focused on the same issues that were present in earlier forms of distance education including the isolation experienced by students which likely leads to the lack of student persistence to course completion, higher attrition rates, and lower learning achievement for those who complete.

Researchers have studied different pedagogical approaches and curriculum designs that enrich the online student experience, enhance the student's sense of connectedness, and appeared to motivate greater student engagement. These findings suggested course designs that integrate collaborative constructivist learning frameworks and present authentic problems to a community of learners are important to successful online instruction (Boling, Hough, Krinsky, Saleem, & Stevens, 2012; Garrison & Akyol, 2013; Gunawardena, 1995; Rhode, 2008; Rovai, 2002). Research demonstrated that collaborative communities encourage persistence, student engagement, and support the co-construction of meaning within the community, resulting in better learning outcomes (Gunawardena, Lowe, Anderson, 1998; Rovai, 2002).

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Independent Study Courses

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Researchers agree that independent study format courses are not as beneficial to student learning as other community-centered instructional approaches. International associations,

standards-setting bodies, and accreditors have promulgated standards that require interactions in order to meet goals or to be accepted by association members. Perhaps most visible in the K-12 environment is the NCAA policy on accepting independent study courses for core curriculum requirements for collegiate athletic eligibility (Brown, 2010; Lederman, 2010; NCAA, n.d.). Accreditation organizations have also established interactions consistent with a community structure as a requirement for quality courses and schools (AdvancED, 2013a, 2013b).

Community-structured courses may improve persistence and learning, but they often include restrictions on time, location, pacing, and course duration which may conflict with the need students are addressing when enrolling in an online course (Anderson, 2008). Adolescent students take online courses to meet high school graduation requirements. Students often choose online distance learning because it is the only option available to them given time, location, or other access constraints. Independent Study "offer[s] learners varying degrees of freedom in the self-determination of goals and activities, and in starting, stopping and pacing individualized learning programs which are carried on to the greatest extent possible at the convenience of the learners" (Wedemeyer 1971, p. 3, as cited in Diehl, 2011, p. 39).

Many students choose convenience as a way to complete their education, even when more "effective" interdependent models of courses are available to them. Friesen and Kuskis (2013) wrote that "despite the many pedagogical benefits of interaction among students, some students have been shown to purposely select distance education formats that support independent study, free from the temporal restraints and also interpersonal contact associated with collaborative forms of learning" (p. 357).

Independent Study Flexibility

Students choose independent study courses in order to access flexibility in time, location, pacing, and duration (Anderson, 2008). The major reason for student enrollment in these flexible format courses was not the physical access to the course but was instead the opportunity "to move through a course of studies at a time and pace of their choice" (Anderson, 2008, p. 52). In addition to preferences for self-pacing, students often face time constraints that limit their options in completing the course to an independent study version if they are to meet timely graduation requirements. Those time constraints include their inability to attend class during regular school hours or the need to complete the course sooner than can be accomplished in a traditional academic period (term/semester).

Motivations to Seek and Provide Independent Study Curses

Earlier in this literature review we noted the concern of students, family, and society regarding timely high school graduation. The specific concerns are re-stated here as they are a driver of the demand for independent study format courses.

Student and family concerns for high school graduation. Research shows that students who fall behind classmates become at risk and may drop out of high school altogether (Watson & Gemin, 2008). Students and families understand the personal costs of not graduating from high school. Research has identified the lifelong costs of the failure to graduate from high school. Societal costs associated with failure to achieve high school graduation include additional expenses for incarceration, entitlement, and other welfare costs (Northeastern University, 2009; Sum, Khatiwada, McLaughlin, & Palma, 2009; Tyler & Lofstrom, 2009).

School and educator accountability. Educators and administrators face increasing pressures to document progress towards, and achievement of, timely high school graduation in

order to comply with new accountability measures under emerging educational reform movements (Picciano et al., 2012; Swenson, 2008; Trotter, 2008). These reform initiatives may lead to increased scrutiny by government agencies and result in changes in school governance and funding if accountability goals are not met.

Online course graduation requirements. Several states have recently changed high school graduation requirements to include the completion of at least one online high school course. The definition of online courses varies but the motivations appear to be the same for these online course requirements. Funding efficiencies are a major motivation for the requirement but policies also acknowledge that students need to develop the skills to learn online in order to become lifelong learners. Researchers have expressed the likelihood that additional states will pursue adopting online learning requirements for high school graduation (Barbour, 2009; Watson et al., 2014; Watson, Murin & Pape, 2014).

Limits on students' available time for other supplemental course options. States and local educational agencies respond to the need for supplemental courses by providing expanded learning opportunities "such as after-school and summer programs, internships and independent study" (NCSL, 2012, Introduction). Students may have time constraints that will not allow participation in after-school, summer, or internship programs to receive the supplemental credit. Independent study options could be the only recourse for these time-constrained students.

Capacity limits of family support for full-time online schooling. Full-time online schooling faces limits in capacity, both structural support limits within the school, and capacity for family support in the home. It is estimated that no more than 10% of the K-12 student population will be able to participate in such cyber school and home school matriculation (Hasler Waters, Barbour, et al., 2014, Horn & Staker, 2011; Watson et al., 2012).

Growing Demand for Supplemental Independent Study Courses

The convergence of the needs to provide online opportunities, and the capacity limitations of schools and families engaged in full-time online schooling, means that the demand for supplemental courses will continue to grow. The growing demand for online courses is puzzling to some researchers. Miron and Gulosino, (2016) noted that, even though the evidence for poor academic outcomes in online learning "is becoming stronger and more convincingly negative, an increasing number of parents are opting for full or part-time online options" (p. 7). Obviously, there are value judgments made by students, their parents, educators, and policymakers where they see the advantages of online courses outweighing these negative outcomes. The costs to individuals and society, educational accountability standards, and the desire to ensure timely graduation appear to be significant motivators to continue to seek and provide flexible online learning alternatives for students.

The student need or preference for flexibility results in enrollment in independent study format courses which do not require interactions with communities organized by the course provider, even though such community-centered instruction was deemed most effective in the literature (Freisen & Kuskis, 2013). Anderson's (2008) observation that there is a need for avoiding time and place boundedness while offering appropriate substitution of independent or community learning is an appropriate response to this demand. This suggests that independent study courses will be demanded and that instructional designs for these courses should consider balancing the elements of interactive courses supporting deeper learning with independent learning practices (Daniel & Marquis, 1988). This research was intended to identify interactions that were already occurring in independent study situations and associate such interactions (if any) with community-centered frameworks proposed for adolescent learners.

Collaborative Online Instruction

Researcher have recognized that one way to address the learning characteristics that make distance learning difficult is to design instruction that harnesses the benefits of interaction, collaboration, and communities of learners.

Online Interaction/Community Learning Frameworks

Moore (1989) proposed the presence of three primary forms of learning interactions: learner-content, learner-instructor, and learner-learner. Hillman, Willis, and Gunawardena (1994) described learner-interface interactions not as a fourth mode of interaction but as "a mediating element in all interaction" (p. 34). Friesen and Kuskis (2013) wrote that learner-interface interaction should be viewed "as a component of the other forms of interaction" (p. 352). Burnham and Walden (1997) contributed the concept of learner-environment interaction as another form of interaction that could be added to those described in Moore's framework. From their research in a charter cyber high school Borup et al. (2014) added two additional forms of interaction important to adolescent learners engaged in online courses: learner-parent interaction and parent-instructor interaction.

The Community of Inquiry (CoI) framework (Garrison et al., 2000) suggested that online learning is more effective when three forms of "presence" are integrated in the learning activity. The three forms of presence are teaching, social, and cognitive. Cognitive presence is the major factor in student learning. Cognitive presence is encouraged when a student is socially present in a course. A student's social presence is promoted when the teacher and peers are also socially present in the course. Teaching presence is essential to the instruction provided and encourages the other forms of presence by engaging the student(s) in meaningful educational interactions.

Muirhead (2009) wrote that it is difficult for students to collaborate when students enrolled in the course are progressing at different paces. He also observed that teachers would not be able to effectively facilitate interactions between groups of students in independent study courses when students preferred to work alone. That independence is one of the major reasons that Anderson (2008) reported students choose an independent study version of a course. The difficulty structuring effective peer interactions in independent study courses, and the student desire to be able to work independently, make it difficult to design a community that would fulfill the promise of community interactions and engagement while also meeting the student's need for flexibility.

Research Settings and Community Structures

An interesting nuance to research in K-12 online education is the structure of the school settings (providers) and the impact on a community-formatted pedagogical approach. Depending on the nature of the school, and the purpose of the course (regular or supplemental), students may have different levels of access to a school-provided community with whom they can interact. Some schools provide access to a rich, highly-structured community for supporting interactions. Others schools provide little or no community for interactions. The student's desire for interactions, and the time constraints that they confront, will inform their decision about the nature of the school in which they will enroll, and the nature of the interactions in which they are willing to participate as they complete their course.

Previously in this literature review the taxonomy of online schools and the variables associated with each of the different schooling options was discussed. The literature review will now consider the variables associated with the school and course type and then discuss a theory of adolescent learning that is the basis for the theory proposed in the study.

Cyber Schools (Online Charters)

Researchers observed that cyber schools align many of their instruction, policies and procedures, with brick-and-mortar charter schools (Hasler Waters, 2012) and support more collaborative learning models. School policies specify expectations for student interactions and engagement and define support expectations for parents (Borup et al., 2013a; Borup et al., 2013b; Borup, Graham, & Drysdale, 2013; Hasler Waters, 2012; Hasler Waters, Barbour et al., 2014). Students choosing full-time enrollment in most cyber schools accept these more restrictive and interdependent activities, and the resultant limits on flexibility, in exchange for the flexibility in time and location, access to the school for their full load of courses, and the support community the school provides.

Cyber school courses allow flexibility in time and location of instruction but often restrict flexibility in pacing and duration, typically limited to specified academic periods (terms and semesters). Woodworth et al. (2015) ask if online schools are "the solution for many educational challenges faced by families today or are they a niche option appropriate for only a small group of students with a specific set of characteristics?" (p. 3) Cyber schools appear to be responding to the family needs by including more opportunities for supplemental course matriculation and more independent study models. Researchers recently found that cyber schools are relying heavily on self-paced independent study courses for their students. Gill et al. (2015) reported that "three-quarters (76 percent) of online charter schools include courses that are self-paced rather than tied to the calendar" and that "one-third of online charter schools rely exclusively on self-paced courses" (p. 9). They go on to observe that these self-paced courses mean that "the instructional method used most frequently in online charter schools is individualized, student driven independent study" (p. 9).

Such observation run counter to the earlier research in cyber schools that were more highly-structured and interactive. Gill and his colleagues found that "students in a typical online charter school have less synchronous instructional time in a week than students in a brick and mortar school have in one day" (Gill et al., 2015, p. 10). This dependence on self-paced courses using independent study models bolsters the need for proximate community help for online students.

Virtual Schools (Supplemental)

Virtual schools may offer a full-time option for students, but are primarily used by students for supplemental credits. Most often virtual schools do not grant diplomas but provide opportunities to earn credit that students then transfer to the school they attend full-time (Watson et al., 2014). Supplemental courses offered by virtual schools are structured to allow for interdependent course experiences where interactions are made available, typically asynchronously, but substantial interactions are not typically required. Many supplemental courses allow an independent study option as well. Supplemental courses, particularly those structured for independent study, allow flexibility in time, location, pacing, and duration of instruction within limitation (some offering up to a year to complete the course).

The Adolescent Community of Engagement (ACE) Framework

The development of theoretical frameworks in the design and teaching of online courses has been expanding over the past two decades, mostly in the realm of courses in higher education. Only recently has there been work done to advance frameworks that consider the application of these frameworks to K-12 schooling, particularly in high school. We now consider one such framework, the adolescent community of engagement (ACE) proposed by Borup et al. (2014).

Gill et al. (2015) asked principals of online charter schools about the greatest challenges that they confront leading their schools. Student engagement was identified three times more often than any other challenge. The researchers observed that this "challenge is inherent to online schooling because the school has no way to ensure that students are in their seats and focused on their coursework" (Gill et al., 2015, p. 21). The principals identified several tools that they use to monitor student engagement including tracking completion of assignments, logged activity in the LMS, and participation in synchronous activities. Designs that encourage engagement by students are beneficial to student learning and support the management efforts of leaders attempting support student success.

The adolescent community of engagement (ACE) was framed to "explicitly address the adolescent online environment and learner" (Borup et al, 2014, p. 110). The fundamental assertion of the ACE framework, confirmed by research, is that student engagement is increased as teacher, parent, and peer engagement is increased. The framework provides a solution to the engagement problem identified Gill and his colleagues (Gill et al., 2015).

The ACE framework builds on earlier learning frameworks derived from research in distance learning in higher education. Among the predecessor frameworks upon which the ACE framework is built are learning interactions (Anderson, 2004; Burnham & Walden, 1997; Moore, 1989), transactional distance (Moore, 1980), the Community of Inquiry (CoI) (Garrison et al., 2000), and parental involvement (Epstein, 1987; Epstein & Dauber, 1991; Hoover, Dempsey & Sandler, 1995, 2005; Liu, Black, Algina, Cavanaugh, & Dawson, 2010).

The frameworks which served as a foundation for the ACE framework were derived from research of online courses in higher education. Borup et al. (2014) considered the elements and principles of these collaborative-constructivist frameworks to investigate student learning at a

fully online charter high school. The school was structured as a cyber school where students [were] engaged in full-time online instruction" (Barbour, 2013, p. 575). Borup and his colleagues conducted a series of studies which examined the experience of teachers, students, and parents involved in the charter school (Borup et al., 2013a, 2013b; Borup, Graham, & Drysdale, 2013). The investigations examined student learning achievement, the presence and effect of different forms interaction, and the different functions and activities performed by the actors in the learning community. Their investigations identified elements of the interaction and community frameworks operating in the school and examined their impacts on student engagement.

Prior research highlighted differences between adult learners and adolescent learners that prove problematic in adolescent distance education (Barbour & Reeves, 2009; Cavanaugh, 2007; Hasler Waters & Leong, 2014; Moore, 1993, 2007; Rice, 2006). The development of the ACE framework contemplated the need for consideration of the characteristics of adolescent learners when applying these online frameworks to K-12 students. Borup and his colleagues considered the implications of research on K-12 learning in both face-to-face classrooms and online instruction when proposing their framework for adolescent online learning.

The target of the ACE framework is effective student engagement. Student engagement must be affective, behavioral and cognitive in order to be effective. The hypothesis steering the ACE framework is that greater engagement by parents, teachers, and peers will positively correlate to student engagement. Figure A.1, reproduced from Borup et al. (2014), illustrates the interaction between the engagement of roles external to the student and the level of student engagement.
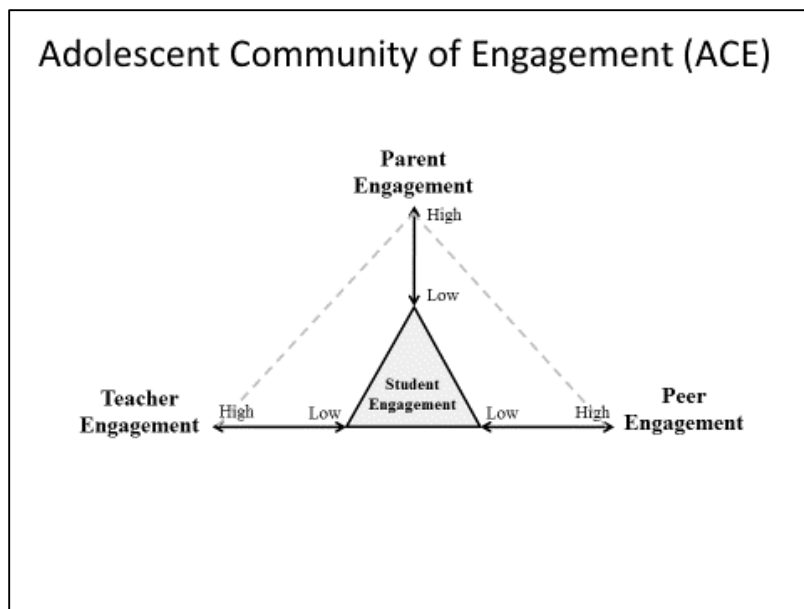
Figure A.1. ACE framework from Borup et al. (2014, p. 111)

The ACE framework serves as a lens through which researchers can explore the interactions operating in a learning community supporting adolescent students. There is a lack of research on the experience of independent study students. With the growing demand from students and the increasing dependence on such courses by online charter schools an understanding of the independent study experience is needed.

Using the elements of the ACE framework, we have devised a theory applying its elements to independent study settings. We hypothesize that students enrolling in independent study courses create and use an engagement community we have called the *proximate community of engagement* (PCE) to support their course activities. We used the community roles, member functions, and different engagement activities described in the ACE framework as the lens through which to identify and examine the local resources a student may access supporting their independent study enrollments for the same interactions.

We now consider the ACE framework in this literature review. In the following sections, we will discuss the unique functions and interactions associated with each role in the ACE

framework. Although this article focuses on a community of engagement in an independent study context, research examining independent study courses is especially limited; therefore, research examining community roles and interactions from other learning models and different learning contexts is included in this review.

There are critical roles and functions fulfilled by the different actors with the learning community described in the ACE framework which are expressed through interactions in different activities. The framework proposes that greater engagement by the various actors in the community will result in greater engagement by the student (Borup et al., 2014). The critical roles active in the community are student, teacher, peer, and parent. Each role acting in the ACE framework performs functions as they engage in activities within the community. The different roles, functions, and activities identified by Borup and his colleagues in the ACE framework and other literature are now described. While students act on their own in their learner role, they also act as a peer learner to other students within the community. For purposes of this study, discussion of the student role is limited to those activities associated with that of a peer learner as described in the ACE framework.

Table A.1 provides a summary level view of the ACE framework roles and the functions fulfilled by each role within the community. The table illustrates a commonality of function between the three roles and illuminates the overlaps, particularly of the teacher and parent roles. We will now discuss the literature associated with each of the roles in the ACE framework.

Table A.1

Overlapping Roles and Functions in ACE Framework

Function	Task	ACE Role		
		Teacher	Parent	Peer
Facilitating (monitoring & motivating)				
	Nurturing	X	X	
	Monitoring	X	X	
	Motivating	X	X	X
	Facilitating discourse & communication	X		
	Volunteering		X	
Organizing				
	Organizing materials and environment	X	X	
	Designing materials	X		
	Organizing timeliness and schedule	X	X	
Instructing				
	Providing instruction	X	X	X
	Offering assignment help	X	X	X
	Collaborating			X

Teacher Role

The first role from the ACE framework we will consider is the teacher role. Researchers have explored teacher roles in education in different teaching contexts (face-to-face, online, or blended) and considered how roles may vary based on the context and the medium of delivery. The research for this dissertation examined student enrollments in supplemental online courses using the independent study method. One of the major characteristics of and independent study course is that they are student-paced (or led) and that the student bears the major responsibility for the completion of the course. Shaikh and Khoja (2012) observed that the emergence of constructivist learning environments, supported by rapidly developing technologies, is leading to

learner-controlled education that is not institution bound. This rapidly changing environment means that teachers are required to acquire new competencies at a faster pace and to "identify new roles to be successful" (Shaikh & Khoja, 2012, p. 24).

Taxonomies of Teacher Role in Education

The review of the literature identified important functions and activities served by the teacher role and the characteristics and best practices of successful online teachers. Several researchers examined the teacher role in online courses and proposed taxonomies labeling and defining the different functions and activities associated with teaching presence and engagement. The research of the evolution of teacher role taxonomies in online education is now considered as defined and discussed in the ACE framework (Borup et al., 2014).

Teacher as teacher, designer, and local facilitator. Davis and Niederhauser (2006) wrote that educational teamwork is common in K-12 schools and that teamwork "becomes even more essential for high quality VS [Virtual Schools]" (p. 2). The authors identified three core teacher roles in virtual schooling: teacher, designer, and local facilitator. They also discussed an extended team involved in a successful virtual school who supported the core teacher roles. That team includes administrators, instructional technology coordinators and the students' parents or guardians. They wrote that these different roles often overlap one another, that different members of the team may take on multiple roles, and that some roles may actually between two or more members of the team.

Added teacher responsibilities for local relationships with students. Research by Harms, Niederhauser, Davis, Roblyer, and Gilbert (2006) established that teachers have critical communication responsibilities in virtual schooling which they must provide for their students to be effective. They posited that teachers, designers, and facilitators need to understand the unique

communication demands existing within virtual schooling and how those communication demands differ from the communications in the traditional classroom. They described eight more specific teacher roles required in virtual schooling, adding further detail to the three core roles (teacher, designer, local facilitator) identified by Davis and Niederhauser (2006) and expanding the taxonomy to be more descriptive.

The research on teacher roles in education was expanded further by Ferdig, Cavanaugh, DiPietro, Black, and Dawson (2009) who performed a study of then-published research and teaching standards in online courses. They studied 13 different documents produced by practitioner associations, governmental and standards setting bodies, consortiums, and virtual schools which reported best practices by teachers in online education. These researchers added further descriptive detail to the function within the teacher role of providing instruction and identified other functions and responsibilities that teachers may be required to fulfill "including counselor, mentor, facilitator, instructional designer, site coordinator, and administrator" (p. 486).

These authors added detail to the taxonomy proposed by Harms et al. (2006) in support of each role, function, and activity identified for best practices in online teaching. These roles are associated with best practices for teaching in online courses but the literature does not restrict the staffing of the roles to the teacher of the course alone. Others may, and often do, act in the teacher's role in online courses.

Consolidation of Teacher Role Taxonomies

In their study of teachers in a virtual school Hawkins, Graham, and Barber (2012) consolidated the more specific roles in the taxonomies provided by Harms et al. (2006) and Ferdig et al. (2009) under the three core roles identified by Davis and Niederhauser (2006).

Their contribution focuses best practices within the three core roles and provides categorization within each core function at a lower component level, promoting operationalization of the teacher roles and reducing the complexity of the taxonomy. The added clarification of the relationships of the functions to each of the three core roles supports research in online course design and support practices.

Teachers in a mentoring and facilitating role. Drysdale, Graham and Borup (2014) identified significant mentoring or facilitating roles served by teachers in their study of a cyber school. The school referred to the activities of teachers acting in these roles as "shepherds" and the program as "shepherding." Three different functions of shepherding were recognized at the cyber school: building caring relationships, facilitating content interaction, and providing communication links. Within these different shepherding roles, they identify different functions or characteristics that the participants in their study (teachers at the cyber school) considered important.

The stated goal of the ACE framework is increasing student engagement (Borup et al., 2014). The ACE framework suggests that increased engagement by teachers will have a corresponding positive effect on student engagement. One of the benefits noted by Drysdale et al. (2014) is the positive impact that this mentoring approach had on the teachers. They identified positive impacts on job satisfaction, sense of responsibility, motivation, and their mental peace. Mentoring as described in the shepherding program in this cyber school may provide incentive for increased engagement by the teacher, and consequently by the student.

Teachers in blended learning courses. Emerging research on blended learning suggests an impacts on teacher roles as they combine online and face-to-face instruction. Chan, Wilkinson, Graham, Borup and Skeen (2011) explained the activities within the role of a teacher

in blended learning to include acting as a motivator, a facilitator of understanding, a cognitive coach who knows students' needs and abilities, a mentor who adapts instruction to individual students, a master who assesses students' performance beyond standardized tests, and a guide who assists students in applying knowledge to real-world situations (p. 1090). They proposed guiding principles that teachers should consider in promoting successful blended learning. Among the principles was a recognition that there are tasks that teachers can perform that computers cannot.

The list of these teacher tasks included: motivating students, building relationships, developing passion for a discipline, providing emotional support, solving intricate human or systemic problems, establishing cognitive scaffolds, customizing instructions, conducting performance assessments, teaching life lessons, organizing real-world applications, facilitating discussions, enforcing accountability, and so on. These are tasks on which teachers should focus as they shift their roles from lecturers to facilitators. Most of these tasks can be done online, but occasional face-to-face interaction especially in the beginning of a course and especially with the lower grades adds valuable human interactions that are critical to student learning (Chan et al., pp. 1094-1095).

Table A.2 summarizes the different taxonomies described by the various research efforts cited above. The table attempts to organize these taxonomies, aligning similar roles. We will describe how the roles and functions derived from these taxonomies were included and described in the ACE framework. We will then explain how we operationalized these different roles and functions included in the ACE framework when we prepared the data collection instruments used in this study.

Table A.2

Taxonomies for Teacher Roles in K-12 Online/Blended Education

Role #	Davis and Niederhauser (2006)	Harms et al. (2006)	Ferdig et al. (2009)[1]	Hawkins et al. (2012)	Drysdale et al. (2014)	Chan et al. (2011)[2]
1	Teacher	Teacher	Teacher Personal criteria (9) Communication (3) Programmatic (3) Pedagogy (7) Classroom management (7) Course management (4)	Teacher Course facilitator	[Teacher] Facilitating content interaction	[Teacher] Facilitator of understanding Cognitive coach Assess student performance Guide Solve problems Cognitive scaffolds Performance assessments
2	Designer	Instructional designer	Instructional designer (5)	Instructional designer		[Instructional designer] Adapts instruction Customize instruction Organize real applications
3	Local facilitator	Course facilitator	Site [course] facilitator (3)	[Facilitator] Local key contact Mentor Technology coordinator Guidance counselor Administrator	[Facilitator] Providing communication links	[Facilitator] Motivator Facilitate discussions Enforce accountability
4		Local key contact	Local key contact (5)			
5		Administrator	Administrator (5)			
6		Mentor	Mentor (2)		[Mentor] Building caring relationships	[Mentor] Knows students Builds relationships Developing passion Emotional support Teach life lessons
7		Technology coordinator	Technology coordinator (3)			
8		Guidance counselor	Guidance counselor (2)			

[1] The bulleted list includes the specific functions listed in article. The number in the parentheses following the role/function is the # of specific activities listed for each role or function.
[2] The list is specific activities associated with the various roles labeled in the [brackets]

Elements of the Teacher Role in the ACE Framework

The literature suggests a wide variety of functions, tasks, and activities performed by the teacher in online distance learning. These functions, tasks, and activities are the elements of the teacher role in any framework. These are labeled differently in each taxonomy with varying degrees of specificity. The purpose of this study required identification of specific functions, tasks and activities present in the teacher role drawn from the literature and documented in the ACE framework. Table A.3 outlines the different functions, tasks, and activities associated with the teacher role in the ACE framework and includes the literature cited by Borup et al. (2014) describing that function and activity in the ACE framework.

Borup et al. (2014) observed "that the elements of teacher engagement can be performed by one or multiple individuals depending on the context and the instruction model used" (p. 113). These features of teacher engagement are fulfilled by the teacher, another individual, or multiple people, acting in the teacher role. This suggests the possibility that resources proximate to a student, other than the teacher, can act as "teacher proxies" in the teacher role and support student engagement and successful completion of the online course. In our investigation of the existence of a proximate community of engagement, we would seek to find evidence of local resources acting as proxy teachers in supporting the student as he or she completes the course.

The data collection plan for this dissertation used the detail of the three functions, ten tasks, and 32 activities listed in Table A.3 as the standard by which the functions of a proxy teacher in proximate community could be identified.

Table A.3

Teacher Role Elements in the Adolescent Community of Engagement

Function	Task	Code	Activity	Reference
Facilitating interaction	Nurturing student relationship	T1	Provide social and emotional support	Picciano, Seaman, and Allen (2010)
		T2	Nurture caring relationships	Borup, Graham, and Drysdale (2013), Velasquez, Graham, and Osguthorpe (2013)
	Nurturing safe environment	T3	Express specific behavior requirements	Kanuka (2008)
		T4	Explain and enforce cyber-bullying policies	Kanuka (2008)
	Monitoring and motivating student engagement	T5	Monitor students – Use LMS analytics to assess engagement	Zhang and Almeroth, (2010)
		T6	Monitor students – Provide parents access to child's data	Cavanaugh, (2009)
	Motivate student engagement	T7	Positive reinforcement	Bandura, (1977); Cavanugh et al. (2004); Murphy and Rodriguez-Manzanares, (2009)
		T8	Verbal persuasion	Bandura, (1977); Cavanugh et al. (2004); Murphy and Rodriguez-Manzanares, (2009)
		T9	Provide immediate feedback and praise	DiPietro, Ferdig, Black, and Preston, (2008)
		T10	Create formal learning contract with rewards and reprimands	Borup et al. (2014)
	Facilitating student discourse	T11	Learner-instructor interactions - check in with emails	Borup et al. (2013a); Borup, Graham, and Velasquez, (2013); Archambault et al. (2010)
		T12	Learner-learner interactions - provide socialization opportunity	Sorensen, (2012)
		T13	Facilitate parent-instructor interactions	Black, (2009); Borup et al. (2013b); Epstein et al. (1997); iNACOL, (2011)
		T14	Learner-parent interactions - Copy parents on emails	Borup et al. (2013)
		T15	Learner-parent interactions - Direct invitations to parents to be involved	Hoover-Dempsey and Sandler, (1995)

Table A.3, Continued

Function	Task	Code	Activity	Reference
Organizing and designing course materials	Organize, design, & modify courses & materials	T16	Organize lessons in short segments	Cavanaugh et al. (2004)
		T17	Design to developmental stage of learners	Cavanaugh et al. (2004)
		T18	Make modifications (tweaks) to respond to learner needs	Borup et al.,(2013); Hawkins, Barbour, and Graham, (2012)
		T19	Make modifications for IEP's of needed	Carnahan and Fulton, (2013); Muller, (2010); Repetto et al. (2010); Spitler, Repetto, and Cavanaugh, (2013)
	Organizing course timeliness	T20	Set concrete deadlines that are well documented and communicated	Weiner, (2003)
Instructing students	Provide intellectual and scholarly leadership	T21	Ask questions	Anderson et al. (2001)
		T22	Draw attention to certain comments	Anderson et al. (2001)
		T23	Summarize student discussions	Anderson et al. (2001)
		T24	Provide additional resources	Anderson et al. (2001)
		T25	Provide tutoring	Kennedy et al. (2013)
		T26	Provide constructive feedback	Kennedy et al. (2013)
	Assignment support	T27	Provide timely assignment feedback	Johnston and Barbour, (2013)
	General student instruction support	T28	Instruct students in study skills & self-assessment	iNACOL (2011)
		T29	Train students on using e-learning materials	Boulton (2008)
		T30	Train students on developing independent learning skills	Boulton (2008)
		T31	Provide assistance with technological problems	Weiner, (2003)
		T32	Provide regular office hours to students	Borup et al. (2013); Borup, Graham, and Velasquez, (2013)

Data Collection Plan for the Teacher Role

The data collection plan for this study required an analysis of these different teacher role activities in the ACE framework to operationalize those expected to be apparent in an independent study course experience and then prepare items that could identify and explicate those activities. Much of the research in K-12 community-centered learning was conducted in full-time cyber schools (Borup et al., 2013a, 2013b, 2014; Drysdale et al., 2014; Hasler Waters, 2012; Curtis, 2013). There is little research of learning communities structured to support adolescent learners enrolled supplemental independent study courses. Independent study courses are designed for learner convenience where "the learner takes responsibility for progress" (Rafoth, 2011, p. 1110) and where an autonomous learner "will not give up overall control of the learning processes" (Moore, 1972, p. 81).

Many of the teacher functions, tasks and activities are designed into the course materials when the course is intended to be offered in the independent study format. That aligns with Moore's (1989) observation that the interaction between the learner and the content is the foundation of learning at a distance. Some of the tasks and activities suggested for the teacher role in the ACE framework are fulfilled through the course design, many times through automated response and feedback processes, rather than being mediated by the teacher or an onsite facilitator. Consequently, there are some functions, tasks, and activities suggested in the ACE framework community that would not be found, or would be difficult to identify and assess in an independent study course.

We analyzed each of the 32 activities described in Table A.3 for the teacher role in the ACE Framework. We assessed whether each was likely to be designed into the content, or likely to be facilitated by a human. Those tasks and activities associated with the teacher role that were

not likely to be included in the designed course materials would need to be accessed by the student through local resources if the PCE exists and is used.

For example, one function and its associated tasks that do not seem to translate well to the independent study course is nurturing student relationships, which includes providing social and emotional support and nurturing. The activity of providing social and emotional support for the student within a nurturing relationship often requires physical presence. The definition of independent study highlights the separation of the student from the teacher and other learners (Wedemeyer, 1971). This nurturing presence is an important responsibility of the teacher in the ACE community and needs to be replicated in an effective PCE.

Borup, Graham, and Velasquez, (2013) observed:

Within the online learning context, teachers and students are separated by space and often time, requiring their dialogue to be mediated by technology. Although online teachers and students cannot be present physically they can establish online social presence - a prerequisite to establishing caring relationships online (p. 187).

While these relationships can be created and nurturing provided online there is great difficulty when the learner is engaged in a truly independent learning situation. Picciano and his colleagues considered this activity to be provided by public schools as "socializing agents that nurture and provide social and emotional support to young people helping them to mature and contribute to society" (Picciano et al., 2010, p. 29). They found that social and emotional support is a partner function with nurturing and are a responsibility of public schools. They further observed that "there is skepticism, perhaps justifiable so, as to how well online learning can perform both functions" (Picciano et al., 2010, p. 29).

The design of a traditional independent study is structured to eliminate the need to provide human resources beyond the materials and technology designed into the course. The student may identify a local resource to provide organization and instruction activities beyond the course materials and technology, but the intent of the provider is to incorporate the organizing and instructing interactions as learner-content interaction in the course itself (Moore, 1989). An example of a local resource the student might call upon for this support might be a teacher with subject expertise in the student's family, in a local school, or in the neighborhood who could provide instructional support, immediate feedback, or local facilitation of learning interactions with other students.

This suggests that the activities of nurturing student relationships and providing social and emotional support are critical to student engagement in online courses within the ACE framework but not likely to be provided through online resources. Therefore, the data collection plan needed to assess whether such activities included in the ACE framework community would be likely exist in the PCE and if it would be observable and visible as a course-specific interaction.

The lead researcher analyzed the 32 different teacher activities to determine the feasibility of identifying, operationalizing, and assessing these activities in a non-cyber school setting. Many of these activities associate with the ACE framework were identified in research conducted in cyber schools and where these activities may be present and visible. Some would be hard to duplicate in a non-cyber school setting. Activities that were difficult to identify, operationalize, and assess were excluded from the research instruments.

Table A.4 lists each function and activity identified in the literature for the teacher role within the ACE Framework (see Table A.3) and indicates whether we included that specific

activity in the data collection instruments which we used. The first four columns of the table

show the function (column 1), specific task performed by that function (column 2), a code used

by the researchers to identify a specific activity fulfilling that task (column 3), and the specific

activity (column 4). The "Included" column shows whether the researcher selected that specific

activity for inclusion in the data collection instruments (surveys and semi-structured interview

script). A "No" indicates that the researcher considered that activity not applicable in an

independent study version of the course, or considered that activity too unlikely to be filled, too

difficult to operationalize, or too hard to accurately assess in the independent study version. If

the activity was selected for inclusion in the survey the last column indicates how it was

assessed. The surveys and interview questions are included in Appendix B through D at the end

of this dissertation.

Table A.4

Teacher Role Elements Used in Data Collection Plan

Function	Task	Code	Activity	Included?	Survey item #(s)	Reason or how assessed
Facilitating interaction	Nurturing student relationship	T1	Provide social and emotional support	Yes	9,10,11,14	Someone to encourage student to participate in course and help them succeed.
		T2	Nurture caring relationships	Yes	11,14	Someone showing personal interest in the student and concern for their success.
	Nurturing safe environment	T3	Express specific behavior requirements	Yes	10	Someone reviewing policies at the start of the course
		T4	Explain and enforce cyber-bullying policies	Yes	10	Someone reviewing policies at the start of the course
	Monitoring and motivating student engagement	T5	Monitor student's data to assess engagement	Yes	14	Someone who will review the students online activity and ask student about progress
		T6	Provide parents access to child's data	No	NA	Not included – assumed in course design and LMS and not critical community interaction
	Motivate student engagement	T7	Positive reinforcement	Yes	19	Someone to give encouragement and praise the course-taking behavior to encourage engagement.
		T8	Verbal persuasion	Yes	20	Someone to give encouragement and express confidence when the student feels incapable of succeeding
		T9	Provide immediate feedback . . .	No	NA	In course design - grades and comments received from provider.
			. . . and praise	Yes	21	Someone to praise the work that the student completes and recognizes positive grades received
		T10	Create formal learning contract with rewards and reprimands	No	NA	In course design and process (if needed).
	Facilitating student discourse	T11	Learner-instructor interactions (emails)	No	NA	In course design and process.
		T12	Learner-learner interactions (socialization opportunities)	Yes	24	Someone to suggest and arrange contacts with other local students studying same topic.
		T13	Facilitate learner-parent interactions	No	NA	In course design
		T14	Learner-parent interactions (copy on emails)	No	NA	In course design and process.
		T15	Learner-parent interactions – invite parents to be involved	No	NA	In course design

Table A.4, Continued

Function	Task	Code	Activity	Included?	Survey item #(s)	Reason or how assessed
Organizing and designing course materials	Organize, design, & modify courses & materials	T16	Organize lessons in short segments	No	NA	In course design
		T17	Design to development stage of learners	No	NA	In course design
		T18	Make modifications (tweaks) to respond to learner needs	No	NA	In course design (enhancements)
		T19	Make modifications for IEPs if needed	No	NA	Assumed not applicable in independent learning situation studied.
	Organize course timeliness	T20	Set concrete deadlines	Yes	13	Someone helps set specific goals for completion of lessons and course
Instructing students	Provide intellectual and scholarly leadership	T21	Ask questions	No	NA	In course design and process (learner-content interaction)
		T22	Draw attention to certain comments	No	NA	In course design and LMS
		T23	Summarize student discussions	No	NA	In course design and LMS
		T24	Provide additional resources	Yes	23	Someone help you find additional sources for study and explanation.
		T25	Provide tutoring	Yes	15,16	Someone answer your questions and help with course activities
		T26	Provide constructive feedback	Yes	15,16	Discuss lessons and assignments and provide helpful feedback
	Assignment support	T27	Provide timely assignment feedback	Yes	16	Review the assignments and lessons submitted upon receiving grades
	General student instruction support	T28	Instruct students in study skills & self-assessment	Yes	22	Provide instructions on how to study in the online course and keep track of your own progress?
		T29	Train students on using e-learning materials	Yes	22	Provide guidance on how to use the course and other online materials if there are questions
		T30	Train students on developing independent learning skills	Yes	22	Provide guidance on how to be successful learning on your own outside of a classroom
		T31	Provide assistance with technological problems	Yes	18	Answer questions and provide assistance if the computer, internet, or course is not working
		T32	Provide regular office hours to students	Yes	11	Someone set aside a regular time to meet with the student and discuss course progress and answer questions

Parent Role

The second role within the ACE framework discussed in this literature review is the role of the parent. Parental engagement plays a critical role in supporting and encouraging adolescent student engagement in school and learning activities, especially in online courses (Borup et al., 2013b, Curtis, 2013; Hasler Waters, 2012; Litke, 1998).

Gill et al. (2015) wrote that the first response by most online charter schools when they identify a student who is not engaging in the course is to contact a parent. They noted that "most online charter schools have substantial expectations of parents – surely necessitated . . . by the limits of the schools' tools for keeping students engaged" (p. 22). They further found that (at the high school level) "43 percent of online charter schools expect the parents to participate actively" (p. 23).

One of the ways that schools engage parents is through communications about the student's progress "via email, telephone or postal mail" (Gill et al., 2015, p. 23). Gill and his colleagues observed that parents are expected to participate in three critical ways: (a) make sure that the students complete their assignment, (b) monitor their participation in the course, and (c) support the student through instruction and tutoring. Schools often require parents to participate in training in order to shape this participation. Woodworth et al. (2015) analyzed the different roles parents are asked to play in their student's online course activity and noted that the only significant and positive relationship they identified in parental support was that of parents monitoring their student's participation in the course through verifying seat time (p. 45).

Researchers have identified an expectation by course providers that the parents bear a great responsibility for teaching and instructing when their student is enrolled in a cyber-school. They identified a mixing of the roles between the teacher and the parent which occurs if a

student is to succeed. Barbour (2009) observed: "cyber school provides the online materials used by the student [and] . . . there is an expectation that the parent is the primary 'teacher' . . . and the cyber-school teacher is largely a curricular help desk and grader. (p. 13). Hasler Waters and Leong, (2014) agreed that there is an exchange of roles that occurs in online courses with teachers where parents act as "co-educators"(p. 33) with the teacher in online courses. They also noted that the management aspects of the teacher role are passed to the parents of the student in an online course while the teacher shifts focus to be "content experts and facilitators" (p. 33). Such observations are illustrated in the role overlap shown in Table A.1 and highlights the importance of the parent role in online learning.

Overall, studies suggest that the active monitoring provided by a parent in the online setting helps the student engage and may lead to success in the course. There is some concern however that the lower performance in terms of academic growth observed in online charter school students when compared to students in traditional schools shows that "schools are holding expectations for parents which the parents do not meet" (Woodworth et al., 2015, p. 45). Research by Woodworth and his colleagues suggests that a solution to this disconnect would be for schools to effectively monitor communications between the teacher of the course and the family to ensure that the overlapping and exchanged responsibilities are actively occurring in the student's participation in the course (Woodworth et al., 2015).

Specific research on the significant roles and support activities and interactions that parents play in the education of the students is now discussed and the inclusion of those supporting actions as incorporated into the ACE framework is now considered.

Parental Involvement and Engagement

In research for a Master's thesis, Bentley, (2013) posited that parental warmth and parental involvement support and encourage student engagement. He found support in the research literature, observing "parental involvement is directly related to school engagement, and is even the most predictive of school engagement when compared to other parenting variables such as parental monitoring and expectations" (p. 9). He went on to note that increased involvement increased student engagement and academic results. The significant addition of parental interactions and engagement to the collaborative constructivist learning community proposed in the ACE framework recognizes the major differences in maturity and required support between adult (higher education) and adolescent learners (high school) (Barbour & Reeves, 2009; Borup, et al., 2013a).

Who is a Parent?

In order to design courses to include parental involvement, or to assess the impact of parental involvement, it is important to clearly define what is meant by the use of the word "parent." Stevens and Borup (2015) wrote that there are varying definitions of a parent in the literature and statute. Their study used the definition of parent described in the No Child Left Behind (NCLB) Act of 2001, which defines a parent in this context as any adult who has developed a close relationship with the student (No Child Left Behind Act of 2001; Title 20, 2014; U.S. Department of Education, 2004). Clear understanding of who is intended when reading word parent is important to identify those who functioned in the parent role, and to help adolescent students identify resources who might act in the parent role if their own parents are either unavailable, or unable to perform those parental functions. This close relationship standard is the definition for parent used in this research.

Parent Engagement Frameworks

The parental engagement frameworks drawn from the literature for face-to-face classrooms is now discussed. Then a brief discussion of the emerging frameworks for parental engagement for online instruction will follow. This section of the literature review will then conclude by considering the different functions and activities expected for parental engagement in the ACE framework.

Research in Face-to-Face Classrooms

Becker and Epstein (1982) studied parental involvement supporting the learning of elementary school students in face-to-face classrooms and observed that teachers found it useful to involve parents with their students in learning activities at home. They noted that involvement in assigned learning activities made the parental interactions with the students at home more educationally effective. Their study led to the proposal of a parent-involvement model consisting of 14 different teaching techniques designed to involve parents within five different categories. The categories include techniques that: involve reading, encouraging discussions, providing informal activities to encourage learning, creating contracts with parental and student roles and expectations, and developing helping and tutoring skills in the parents. They found that factors such as the grade-level of the students, the education level of the parents, and school subjects being studied influenced the willingness of teachers to implement parent-involvement techniques supporting student learning.

Epstein (1987) assembled then-current research on parent involvement in elementary school face-to-face classrooms and formulated a framework to guide schools, families, and school administrators in the implementing effective practices to involve parents in their children's schooling. She wrote, "the evidence is clear that parental encouragement, activities,

interest at home and participation in schools and classrooms affect children's achievements, attitudes, and aspirations" (p. 120). Her framework consists of four main types of parental involvement that Epstein identifies as important to student success in school. These types of involvement include: fulfilling their basic parental obligations, school-to-home communication, involvement in the school, and involvement in learning activities at home. Of these four types of involvement, this study considers school-to-home communication and involvement in learning activities at home most easily transferred to frameworks for online learning.

Hoover-Dempsey and Sandler (1995, 2005) proposed a model for positive parental involvement in the education of their student. The model that they propose for the parental role in the children's learning activities includes the factors that influence a parent's decision to be involved, and the factors that determine how they will be involved. The parental decision to be involved is driven by their sense of, and belief in, a required parent role in their student's education, and their sense that they (the parent) are capable of doing so. The requirement for this role construction is supported by the demand for involvement expressed by their students and/or their schools. The different factors in the decision are influenced by their own experiences related to each factor, the vicarious experiences observing others acting in that role, verbal persuasion from others, and the arousal of emotions that value their involvement.

Once parents decide to be involved, the nature of that involvement is based on a mix of the parent's specific skills and knowledge, the demands on their time and energies from work or other commitments outside of the school, and the demands for their involvement from their student and/or the school. The involvement influences student outcomes through three specific "mechanisms of influence" (Hoover-Dempsey & Sandler, 2005. p. 22) that determine the impact

that parental involvement will have on their children's academic success. The three mechanisms they identified were:

- Modeling – Demonstrating interest and support for school-related activities

- Reinforcement – Reward specific behaviors essential to school success

- Direct Instruction - Provide instruction that is closed-ended (Help students solve problems) or open-ended (ask students how they would solve problems)

The mechanisms of influence through parental involvement enable and enhance the positive aspects of learning for the children but are not sufficient by themselves. Appropriate conduct and instruction in school is also required. Effective parental involvement must be appropriate to the developmental stage of the child and align with the school's expectations for parents for involvement. The application of the proposed model results in the achievement of student learning outcomes including a greater sense of the importance of school, enhanced skills and knowledge development in the student, and a greater sense of self-efficacy in the child that they can do well in school.

Transferring Research Across Instruction Formats

There is a scarcity of research investigating parent engagement in online instruction of K-12 students (Hasler Waters, 2012; Stevens & Borup, 2015). Stevens and Borup (2015) reviewed the literature on parental involvement in K-12 instruction and found that frameworks for parental engagement from studies in the face-to-face classroom environment have informed emerging frameworks for the online environment. They observed that the results of research on parental engagement offered structures for supporting learning by adolescent students in online courses where those acting in the parent role in a learning community provide functions and activities which encourage student engagement and persistence.

Stevens and Borup (2015) reflected on important aspects of parental engagement in online courses. They reported types of engagement that included: nurturing and mentoring, communicating, organizing, monitoring and motivating, and instructing. Parents underestimate the impacts that they have on their children's education in online courses (Borup et al., 2013b; Litke, 1998). These studies showed that students valued their parent's involvement even though parents did not think that their attention to the student's efforts was important.

Nurturing and mentoring means that parents provide for student needs "beyond the boundaries of the course" (Stevens & Borup, 2015, p. 8). Parents and schools share a symbiotic relationship in online courses where they each provide support that they cannot effectively do alone in an online course (Noddings, 1984; Staker, 2011). Parents also mentor students through helping them make the decision to enroll in, and withdraw from online courses as they perceive that this will affect the student's long-term goals (Curtis, 2013; Stevens & Borup, 2015).

Parental engagement is impacted by communications. Communication is impacted by lack of attention by parents to messages from school, time constraints that limit parental responsiveness, failure of school to have and enforce parent-school communication policies, and the lack of timeliness in communications. Engagement is supported by organization of the student's learning space and homework schedules as well as parental understanding of the course schedule (Stevens & Borup, 2015).

Parents also encourage engagement by monitoring the student's progress and activity in the course. This is done by reviewing LMS data and monitoring offline behavior. Parents need to understand their monitoring responsibilities and build a close and caring relationship with the student both to monitor and motivate (Curtis, 2013; Stevens & Borup, 2015).

Research in Online Courses

Liu et al. (2010) created an instrument intended to assess parental involvement in virtual school courses building on the research in face-to-face classroom courses which posits that a parent's involvement in the learning process with their students has a positive relationship with their student's "achievement, attendance, and pro-social behaviors" (p. 107). Some of the positive academic outcomes they described from the literature associated with parental involvement included increased G.P.A., increased mathematic achievement, improved writing skill, and enhanced reading skill. They also cited research that identified positive behavioral outcomes associated with parental involvement including lower drop-out rates, more positive attitudes towards school, increased time spent on homework, and improvement in a student's self-regulatory ability. These latter findings are significant if translated to the online context where higher attrition rates continue to be a major criticism of online learning but where the causes of attrition appear to be under-researched (Stevens & Borup, 2015).

The scarcity of research on parental involvement in online courses was mentioned previously. Stevens and Borup (2015) cite recent research by three investigators proposing frameworks describing effective parental involvement in online learning. These three frameworks are briefly discussed and the roles that they describe for parents supporting their students in online courses are considered. Before discussing these frameworks, it should be noted that all three of the studies cited occurred within full-time online schools (cyber charters). Research specific to parent involvement supporting students enrolled in supplemental online courses, particularly independent study format courses (the focus of this research) was not found in a search of the literature.

Hasler Waters' (2012) dissertation reported an exploratory qualitative case study engaging five parents/guardians ("learning coaches" in her study) of students enrolled in a full-time online elementary and middle school. Her study gathered the perspectives of parents in the cyber school to better understand the role that they play in supporting the student. She was interested not only in their experiences, but in their perception of the support that they received from the school to be effective in their coaching role. In the literature review for her study she identified four roles that the learning coaches play supporting their students. Those roles were:

- Organizer – plans schedule, lessons, activities, and gathers materials

- Instructor (guide) – provides one-on-one instruction, tutoring, participates in educational experiences and co-constructs meaning

- Motivator – motivates student to progress and work through problems

- Manager – Tracks student progress, manages schedule, disciplines, monitors progress (p. 104).

Her study further identified the ways that the coaches support the learning experiences of their students. She identified three themes emerging in the data she collected. The themes were that the coaches' experiences were learner centric, that they were users of the resources and tools provided in their role, and that they valued real life

examples as a way to validate their student's learning (p. 160).

Learner-centric Support

Hasler Waters (2012) described being learner centric as the feeling that the parents were aware of their child's needs and tailored their educational experience to meet those needs. Evidence of the learner centrism was that the parents were aware of their student's needs because they knew their learning preferences. The parent demonstrated that awareness by adapting their

practices to meet the needs of their child, encouraging the student and motivating them to progress in the course, reinforcing and reassuring the student that they were learning, and providing instruction adapted to the student's preferences for learning. She noted that the parents seemed to use a constructivist approach when instructing (p. 176).

Parents attended to the needs of their students based on their perceived role as the coach and their level of involvement in the learning. The parents in her study saw themselves as both responsible for their children's instruction and for the learning outcomes the students achieved. When asked to expound on this responsibility they "described their top three roles as keeping their children on track, setting expectations for quality work produced by their children, and guiding their children through the learning" based on the needs of the student (p. 180).

Resources for Parent Support

Hasler Waters (2012) found that parents valued the resources that were provided to them in order to fulfill their role as learning coaches. The resources that they found important were:

- The teacher – Provides support with content and child development, tutors and socializing and collaboration for students.

- Technology – Used to communicate and explore in accomplishing learning.

- Themselves – Participants were highly educated and confident and invested time to monitor and support their student.

- The curriculum – parents were provided instructional guides, teaching tips and other resources by K12, the EMO operating the school.

- Training – The parents had ample training tools provided by K12 and an orientation at the school, but most did not use the tools.

- Their family – the participants relied upon their spouse and the student's siblings for instructional support when needed for expertise.

- Others – Participants also relied upon non-family members for support and instructional resources.

The tools that the parents relied upon as resources included things and people. Not all were used equally, but all were valued, though some were not as accessible as the parents would have liked.

Support Using Real-Life Examples

The parents in Hasler Waters' (2012) study used real life examples to reinforce and validate what their students were learning and to model how to learn (p. 212). Participants described circumstances where they encountered things or circumstances in their lives that they could use to reinforce a subject or lesson that was part of their schooling. Parents also added assessments in real life activities to validate that their students had learned. One parent mentioned asking her child to "double the measurements for a cake recipe" and another had a son who had done well in a subject teach that lesson to his twin sister (p. 215). This was real life validation of learning beyond the tests that the students had taken. Many participants mentioned their practices such as a love of reading, searching the internet for missing information, or taking classes themselves as ways that they modeled for their students with real life examples.

One of the conclusions in the study by Hasler Waters was that the learner-centric approach demonstrated by the parents, and the closeness of their relationships with the students, facilitated a deeper understanding of the child than might occur between a student and his classroom teacher or the data sets generated by digitized learning. Yet, unlike the classroom teacher, they lacked some expertise regarding content, child development and student-

management. There was no doubt that their keen awareness of their child was central to their ability to adapt the way they guided the child, or adjusted their own beliefs or the environment to make learning a positive experience for the child. These practices seemed to resemble what some of the more prominent voices promoting educational reforms agree on – that student-centered and personalized learning, which leverages technology, will provide opportunities for students to engage in learning that is more meaningful to them and will enable students to engage in skills necessary for the 21st Century workplace (Hasler Waters, 2012, p. 262).

Parent Responsibility to Monitor, Mentor, and Motivate

Curtis (2013) studied a full-time online high school to investigate factors that influence academic success and to explore the impact of parental involvement. She observed "having a parent or caring adult to support and guide the student is essential to success in any academic setting, but in a full-time online environment, it is vital" (p. 35). Her study identified three stakeholders in the online high school experience: school, students, and parents. These stakeholders interact to create a successful academic experience. According to parents who participated in qualitative interviews in the study schools have an obligation to communicate, provide transparency of student progress and performance, and provide individualized instruction and support. Students are responsible to be self-motivated, remain engaged, and be accountable for their learning. Parents need to monitor, mentor and motivate.

Noting that there was a gap in the research related to the roles of parents in full-time schools, Curtis (2013) reported that the roles of parents is to monitor, mentor, and motivate. Parents reported that they spent more time engaged in their students' learning in the online schools than they did in their students' enrollments in traditional schools. This aspect of monitoring was accomplished through tasks that included "questioning about assignments,

monitoring assignment completion . . ., setting a schedule for/with the student . . ., and advanced preparation of student materials" (Curtis, 2013, p. 98). Other monitoring efforts by parents include communicating with the teacher and checking on student activity in the learning management system. The study participants said parent monitoring was critical to student success in online courses and that the students may fail without it.

Parents mentor by providing immediate feedback and demonstrating care for the student. Parents indicated that they perceived that they needed to act in the teacher role in the online enrollment and providing immediate feedback in that role encouraged academic success. Another element of mentoring was spending time with the students engaged in learning. As students and parents engage, positive relationship benefits are realized and the parent becomes more aware of the student's strengths and weaknesses. This awareness can help them motivate the student to successful engagement in the course. In addition to motivation for school performance, parents also motivate their students to aspire to achieve a better future.

An implication of the study is that the better understanding of the needs of the parents can result in the development of training by online schools to help families when a student enrolls for the first time. The parents in the study said "that better communication from the school regarding start up could help students be more successful" (Curtis, 2013 p.112). Curtis further observed "online schools need to provide adequate communication so that students get more positive start" (Curtis, 2013, p. 112).

Helping Parents Fulfill Engagement Responsibilities

Recognizing the important role of parents in online courses, virtual schools and other online course providers are seeking to help parents better understand their important role in their student's success and providing guidance and training on how to be successful. Hasler Waters

(2012) described the efforts of K12 (an EMO) in the cyber school she studied to help parents become an effective support for their student. Parents were provided instructional guides, teaching tips and other resources as training tools and also participated in an orientation at the school. Gill et al. (2015) found that "the great majority of online schools ask parents to participate in training sessions" (p. 23).

The Michigan Virtual University (MVU) provides a *Parent Guide to Online Learning* (Michigan Virtual University, 2016a) and *Mentor Fundamentals: A Guide for Mentoring Online Learners* (Michigan Virtual University, 2016b). The Parent Guide is intended to help parents (or other adult advocates) determine whether online courses are "a good option" for their student and helps assess whether they can be successful (Michigan Virtual University, 2016a, Introduction). The Mentoring Guide is a tool providing "practical, research and experience-based best practices for school employees or parents who provide on-site support for online learners" (Michigan Virtual University, 2014, pp. 7-8). These resources further indicate the important roles parents play in successful online education and that efforts must be made to effectively engage them in the community of support for K-12 students.

Parent Engagement in the ACE Framework

Borup et al. (2014) described specific parental functions and engagement activities operating within the adolescent community of engagement (ACE) drawn from the literature. There are three primary functions originally outlined for the parent role in the ACE framework: facilitating interaction, organizing students' environments, and instructing students (Borup et al., 2014). Table A.5 details the three functions, seven tasks, and 23 activities of the parent role in the ACE framework. The data collection plan included those functions deemed feasible to identify and measure were included in the research instrument as indicated in Table A.6

Table A.5

Parent Role Elements in the Adolescent Community of Engagement

Function	Task	Code	Activity	Reference
Facilitating interaction	Nurturing	PA1	Provide love and nurture for students	Staker, (2011, p. 28)
		PA2	Provide basic physiological needs	Staker, (2011, p. 28)
		PA3	Provide access to meet basic learning needs (computer, internet access, books, writing materials)	Epstein, (1987)
		PA4	Help develop needed social skills	Epstein, (1987)
	Monitoring and motivating	PA5	Follow-up on student engagement in course activities	Russell, (2004); Sorenson, (2012)
		PA6	Review student scores and data provided by school/teacher	Eyal, (2012, p.38)
		PA7	Give positive reinforcement for positive engagement	Hoover-Dempsey and Sandler, (1995, 2005); Liu et al. (2010)
		PA8	Actively encourage or push students	Murphy and Rodriguez-Manzanares, (2009)
		PA9	Provide incentives/rewards for student engagement	Hasler Waters, (2012)
		PA10	Respond to school/teacher requests to engage with students	Hasler Waters, (2012); Borup et al. (2013b)
	Volunteering	PA11	Volunteering to help with school activities	Hoover-Dempsey and Sandler, (1995)
Organizing student's environment	Organize physical environment	PA12	Organize physical environment for study	Epstein, (1987)
	Assist with student schedule	PA13	Help organize daily schedule	Tunison and Noonan, (2001)
		PA14	Adjust schedule for student moods & level of motivation	Hasler Waters, (2012)
Instructing students	Provide additional local instruction if needed	PA15	Look for instructional information online	Hasler Waters, (2012)
		PA16	Contact instructor	Hasler Waters, (2012)
		PA17	Use materials and information provided by teacher	Borup, et al., (2013a, p. 52)
		PA18	Use teaching suggestions/tips provided by teacher	Borup, et al., (2013a, p. 52)
	Provide instructional support beyond content	PA19	Teach learning strategies	Lee and Figueroa, (2012); Liu et al. (2010)
		PA20	Teach technology skills	Lee and Figueroa, (2012); Liu et al. (2010)
		PA21	Teach academic integrity	Lee and Figueroa, (2012); Liu et al. (2010)
		PA22	Read assignments and school policies with student	Lee and Figueroa, (2012); Liu et al. (2010)
		PA23	Teach how to identify and use quality online resources	Hasler-Waters, (2012)

Table A.6

Parent Role Elements Used in Data Collection Plan

Function	Task	Code	Activity	Included?	Survey item #(s)	Reason or how assessed
Facilitating interaction	Nurturing	PA1	Provide love and nurture for students	No	NA	Assumed as ongoing parent responsibility
		PA2	Provide basic physiological needs	No	NA	Assumed as ongoing parent responsibility
		PA3	Provide access to meet basic learning needs (computer, internet access, books, writing materials)	Yes	9	Someone to make sure that all academic needs are available
		PA4	Help develop needed social skills	No	NA	Assumed as ongoing parent responsibility
	Monitoring and motivating	PA5	Follow-up on student engagement in course activities	Yes	14	Someone to check on course progress and remind to stay on schedule
		PA6	Review student scores and data provided by school/teacher	Yes	21	Someone to check on grades and praise or correct as needed
		PA7	Give positive reinforcement for positive engagement	Yes	19	Someone to check on course progress and praise or correct as needed
		PA8	Actively encourage or push students	Yes	19, 21	Someone to check on course progress and praise or correct as needed
		PA9	Provide incentives/rewards for student engagement	Yes	19, 21	Someone to check on course progress and praise or correct as needed
		PA10	Respond to school/teacher requests to engage with students	No	NA	Assumed as ongoing parent responsibility
	Volunteering	PA11	Volunteering to help with school activities	No	NA	Not applicable in supplemental independent study courses
Organizing student's environment	Organize physical environment	PA12	Organize physical environment for study	Yes	9	Someone to make sure that all academic needs are available
	Assist with student schedule	PA13	Help organize daily schedule	Yes	12	Someone to help student organize schedule to plan engagement
		PA14	Adjust schedule for student moods & level of motivation	Yes	12	Someone to help student organize schedule to plan engagement

Table A.6, Continued

Function	Task	Code	Activity	Included?	Survey item #(s)	Reason or how assessed
Instructing students	Provide additional local instruction if needed	PA15	Look for instructional information online	Yes	23	Someone help find additional material online
		PA16	Contact instructor	Yes	17	Someone to contact the school or instructor if concerns require
		PA17	Use materials and information provided by teacher	Yes	16	Someone to help with course materials provided in course design
		PA18	Use teaching suggestions/tips provided by teacher	Yes	16	Someone to help with course materials provided in course design
	Provide instructional support beyond content	PA19	Teach learning strategies	Yes	22	Someone to help learn to study online and track of own progress
		PA20	Teach technology skills	Yes	22	Someone to help learn to study online and track of own progress
		PA21	Teach academic integrity	Yes	10	Someone reviewing policies at the start of the course
		PA22	Read assignments and school policies with student	Yes	10	Someone reviewing policies at the start of the course
		PA23	Teach how to identify and use quality online resources	Yes	23	Someone help find additional material online

Peer Role

The ACE framework is an extension of collaborative-constructivist learning models that encourage formation of interactive learning communities (Moore, 1980, Moore, 1989, Garrison et al., 2000). The energy fueling these communities is the interaction between members. In fact, this facet of constructivist learning interactions (learner-learner) is perhaps the most studied of the three types of interaction described in collaborative-constructivist frameworks (Friesen & Kuskis, 2013).

Peer Interactions and Student Engagement

Research on student-student interactions and learning considers impacts in classrooms (Rossem & Vermande, 2004) and online courses (Borup, West, & Graham, 2013; Chen, Wei, Wu, & Uden, 2009; Corrigan & Craciun, 2012; Hew & Cheung, 2008; Weiner, 2003; Young & Lewis, 2008). Peer relationships impact student engagement, particularly through the functions of collaborating with other students, serving as an instructional resource, and helping to motivate one another. Borup et al. (2014) identified these functions of peer interactions as the critical functions fulfilled by the peer role in the ACE community.

Peers as Collaboration Resources

Peer interactions "can take many forms -- debate, collaboration, discussion, peer review, as well as informal and incidental learning among classmates" (Swan, 2003, p. 16). Peer interactions are critical to the formation of a learning community. Social interactions are the key to effective collaborative learning and are critical to the development of a healthy learning community (Kreijns, Kirschner, & Jochems, 2003). Students must trust other members of the community and feel a sense of warmth, belonging, and closeness to each other before they will willingly collaborate and see it as valuable (Rourke, 2000, as cited in Kreijns, Kirschner, &

Jochems, 2003). Anderson, (2008) wrote that earlier research "found that student-led teams can result in higher levels of cognitive, social, and even teaching presence, than those led by teachers" (p. 57).

Peers supporting cognitive presence. Garrison, Anderson, and Archer (2001) described cognitive presence exhibited by learners in the Community of Inquiry (CoI). They cited cognitive presence as being engagement with the learning process that results in deeper learning and critical thinking. Cognitive presence in a practical inquiry model progresses through four phases: a triggering event, exploration, integration, and resolution (Garrison et al., 2001). These four phases are reflected in what Woo and Reeves (2007) defined as "meaningful interaction" between peers. Meaningful interaction includes:

- interactions by groups of students that encounter confusion and conflict

- discussion of the confusion and conflict with others in the group

- undergoing internal and external negotiation with peers to resolve the problem (the confusion or conflict)

- arriving at a common understanding (Woo & Reeves, 2007).

Garrison and Arbaugh (2007) observed that many online course formats can result in enhanced critical thinking skills. They ventured that the composition of the group of peers, with their variety of personalities, may have more to do with the enhanced cognitive presence than the format of the instruction.

Solving authentic problems in real-life contexts. Swan et al. (2000) described knowledge building communities who build knowledge through discussions where "meanings are agreed upon, ideas negotiated, concepts evolved, knowledge constructed" (p. 380). They further observed that this interaction is time consuming and students will only participate if they

believe that the activity "is both valued and authentic" (p. 380). Social-constructivist frameworks support learning in groups and collaborating to solve authentic problems (Jonassen, Davidson, Collins, Campbell, & Haag, 1995). Researchers encouraged course design that includes authentic learning tasks structured to require collaboration between learners solving real problems within in communities of practice in order to meet the demands of today's information society (Lave & Wenger, 2002; Naidu, 2013; Reigeluth, 1999; Wenger, 1998). This problem-based learning, set in real-life contexts, is championed by theorists as a way to develop higher-order thinking and deeper learning of the subjects being taught (Gunawardena, 1995; Garrison & Arbaugh, 2007). These collaborations support stronger feelings of social presence and student engagement which also promotes student persistence to complete the course (Rovai, 2002; Stavredes & Herder, 2013).

Peers as Instructional Resources

Collaborative learner-learner interactions have been identified as a way that peers can participate in a community for the purposes of providing instruction. Peer activities identified in the literature that fulfill instructional (teaching) purposes include:

- Active peer collaboration leading to co-construction of meaning and knowledge (Benbunan-Fich & Arbaugh, 2006; Borup et al., 2014; Gunawardena, Lowe, & Anderson, 1998; Swan & Shea, 2005)

- Providing "skilled-peer" scaffolding for less-experienced learners (Anderson, Rourke, Garrison, & Archer, 2001; Dabbagh & Kitsantas, 2005)

- Peer-tutoring (Archambault et al., 2010; Borup, Graham, & Velasquez, 2013; McGhee & Kozma, 2001),

- Peer review (Akyol & Garrison, 2011; Boyd, 2008; Corrigan & Craciun, 2012; Swan, 2003)

- Peer feedback and assessment (Chen, Wei, Wu, & Uden, 2009; Corrigan & Craciun, 2012; Wang & Wu, 2008)

- Active participation in threaded and other online discussions, chats, and synchronous and asynchronous learning activities (Boyd, 2008; Hew & Cheung, 2008)

A search of the literature provides evidence of the benefits of collaboration amongst peers in a learning community. Borup et al. (2013a) asked students to complete surveys about their time spent on the three types of interaction from Moore's interaction theory over the course of two semesters in which they enrolled at a charter cyber school. The respondents reported that 90% of their time spent in social interactions in the coursework occurred with other learners. Statistical analysis of the data collected showed that students perceived that their learner-learner interactions were not as educationally valuable as their interactions with the teacher or the content but that they felt that the learner-learner interactions were valuable to their learning. The analysis of survey responses revealed that there was no significant difference in the educational value of learner-learner interactions and teacher-learner interactions. They also found a positive correlation between time the students spent in learner-learner interactions and their favorably view of the course content.

The cyber schools studied by researchers were found to design most of these peer-instructor opportunities within the activities in the course. Participants can collaborate effectively and readily support one another as they are enrolled in courses that are structured to begin and end at dates prescribed by the school's academic calendar, consist of assignments with specific beginning and end dates, and are facilitated, led, and paced by the teacher. Peers have

the opportunity to construct meaning as they assume some of these peer-instructor activities in their collaboration.

Peers as Motivating Resources

Student motivation is linked to successful learning (Clayton, Blumberg, & Auld, 2010). From their research on interactions in the cyber charter high school Borup et al. (2013a) found that students viewed learner-learner interactions to be motivational. Murphy and Rodríguez-Manzanares (2009) cited research from multiple studies using different frameworks that showed self-efficacy having a positive impact on student motivation. Their qualitative study of high school teachers' perspectives of their students' motivation showed that there were three categories of primary factors that seemed to impact the students' motivation:

- Communication, interaction and social presence

- Intrinsic and extrinsic motivators

- Learner-centered designs (p. 8)

Within each category, several sub-categories were identified that promoted student motivation, several of which were interactions with teachers and peers. These interactions included developing personal relationships, providing feedback, communications with others (face-to-face or through discussion boards), discussion, and receiving support and encouragement from others. Their research indicated that there may be a need for local facilitators and parents to provide motivational support for students with low levels of intrinsic motivation.

In a study for dissertation research, Tao (2009) investigated the relationship between social presence and student motivation in higher education students. Using two instruments, one designed to measure student motivation, and the other to measure social presence, Tao looked at

changes in measures from the beginning to the end of a semester. Tao found a positive correlation between the level of social presence and the level of motivation expressed by students in the online course. Moore (1989) wrote that young learners are motivated by learner-learner interactions. Borup et al. (2014) noted high standing students motivate their peers through interactions providing explicit praise and encouragement without knowing that they are providing that motivation.

While the literature highlights the positive impacts of learner-learner interactions on student satisfaction, Borup et al. (2013a) observed that students did not perceive the interactions with their peers to be as educationally valuable as their interactions with teachers or content. Students viewed these peer interactions as being social rather than educational. The results of the study showed that seven of the nine significant correlations between course outcomes and quantity of interaction (as measured by time) were from learner-learner interactions. The results indicated that "learner–learner interaction tended to be more highly correlated with achievement than was learner–instructor interaction" (p. 162). The authors noted that this confirms the earlier research by Moore (1989) that adolescent learners benefit from interactions with their peers more than do adult learners (p. 162).

Impediments to Peer Interactions in Online Courses

Muirhead (2009) wrote that it is difficult for students to collaborate when students enrolled in the course are progressing at different paces. He also observed that teachers would not be able to effectively facilitate interactions between groups of students in independent study courses when students preferred to work alone. That independence is one of the major reasons that Anderson (2008) reported students choose an independent study version of a course.

The difficulty structuring effective peer interactions in independent study courses, and the student desire to be able to work independently, create structural problems where students lack access to the benefits of a richly interactive support community envisioned in the collaborative constructivist literature. Gill and his colleagues (Gill et al., 2015) found that cyber schools are relying on self-paced independent study models more than expected. They reported that "collaborative learning involving two or more students working together is used frequently in . . . 21% [of schools] for high school students" (Gill et al., 2015, p. 10) while "one-third . . . .of online charter schools . . . offer *only* [emphasis in original] self-paced instruction (Gill et al., 2015, p. 8). This finding implies that peers within a course have limited opportunity for collaboration and building a community even when enrolled full-time in an online charter school.

In summary, properly structured peer interactions, actively facilitated by teachers within an interdependent-format online course, are shown to encourage sustained student engagement, improve student learning, and increase learner satisfaction and perceived learning in the course (Anderson, 2008; Garrison & Arbaugh, 2007; Gunawardena, 1995; Kreijns, Kirschner, & Jochems, 2003; Rovai, 2002; Stavredes & Herder, 2013). However, student motivations to work independently in order to receive desired flexibility (Anderson, 2008), and the ongoing delivery of online courses in the independent study format by schools (Gill et al., 2015), means that many students will enroll in courses which do not require and provide opportunities for beneficial peer interactions.

Anderson (2008) argued that these conflicts between the advantages of interdependent collaborative learning and the need for flexibility "argue for a theory of online learning that accommodates but does not prescribe any particular format of time and place 'boundedness,' and that allows for appropriate substitution of independent and community-centred learning"

(Anderson, 2008, p. 52). The suggested proximate community of engagement is an attempt to incorporate the advantages of community-centered learning into the independent study student experience. Access to peers in a proximate community may present the only opportunities for online students to effectively engage with other students. The ability to coach and mentor students and their parents to curate a community of local peers would allow independent study students to reap the benefits of peer and other community interactions as they complete their independent study course.

Peer Engagement in the ACE Framework

Table A.7 itemizes the different functions and activities associated with the peer role in the ACE framework described in the literature. Table A.8 details the different functions and activities fulfilled by the peer role in the ACE framework that could be fulfilled proximately by a student and how each activity was operationalized in the research instruments in the study.

The data collection plan for the peer role considered two function, two tasks, and five activities. The evidence of the presence of the peer role in the PCE is seen through two specific interactions. The first was whether students planned to, or did collaborate with other peer student. The second is whether they someone would arrange, or did arrange, collaboration and study opportunities with student peers. Table A.8 details the elements of the peer role included in the survey instruments.

Table A.7

Peer Role Elements in the Adolescent Community of Engagement

Function	Task	Code	Activity	Reference
Instructing & collaborating	Participate in community of peer students	PE1	Share previously obtained knowledge of content and meta-cognitive understanding with others	Gunawardena, Lowe, & Anderson, (1998)
		PE2	Assist in co-constructing knowledge	Borup, West, Graham, and Davies, (2014)
		PE3	Be committed to learning community	Garrison et al., (2000)
Motivating	Participate in community of peer students	PE4	Interact with other learners stimulating motivation	Moore, (1989)
		PE5	Offer specific praise and encouragement to peers	Bandura, (1986)

Table A.8

Peer Role Elements Used in Data Collection Plan

Function	Task	Code	Activity	Included?	Survey item #(s)	Reason or how assessed
Instructing & collaborating	Participate in community of peer students	PE1	Share previously obtained knowledge of content and meta-cognitive understanding with others	Yes	15,16,25	Student worked with another local student studying the same subject?
		PE2	Assist in co-constructing knowledge	Yes	15,16,25	Student worked with another local student studying the same subject?
		PE3	Be committed to learning community	Yes	25	Student worked with another local student studying the same subject?
Motivating	Participate in community of peer students	PE4	Interact with other learners stimulating motivation	Yes	25	Student worked with another local student studying the same subject?
		PE5	Offer specific praise and encouragement to peers	Yes	19,21,25	Student worked with another local student studying the same subject?

The ACE Framework and Independent Study

The ACE framework was derived from research on interactions in adolescent learning settings. The researchers identified and investigated the engagement community within the context of a cyber-school (Borup et al., 2014). This study is intended to address the effectiveness of the ACE framework elements being provided through a proximate community, thus creating effective student engagement, leading to better learning outcomes when students choose or need to complete an independent study format supplemental course. The online course enrollment reflects the desire of the student, their family or adult advocate, and the student's educational institution for the student to meet high school graduation requirements. Further, the enrollment in the independent study supplemental course was likely chosen due to constraints that restricted the option of effective participation in more interactive courses that may have been available to the student. The impact on the three different ACE roles when evaluated in the light of an independent study enrollment is now explained.

Teacher Role in Independent Study

The teacher role in an independent study course differs dramatically from the teacher role as it functions in more collaborative community-centered courses offered by virtual charter schools. Research in online schooling for K-12 students has been conducted in virtual schools looking at students enrolled both part-time (supplemental) and full-time in the virtual school. However, much of the research related to collaborative learning communities of inquiry and engagement in K-12 online courses, including analyses of the important roles within those communities, was conducted in full-time charter cyber schools where structures and policies promote interactions (Borup et al., 2014; Curtis, 2013; Hasler Waters, 2012).

O'Leary and Quinlan (2007) observed that pervasive online teacher-student interaction must exist if a course is to be effective. Several functions and activities described for the teacher in the ACE framework (teacher, designer, and local facilitator) would not be provided with the same immediacy and structure in an online course using an independent study format as they are provided by a charter cyber school. Students in an independent study course interact primarily with the course materials. Some of the activities and interactions associated with the teacher role in the ACE framework may be transferred from the instructing and facilitating function to the course organization function. This occurs through instructional designs that automate some of the instructing and facilitating functions (feedback, monitoring, reinforcement and praise) using the learning management system.

Functions ascribed to the teacher role that could continue to be fulfilled by the online teacher include feedback on assignments and exams and responding to student questions about content and procedure, though in an independent study format course these interactions are likely to be asynchronous. Barbour (2009) wrote "one of the more troubling findings related to asynchronous instruction in these virtual schools is the lack of actual teaching that occurs" (p. 15).

The proximity of the parent to the student, and the overlap in the functions of the teacher and parent roles in the literature (see Table A.1) means that many of the functions and activities ascribed to the teacher may instead be performed by the parent. Barbour (2009) observed that "there is the expectation that the parent is the primary 'teacher' . . . and the cyber-school teacher is largely a curricular help desk and grader" (Barbour, 2009, p. 13). Hasler Water and Leong (2014) described parents as "co-educators" (p. 33) with the teacher. Schools and teachers offering independent study options must work to design curriculum that allows for teaching with

asynchronous communications where parents can adequately perform the functions that overlap with the teacher.

Parent Role in Independent Study

A unique aspect of the adaptation of the ACE framework to the independent study setting is that the framework functions of the parent role within the ACE community are not changed by the format of the course. The parent assumes additional responsibilities from the teacher in the areas where their roles overlap due to the intended independent learning design, but the parent functions of facilitating interaction, organizing the student's environment, and providing instruction remain in any setting and course format.

Hasler Waters and Leong (2014) described parents in online course settings as "co-educators" or "learning coaches" (p. 33). They observed that teachers serve less of a role managing instruction and instead become content experts and facilitators as parents manage the children and guide them through the curriculum. In their review of parental engagement literature, Stevens and Borup (2015) cautioned that parents' provision of instructional support may be important but that they "typically lack the content expertise to directly instruct students on specific course material, especially in older grades" (p. 111). They further encouraged online programs to understand the "benefits and drawbacks of parental instructional support and to work with parents so that they understand and fulfill their roles in ways that facilitate – not inhibit – student learning" (p. 112). In another study, Borup (2016) noted that teachers are supportive of the instructional activities (tutoring) provided by parents "if the parents had the knowledge and the skills to do so" (p. 77). Other researchers have cautioned that there is a continuum of parent involvement that will impact student learning. Parents can be so uninvolved

that student are not supported, or too involved such that students are not required to learn on their own (Hasler Waters & Leong, 2014; Hasler Waters et al., 2014).

School policies are an important support for effective parent involvement in their student's online course success. Cavanaugh et al. (2009) examined written policies governing communications with parents and suggested frequent communications between school and parents were important. The demand for frequent communications between the teachers and parents is problematic in an independent study course because the absence of required communications and interactions is a primary motivation for enrolling in the course (Anderson, 2008). Hasler Waters, Menchaca, and Borup (2014) suggest three important policies that would support parents in their responsibilities to help their students succeed. Those policies include:

- Effectively train parents to be educational facilitators for their own students

- Encourage effective parental involvement on supporting, guiding, and motivating the student

- Communicate guidelines for parents' roles and responsibilities (p. 316)

The authors asserted that these policies are important in K-12 online schooling. Designers of independent study format courses must consider how to build this into the course design. The authors concluded that research presently does not "clearly . . . define variables associated with parental involvement in K-12 online learning" (p. 318) and that "studies . . . hint at how parents might fill in a much needed gap when teachers are not present" (p. 320).

Peer Role in Independent Study

There is a significant difference in the peer role described the ACE Framework when the student is enrolled in the independent study format. Parent and teacher roles overlap and are

largely present in online courses without regard to the course format. But the peer role is significantly impacted by the independent study format.

Students acting as peers are critical participants in collaborative constructivist community-centered courses (Kreijns, Kirschner, & Jochems, 2003). Designs for these community-centered courses encourage student co-creation of knowledge. Student peers can provide instruction from their own knowledge (Gunawardena, Lowe, & Anderson, 1998) and also act to motivate other learners (Moore, 1989). Researchers reported that students appreciated engagement with peers believing that they these interactions were valuable to their learning (Borup, et al., 2013a) and that they learned more when given the opportunity to teach other students through peer-tutoring, peer review, and peer feedback and assessment (Corrigan & Craciun, 2012; Garrett Dikkers, Whiteside, & Lewis, 2013). Research also showed a positive correlation between learner-learner interactions and course outcomes (Borup, et al., 2013a). The lack of peer interactions intentionally designed into independent study courses prevents students from deriving many of the benefits associated with peer engagement in the research.

Required peer collaborations negatively impact the flexibility students are seeking in when they enroll in an independent study course (Anderson, 2008) but these collaborations are viewed as important for online courses (Ferdig, Cavanaugh, DiPietro, Black, & Dawson, 2009; iNACOL, 2011). Oviatt et al. (2016) found that students do not perceive as much value in peer interactions as they do parent and teacher interactions, but may interact if peer interactions are suggested in the course design and peers are available to them locally. This role is the one least expected in the proximate community of engagement.

Conclusion

This extended literature review explained the background, context, and data collection plan for this study of adolescent student experiences in an online independent study course. The review of the literature noted the students' practical needs for completing a supplemental course in order to graduate from high school but to do so in a way that provides flexibility. This practical need is in direct conflict with the ideals of collaborative-constructivist community learning which provides the greatest learning outcomes.

The research agenda is an attempt to reconcile this practical student need with the ideal learning to accommodate a theory providing independent study students with the flexibility they desire while also helping them receive the benefits of community-centered learning (Anderson, 2008). This research sought to identify the existence of support provided by a proximate community of engagement (PCE) when a student completes an independent study course. The data collected could be used to inform the best practices in the curation, design, and effective operation of a proximate learning community supporting independent study students.

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Appendix B: Survey Instrument for Study of Perception of Need for PCE

Thank you for participating in this brief survey. There are 25 questions that should take you less than 15 minutes to answer. Your responses will help us improve our courses and student support. Your honest and thoughtful responses will benefit present and future students. Once you have completed the survey, you will be entered into the drawing for the free tablet computer.

1. **Enter your email address to be entered in the drawing for the free tablet computers.**

   your.email@address.com

2. **Gender:**

   ○ Female   ○ Male

3. **Year in school (grade):**

   ○ Pre-9th grade   ○ 9th (Fresh)   ○ 10th (Soph)   ○ 11th (Jr.)   ○ 12th (Sr.)

4. **Current overall GPA:**

   ○ < 2.0   ○ 2.0 - 2.49   ○ 2.5 - 2.99   ○ 3.0 - 3.49   ○ 3.5 - 3.99   ○ 4.0   ○ > 4.0

5. **Why are you taking this class?**

   ○ I need to pass the course to met high school graduation requirements

   ○ I do not need the class to meet graduation requirements but I am interested in the topic

   ○ Other | Reason you are taking the class if not for reasons given above |

6. **Have you already taken this class before from another school or provider?**

   ○ Yes   ○ No

   If answer to #6 is yes, go to #7. If answer is No, go to #9

7. **Why are you taking the class again?**

   ○ I previously failed the course

   ○ Other reason | Explain the other reason for taking the course again |

   If the answer to #7 is failed the course, go to #8. If not failed, go to #9

8. **Why do you believe you failed the course (check all that apply)?**

    ☐ I did not try

    ☐ I could not understand the topic

    ☐ I could not understand the teacher

    ☐ The teacher would not help me

    ☐ I had to stop attending class because of illness or other problems

    ☐ I had to stop attending class due to bullying or other safety issues

    ☐ Other reason: | Explain the other reason why you believe you failed the course before |

Questions 9-25 in this survey present a series of statements about possible support that could be provided for you as you complete this online course and you will be ask if you agree or disagree with each statement. Please be thoughtful about the help you would seek if you agree in any degree with the statements. You will be asked to identify the source you will go to, or ask for, help in that area if needed.

9. **I will be more successful in this online course if someone makes sure that I have a designated place to study, access to a computer, adequate internet access, books, and any other study materials that you will need to complete the course.**

    ◌ Very Strongly Agree   ◌ Strongly Agree   ◌ Agree   ◌ Disagree   ◉ Strongly Disagree

    (If any agree option) **Who do you plan to do this (select all who you would ask)?**

    ☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

    ☐ A teacher or counselor at your local school   ☐ Another student at your local school

    ☐ A teacher or tutor from online school   ☐ Another student in the online course

    ☐ I don't know anyone who can help   ☐ No one is available to help

    ☐ Another person: | Who is that person |

10. I will be more successful in this online course if someone reviews the policies of the online school and the online course with me when I start of the course.

○ Very Strongly Agree ○ Strongly Agree ○ Agree ○ Disagree ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Parent ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school ☐ Another student at your local school

☐ A teacher or tutor from online school ☐ Another student in the online course

☐ I don't know anyone who can help ☐ No one is available to help

☐ Another person: | Who is that person

11. I will be more successful in this online course if someone sets aside a regular time to meet with me to discuss course progress.

○ Very Strongly Agree ○ Strongly Agree ○ Agree ○ Disagree ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Parent ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school ☐ Another student at your local school

☐ A teacher or tutor from online school ☐ Another student in the online course

☐ I don't know anyone who can help ☐ No one is available to help

☐ Another person: | Who is that person

12. I will be more successful in this online course if someone helps me organize and plan my time so that I have a regular schedule to work on the course until it is completed.

○ Very Strongly Agree   ○ Strongly Agree   ○ Agree   ○ Disagree   ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ I don't know anyone to help   ☐ No one is available to help

☐ Another person: | Who is that person |

13. I will be more successful in this online course if someone helps me set specific goals and deadlines for completing lessons, taking tests, and finishing the course.

○ Very Strongly Agree   ○ Strongly Agree   ○ Agree   ○ Disagree   ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ I don't know anyone who can help   ☐ No one is available to help

☐ Another person: | Who is that person |

14. I will be more successful in this online course if someone checks on my course progress regularly, asks how I am doing in the course, and reminds me to keep working and stay on schedule.

○ Very Strongly Agree   ○ Strongly Agree   ○ Agree   ○ Disagree   ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ I don't know anyone who can help   ☐ No one is available to help

☐ Another person: | Who is that person

15. I will be more successful in this online course if someone is available to explain things to me when I have questions about the readings and course materials if I do not understand the lesson or assignments.

○ Very Strongly Agree   ○ Strongly Agree   ○ Agree   ○ Disagree   ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ I don't know anyone who can help   ☐ No one is available to help

☐ Another person: | Who is that person

16. I will be more successful in this online course if someone is available to help me with assignments, papers, quizzes, etc. when I have questions until I complete the course.

○ Very Strongly Agree   ○ Strongly Agree   ○ Agree   ○ Disagree   ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ I don't know anyone who can help   ☐ No one is available to help

☐ Another person: | Who is that person

17. I will be more successful in this online course if someone helps by talking to BYU Independent Study or my online teacher and follows-up on my concerns if needed.

○ Very Strongly Agree   ○ Strongly Agree   ○ Agree   ○ Disagree   ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ I don't know anyone who can help   ☐ No one is available to help

☐ Another person: | Who is that person

18. I will be more successful in this online course if someone is available to teach me how to use the technology and help me if I am having computer or internet problems or if the course is not working correctly

○ Very Strongly Agree   ○ Strongly Agree   ○ Agree   ○ Disagree   ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ I don't know anyone who can help   ☐ No one is available to help

☐ Another person: | Who is that person

19. I will be more successful in this online course if someone helps by offering encouragement and praise when I keep working on the course lessons and activities.

○ Very Strongly Agree   ○ Strongly Agree   ○ Agree   ○ Disagree   ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ I don't know anyone who can help   ☐ No one is available to help

☐ Another person: | Who is that person

20. I will be more successful in this online course if someone regularly encourages me to keep working on the course if I start feeling like I will not be successful.

○ Very Strongly Agree ○ Strongly Agree ○ Agree ○ Disagree ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Parent ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school ☐ Another student at your local school

☐ A teacher or tutor from online school ☐ Another student in the online course

☐ I don't know anyone who can help ☐ No one is available to help

☐ Another person: | Who is that person

21. I will be more successful in this online course if someone regularly checks on my grades and praises me for good grades, or encourages me when my grades are not satisfactory.

○ Very Strongly Agree ○ Strongly Agree ○ Agree ○ Disagree ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Parent ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school ☐ Another student at your local school

☐ A teacher or tutor from online school ☐ Another student in the online course

☐ I don't know anyone who can help ☐ No one is available to help

☐ Another person: | Who is that person

22. I will be more successful in this online course if someone is available to help me better learn how to study in an online course, keep track of my own progress, and how to learn on my own outside of a classroom.

○ Very Strongly Agree   ○ Strongly Agree   ○ Agree   ○ Disagree   ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ I don't know anyone who can help   ☐ No one is available to help

☐ Another person: | Who is that person

23. I will be more successful in this online course if someone is available to show me how to search online, how to search in their own library, or shows me how to search another resource in the community if I need more materials to help with the course.

○ Very Strongly Agree   ○ Strongly Agree   ○ Agree   ○ Disagree   ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ I don't know anyone who can help   ☐ No one is available to help

☐ Another person: | Who is that person

24. I will be more successful in this online course if someone arranges contacts with other students so that we can study and work together.

○ Very Strongly Agree   ○ Strongly Agree   ○ Agree   ○ Disagree   ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ I don't know anyone who can help   ☐ No one is available to help

☐ Another person: | Who is that person |

25. To be more successful in this online course I should study together with another student who is studying the same subject or taking the same course.

○ Very Strongly Agree   ○ Strongly Agree   ○ Agree   ○ Disagree   ○ Strongly Disagree

(If any agree option) **Who do you plan to do this (select all who you would ask)?**

☐ Another student at your local school   ☐ Another student in the online course

☐ Another friend in your community

☐ I don't know another student who can study with me

☐ No other student is available to study with me

☐ Another person: | Who is that person |

You have completed the survey. Thank you for your time. Your email address has been submitted to the drawing for one of the free tablet computers. Please call BYU Independent Study at 1-800-914-8931 to make additional comments or for assistance.

Appendix C: Survey Instrument for Study of PCE Utilization

Thank you for participating in this brief survey. There are 25 questions that should take you less than 15 minutes to answer. Your responses will help us improve our courses and student support. Your honest and thoughtful responses will benefit present and future students. Once you have completed the survey, you will be entered into the drawing for the free tablet computer.

1. **Enter your email address to be entered in the drawing for the free tablet computers.**

   your.email@address.com

2. **Gender:**

   ○ Female   ○ Male

3. **Year in school (grade):**

   ○ Pre-9th grade   ○ 9th (Fresh)   ○ 10th (Soph)   ○ 11th (Jr.)   ○ 12th (Sr.)

4. **Current overall GPA:**

   ○ < 2.0   ○ 2.0 - 2.49   ○ 2.5 - 2.99   ○ 3.0 - 3.49   ○ 3.5 - 3.99   ○ 4.0   ○ > 4.0

5. **Why did you take this class?**

   ○ I need to pass the course to met high school graduation requirements

   ○ I do not need the class to meet graduation requirements but I am interested in the topic

   ○ Other   Reason you are taking the class if not for reasons given above

6. **Had you already taken this class before from another school or provider?**

   ○ Yes   ○ No

   If answer to #6 is yes, go to #7. If answer is No, go to #9

7. **Why did you take the class again?**

   ○ I previously failed the course

   ○ Other reason   Explain the other reason for taking the course again

   If the answer to #7 is failed the course, go to #8. If not failed, go to #9

8. Why do you believe you failed the course (check all that apply)?

☐ I did not try

☐ I could not understand the topic

☐ I could not understand the teacher

☐ The teacher would not help me

☐ I had to stop attending class because of illness or other problems

☐ I had to stop attending class due to bullying or other safety issues

☐ Other reason: | Explain the other reason why you believe you failed the course before

Congratulation on successfully completing your independent study course and thank you for your willingness to participate in this survey. Independent study courses do not require students to interact frequently with teachers or with other students in the course. Studies have shown that interactions with others while taking courses helps students learn. We are interested in ways that we can help all students succeed in online courses. We know that many students succeed in independent study courses because of the support and help that they receive from others as they complete their courses. Questions 9-25 ask about help you may have received as you completed your course. Please be thoughtful about each question and do your best to remember all of the help that you may have received from others.

9. **Did someone make sure that you had a designated place to study, access to a computer, adequate internet access, books, and any other study materials that you needed to complete the course?**

　○ Yes　　　　　○ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent　　☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school　　☐ Another student at your local school

☐ A teacher or tutor from online school　　☐ Another student in the online course

☐ Another person: | Who is that person |

10. **Did someone review the policies of the online school and the online course with you when you started the course?**

　○ Yes　　　　　○ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent　　☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school　　☐ Another student at your local school

☐ A teacher or tutor from online school　　☐ Another student in the online course

☐ Another person: | Who is that person |

11. Did someone set aside a regular time to meet with you to discuss course progress?

○ Yes   ○ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ Another person: | Who is that person |

12. Did someone help you organize and plan your time so that you had a regular schedule to work on your course until it was completed?

○ Yes   ○ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ Another person: | Who is that person |

13. Did someone help you set specific goals and deadlines for completing lessons, taking tests, and finishing the course?

☐ Yes   ☐ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ Another person: | Who is that person

14. Did someone check on your course progress regularly, ask how you were doing in the course, and remind you to keep working and stay on schedule?

☐ Yes   ☐ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ Another person: | Who is that person

15. Did someone explain things to you when you had questions about the readings and course materials if you did not understand the lesson or assignments?

○ Yes   ○ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ Another person: | Who is that person

16. Did someone help you with assignments, papers, quizzes, etc. when you had questions or needed help until you completed the course?

○ Yes   ○ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ Another person: | Who is that person

17. Did someone talk to the online school or online teacher and follow-up on your concerns if needed?

◯ Yes ◯ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school ☐ Another student at your local school

☐ A teacher or tutor from online school ☐ Another student in the online course

☐ Another person: | Who is that person |

18. Did someone teach you how to use the technology and to help you if you were having computer or internet problems or if the course was not working correctly?

◯ Yes ◯ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school ☐ Another student at your local school

☐ A teacher or tutor from online school ☐ Another student in the online course

☐ Another person: | Who is that person |

19. Did someone encourage and praise you for staying engaged in the course lessons and activities?

○ Yes   ○ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ Another person: | Who is that person

20. Did someone regularly encourage you to keep working if you were feeling like you would not be successful?

○ Yes   ○ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ Another person: | Who is that person

21. Did someone check on your grades periodically and praise you for good grades or encourage you when your grades were not satisfactory?

○ Yes   ○ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ Another person: | Who is that person

22. Did someone help you learn how to successfully study in an online course, keep track of your own progress, and teach you how to learn on your own outside of a classroom?

○ Yes   ○ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ Another person: | Who is that person

23. Did someone show you how to search online, search their own library, or search another resource in the community if you needed more materials to help with the course?

○ Yes   ○ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ Another person: | Who is that person

24. Did someone arrange contacts with other students so that you could study and work together?

○ Yes   ○ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Parent   ☐ Another close relative (grandparent, brother/sister, aunt/uncle, cousin)

☐ A teacher or counselor at your local school   ☐ Another student at your local school

☐ A teacher or tutor from online school   ☐ Another student in the online course

☐ Another person: | Who is that person

25. Did you study together with another student who was also studying the same subject or was taking the same course?

◯ Yes　　　　◯ No

(If yes) **Who helped you (select everyone who helped)?**

☐ Another student at your local school　　　☐ Another student in the online course

☐ Another friend in your community

☐ Another person or people: | Who was that person (or people) |

You have completed the survey. Thank you for your time. Your email address has been submitted to the drawing for one of the free tablet computers. Please call BYU Independent Study at 1-800-914-8931 to make additional comments or for assistance.

Appendix D: Semi-Structured Interview Protocol

Thank you for conducting these interviews. The intent of this study is to understand the interactions that the student experienced within a learning community during the completion of their independent study course. The data collected will be used to improve the design of courses and the support provided to students. Please follow the protocol for the interviews per the training and follow-up as clarity and more in-depth understanding may require.

Introduction

1. Greet the student and ensure that parent is present. Greet the parent. Thank them for their participation. Inform them that the interview will be recorded and that the recording will be used to document their responses for further study. Assure them that their identity will be protected and that researchers will not know their true identity. Thank them for logging in to Adobe Connect for the interview. Make sure that both can hear and that the technology is working properly. Let the participants know that the interview is expected to take 20 – 25 minutes. Remind them that they will each receive a $25 gift card and that you will verify the address where the gift card will be sent at the completion of the interview.

2. Thank the student for completing the survey and let them know that you have copies of their responses and that you will be using those answers as the basis for the interview questions. Tell them that the intent of the interview is to better understand the experience that the student had when they took their course.

3. Remind the parent that, though the interview questions are directed towards the student, you would like the parent to confirm the answers provided by the student and report their (the parent's) perspective on the experience as it relates to the interview questions.

4. For all interview questions except #1, there are two possible ways to phrase the question based on the student's survey response.

   a. If the student answered "No" to the question about someone helping them, you would begin the question by saying "You reported that no one (repeat the pertinent question text)" and then ask "Do you believe it would have helped if someone had?" If they say yes ask, "how would that have helped?" Follow up on the response to pursue ideas expressed by the student including who they think could have provided that help. Ask the parent if they have thoughts about the question and the answer provided by the student.

   b. If the student answered "yes" to the question about someone helping them they would also have responded in the survey with the person(s) that helped them. You would begin the interview question by saying, "You reported that person(s) [from survey response] helped you (repeat the question text). Can you give me an example of when this happened?" Follow up on the responses to pursue interesting insights on the student experience. Ask the parent if they have thoughts about the question and the answer provided by the student.

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Interview Questions

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1. (Refer to the student's response to survey question #5) When we asked you why you took this class you answered? (Repeat the student's answer). Ask how successful they were you in accomplishing that purpose? Ask the parent for confirmation and any thoughts they would like to share.

2. Refer to the student's response to survey question #9 and ask the appropriate interview questions (see #4 in introduction section above) and follow up with student and parent as

appropriate to better understand their experience and perception of help provided or perception of the value of the help that could have been provided.

3. Repeat process of question #2 using responses to survey questions #10 through 25.

Conclusion

Conclude the interview by thanking the participants. Remind them that they will each be receiving a $25 gift card. Conform the mailing address where the cards are to be sent. If the interview is in person, give them the gift cards and obtain the appropriate signatures on the form provided. Tell them that the answers to the survey and interview questions will help us improve the experiences that students have in our courses and help us provide better support. Conclude interview. Inform the DCE assessment office that the interview was conducted and forward all materials and documents.