Academic Communities of Engagement (ACE) Framework

Jered Borup, Charles R. Graham, Richard E. West, Leanna Archambault, & Joan Kang Shin

Communities   Blended Learning   Online Learning   Online   Engagement   Student Engagement   Support

Blended

The Academic Communities of Engagement (ACE) framework was originally created to identify the critical factors that limit or facilitate students' ability to engage in online and blended learning environments (Borup et al., 2020). Specifically, the ACE framework builds on previous educational psychology research that has three interconnected dimensions of engagement: affective, behavioral, and cognitive (the ABC dimensions of engagement). Within a blended or online learning environment, students can independently engage in learning activities without the support of others. However, much of the existing research has assumed the in-person learning environment and has not considered the affordances and constraints of online and blended environments that can facilitate or inhibit a learner's ability to engage in learning activities. For instance, the nature of asynchronous online courses can leave learners feeling isolated and require that they exercise more self-regulation abilities compared to their in-person counterparts. These challenges are reflected in online learning's relatively high attrition rates (Freidhoff, 2021). When online learners' ability to independently engage affectively, behaviorally, and/or cognitively is insufficient, they require support from others to be successful. The ACE framework defines the ABC dimensions of engagement and explains how environments, communities, and learner characteristics can limit or facilitate academic engagement.

Despite its importance to learning outcomes, learner engagement has been generally ill-defined. In fact, many researchers within the field of instructional design and technology have used the term without providing any definition at all (Henrie et al., 2015; Martin & Borup, 2022). Those who have attempted to define learner engagement have agreed that it is multidimensional. However, researchers commonly disagree on which dimensions to include and how to define them (Christenson et al., 2012). While disagreements will likely always exist (Fredricks, 2011), some researchers have coalesced around three dimensions of learner engagement. Building on this research, the authors of the ACE framework operationalized the dimensions as follows (Borup et al., 2020):

- Affective engagement: "The emotional energy associated with involvement in course learning activities" (p. 813). Example indicators of affective engagement include situational and personal interests, enjoyment, confidence, and happiness.
- Behavioral engagement: "The physical behaviors (energy) associated with the completing course learning activity requirements" (p. 813). Example indicators of behavioral engagement include attendance, completing/submitting work, time on task, and following procedures/directions.
- Cognitive engagement: "The mental energy exerted towards productive involvement with course learning activities" (p. 813). Example indicators of cognitive engagement include attention, concentration, and use of cognitive/metacognitive strategies.

The ABC dimensions of engagement are influenced by "facilitators" that support or hinder engagement (see Figure 1). Students' abilities to academically engage in online and blended learning activities can vary widely and are dependent on their background and characteristics such as self-regulation abilities, socioemotional abilities, academic competency, and previous online and blended learning experiences. Dimensions of engagement are also influenced by the learner's personal and course environments and communities (see Figure 1). While there is overlap between environments and communities, the distinction made by the ACE framework is that the environment is the physical location (the where) and materials/activities (the what) and the communities are formed by support actors (the who).

Figure 1

ACE framework image depicting the relationship between facilitators of academic engagement, dimensions of academic engagement, and desired learning outcomes.
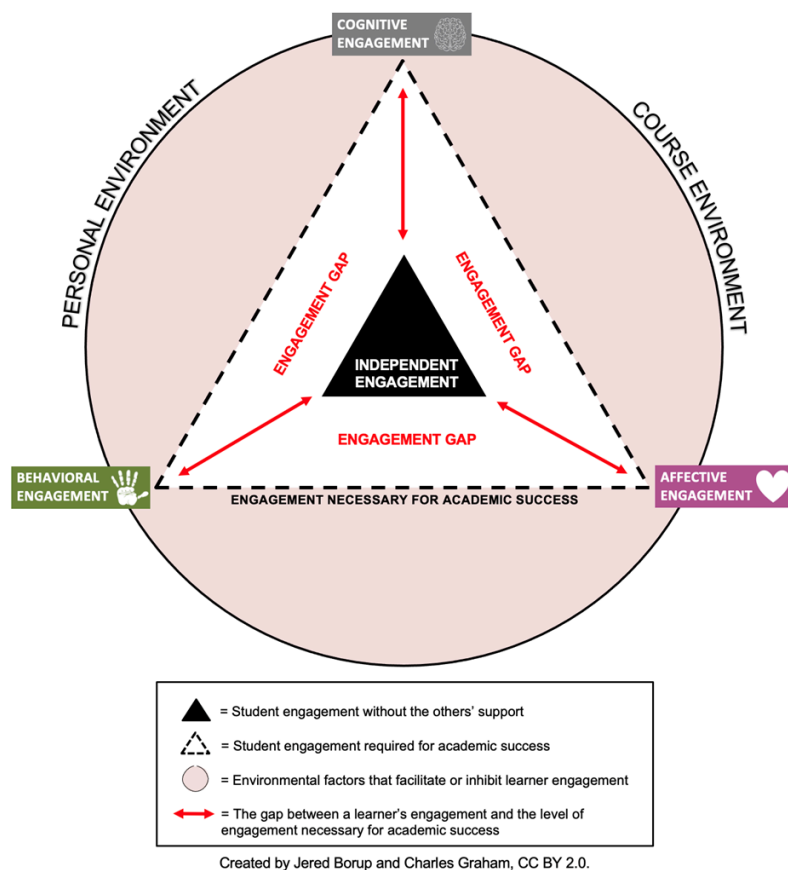

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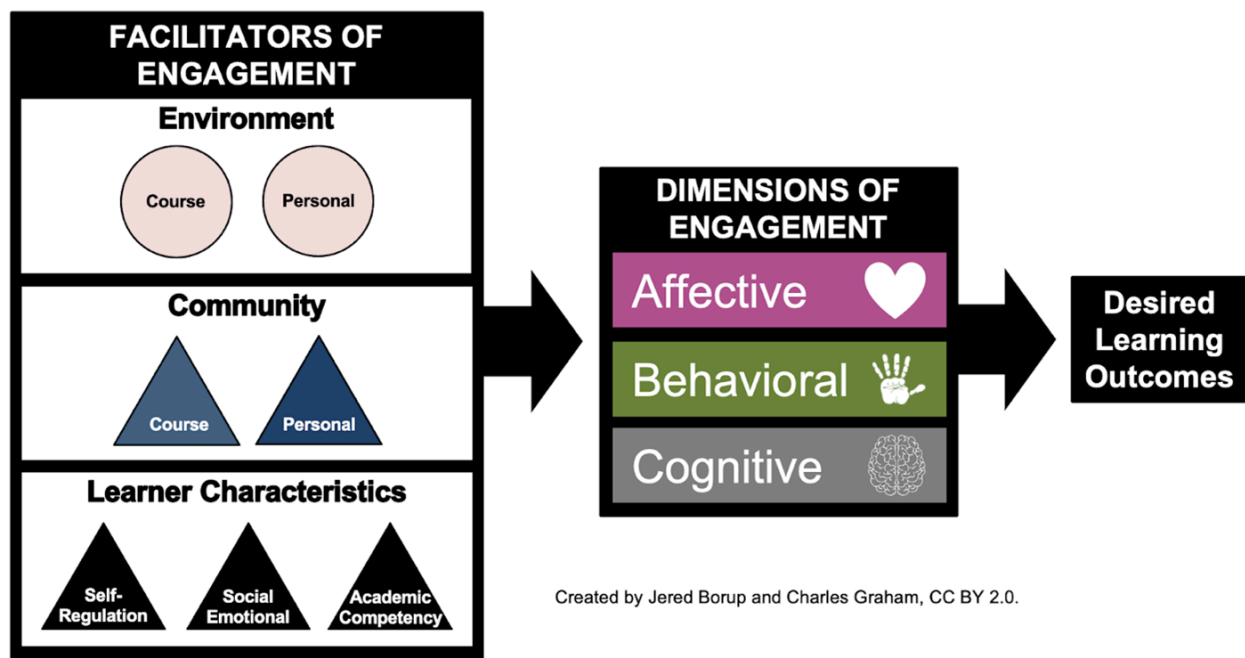
Supporting and Increasing Learner Engagement

Learner engagement is malleable, shaped by changes to the learner's personal and course environments. Even in well-designed and organized environments, there likely exists a gap between a learner's independent engagement (or the ability to engage in learning activities without support) and the level of engagement necessary for academic success (see Figure 2). As a result, support offered by actors within the learner's communities is an important facilitator of learner engagement.

Figure 2

ACE framework image depicting the gap between a student's ability to engage independently and the level of engagement needed for academic success.

COGNITIVE ENGAGEMENT

PERSONAL ENVIRONMENT

COURSE ENVIRONMENT

ENGAGEMENT GAP

ENGAGEMENT GAP

INDEPENDENT ENGAGEMENT

ENGAGEMENT GAP

BEHAVIORAL ENGAGEMENT

AFFECTIVE ENGAGEMENT

ENGAGEMENT NECESSARY FOR ACADEMIC SUCCESS

▲ = Student engagement without the others' support

△ = Student engagement required for academic success

◯ = Environmental factors that facilitate or inhibit learner engagement

↔ = The gap between a learner's engagement and the level of engagement necessary for academic success

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Similar to how sociocultural learning theories describe support for knowledge construction, the primary claim of the ACE framework is that a student's individual ability to independently engage affectively, behaviorally, and cognitively can increase when supported by others. The ACE framework originally grouped support actors within the two communities (see Figure 3):

1. The personal community of support includes support actors such as family and friends who have formed long-lasting relationships with the learner outside of the course.
2. The course community of support includes support actors such as instructors and other students that formed relationships with the learner because of their enrollment in a course or program. These relationships tend to be temporary and not meaningfully extend beyond the duration of the course.
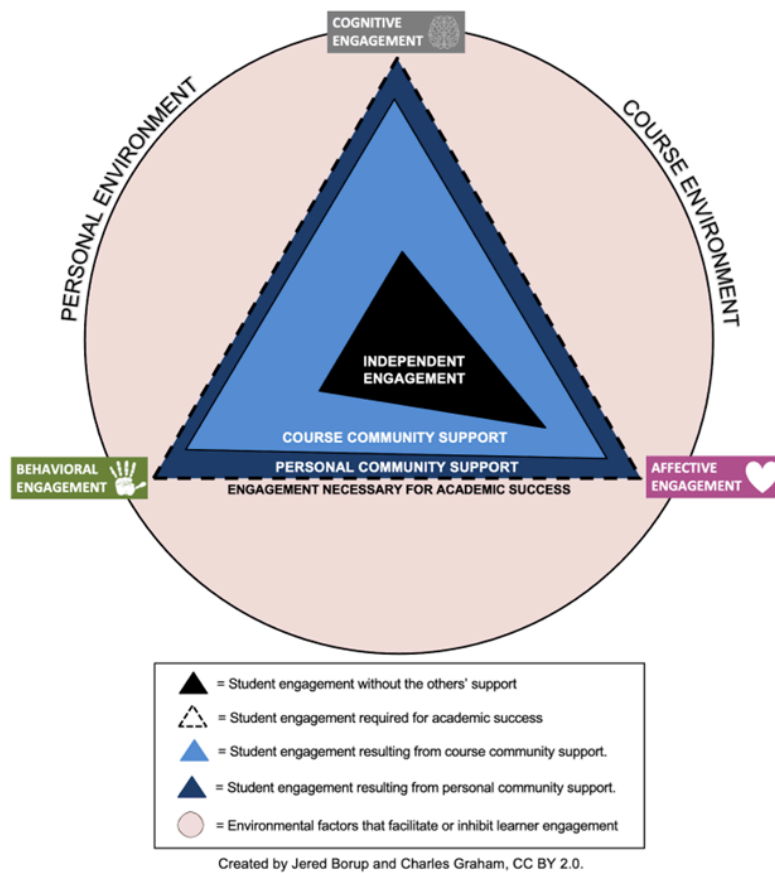
Figure 3

The original ACE framework described two primary engagement support communities at the personal level and course level.

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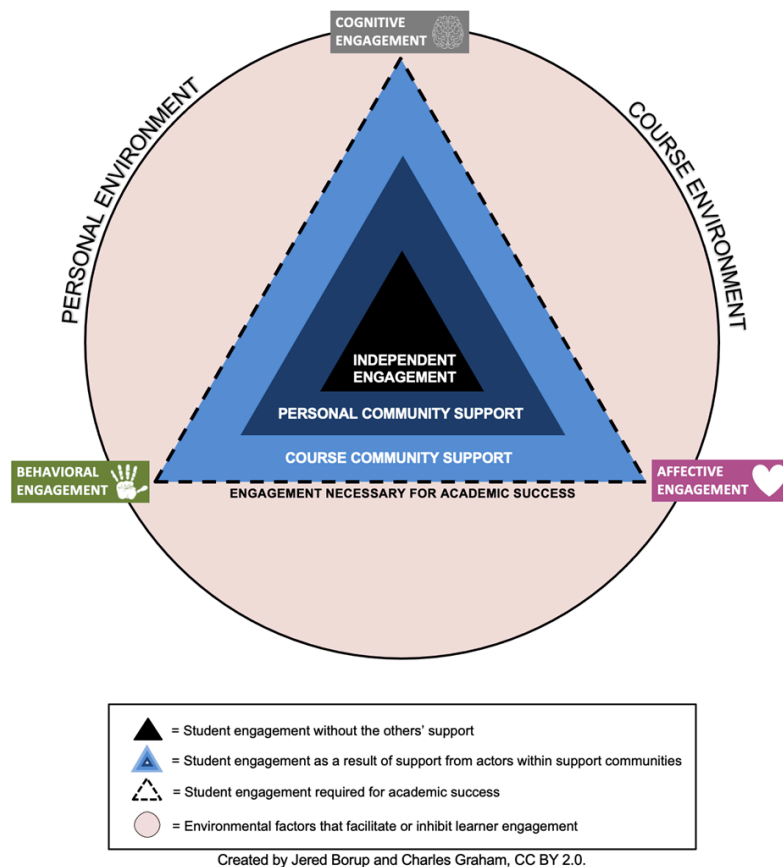
While independent engagement is represented by an equilateral triangle, in reality a student's ability to engage can vary across the different dimensions. Similarly, the support students receive can be asymmetrical. For instance, in Figure 4, a student has high affective engagement but low behavioral and cognitive engagement. They received a high level of support from their course community and much less support from their personal community. The order that the communities are represented in the figure are largely arbitrary and can be changed if the researcher chooses. For instance, in the following figure, we swapped the location of the support communities with the inner triangle representing the course community support and the outer triangle representing the personal community support.

**Figure 4**

The ACE framework with high course community support

COGNITIVE ENGAGEMENT

PERSONAL ENVIRONMENT

COURSE ENVIRONMENT

INDEPENDENT ENGAGEMENT

COURSE COMMUNITY SUPPORT

PERSONAL COMMUNITY SUPPORT

ENGAGEMENT NECESSARY FOR ACADEMIC SUCCESS

BEHAVIORAL ENGAGEMENT

AFFECTIVE ENGAGEMENT

▲ = Student engagement without the others' support

△ = Student engagement required for academic success

▲ = Student engagement resulting from course community support.

▲ = Student engagement resulting from personal community support.

◯ = Environmental factors that facilitate or inhibit learner engagement

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Following a review of the literature and the completion of a series of case studies in various online and blended contexts, the ACE framework authors offered some possible support elements for learner engagement and aligned them with the three dimensions of engagement (see Figure 5). Specifically, the authors of the ACE framework proposed the following:

· Affective engagement would likely increase with support elements of facilitating communication, developing relationships, and instilling excitement for learning.

· Behavioral engagement would likely increase with support elements of troubleshooting, orienting, organizing, managing, monitoring, and encouraging progress.

· Cognitive engagement would likely increase with the support elements of instructing and collaborating.

Figure 5

Support elements for the ABC dimensions of engagement as proposed by the original ACE framework.

Affective ♥	Behavioral ✋	Cognitive 🧠
• Facilitating communication • Developing relationships • Instilling excitement for learning	• Troubleshooting and orienting • Organizing and managing • Monitoring and encouraging progress	• Instructing • Collaborating
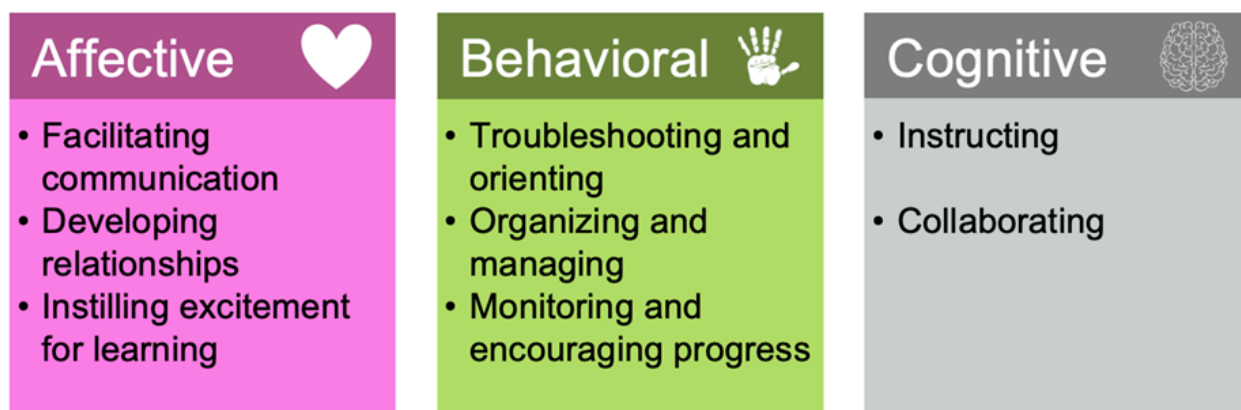
The Future of the ACE Framework

Since its publication in 2020, researchers have adapted the ACE framework to a variety of settings. In the appendix, we share three adaptations that provide important insights into:

- The dynamics between independent engagement, personal community, and course community.
- The value of both the local and global course communities.
- The importance of adding the school/institutional community of support.

As a relatively new framework, additional case studies will continue to help refine and/or expand aspects of the ACE framework. Measures of the framework should also be developed and validated. This type of research is best done collaboratively with stakeholders and will be especially important if we are to identify strategies to increase learner engagement.

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Appendix: ACE Framework Adaptations

When first published, the authors of the ACE framework called for future research to confirm, refine, and/or expand on the framework. In the following sections, we highlight three cases of the ACE framework that have made important adaptations.

The Dynamics Between Independent Engagement, Personal Community, and Course Community

In their research at a full-time cyber charter school, Hanny et al. (2023) conducted and analyzed parent interviews to better understand parents' efforts to support their children's ABC engagement. They found that parents commonly identified a gap between their child's engagement with current level of support and the amount of engagement that was necessary for academic success (see Figure 6).

Figure 6

The ACE framework with an engagement gap between a learner's engagement following support and the engagement necessary for academic success.

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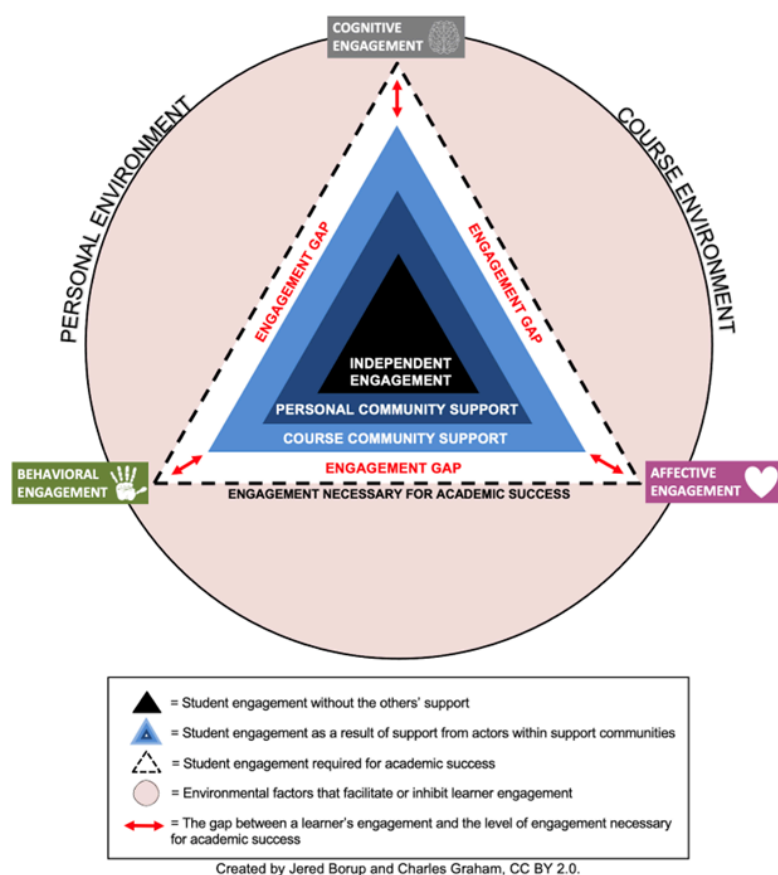
Parents addressed this engagement gap in three ways. First, parents worked to increase their child's ability to independently engage in learning activities, often by helping them to develop better self-regulation and socioemotional skills. Second, parents worked to increase their own knowledge and skills so that they could offer their child more effective support. Third, parents advocated for their child to increase the levels of support offered by the support actors within the course community (see Figure 7).

Figure 7

Three ways that parents work to close the engagement gap for their students, (1) (left) by increasing their child's ability to independently engage, (2) (center) by increasing their own ability to support engagement, and (3) (right) by advocating for greater support from those in the course community.
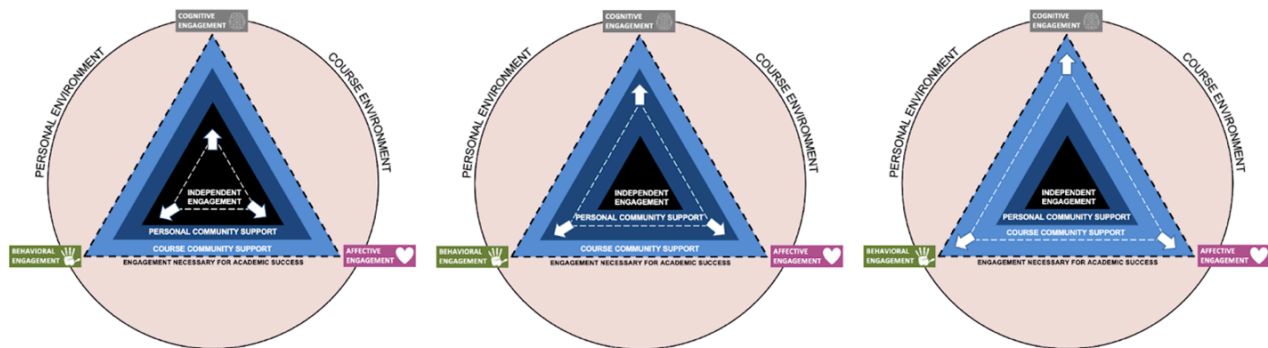
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Local and Global Course Communities

Several studies have applied the ACE framework to contexts with multiple, distinct environments and communities within the same course. For instance, when Shin and her colleagues (Shin et al., 2022) offered a Massive Open Online Courses (MOOC) to teachers of English throughout the world, they learned that some of the MOOC participants were also attending in-person MOOC camp sessions facilitated by local experts. In their research, they used the ACE framework to better understand how in-person MOOC camps in Brazil, Vietnam, and Peru impacted learners' ABC dimensions of engagement. Their analysis of interviews with MOOC camp participants and facilitators found that the local MOOC camps offered important support that increased engagement in the MOOC (offered only in English). The camps helped participants to better persist through the MOOC activities and transfer their learning to their teaching. This local course community provided linguistic support for teachers whose levels of English language proficiency could not support comprehension of the MOOC content. In addition, the camps offered content support by experts who could situate the global MOOC content within the local culture and context. As a result, Shin et al. (2022) adapted the ACE framework for culturally and linguistically learners (ACE-CLD) to include three communities and environments: the personal community/environment, the in-person local course community/environment, and the global online community/environment (see Figure 8 and 9).

Figure 8

Adapted figure to include the global and local course environments and communities as facilitators of engagement.
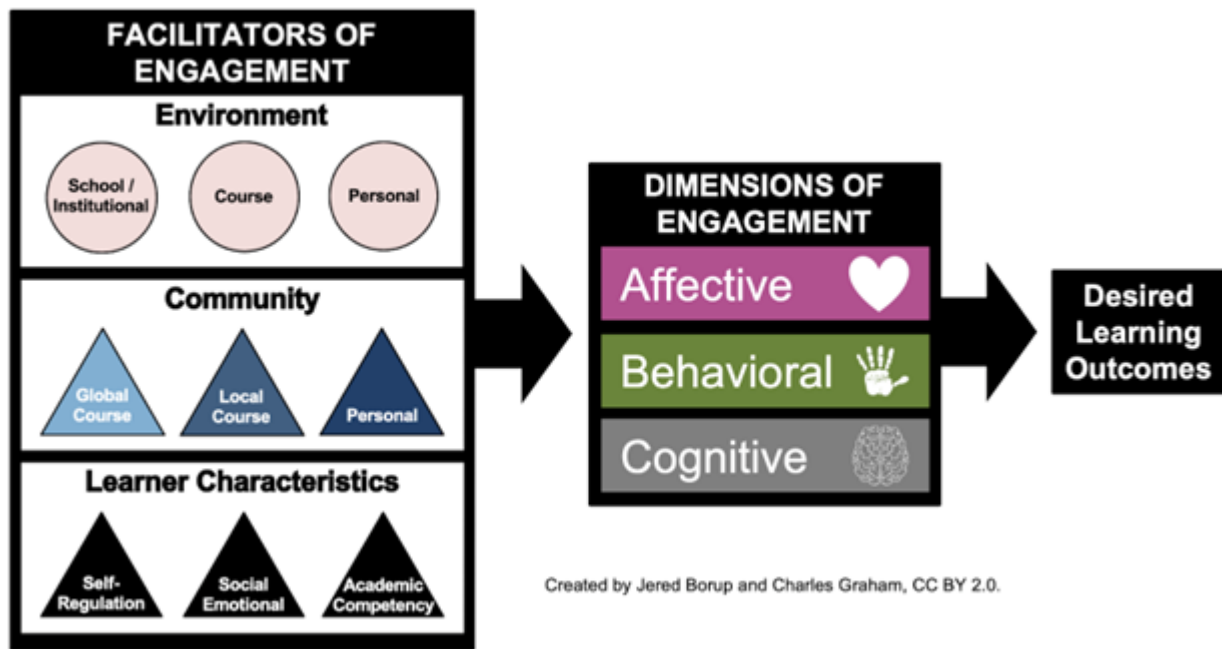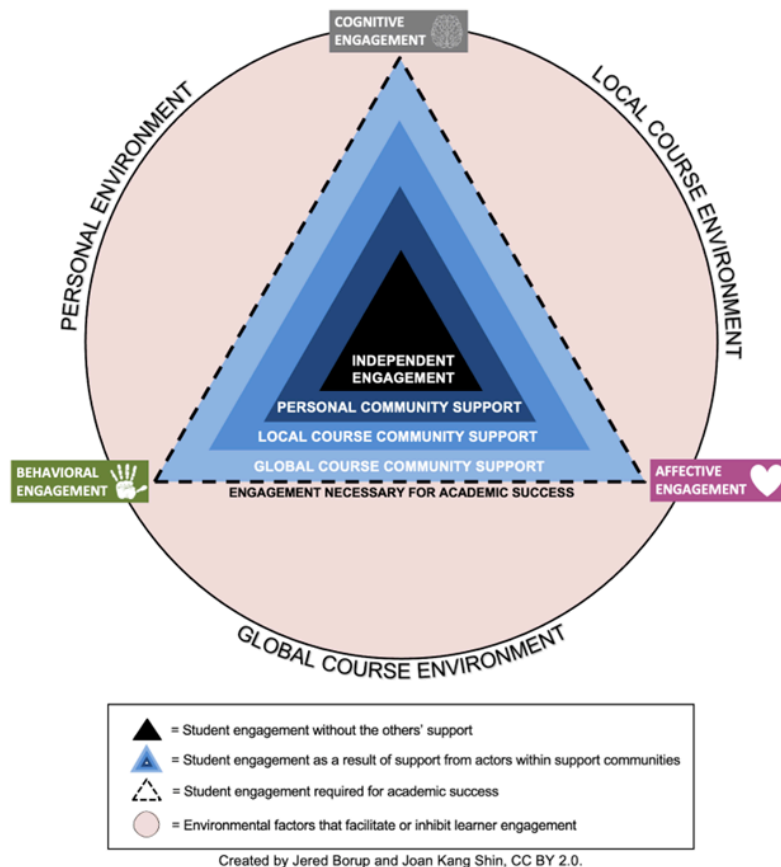
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Figure 9

The adapted ACE figure with local and global course communities of support

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A similar distinction has been made between local and online course communities and environments. For instance, Spring et al. (2023) examined a blended program where university students enrolled in online courses but also attended weekly local, in-person sessions to discuss their learning with peers. Unlike the MOOC camps described by Shin et al.

(2022), these discussions were facilitated by volunteers who were not experts in the different course content areas but knowledgeable at fostering a supportive learning community. As a result, the facilitators were best equipped to support affective and behavioral engagement, and the online teacher supported cognitive engagement. Similarly, Borup and his colleagues conducted a series of case studies examining a learning model where high school students enrolled in one or two online courses and completed the courses under the supervision of an on-site facilitator in a classroom environment. In these cases, the in-person community and environment offered the learner support that their online community and environment did not or could not provide.

School/Institutional Community of Support

The original ACE framework did not include the school/institutional community of support. However, current applications of the ACE framework at the institutional level have found there are environmental and community facilitators/barriers to engagement that can be addressed at the institutional level (Spricigo et al., 2023; Tuiloma et al., 2022). While it is possible to combine the course and school communities, there are advantages and precedent to separating them. For instance, Rovai and colleagues developed measures for learners' sense of community at the course and school levels (Rovai, 2002; Rovai et al., 2004). Similarly, Skinner and Pitzer (2012) distinguished between engagement in the classroom and with the school. Others have also distinguished between support offered to online learners at the institution level and the course level (Thrope, 2002; Trespalacios et al., 2023). This type of distinction, can provide a broader and more nuanced understanding of a learner's engagement and various support actors and the supports they provide. This is especially important when learners are enrolled in multiple courses at a single school/institution and less important when learners are only enrolled in a single course and do not engage with the school/institution.

Figure 10

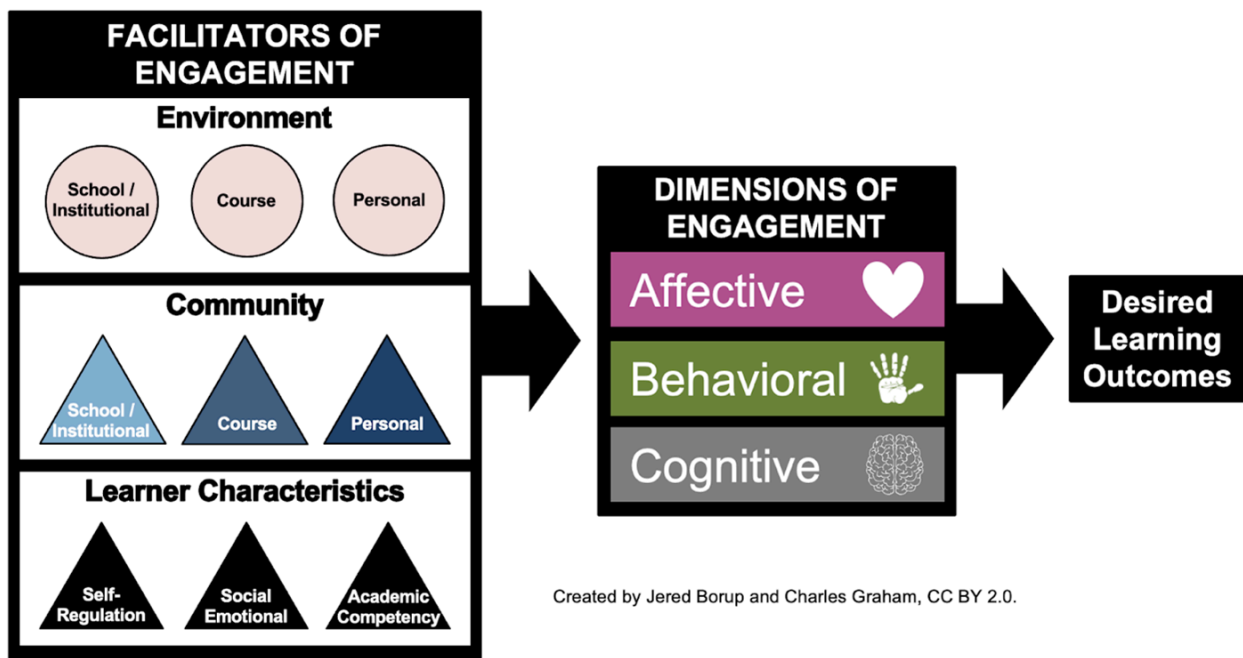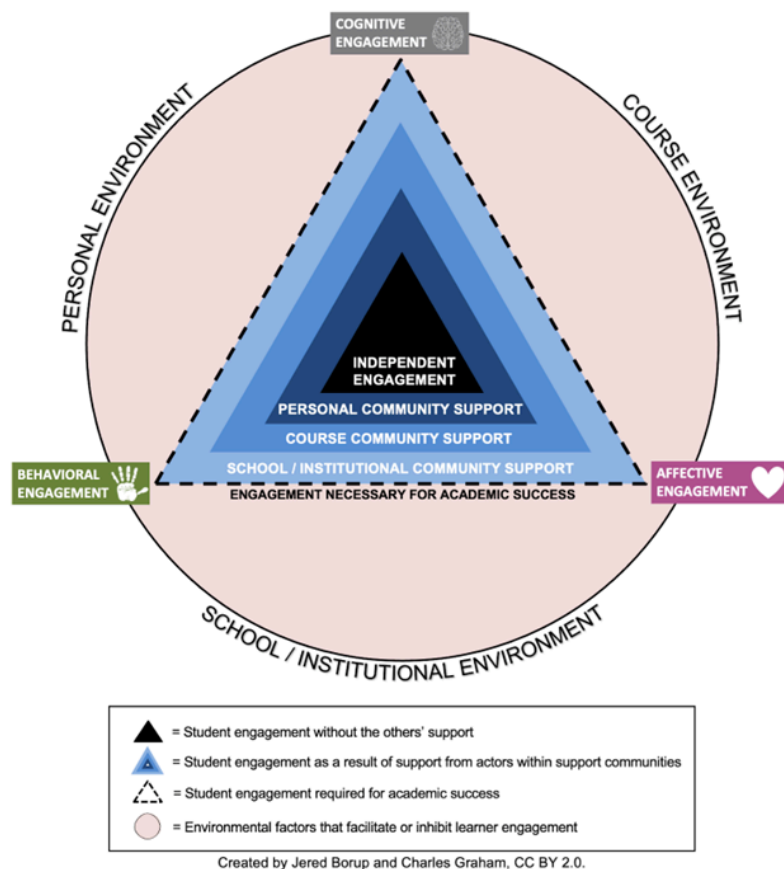*Adapted figure to include school/institutional course environment and community as facilitators of engagement.*

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Figure 11

The adapted ACE figure with school/institutional community of support.

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