Presence+Experience: A Framework for the Purposeful Design of Presence in Online Courses

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Keywords: Presence; online; eLearning; course design; Community of Inquiry; experiential learning; STEM

This is a post-peer-review, pre-copyedit version of an article published in Tech Trends. The final authenticated version is available online at: doi: 10.1007/s11528-016-0029-4
Cite as:
Dunlap, J. C., Verma, G., & Johnson, H. L. (2016). Presence+Experience: A framework for the purposeful design of presence in online courses. *Tech Trends, 60*(2), 145-151.

Abstract

In this article, we share a framework for the purposeful design of presence in online courses. Instead of developing something new, we looked at two models that have helped us with previous instructional design projects, providing us with some assurance that the design decisions we were making were fundamentally sound. As we began to work with the two models we noted that they could be overlaid to create a useful design framework for our efforts. The framework—what we refer to as the Presence+Experience (P+E) framework—merges the Community of Inquiry (CoI) model with Kolb's experiential learning cycle. We used this framework to guide the redesign of Science, Technology, Engineering, and Mathematics (STEM) method courses for eLearning delivery.

Overview

When an on-campus course is lecture-oriented and has limited opportunities for student engagement, converting it to online is an opportunity to positively influence teaching and assessment strategies to improve student and faculty experience. However, planning what exactly to do with the course design and teaching strategies can feel like an overwhelming task, especially for faculty who have less experience with facilitating online learning opportunities. The design goal is often to protect those aspects of the on-campus course that make it an effective learning experience (a "do no harm" perspective) while at the same time maximize the benefits and minimize the limitations of eLearning.

When working with faculty colleagues to reenvision their courses for eLearning delivery, we find the Community of Inquiry model to be useful. The Community of Inquiry (CoI) model (Garrison, Anderson & Archer, 2000) emphasizes educational interactions involving cognitive, social, and teaching presence in order to engage students' meaningful conceptual processing and critical thinking during online learning. However, for a more inexperienced online educator, the challenge with the CoI model is that it is descriptive instead of prescriptive. When embarking on a course redesign for eLearning delivery, educators are looking for guidelines on what to do—what strategies to employ to achieve student engagement through interaction in an online course.

To address the need to provide colleagues with discerning advice on how to design their online courses to achieve the benefits of the Community of Inquiry model, we overlaid Kolb's experiential learning cycle—a more prescriptive model effectively used to structure on-campus and online courses (see Svinicki & Dixon, 1987; Dunlap, Dobrovolny & Young, 2008)—on the Community of Inquiry model. In this article we accomplish the following two goals: 1) we share the resulting prescriptive framework--what we refer to as the Presence+Experience (P+E) framework—for the purposeful design of presence in online courses; and 2) describe how it was applied to the redesign of Mathematics and Science Education Methods courses (STEM methods course) for eLearning delivery. [Note: We use "STEM methods courses" to refer to science and mathematics methods courses to be succinct in our writing. We do recognize that STEM encompasses more than mathematics and science.]

The Presence+Experience framework

With an increased interest in online education during the late 1990s, Garrison, Anderson, and Archer (2000) developed the Community of Inquiry (CoI) model to describe how the interplay between three elements essential to learning transactions—teaching presence, social presence, and cognitive presence—are foundational to the development of deep and meaningful educational experiences in eLearning environments (see Figure 1). Influenced by Dewey's ideas regarding the social context of scientific inquiry and knowledge construction, and later by Lipman's (2003) application of the CoI concept to education and classroom settings, the CoI model applied to online education—reflects the sociocultural view of learning and knowledge-formation as situated in a social context. By emphasizing balanced attention to teaching, social, and cognitive presence in order to establish a Community of Inquiry involving students and teachers in community-oriented, knowledge-building interactions in an online course, the CoI model emphasizes educators' intentional use of instructional strategies (referred to as teaching presence) to establish social presence in support of and service to cognitive presence and overall student learning (Dunlap & Lowenthal, 2014).

[PLACE FIGURE 1 ABOUT HERE]

The CoI model is visually represented as having three distinct, yet interrelated components: social presence, cognitive presence, and teaching presence. All three components require attention to create a complete online learning experience. Social presence is determined in an online course by the type and level of student-to-student

and student-to-instructor (and/or any other instructional support person, such as a teaching assistant) interaction. Social presence refers to the strategies people use and the activities people engage in—using various asynchronous and synchronous communication tools—to minimize transactional distance and help students and faculty feel more involved, engaged, and real in online courses (Lowenthal & Dunlap, 2014). It is also a term used to capture aspects of immediacy, intimacy, emotion, and/or connectedness between and among participants in an online course (Lowenthal, 2010; Dunlap et al., in press).

Cognitive presence refers to the interaction students have with the content of a learning experience. Supported by teaching and social presence, students' cognitive presence is engaged through deep and relevant cognitive-processing activities and assessments that lead to enhanced conceptual understanding (Dunlap, Sobel, & Sands, 2007; see same for a taxonomy of student-to-content interactions strategies for online courses).

Finally, teaching presence refers to the decisions made related to the design, direction, and facilitation of social and cognitive-processing interactions in online courses (Anderson, Rourke, Garrison, & Archer, 2001). To establish teaching presence, an instructor must attend to the design and organization of learning experiences; the design and facilitation of communication and interaction activities occurring between and among students, students and the instructor, and students and the content; and share content/discipline knowledge and expertise through direct instruction.

Although used as a central concept in online-education design and development, the CoI model is a descriptive model that does not provide much prescriptive guidance

on how to intentionally design for and facilitate student learning and engagement in online courses (Garrison & Arbaugh, 2007). Educators can make some inferences from the indicators of teaching presence developed by Anderson et al. (2001), but even these indicators lack sufficient detail; others still have described strategies for establishing social presence (Dunlap & Lowenthal, 2014) and cognitive presence (Dunlap, Sobel, & Sands, 2007) in online courses, providing design and teaching recommendations but not a systematic approach for designing CoI-aligned online learning experiences. So despite its intuitive appeal and overall popularity, online educators continue to experiment with different ways to establish a Community of Inquiry (through teaching, social, and cognitive presence) in the online courses they teach (Dunlap & Lowenthal, 2014). Therefore, to address the lack of specific instructional-design recommendations for establishing Communities of Inquiry in online courses, we used an approach which had been effective in guiding a few of our previous online-course and flipped-classroom design projects —Kolb's experiential learning cycle (e.g., Dunlap, Dobrovolny, & Young, 2008).

Kolb (1984) defines learning as "the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience" (p. 41). Influenced by Dewey, Lewin, and Piaget, Kolb (1984; Kolb, Boyatzis, & Mainemelis, 2000) conceptualizes learning from experience in terms of four components: *Concrete Experience*, *Reflective Observation*, *Abstract Conceptualization*, and *Active Experimentation*. These components form four phases of student interaction in support of student engagement and learning, referred to collectively as the experiential learning cycle (see Figure 2).

[PLACE FIGURE 2 ABOUT HERE]

Within the cycle each of these four phases and corresponding components entails its own distinctive process for students (Dunlap, Dobrovolny, & Young, 2008; Svinicki & Dixon, 1987):

i. *Experiencing (concrete experience)*. Students are involved in a specific experience that provides context for the learning to come. This phase of the cycle addresses cognitive presence by involving students in student-to-content interactions through a video, case study, lab, story, simulation, or game.

ii. *Examining (reflective observation)*. Students reflect on the experience, considering various aspects of experience and drawing meaning from the experience. Through the use of group discussion, group brainstorming sessions, and journaling/blogging to encourage reflective observation, students are not only involved in student-to-content interactions (supporting cognitive presence), but also student-to-student and student-to-instructor interactions (supporting social presence).

iii. *Explaining (abstract conceptualization)*. After the first two phases have provided students with a contextualizing experience, students use theoretical constructs to explain their previous experience, drawing logical conclusions that inform future experiences. Instructional activities that support students' cognitive presence during this phase include listening to/watching lectures, completing readings, writing position papers, and model building.

iv. *Applying (active experimentation)*. Students apply their new learning to practice, problem solving, and decision making, leading to new concrete experiences and continuing iterations of the cycle. During this phase, students complete projects and simulations, as well as engage in service learning and fieldwork. Depending on the types of application activities, students are involved in student-to-content, and student-to-student and student-to-instructor (and possibly student-to-supervisor, if in the field) interactions that support both cognitive and social presence needs.

Providing prescriptive advice, Kolb's experiential learning cycle illustrated how various instructional and teaching strategies could be applied in an intentional sequence to enhance students' engagement, cognitive processing, and overall learning experience.

By overlaying Kolb's experiential learning cycle on the the CoI model (see Figure 3), we determined that the experiential learning cycle could be used to inform teaching presence (and ultimately social and cognitive presence) by prescribing a systematic approach for considering (a) the design and organization of learning experiences; (b) the design and facilitation of student-to-student, student-to-instructor, and student-to-content interactions; and (c) the design and delivery of content/discipline-specific instruction. In other words, the experiential learning cycle could encourage us to approach the goals of the CoI model in an intentional, experience-centered way.

[PLACE FIGURE 3 ABOUT HERE]

Designing eLearning environments in STEM methods courses using the Presence +Experience framework

By offering our STEM methods courses fully online, we provide flexible learning environments, meaningful opportunities to enhance prospective STEM (pSTEM) teachers' professional expertise, and address the diversity in their backgrounds and experiences. STEM methods courses are an integral part of most teacher education preparation programs in the United States (US). These courses are considered to be high-touch, high-interaction endeavors and mostly offered in face-to-face or hybrid settings. pSTEM teachers take these courses to further their content knowledge, pedagogy, and instructional practices. In our STEM education program at the [name of institution], pSTEM teachers enroll in STEM methods courses concurrently with field experiences in middle and high school STEM classrooms.

We used the Presence+Experience (P+E) framework to guide the redesign of two STEM methods courses—one in mathematics education and one in science education—for full online delivery. Rather than trying to replicate face-to-face or hybrid courses for online delivery (if that were even possible), we drew on our P+E framework to design instructional experiences that maximize the benefits of eLearning. By instructional experiences, we mean a coherent collection of activities (e.g., course readings, classroom/instructional videos, interactive web-based tools, instructor prompts, case studies) that provide pSTEM teachers with opportunities to engage in each phase of Kolb's experiential learning cycle. We drew on each phase of Kolb's experiential learning cycle to prescriptively design content/discipline specific instructional experiences (teaching presence). In so doing, we were able to

systematically address student-to-student, student-to-instructor, and student-to-content interactions (social and cognitive presences) in conjunction with teaching presence. Although social and cognitive presences could be addressed in each phase of Kolb's experiential learning cycle, we found it useful to leverage pSTEM teachers' work in the first three phases by intentionally designing for the intersection of cognitive and teaching, social and teaching, and cognitive and social presences, respectively. In the last phase, we designed for the intersection of teaching, cognitive, and social presences. Of important note, rather than designing for one presence in isolation, we intentionally targeted the intersection of two or more presences.

The following paragraphs provide examples of how the P+E framework supported our instructional design decisions. During the *experiencing (concrete experience)* phase, for example, we addressed the intersection of cognitive and teaching presence by selecting content (see Figure 4) that provided pSTEM teachers opportunities to engage in activities relevant to STEM teaching practice. Activities included viewing vetted classroom videos of experienced STEM teachers, watching video interviews with STEM experts, and working with interactive web-based tools, including virtual science laboratories and dynamic geometry tools.

[PLACE FIGURE 4 ABOUT HERE]

During the *examining (reflective observation)* phase, we addressed the intersection of social and teaching presences by setting an instructional climate (see Figure 5) through prompts intended to guide pSTEM teachers' reflection on the activities

in the *experiencing (concrete experience)* phase. Prompts designed to encourage pSTEM teachers' reflection on classroom videos included "How did the teacher promote students' reasoning during the whole class discussion?"; "Use an observation protocol to identify successful classroom management practices in a video of a STEM classroom"; and "How did the teacher engage in formative assessment when monitoring students' work on the task?" Prompts designed to encourage pSTEM teachers' reflection on the interactive web-based tools included "How might a middle school student use this interactive to make sense of ratio?" and "In what ways can you share the data collected from the virtual lab? Take a picture of it or scan it and upload it on CANVAS [the university's learning management system]. What does the data represent? What are the implications?"

[PLACE FIGURE 5 ABOUT HERE]

During the *explaining (abstract conceptualization)* phase, instructional strategies that may address the intersection of social and cognitive presences include explaining the underlying theory/ies to students via lecture/presentation, having students write position papers based on their understanding of theory, involving students in model building that represents theory, or asking students to complete a set of foundational readings on theory. One way we approached this phase is by providing pSTEM teachers the opportunity to engage in student-student and student-instructor interactions (see Figure 6). With the support of these interactions, students used theoretical constructs to explain their work in the previous phases and draw logical conclusions to inform their future work. We held instructor-led small group synchronous

video conferences where pSTEM teachers interact with their peers and instructor to draw logical conclusions based on theory. We also provided pSTEM teachers the opportunity to engage in peer review to develop their abstract conceptualization through peer-peer interactions. For example, we prompted pSTEM teachers to vet theory-based conclusions that their peers drew, providing viable alternate explanations when applicable. Furthermore, pSTEM teachers responded to instructor prompts via text, video, and screenshots.

[PLACE FIGURE 6 ABOUT HERE]

During the *applying (active experimentation)* phase, we addressed the intersection of teaching, cognitive, and social presences (see Figure 7) by providing pSTEM teachers with opportunities to connect key instructional practices to their own classroom practice in their concurrent field experiences. Drawing on theory and practice from the STEM methods courses, pSTEM teachers facilitated lessons in their concurrent field experiences, evaluated the effectiveness of those lessons, and made concrete recommendations for future STEM lessons. In addition, pSTEM teachers observed experienced classroom teachers for particular purposes. When possible, pSTEM teachers conducted joint observations and conversed about what they learned using a variety of asynchronous and synchronous online communication tools.

[PLACE FIGURE 7 ABOUT HERE]

Although we used each phase of Kolb's experiential learning cycle to prescriptively design instructional experiences, this is not to say that our instructional

experiences are lock-step, requiring that pSTEM teachers demonstrate particular competencies prior to moving forward in the experience. Rather, we consider the educational experiences to be multidimensional “teaching playgrounds” (Authors, under review), in which pSTEM teachers can investigate, reflect on, and respond to STEM teaching practices.

Guidelines for using the Presence+Experience (P+E) framework

While we have found the Presence+Experience (P+E) framework to be useful in guiding our design decision-making in order to create learning opportunities that enhance our students' experience in online courses, we recognize that the course-design structure defined by the framework may not be appropriate for all online courses. As when designing any type of instruction, educators and designers need to take into consideration their context, content, learning objectives, and audience—which is typically accomplished through a front-end analysis. Below are further guidelines we recommend considering when using the P+E framework to support online-course design.

1. Take advantage of the flexibility of the framework. The framework—while prescriptive—does not present a rigid sequence of instructional events that must be adopted. There is a lot of flexibility built into the framework that allows for professional judgment based on front-end analysis findings. It may be that your online course requires a stronger emphasis on social presence, or a unit in the course would be best approached by starting with abstract-conceptualization activities, or that the framework applies well the first half of the course but not the

second half. In our experience, the framework works best when it maps well to the instructional goals of the course, so we recommend adjusting the framework when appropriate.

2. Consider the unit of instruction. Related to the first recommendation, the framework is flexible enough to be applied to a variety of instructional units, whether based on timeframe (e.g., day, week), or achievement of learning objectives (e.g., lesson, project). Our students often plan their coursework schedule on a weekly timeframe. Therefore, we tend to structure coursework into weekly chunks, with larger-scale projects crossing multiple weeks. For those weekly chunks we apply the framework to make sure we get through all four phases of Kolb's cycle while attending to teaching, social, and cognitive presence. The framework helps us address all aspects of what we see as an effective learning experience. We recommend educators and designers approach the use of the framework in a similar way: first thinking about the definition and boundaries of instructional units throughout the course, and then making sure the framework is applied to each unit so that students are involved in all phases of Kolb's cycle while benefiting from enhanced teaching, social, and cognitive presence.

3. Design using the framework first, then consider technology affordances and limitations. Although the framework is designed to provide guidance for online-course design and is partially driven by the Community of Inquiry (CoI) model, the framework is agnostic when it comes to specific online communication, collaboration, and learning-support tools and technologies. In other words, the framework does not rely on the use and/or underlying functionality of a learning

management system or any other specific technologies. In fact, the framework could easily be used to guide the design of a classroom-based course as well. We recommend that you first use the framework to design the course, then—armed with that design plan of action—translate the design to online delivery. In this way, the tools and technologies available to you do not stymie the overall design. Often things we though impossible given technical limitations are found to be possible when considering the design as a whole first.

Conclusion

The Presence+Experience (P+E) framework combines two well-established models—the Community of Inquiry (CoI) model and Kolb's experiential learning cycle—to guide online-course designers and educators in the purposeful design of presence in online courses. We have found that the integration of the prescriptive stages of Kolb's experiential learning cycle with the CoI model has helped us create productive, meaningful, and flexible learning experiences for pSTEM teachers. However, we are mindful of the potential for the resulting P+E framework to appear too rigid when designing online learning experiences in different contexts and with different instructional goals and audiences. In reflecting on this potential limitation, we considered our own use of the P+E framework. In our course designs, Kolb's experiential learning cycle played out multiple times during the online course albeit with some variation. We packaged each phase differently (experiencing, examining, explaining, and applying) based on our anticipation of pSTEM teachers' prior experience and their current learning needs regarding a particular topic/theme. Kolb's experiential

learning cycle kept us focused on social, cognitive, and teaching presence and the resulting robustness of the educational experiences for the pSTEM teachers without it feeling as if our professional judgement regarding appropriate instructional strategies was being compromised. Consequently, we believe the P+E framework—although prescriptive—allows room for considerable variance; the P+E framework provides a functional foundation for selecting instructional strategies and activities that are deemed appropriate given the learning objectives, instructional goals, audience, discipline, instructor strengths and expertise, and so on.

The P+E framework provides online-course designers and educators with viable and concrete ideas for reconceptualizing the design and facilitation of online courses in a way that intentionally establishes teaching, social, and cognitive presence. The P+E framework is particularly helpful for online-course designers and educators who are creating courses requiring a high-level of interpersonal connection, such as courses in education, counseling, social work, and the like; we believe that the P+E framework may help alleviate educators' concerns about delivering and facilitating the learning of high-touch content online. We also see the P+E framework as useful to educators and designers involved in flipping their classroom and/or creating blended courses; the framework provides a structure for considering what instructional activities may be best approached via online delivery (e.g., reflective observation through blogging, or abstract conceptualization through screencasting lectures or facilitating a web-conferenced lecture), and which instructional activities may be best suited for classroom delivery (such having a concrete experience through playing a game, or being involved in active experimentation by working on a collaborative project)—all without degradation of

teaching, social, and/or cognitive presence. Finally, we think the P+E framework helps educators and designers sequence instructional strategies and activities in a way that leads to the biggest bang for the buck—by having new activities build on previous activities to further engage students and encourage deeper processing—while approaching the design of an online course so that the diversity of students' learning preferences, strengths, and areas needing improvement are recognized and addressed. By providing guidance for attending to presence while engaging students in a way that encourages social interaction and cognitive processing, the P+E framework has the potential to be a useful tool for online educators and designers, providing a useful foundation for online-course design regardless of the context.

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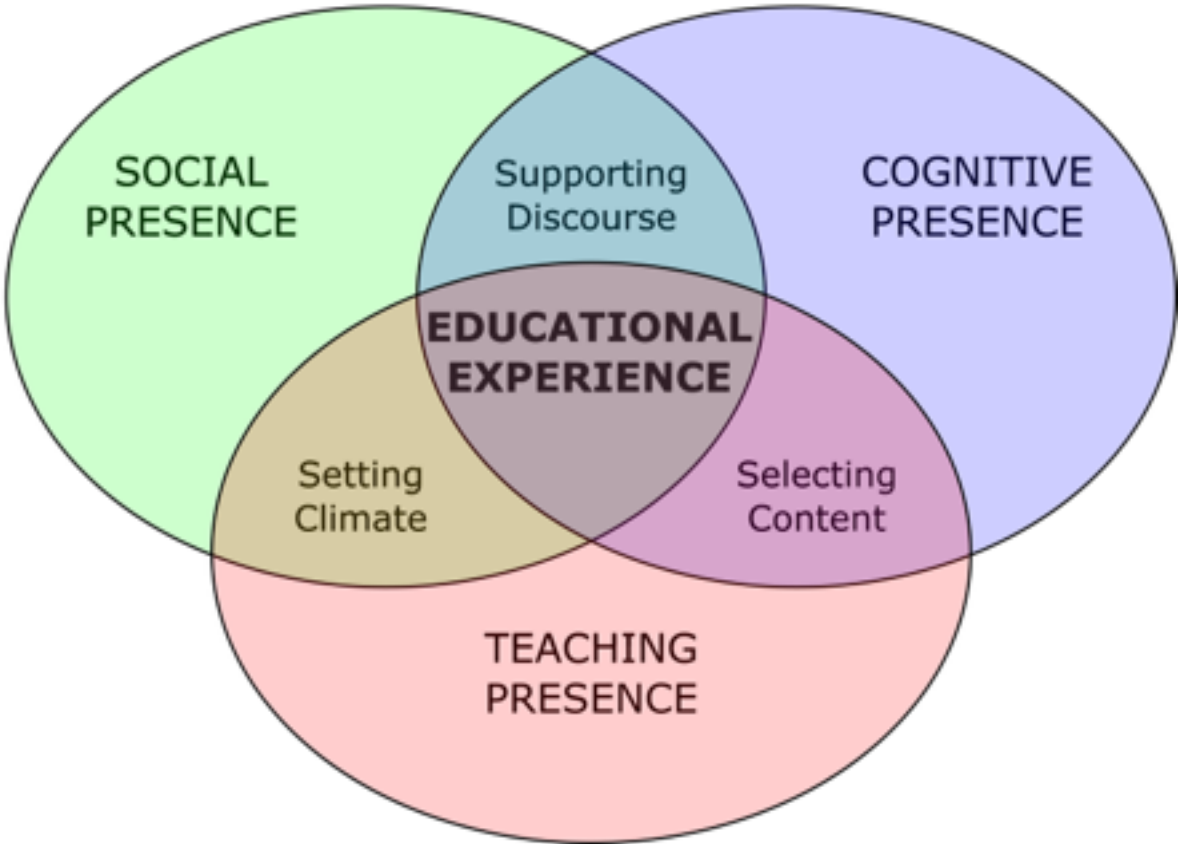

Figure 1. The Community of Inquiry (CoI) Model

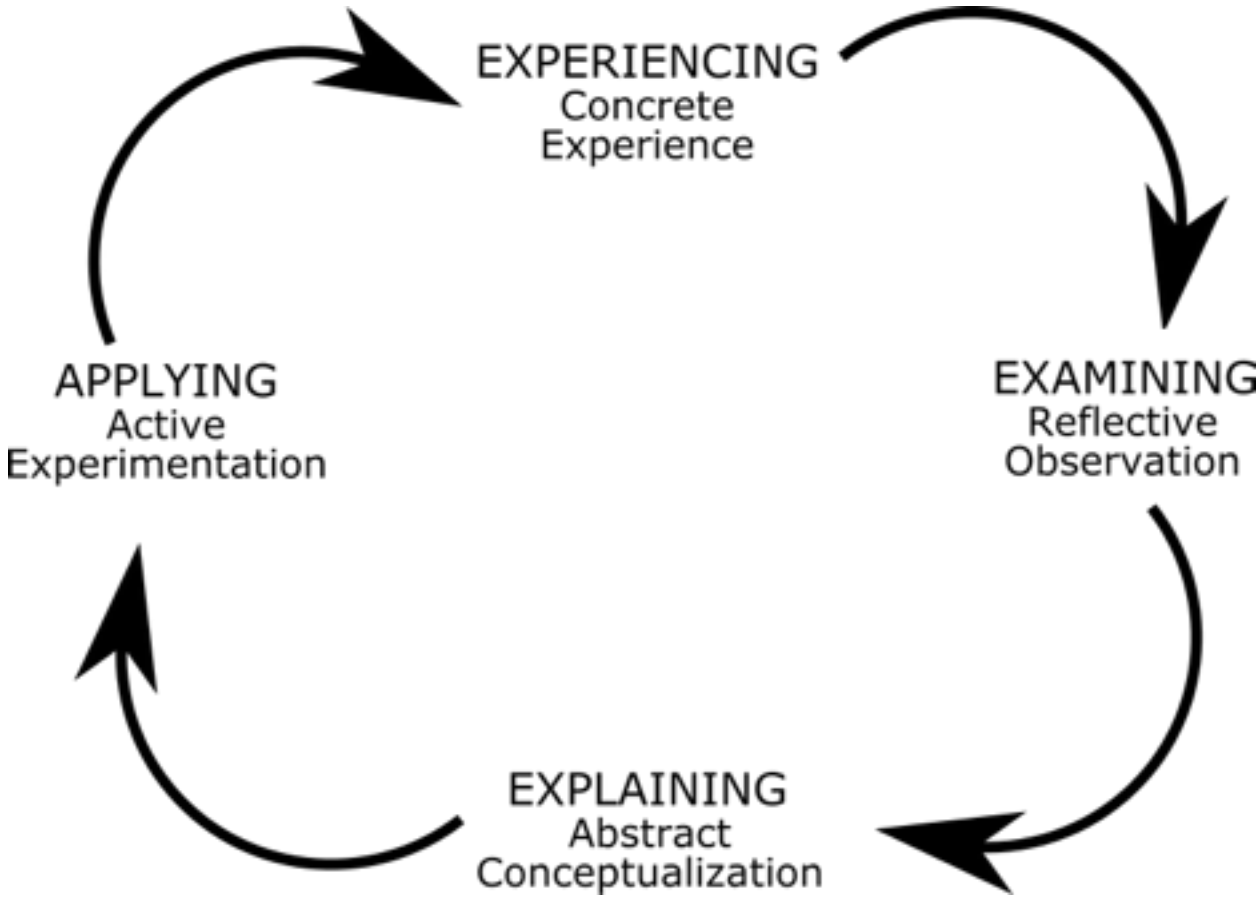

Figure 2. Kolb's experiential learning cycle

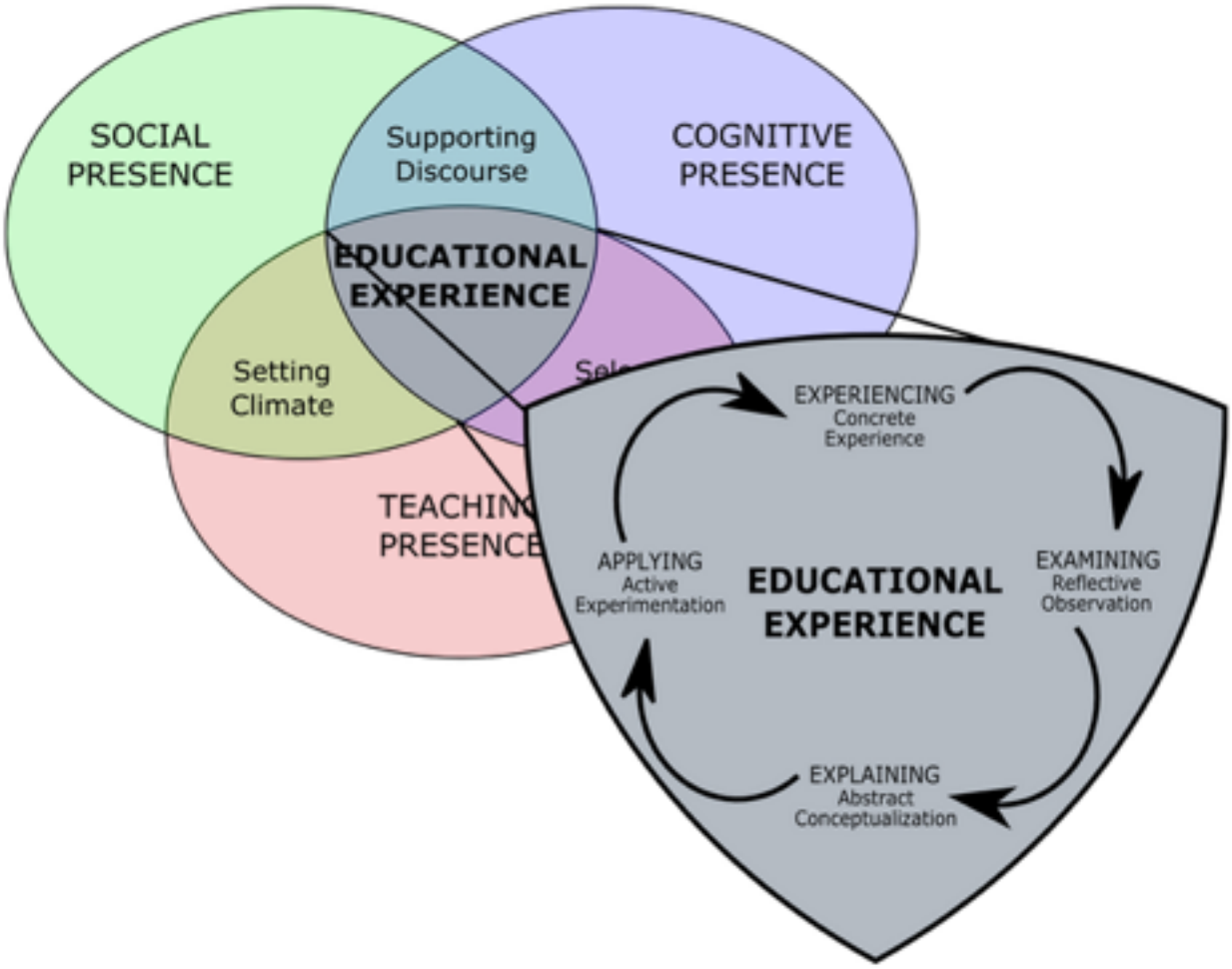

Figure 3. Presence+Experience (P+E) framework

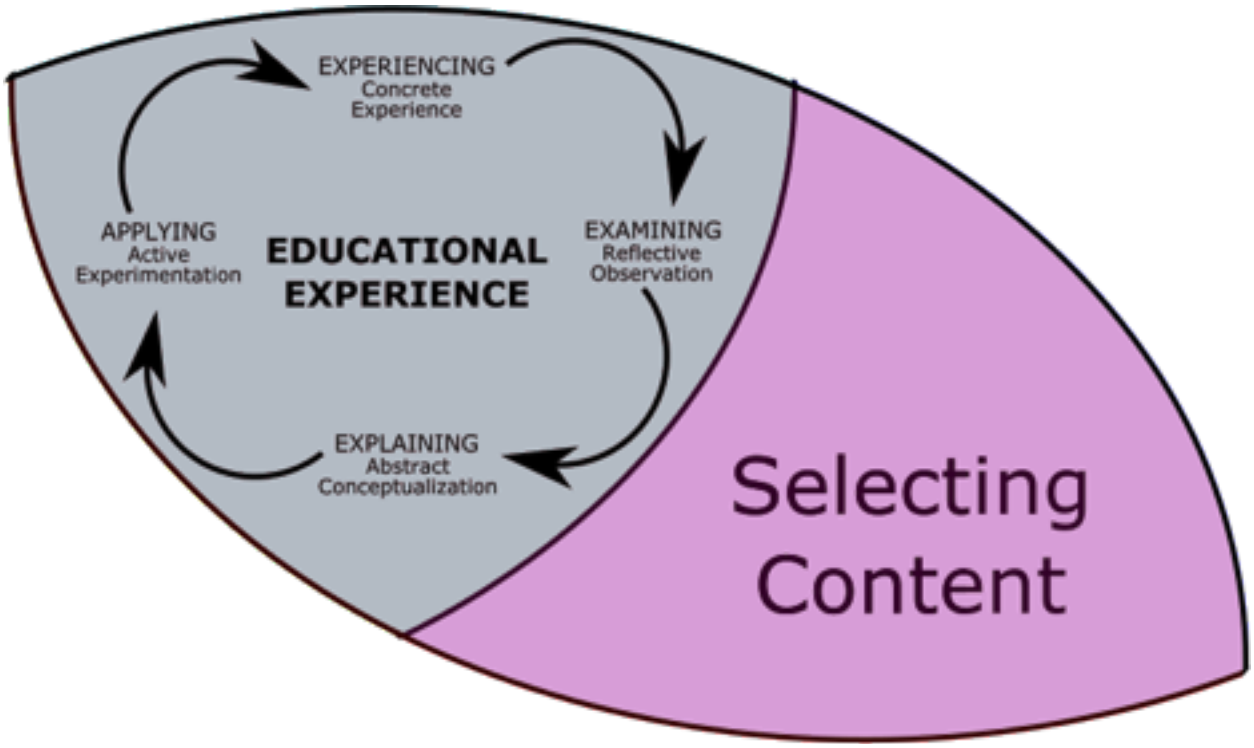

Figure 4. Selecting content at the intersection of cognitive and teaching presence in support of the educational experience

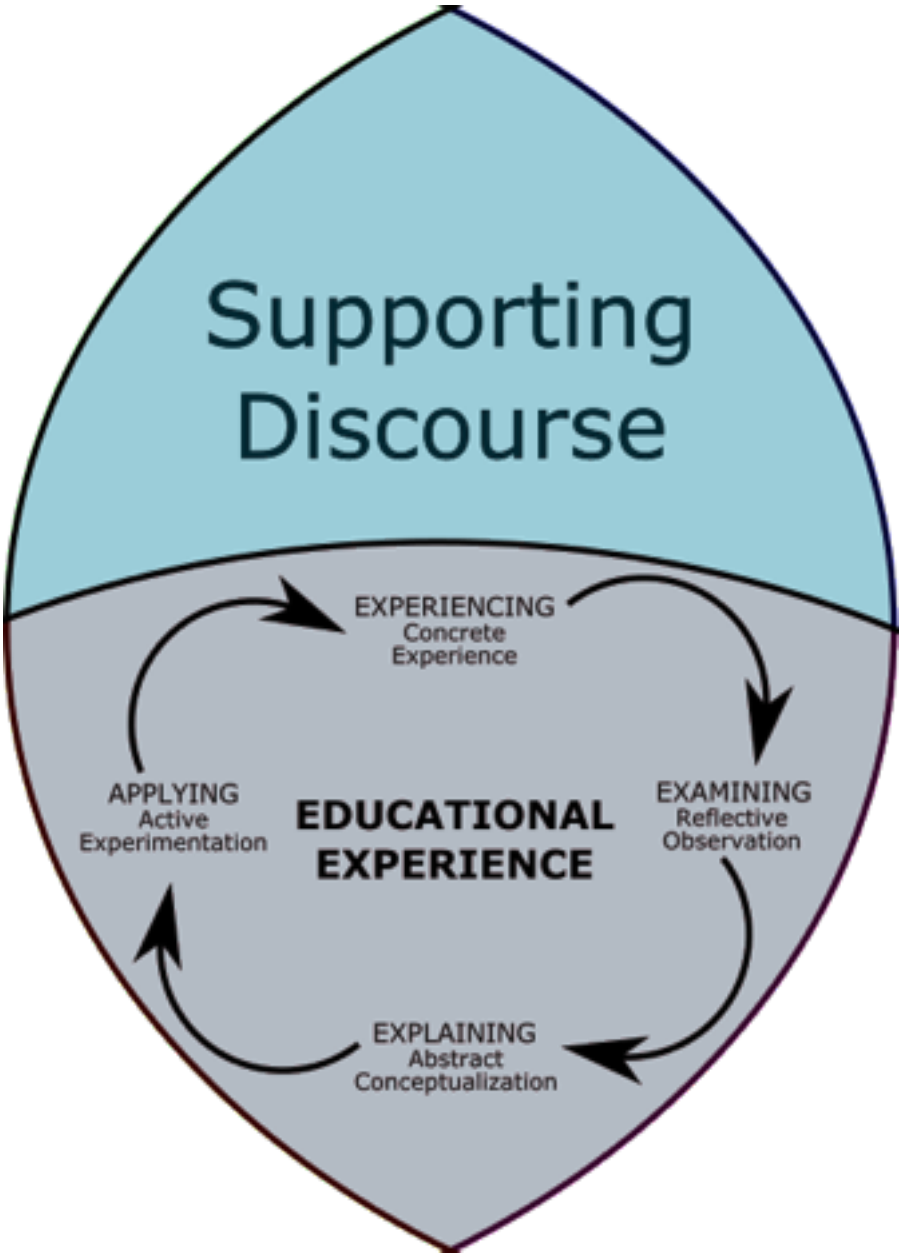

Figure 5. Supporting discourse and interaction at the intersection of social and teaching presence during the educational experience

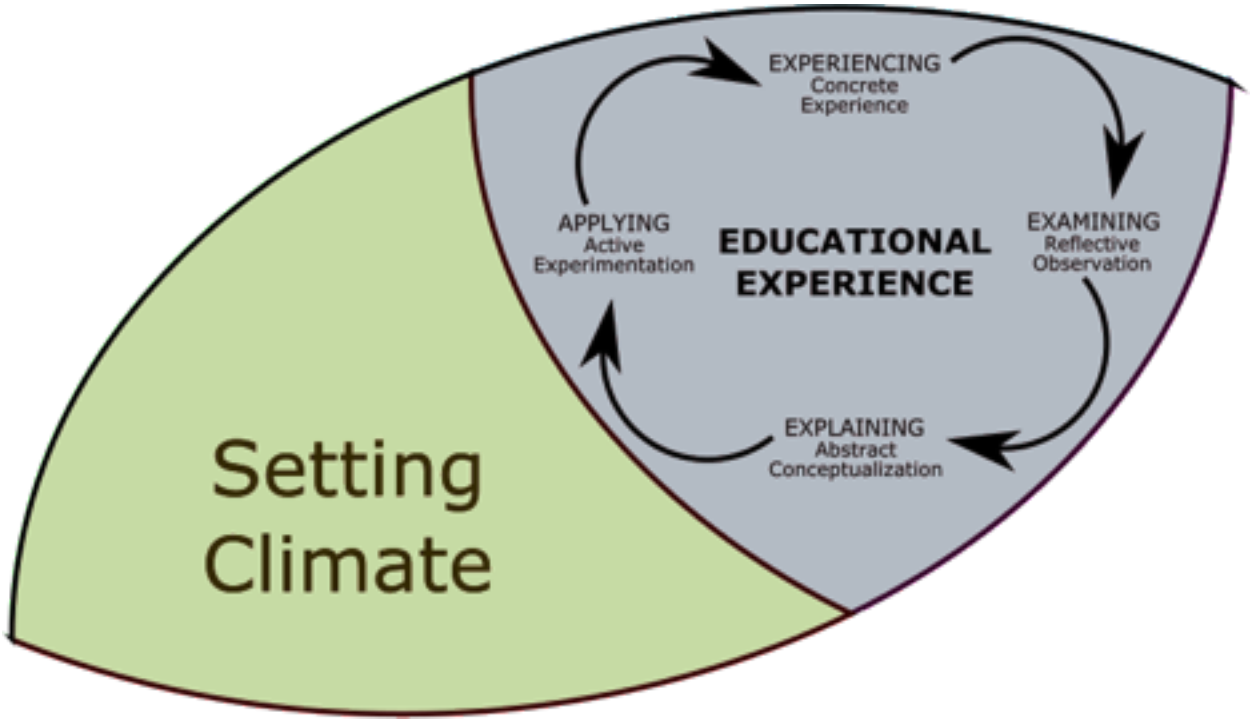

Figure 6. Setting the instructional climate at the intersection of social and cognitive presence during the educational experience

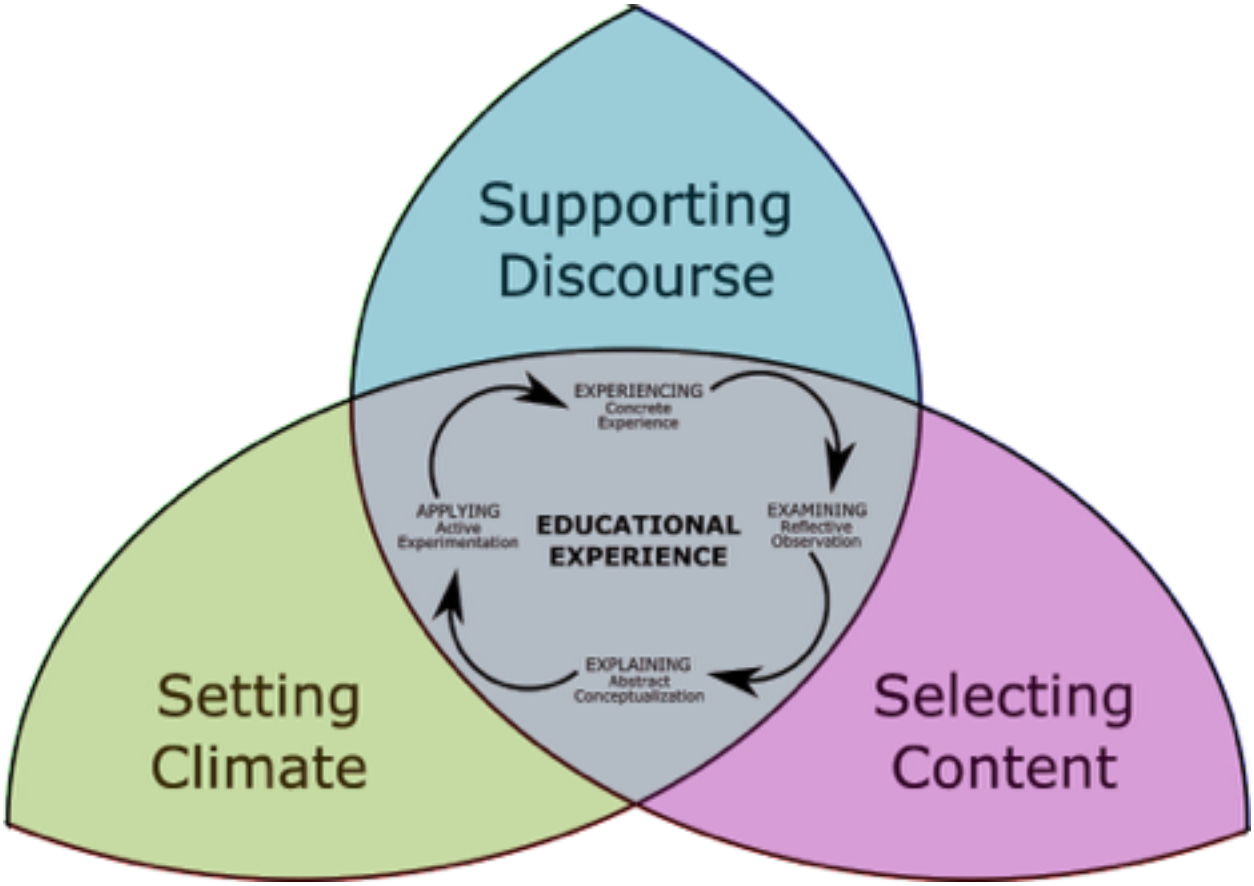

Figure 7. The connection between the educational experience and the intersection of teaching,cognitive, and social presences