Expansive Framing of Engagement Survey for Online Learners: A Situative Alternative to the Community of Inquiry Survey

Daniel T. Hickey, Tripp Harris, Grant T. Chartrand
dthickey@iu.edu, triharr@iu.edu, gchartra@iu.edu
Indiana University

Abstract: Expansive framing is a situative instructional perspective that (a) pushes students to make connections with people, places, topics, and times beyond the course, (b) positions students as authors (rather than consumers) of disciplinary knowledge, and (c) holds students accountable to disciplinary discourse. A new survey of perceived expansive framing was completed by 6,452 fully online students as experimental items within the larger National Survey of Student Engagement (NSSE). Exploratory factor analysis uncovered five of the six intended factors in our 16-item survey and the internal consistency of the six scales ranged from 0.77 to 0.86. Significantly, one of our scales (Outside Places) was more highly correlated with the NSSE Perceived Learning scale (0.56) than any of the NSSE scales. Pending confirmatory factor analysis, we hope the survey will be more predictive of actual learning outcomes than the popular socio-constructivist Community of Inquiry survey or the atheoretical NSSE survey.

This study concerns a new survey of student engagement that is based on situative theories of learning (Greeno, 1998). We contend that the design principles for “expansive framing” of learning that emerged in the work of Randi Engle (1965-2012) are among the most useful to emerge from situative theory. These principles suggest learners “problemmatize” learning from their own perspective by framing their engagement using people, places, topics and times from outside of the course. This positions learners as authors (rather than consumers) of knowledge participating in a larger intellectual conversation while holding them accountable to disciplinary discourses. Expansive framing is proposed to result in generative school learning that transfers widely and broadly. This paper first summarizes the roots of these design principles and our own efforts to use them to create engaging online courses. We then describe the socio-constructivist Community of Inquiry (CoI) framework and survey that is widely used in online education. After reviewing our concerns and evidence that CoI scores are unrelated to learning outcomes, we describe our new Expansive Framing of Engagement (EFE) survey and our initial efforts to validate it with responses from 6,452 fully online college students alongside the National Survey of Student Engagement (NSSE).

Productive disciplinary engagement

Expansive framing is rooted in Engle and Conant’s (2002) introduction of productive disciplinary engagement (PDE) to explain a particularly compelling extended discussion that was recorded in a 5th-grade environmental science classroom. Engle and Conant’s analyses were distinctive because they used situative theories of cognition (i.e., Greeno, 1998). Most prior characterizations of student engagement (i.e., in the processes of learning) focused on cognitive associations and thinking processes. In contrast, PDE characterized engagement fundamentally in terms of discourse. While this engagement is most obvious in classroom discussions, it can also take place as students interact independently with educational resources. From a PDE perspective, engagement means that students are making substantive contributions to discussions, coordinating their contributions with those of others, attending to others, demonstrating passion or emotion, staying engaged for long periods of time, and spontaneously re-engaging. Regardless of its form, PDE refers to engagement that concerns the discipline at hand.

Engle and Conant concluded that there were four “guiding principles” that had caused the PDE they documented. The first principle was problematizing content. This principle suggests that educators “should encourage students’ questions, proposals, challenges, and other intellectual contributions, rather than expecting that students should simply assimilate facts, procedures, and other ‘answers’” (p. 404). The second principle for fostering PDE is giving students authority. This is about “students having an active role, or agency, in defining, addressing, and resolving such problems” (p. 404). The third PDE principle is holding students accountable to others and to disciplinary norms. This means that “the teacher and other members of the learning community foster students’ responsibility for ensuring that their intellectual work is responsive to content and practices established by intellectual stakeholders inside and outside of their immediate learning environment, as well as to disciplinary norms” (p. 405). The fourth PDE principle, providing relevant resources, reminds educators that students need time and resources to accomplish the goals of the first three principles, and warns that the quest for
“authenticity” may lead to disciplinary resources that are too advanced to be used productively by intended students. Arguably, the PDE principles are among the most useful and used instructional frameworks to emerge from situative theories. Engle’s (2012) retrospective review identified fourteen other widely cited efforts to reform mathematics or science instruction (many of which occurred before 2002) that had been described by others (i.e., not Engle) as being consistent with the PDE framework.

**Expansive framing**

The design principles for expansive framing emerged across several studies that moved PDE into the study of transfer and the search for generative school learning. This includes Engle’s (2006) further analysis of the data from Engle & Conant (2002), the quasi-experimental tutoring studies in Engle and Faux (2006) and Engle et al. (2011), and the extended program of secondary biology research reported in Zheng et al. (2011/in revision). All of these studies pushed learners to frame their learning expansively by (a) finding connections with *settings (times, places, and participants)* and *topics* beyond the learning environment, and (b) positioning learners as authors (rather than consumers) of disciplinary knowledge who are participating in a broader intellectual conversation that extends over time.

The insights across this program of research were summarized in Engle et al. (2012), which presented five explanations of why expansive framing should promote transfer. These included creating more “intercontextuality” between settings during learning. Practically speaking, this means that it is crucial for teachers to help students make connections between the learning context and potential transfer contexts. The second closely related explanation is that students will be more likely to recognize the relevance of the learned content in the transfer context. The third is that students should transfer in more of their prior knowledge because they see the relevance of the prior knowledge and because that knowledge might be uniquely useful for framing and therefore socially desirable. The fourth explanation is that positioning students as authors is likely to foster accountability to content which engenders confidence in using that knowledge in potential transfer contexts. The closely related fifth explanation is that positioning students as authors should lead them to position themselves as authors in transfer settings independent of the transfer content. In other words, multiple experiences authoring knowledge should result general disposition toward authorship in all settings. The paper provided detailed examples from multiple prior studies for each of these five explanations and went on to consider the potential interactions between the explanations.

While not as widely taken up as PDE, a review by Hickey et al. (2021) identified several promising efforts by others to use expansive framing to support generative learning. This includes our own efforts to use expansive framing to foster PDE in a wide range of online courses, including secondary, undergraduate, graduate, professional, and conventional, open, self-paced courses (e.g., Hickey et al., 2017, 2020). Beyond this work, PDE and expansive framing have yet to be taken up widely in online education and computer-supported contexts (but see e.g., Sinha et al. 2015; Fasso & Knight, 2015; Damşa, 2014; Mendelson, 2010). This is surprising because framing seems particularly important in online courses, where curricula must be developed in advance and instructors cannot frame content “on-the-fly” in classroom discussions. This is presumably due in part to the dominance of didactic/expository approaches (as in most MOOCs) and socio-constructivist approaches (embodied in CoI discussed below) and the tensions between them. This situation is likely further due to the emergence of “connectivist” theories of digital learning (Siemens, 2005) that capture some (but we believe) not all of the aims of expansive framing.

**The Community of Inquiry framework and survey**

Our secondary purpose is creating an alternative to the popular Community of Inquiry (CoI) framework and survey that are widely used in online learning research. Consistent with modern socio-constructivist learning theory, Garrison, Anderson, and Archer (1999) characterize the ideal educational experience as “a collaborative communication process for the purpose of constructing worthwhile and meaningful knowledge” (p. 92). CoI is organized around three aspects of “presence.” These include social presence, cognitive presence, and teaching presence. The factor structure of the CoI survey has been validated (Garrison et al., 2004); and it has been used in over 1,500 empirical studies of online learning (Kitchenshank, 2016).

Our concern is in part that the CoI survey seems likely to encourage relatively bounded framing of course contexts. This is because most of the 34 CoI items define presence within the context of activities and courses themselves. Just two of the cognitive presence items appear to capture perceptions of anything remotely related to expansive framing. From our perspective, this explains the lack of evidence that CoI scores are related to actual learning outcomes (not just *perceived* learning outcomes). Rourke and Kanuka (2009) reviewed 48 empirical studies of CoI published between 2000 and 2008, and they concluded that only 5 studies measured perceived...
learning and that none measured actual learning. More recently, Maddrell et al. (2017) found no relationship between the three CoI presences and instructor-assessed learning outcomes.

A practical concern is that the CoI framework encourages practices like individual student-teacher interactions and complex group projects that may be unnecessary, unmanageable, and/or exhausting. Our own approach to online expansively framing (Hickey et al., 2017; 2020) minimizes private instructor grading and student interaction, maximizes public instructor and peer-to-peer interactions, and minimizes group projects. More generally, we believe that the interactions encouraged by the CoI framework are partly responsible for the workload and instructor burnout associated with high-quality online courses (e.g., Fox & MacKeogh, 2003; Shea et al., 2010).

With a small internal grant, our original goal was creating an Expansive Framing of Engagement survey and administering it alongside the CoI survey in several large undergraduate online STEM classes that included a high-quality learning outcome assessment. We expected that some of the EFE scales would be highly correlated with those learning outcomes and that all of our scales would be more highly correlated than any of the CoI presences. However, we were unexpectedly presented with an opportunity to administer our new EFE survey items as experimental items to at least 6,000 fully online college students who were also completing the 170 items on the long-running National Survey of Student Engagement (NSSE) administered by the Indiana University Center for Postsecondary Research.

**Method**

Drawing on Zheng, Engle, and Meyer (2011/in revision), 16 items were drafted to create six scales: Time:Past, Time:Future, Other Places, Other Topics, Roles:Authoring, and Roles:Accountability. Thus, one of the Other Places items asked, “During the current school year, about how often have you ... made connections in a course with settings outside of that course?” (“very often,” “often,” “sometimes,” “never”). Draft items were revised in three cognitive interviews and reviews by NSSE experts; items were deleted to meet a 16-item limit on experimental items, resulting in two to three items per scale.

The 16 EFE survey items were completed by 6,452 fully online college students alongside 170 other NSSE items in 2019. An exploratory factor analysis (EFA) was carried out with odd-numbered participants. The correlations between six EFE scales and other NSSE measures of perceived engagement were explored, with a focus on the Perceived Learning Gains NSSE scale.

**Results**

The EFA showed that the hypothesized factors were indeed present in the data, with the exception of Time:Future and Other Places collapsing into a single factor. This exception made sense in retrospect, because any activity outside of a course necessarily takes place at a different time. Nonetheless, the original six-factor model yielded an acceptable fit with $CL = 0.944$, $TLI = 0.925$, and $RMSE = 0.064$. Each of the six scales demonstrated reasonable internal consistency (alphas 0.77 to 0.87) and the scale intercorrelations ranged from $r = 0.81$ (Time:Future and Other Places) to $r = 0.42$ (Time:Future and Roles:Authoring). Most importantly, the Roles:Authoring and Roles:Accountability scales (which theoretically reflected the result of the of the other four perceived aspects of engagement) demonstrated acceptably low correlations with the other four scales (< 0.56), though we acknowledge that correlations were attenuated by the lower reliabilities of the two Roles scales. Notably, scores on the EFE Other Places scale were more highly correlated ($r = 0.56$) with the NSSE Perceived Learning Gains scale than any of the ten NSSE perceived engagement scales (though NSSE Supportive Environment was $r = 0.55$).

**Conclusions and next steps**

These results are promising. Our intended factor structure was mostly confirmed, and the scales were sufficiently reliable. Our next step is conducting a confirmatory factor analysis with the existing 16 items. We will then add one item to each of the two 2-item scales, resulting in a 19-item scale. We will also revise the existing items to (a) increase divergence between Other Places and Time:Future and between Other Places and Other Topics and (b) increase the reliability of the crucial Roles:Authoring and Roles:Accountability scales. Consistent with our original goals, we will then administer the revised EFE, the CoI survey, and one or more of the NSSE engagement scales to students in one or more large general education STEM course that includes outcome measures that estimate likely transfer to subsequent educational, professional, and personal settings.
References


