

## **A Pedagogy of Difficulty: Preparing Teachers To Understand and Integrate Complexity in Teaching and Learning**

**By Carolyn Nelson & Victoria Harper**

Twenty-first century America is a land where demand for the “faster, quicker, and easier” seems to be accelerating daily with no limit in sight. One needs look no further than the television set to be quickly convinced of this trend. Whether it’s a faster car, faster computer, faster Internet connection, or faster headache relief, the notion of *faster* is touted as being synonymous with *better*.

Given our penchant for easy and quick, if not immediate solutions in all areas of our lives, it should not come as a surprise that Americans understand good learners to be those who quickly and easily acquire information and skills. These prevailing

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cultural attitudes have permeated both teachers’ and students’ understanding of what it means to be a successful learner in our society. American education has developed an aversion to the role of *difficulty* in the learning process. This is partly because wrestling with difficult and complex issues requires thought and deliberation—that is, a significant investment of time. The quick and easy “Cliff Notes” approach to education subtly implies that learners are not capable of deeper levels of thinking and processing and shortchanges students by providing an impoverished educational experience.

In this article we explore the notion of difficulty and the vital role it can play in the learning journey of student teachers, both with respect to their own and their students' educational maturation. Confronting today's popular but flawed American reductionist learning models, we explicate the opportunity for deeper learning provided by a proactive engagement with, rather than suppression of difficulty. Thus, difficulty is seen not as an impediment to learning but as a source of motivation and impetus for a deeper, transformative learning. In addition, we present a theoretical framework for this alternative approach to learning developed to guide our students in reconceptualizing teaching and learning, promoting what Salavatori (2000) calls a "pedagogy of difficulty" (p. 81).

### **Background of the Problem**

Comparing and contrasting Japanese and American teaching methods, Hess and Azuma (1991) cite numerous examples of American education's obsession with arriving at the right answers quickly. They note that the American educational model "emphasizes dividing lessons into small steps or concepts, each which is quickly mastered, promptly rewarded, and identified as . . . correct" (p. 6). In contrast, Japanese educators encourage students to carefully explore and analyze multiple approaches to a problem's solution, which usually results in a deeper, more thorough understanding of the problem itself and increased student confidence and capacity to tackle and discern other complex issues and ideas.

Stevenson and Stigler (1992), comparing reading and mathematics education in Taiwan, Japan and the United States, noted that American teachers emphasize speed and efficiency, often depriving students of opportunities to think or to grapple with errors or complexity. Like Hess and Azuma (1991), Stevenson and Stigler assert that American teachers typically pose questions to obtain quick, right answers rather than posing questions that stimulate thought and deliberation. They claim that American children view learning as an exercise in rapid insight rather than a lengthy, in-depth engagement or struggle.

The classic "wait time" studies of Mary Budd Rowe et al. support the claim of the rapid pace in which learning is structured in many classrooms (DeTure, 1979; Honea, 1982; Rowe, 1974a, 1974b; Swift & Gooding, 1983). Rowe reported that the average length of time teachers waited after posing a question or responding to a student's utterance was less than 3 seconds, and usually less than 1 second. Kenneth Tobin (1980) found that the average teacher wait time in science classes for fifth through seventh grades was 0.5 seconds.

Schoenfeld (1985), investigating attitudes about mathematics education, found that American children appear to believe that if a problem in mathematics is solvable, it can be solved in less than 10 minutes. This study illustrates the proclivity of American children to resist tasks that require persistence to reach understanding. Schoenfeld's study is consistent with Helen Reguerio Elam's (1991) findings that

American education resists difficulty and complexity, searching instead for easy and immediate solutions. In contrast, Hess and Azuma (1991) stress that resolution of problems should *not* be immediately obvious (or the steps too small) if deeper, meaningful understandings are to be gained.

### **The Problem: Implications for Teacher Education**

Teacher education students formulate their notions about teaching and learning based on subconscious assumptions derived from and shaped by their own experiences as students. We know from our preservice students' educational narratives that their past experiences are most often from technical, skill-building approaches to learning. Their expectations for learning are informed and often clouded by these assumptions as illustrated in their comments cited below. For example, Kathy writes in her reflection paper describing her schooling experience:

The teaching strategies used by most of my teachers were, for the most part, information based and conducted by lecture and the reading of textbooks. We had little, to no "hands on" activities, little critical thinking, no field trips, and no connecting across-curriculum lessons. Consequently, I remember very little.

Michael shares his experience this way:

I don't remember a lot of my education from elementary school, probably because it was not filled with hands-on learning or experience. I do remember learning vocabulary through memorization. I also remember being able to prove my "knowledge" by regurgitating definitions.

Unless deliberately unearthed and critically examined, these assumptions have the potential to confine student teachers in the learning model of their prior experiences. Unexamined assumptions about teaching and learning can inhibit intellectual and emotional growth—that is, they can become hidden obstacles to new learning, operating behind one's back rather than in the fore. Deborah describes the impact of her past school learning on her potential as a teacher:

Before taking this course, I was resigned to remaining a passive learner for the rest of my days. No matter how much I wanted to participate in a class discussion, I often shied away from it. I rationalized that somebody else in class was thinking the same thought and would articulate that thought better than I. So, rather than express my thought or opinion on a topic, I would remain silent. Mostly, though, I did not speak up because I was afraid of being "wrong." It was not until taking this course that I realized the type of paradigm I was working under. This pressure to give the "right" answer has been ingrained in me so deeply through the years of schooling that it has literally paralyzed me from fully participating in class. I feel somewhat "robbed" now, because I had to wait until graduate school to realize that the source of my anxieties about speaking up in class did not come from a personal defect. Rather, the source of my classroom anxieties stemmed from the socialization process that I underwent growing up . . . As with being a learner, I was resigned to being a passive teacher.

## *A Pedagogy of Difficulty*

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I would have been content waiting for “experts” to tell me how and what to teach my students.

Deborah’s statement is a reminder of the long-term effects that simplistic notions of learning can have on the development of a learner. It also reminds us how important it is for teachers to provide opportunities for what Hess and Azuma (1991) call “sticky-probing.” They describe sticky-probing as an approach in which students are expected to examine a topic from “varied perspectives and in a variety of conceptual frameworks,” probing deeply through “deliberative group discussion and teacher-pupil exchange” (p. 6). In this approach, teachers’ responses remain purposely vague in terms of their own views of the problem. Rather, they prompt and facilitate group discussions among the students to ensure that they remain concentrated and focused on the problem at hand.

### **An Alternative Approach**

As teacher educators we want our students to understand that deep and meaningful learning is not achieved through rapid, passive reception of information. We strive to counter the prevailing belief that the best and most valued learning is that which is quickly attained. Rather, we believe that optimal learning requires a commitment from learners to engage in a dynamic process that compels them to grapple with their own assumptions, weighed against different perspectives, circumstances, and ideas. For the student undergoing this often uncomfortable and disorientating metamorphosis, a degree of tenacity is required. We want our students to see that engagement with moments of difficulty in learning “often contain[s] the seeds of understanding” (Salvatori, 2000, p. 81). We believe that our preservice students have a better chance of appropriating a process for deep and meaningful learning if we help them reframe and make explicit their thinking about what is required to achieve this end.

To facilitate this transformation we animated Bill Doll’s (1993) assertion that “there is a need to study other disciplines and to abstract, metaphorically not literally, those ideas and ideals which have pedagogical potential” (p. 13). In doing this we borrowed the concept (metaphor) of *liminality* from the field of anthropology. The potential power of this new metaphor lay in what Lev Vygotsky (1962) describes as inherent in language. He writes, “thought is not merely expressed in words; it comes into existence through them” (p.125). Similarly, Chet Bowers (1987) writes that “what is named becomes the focus of intentionality, and the object of thought and speech” (p.9). Our hope was that this new metaphor would illuminate the learning possibilities in our students’ intellectual struggles and allow such struggles to be viewed more constructively.

### **Liminality Unfolded**

The concept of liminality was conceived by Belgian folklorist Arnold Van Gennep and elaborated upon by anthropologist Victor Turner. Turner (1974, 1985)

presents a three-phase conceptual process to describe the transitional period experienced by individuals (in some cultures) participating in rites-of-passage rituals. The three phases are (1) separation, (2) *limen* (Latin for threshold) or margin, and (3) reaggregation. The culmination of this ritual process is marked by a transformation in how individuals understand themselves and their world. Figure 1 illustrates Turner's ritual process (Turner, 1985, p. 293).

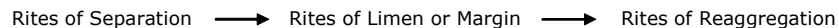
Separation involves the bracketing of the individual from one's current beliefs and understandings about the world. We find this analogous to what Bill Doll (1993) refers to as "the ability to suspend disbelief," opening the way for the possibility of self-reflection and critical analysis (p. 160). This separation prepares the novice to enter the liminal state. According to Turner (1974), in the liminal state the novice feels ambiguous, "neither here nor there, betwixt and between the positions assigned and arrayed by law, custom, convention, and ceremonial" (p. 37). It is during the liminal state that novices experiment with new ideas or experiences and engage in interaction and reflection about them. In the liminal state individuals begin to question their current beliefs and understandings, and possibly recognize how they inform their current frame of reference. In this state the novice can become critically self-conscious. Although uncomfortable and sometimes stress-evoking, the liminal state is central to the transformational process because it is in this transitional state that the individual is "being grown."

Over the last seven years we have expanded on Turner's use of liminality as we have gathered data from our own students about its application to the learning process. In our expanded model we add "willingness to suspend disbelief" to illustrate receptivity to the learning process. The conditions existing in each of these states are shown in Figure 2, which explicates our expansion of liminality as a heuristic for understanding and reinvigorating challenging, complex, meaningful learning.

We identify the learner's current set of assumptions about a topic, idea, or concept as the *aggregated* state. However, in order to be receptive to a new way of thinking about learning, students must be willing to suspend disbelief when a new idea or concept is being introduced, i.e., to enter the separation phase. Hans Jorge Gadamer (1976) alludes to this state when he describes how the interpreter must be oriented to engage in a hermeneutic conversation. He writes: "The hermeneutic conversation begins when the interpreter genuinely opens himself to the text by listening to it and allowing it to assert its viewpoint" (p. xx). Our students are

Figure 1.

Rites-of-passage ritual process according to Victor Turner.



Adapted from *On the edge of the bush: Anthropology as experience* (p. 293), by V. Turner, 1985, Tucson, AZ: University of Arizona Press. Copyright 1985 by The Arizona Board of Regents.

## A Pedagogy of Difficulty

Figure 2.  
The liminal process of reflection for transformational learning.

Aggregated State (Current Understandings)	Separation (Willing to Suspend Disbelief)	Liminal State (Grappling/Critically Engaging the Issue)	Reaggregated State (Transformed or Changed State)
<p><b>Learner may be:</b></p> <ul style="list-style-type: none"> <li>• static...</li> <li>• bored...</li> <li>• ideological...</li> <li>• unreflective...</li> <li>• unaware of new possibilities.</li> </ul> <p>may become dogmatic, ignorant and intolerant of ideas <i>if</i> uninterrupted by perturbation or encounter with other individuals, events or texts representing different perspectives.</p> <p>Without moving to the liminal state and reframing, individuals are apt to be open only to <u>technical</u> forms of learning &amp; may fail to deepen their levels of understanding or critical thought.</p>	<p><b>Learner is:</b></p> <p>oriented toward reaching a new understanding.</p> <p>curious or challenged.</p> <p>able to recognize that there is something to be gained by engaging in learning endeavor.</p> <p>experienced in grappling with issues and understands that this is how one really learns.</p> <p>Learner is compelled to engage in learning when prompted by a particular context, circumstance, or interaction with a person (e.g., teacher).</p>	<p>Exemplified, characterized &amp; propelled by <u>Complexity</u>.</p> <p><b>Learner may feel:</b></p> <p>challenged, chaotic, ambiguous, unclear; may want to retreat or quit.</p> <p>experience self-conscious dissonance.</p> <p><b>Learner has opportunity to:</b></p> <ul style="list-style-type: none"> <li>• rethink and examine assumptions and beliefs</li> <li>• question ideological stance</li> <li>• open up to new ideas and potentials</li> <li>• engage in learning conversations with individuals or texts representing different perspectives from those held by the individual.</li> </ul> <p>Learner <u>grapples</u> with ideas and issues, increasing potential for creativity and transformation</p> <p style="text-align: center;">OR</p> <p>may resist engagement in the liminal state and retreat back to his/her comfort zone, failing to gain new insights, learnings, or understandings.</p>	<p><b>Learning is deep &amp; transformational.</b></p> <p>Individual sees issues or events from a more complex/different perspective.</p> <p>Learner may experience new understanding of him/herself in relation to the world.</p> <p>Individual may be capable of deeper, more complex analysis, more informed judgments, and/or greater self-reflection.</p> <p>Learner feels more comfort in his/her own knowledge.</p> <p>The reaggregated state, if uninterrupted by new learning, may become a new aggregated state.</p>

sometimes reluctant to suspend their disbelief but usually give themselves permission because of their own curiosity, a need to know, or trust in their instructor.

At this point students become receptive to the liminal state. In our graduate courses this is demonstrated by our students' engagement with rigorous and challenging readings and ideas. The intent of these rigorous readings is to compel students to slow down, take a step back, and think critically and intensely about the ideas in the readings rather than speed through them as they might with a conventional text simply to complete the assignment. These readings also serve as a type of perturbation because they are usually from a different theoretical perspective and have a level of rigor beyond what our students might expect. This perturbation functions as a catalyst that initiates the liminal state. The liminal state is eloquently described by Gadamer (1976) when he addresses what happens when individuals (or cultures at large) open themselves to the hermeneutical phenomenon. He writes: "[In the liminal state] a people becomes most acutely aware of the limits and questionableness of its deepest assumptions. Collisions with the other's horizons make us aware of assumptions so deep-seated that they would otherwise remain unnoticed" (p. xxi). The "other's horizons" are our course readings and manner in which we dialogue about them with our students.<sup>1</sup>

Occasionally, we observe a student resist engagement with the liminal state and choose to remain in the aggregated state, that is, within the confines and constraints of his current understandings, beliefs, and assumptions. Typically, this type of

student is open only to technical forms of learning. Although such complete rejection is rare, struggle with the liminal process, in varying degrees, is common. The conclusion of this article offers a possible explanation for this variation in greater detail.

Engagement in the liminal state creates the conditions and potential for deep understanding and enables transformative learning to occur. Here are several examples of our credential students' reactions to learning about liminality. Greg writes:

I loved the application of Turner's liminality studies to the process of becoming a teacher. I studied his work in an anthropology class and when you tied it to teaching it really gave me a sort of framework to look at myself in the process. It sort of relaxed me to see it this way.

Another student, Bill, writes:

I like the concept of liminality. I have found myself in this position often. It is interesting to realize that it is normal and even a key part to growth and maturity.

Susan echoes Bill's comment:

I'm relieved to know that there is a word for where I am right now, liminality. I can definitely say that I am in the process of becoming . . . It's days like today, or rather discussions like the one we just had that make me realize how little I do know, and if I thought I had a fairly clear idea of why our schools are the way they are, well, I was wrong. Because I have not even begun to understand or think about it. Amidst all this confusion now I feel maybe I'm on the right track and can go from here.

Cheryl writes:

The idea of liminality has just given a name to my unease. It's good to know this state of disequilibrium is the most positive moment for learning and creativity.

Matt confides:

I see myself now in a time of betwixt and between. I have a lot of learning and refining to do to even become a teacher professionally. Change has not always been an easy thing for me, but I see how important it is. This changing in thoughts and methods will be my "rigorous rites of passage" this semester and next semester as well.

Maria offers:

The concept of liminal space was a powerful idea. Understanding that liminality, or the sense of being "betwixt and between" established patterns of thought and behavior, has lifted a great deal of the pressure off my shoulders to know something as soon as I am exposed to it. As a learner, I now feel confident that I can make a decision to accept or reject an idea after some thought. Liminality allows for reflection, which empowers learners because they have put careful thought into deciding whether or not they should accept an idea. The choice is in the hands of learners to reject or accept an idea that is being presented. This is empowering. Too often, schooling introduces concepts to

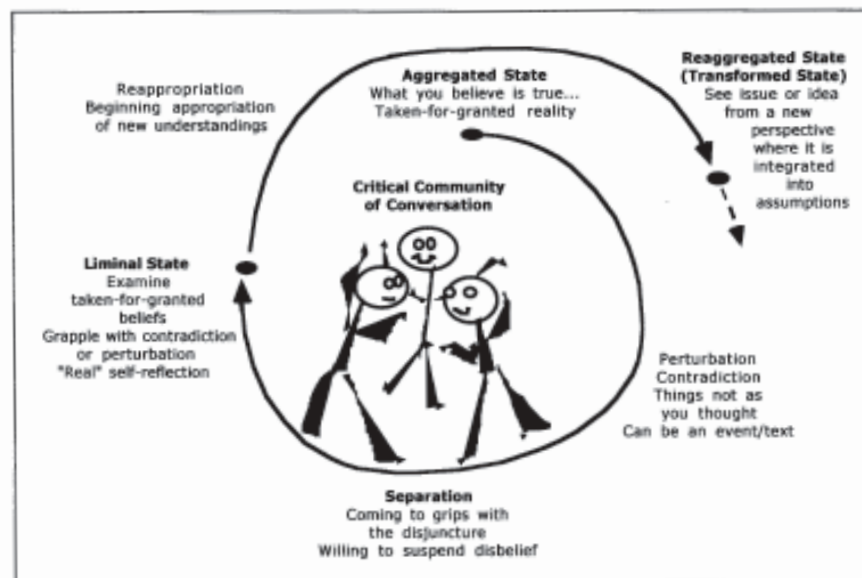
### *A Pedagogy of Difficulty*

students, but does not allow for liminality to run its full course. As a result, students blindly accept ideas without carefully considering how such ideas might affect them.

To make engagement in the liminal state more visible to our students, we created a Critical Hermeneutic Spiral diagram based on Gadamer's (1989) notion of the Hermeneutic Circle. Our model is constructed as a spiral because once individuals experience a transformational learning event, they can no longer return to the same point from which they began their inquiry (see Figure 3). Instead, they continue on until provoked by another perturbation—which holds the potential for re-entering the reflective process.

Our preservice students have found that this symbolic representation of liminality enables them to name and identify their location in this process. The diagram also helps them persevere when they encounter the frustration, stress, and tension that often accompany transformational learning, and functions as a navigational aid for their intellectual journey. More important, students who have persevered through the liminal process have developed an understanding of what Salvatori calls a “pedagogy of difficulty,” enabling them to create opportunities for sticky-probing and self-reflective questioning with students in their own classrooms (Salvatori, 2000, p. 81).

Figure 3.  
Critical hermeneutic spiral.





### **Liminality and the Developmentalists**

At this point it is important to clarify the similarities and differences between liminality and developmentalist theories such as Jean Piaget's theory of cognitive growth, particularly as it is interpreted and implemented in school instruction. Both concepts offer explanations for how individuals change their thinking and both view interaction as essential for growth. They both include a description of what occurs when individuals encounter an event or idea that does not fit with what they already know, creating a type of disequilibrium in the system. But this is the limit of their similarities.

In order to better understand the differences between liminality and the developmentalist perspective, a brief overview of their key ideas is worthwhile. One obvious difference is the fact that these concepts originate from two different theoretical perspectives—Piaget's theory from cognitive-structural theory in the field of psychology and Turners' liminality concept from the field of anthropology. Piaget's theory of intellectual growth has had an enormous impact on the way curriculum is organized and taught. His theory contends that cognitive-structural stages appear one at a time and in the same order, apart from cultural contexts, each stage characterized by a different kind of psychological structure (Ginsberg & Oppen, 1969). In Piagetian theory individuals strive to seek equilibrium through assimilation and/or accommodation. "Assimilation is the process of changing what is perceived so that it fits present cognitive structures, while accommodation is the process of changing the cognitive structures so that they fit what is perceived" (Gage & Berliner, 1984, p.143). Equilibrium is considered vital if the person is to interact with the environment efficiently (Gage & Berliner, 1984; Evans, et al., 1998). When an individual's expectations of the new event or idea are not confirmed by experience, disequilibrium occurs. If assimilation is not possible when a conflict [disequilibrium] occurs, accommodation enables individuals to regain equilibrium" (Evans, et al., 1998, p. 125). In summary, three key aspects of Piaget's theory of cognitive growth include sequential stages, intentionality of the individual as "equilibrium-seeking," and a culture-neutral lens.

Lev Vygotsky (1978), building on Piaget's work, added the socio-cultural aspects of learning. He writes:

An essential feature of learning is that it creates the zone of proximal development; that is, learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers. (p. 90)

A significant aspect of Vygotsky's perspective of learning is the necessity of a scaffolding person—the one who mediates the instruction. In Vygotsky's (1962) words, "the only good kind of instruction is that which marches ahead of development and leads it; it must be aimed not so much at the ripe as at the ripening functions" (p. 104). In other words, the instruction must be aimed a step ahead of

the actual developmental stage of the learner. Here again, the notion of linear developmental stages is fundamental to his perspective of learning.

## **Modernism and Postmodernism:**

### **Different Views of Learning**

Developmentalist theories that focus on linear developmental stages and view individuals as equilibrium-seeking organisms, and liminality that embraces perturbations as essential for transformational learning, are grounded in two different paradigms. Modernism, characterized by its emphasis on linear, stable, objective, product-oriented, closed systems was influential in the implementation of Piaget's theory of learning in schools (Doll, 1993; Kuhn, 1970; Toulmin, 1990;). Doll (1993) writes that "the history of the American school curriculum has been shaped by its modernist view of science more than by any other factor" (p. 12). Kliebard (1986) supports Doll's assertion of the modernist influence on school curriculum in his description of the scientific-efficiency model of curriculum that has its foundations in 17<sup>th</sup>-19<sup>th</sup> century modernist thought. Not inconsequentially, the modernist influence on Piaget's theory of learning reinforced the tendency toward maintaining equilibrium to achieve learning efficiency. In the modernist view, perturbations are viewed as disruptive and inefficient, something to be removed, stifled, or overcome.

Efficiency is a key characteristic and limitation of the modernist interpretation of Piaget's theory of learning. Doll (1993) further explains that the "linear, sequential, easily quantifiable ordering system dominating education today" is characteristic of modernist expressions of schooling that are based on *closed* systems (p. 3). He describes closed systems as mechanical in nature where only exchanges take place rather than transformations. According to Doll, "Exchange (not transformation) is a powerful [ubiquitous] curricular metaphor" (p. 14). Exchange of information between teachers and students, where teachers and texts provide information and students merely exchange their memory of it on exams, is a classic example. Stability and equilibrium are key ingredients of closed systems. In contrast, the postmodern theory of learning is characterized by complex, nonlinear, pluralistic, unpredictable, *open* systems (Prigogine & Stengers, 1984). Open systems are by nature transformative. Change, not stability, is their essence. Growth, not stasis, is their defining feature (Doll, 1993). Open systems require challenges, perturbations, and disruptions. That is, perturbations are cultivated in order to produce the "driving force of development" (p. 14).

Doll (1993) reminds us that "not every perturbation leads to redevelopment [reaggregation]; it is quite possible for a disequilibrated situation to lead to the sort of chaos that takes us not to a new and more complex level of order but to the abyss of destruction" (p. 163). One might ask, under what conditions, then, does perturbation lead to transformative learning? According to Doll, "when the environment is rich enough and open enough for multiple uses, interpretations, and perspectives

to come into play,” the perturbation will serve as a catalyst for transformation (p. 164). He elaborates:

Perturbations can work as a positive force when the atmosphere or frame in which they are perceived is comfortable enough that pressure is not produced to “succeed” quickly, when in this atmosphere the details of the anomaly can be studied (maybe even played with), and when time (as a developmental factor) is sufficient duration to allow a new frame to emerge. (p. 166)

Doll underscores the importance of the time factor in transformative learning by reminding us that the period of time prior to transformation [reaggregation] seems to almost require a *nurturing* of the anomaly. Therefore, taking time to dialogue seriously with students about their ideas is an important aspect of the conditions that direct the perturbations toward meaning-making.

Also key to this process is the requirement for *dialogical* reflection. “Dialogue, according to Doll (1993), is the *sine qua non* of the whole process. Without dialogue there is no transformation . . .” (p. 169). Jurgen Habermas (1974) supports the pivotal role of dialogue, warning about the dangers of *monological* self-reflection:

The self-reflection of a lone subject . . . requires a quite paradoxical achievement: one part of the self must be split off from the other part in such a manner that the subject can be in a position to render aid to itself . . . [Furthermore], in the act of self-reflection the subject can deceive itself. (p. 29)

Therefore, our extension of the hermeneutic circle includes the requirement of a *critical community of conversation*. By its very nature a community allows for dialogical reflection and enhances the likelihood that contradictions and distortions in thinking will be exposed. In addition, the critical community of conversation is guided by the teacher’s thoughtful questions that serve as an impetus for students to remain focused and engaged in the process and not be intimidated by or defensive about grappling with the anomaly.

The above discussion of the distinctions between the developmentalists’ perspective of cognitive growth as interpreted through the modernist lens and our adapted concept of liminality is summarized in Figure 4.

### **The Learner Variable: Struggles with Liminality**

Over time we recognized that some students are inclined to grapple with assumptions, incongruities and contradictions, while others appear more resistant. This difference in our students’ orientation to learning can be explained by examining Carol Dweck’s (1986, 1990; Dweck & Bempechat, 1983) and Martin Covington’s (1985, 1998) theories of intelligence and motivation. Their research explores the interface between cognitive and affective aspects of learning.

Dweck and Covington describe two types of learners. “Entity” learners view ability as fixed and unchangeable even with increased effort or the accumulation of

Figure 4.  
Comparison of developmentalism and liminality.

Developmentalism	Liminality
<ul style="list-style-type: none"><li>• Operates as a closed system</li><li>• Exchanges take place, not transformations</li><li>• Growth is sacrificed for efficiency</li><li>• Growth is seen as occurring in sequential stages; quantity and quality of growth is controlled by the teacher</li><li>• Equilibrium is valued over disequilibrium, thereby limiting learning opportunities</li><li>• Anomalies &amp; perturbations are viewed as inefficient disruptions to be stifled, minimized, or avoided; challenges to the teacher/text are viewed as threatening to her authority</li><li>• Cognitive growth can occur without the requirement of examining assumptions, beliefs, and values</li></ul>	<ul style="list-style-type: none"><li>• Operates as an open system</li><li>• Transformation is the focus (e.g., changes in assumptions, beliefs, and values)</li><li>• Growth is more important than efficiency</li><li>• Growth is self-organizing and self-directed; teacher is facilitator and co-inquirer</li><li>• Anomalies &amp; perturbations are a necessary and valued part of the learning process; challenges to the teacher/text are essential in order for the teacher to function as a co-inquirer</li><li>• Primary purpose is to examine and question one's deepest assumptions, beliefs, and values--offering a deeper form of learning</li></ul>

knowledge. “Incremental” learners view ability as something that can be improved with effort and experience. Both types of learners present differently in classrooms and provide insight into the varying reactions learners can have to the liminal process.

Confronting an academic task, the goal of entity learners is *performance*. That is, they strive to “look smart” in an academic assignment to mask what they don’t know. In their minds, increasing effort is risky because of their fear of failure. Entity learners are ego-involved in the performance. Their egos are constantly threatened when an academic task feels difficult, prompting their tendency to fall into learned helplessness (Dweck & Goetz, 1988; Dweck & Reppucci, 1973). Errors are viewed as incriminating because they expose the parameters of the entity learner’s intelligence or knowledge. Consequently, relationships with instructors are typically adversarial. The standards by which entity learners evaluate their performance are normative. That is, they cannot evaluate their performance until they know how everyone else has performed on the task.

In contrast, the goal of incremental learners is the *learning itself*. They choose to venture beyond their boundaries of knowledge rather than staying within their comfort zone of what is already familiar. Incremental learners view increased effort in a positive light, and necessary to increase and enhance their knowledge. Errors, from an incremental learner's perspective, are viewed as part of the learning experience, and constructive feedback is welcomed. Consequently, the instructor is viewed as a resource rather than an adversary. Incremental learners are task-involved. When the task is challenging and unfamiliar, this type of learner buckles down and works even harder. The standards by which incremental learners evaluate themselves are personal rather than normative; they set their own learning expectations.

## Conclusion

Our research provides additional evidence that the American educational model of efficiency and speed short changes students' educational experience by denying opportunities for *in-depth* learning. Lacking these opportunities, preservice teachers tend to remain mired in a shallow and impoverished understanding of the nature of learning and unwarily perpetuate this deficient notion in their own classrooms. This jejune view of learning constrains the power that in-depth learning offers in understanding oneself, others, and complex issues in society.

Paradoxically, slowing the learning process down creates space for meaningful learning for *all* learners. This space supports a pedagogy that builds on authentic learning experiences, where teachers can encourage students to engage in the liminal process by asking sticky-probing questions and creating contexts for meaningful, self-reflective dialogue.

As teacher educators we found that making the process of engagement in deep learning more visible to our preservice students has made them more willing to engage in meaningful learning for themselves, and more capable of creating these conditions for their own students. As the previous student quotes suggest, the metaphor of liminality (and its schematic representation) provides a roadmap through the learning struggle. In effect, it serves as an advanced organizer that enables learners to identify their position in the learning process. It also helps legitimize their questions and intellectual angst as they encounter complex readings and ideas that challenge their assumptions and understandings about teaching and learning.

## Note

<sup>1</sup> A more in-depth discussion of the specific types of activities we use to engage students in the questions posed by the text, along with how we use dialogue in this process is published in an earlier article entitled, "Transformational Learning: A Pedagogy of Critical Conversation," *Journal on Excellence in College Teaching*, 11(1), 3-17.

## References

- Bowers, C. A. (1987). *Elements of a post-liberal theory of education*. New York: Teachers College Press.
- Covington, M. V. (1998). *The will to learn: A guide for motivating young people*. Cambridge, UK: Cambridge University Press.
- Covington, M. V., & Omelich, D. L. (1985). Ability and effort valuation among failure-avoiding and failure-accepting students. *Journal of Educational Psychology*, 77, 446-459.
- DeTure, L. R. (1979). Relative effects of modeling on the acquisition of wait-time by preservice elementary teachers and concomitant changes in dialogue patterns. *Journal of Research in Science Teaching*, 16, 553-562.
- Doll, W. (1993). *A postmodern perspective on curriculum*. New York: Teachers College Press.
- Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist*, 41, 1040-1048.
- Dweck, C. S., & Bempechat, J. (1983). Children's theories of intelligence: Consequences for learning. In S. G. Paris, G. M. Olson, & H. M. Stevenson (Eds.), *Learning and motivation in the classroom* (pp. 239-256). Hillsdale, NJ: Erlbaum.
- Dweck, C. S., & Goetz, T. E. (1988). Attributions and learned helplessness. In J. H. Harvey, W. Ickes, & R. F. Kidd (Eds.), *New directions in attribution research* (Vol 2, pp. 157-179). Hillsdale, NJ: Erlbaum.
- Dweck, C. S., & Reppucci, N. D. (1973). Learned helplessness and reinforcement responsibility in children. *Journal of Personality and Social Psychology*, 25, 109-116.
- Elam, H. R. (1991). The difficulty of reading. In A. C. Purves (Ed.), *The idea of difficulty in literature*. New York: State University of New York Press.
- Evans, N., Forney, D., & Guido-DiBrito, F. (1998). *Student development in college: Theory, research, and practice*. San Francisco: Jossey-Bass.
- Gadamer, H. (1976). *Philosophical hermeneutics* (D. E. Linge, Ed. & Trans.). Berkeley, CA: University of California Press.
- Gadamer, H. (1989). *Truth and method* (2<sup>nd</sup> ed.). New York: Crossroad Publishing.
- Gage, N., & Berliner, D. (1984). *Educational psychology* (3<sup>rd</sup> ed.). Boston: Houghton Mifflin.
- Ginsberg, H., & Opper, S. (1969). *Piaget's theory of intellectual development: An introduction*. Englewood Cliffs, NJ: Prentice-Hall.
- Habermas, J. (1974). *Theory and practice*. Boston: Beacon Press.
- Hess, R., & Azuma, H. (1991). Cultural support for schooling: Contrasts between Japan and the United States. *Educational Researcher*, 20(9), 2-8.
- Honea, M. J. (1982). Wait time as an instructional variable: An influence on teacher and student. *Clearinghouse*, 56(4), 167-170.
- Kliebard, H. (1986). *The struggle for the American curriculum, 1893-1958*. Boston: Routledge and Kegan Paul.
- Kuhn, T. (1970). *The structure of scientific revolutions*. Chicago: University of Chicago Press.
- Prigogine, I., & Stengers, I. (1984). *Order out of chaos: Man's new dialogue with nature*. Boston: Bantam Books.
- Rowe, M. B. (1974a). Wait time and rewards as instructional variables, their influence in language, logic, and fate control: Part 1. Wait time. *Journal of Research in Science Teaching*, 11(2), 81-94.
- Rowe, M. B. (1974b). Wait time and rewards as instructional variables, their influence in language, logic, and fate control: Part 2. Rewards. *Journal of Research in Science Teaching*,

- 11(4), 291-308.
- Salvatori, M. R. (2000). Difficulty: The great educational divide. In P. Hutchings (Ed.), *Opening lines: Approaches to the scholarship of teaching and learning* (pp. 81-93). Menlo Park, CA: The Carnegie Foundation for the Advancement of Teaching.
- Schoenfeld, A. (1985). *Mathematical problem solving*. Orlando, FL: Academic Press.
- Stevenson, H., & Stigler, J. (1992). *The learning gap: Why our schools are failing and what we can learn from Japanese and Chinese education*. New York: Simon & Schuster.
- Swift, J. N., & Gooding, C. T. (1983). Interaction of wait time feedback and questioning instruction on middle school science teaching. *Journal of Research in Science Teaching*, 20(8), 721-730.
- Tobin, K. G. (1980). The effect of an extended wait time on science achievement. *Journal of Research in Science Teaching*, 17, 469-475.
- Toulmin, S. (1990). *Cosmopolis: The hidden agenda of modernity*. New York: The Free Press, Macmillan Division.
- Turner, V. (1974). *Dramas, fields, and metaphors: Symbolic action in human society*. Ithaca, NY: Cornell University Press.
- Turner, V. (1985). *On the edge of the bush: Anthropology as experience*. Tucson, AZ: University of Arizona Press.
- Vygotsky, L. (1962). *Thought and language* (E. Hanfmann & G. Vakar, Eds. & Trans.). Cambridge, MA: MIT Press.
- Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.