Teaching and Learning to Teach with Recursive Mediated Learning Experiences

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Abstract
Data points continue to underscore an alarming crisis in U.S. public education especially for poor children, non-whites and English Language Learners as well as persistent, pervasive demographic dissonance between future teachers and learners. Given this crisis and dissonance, those charged with preparing the next generation of educators need to identify innovative ways to confront bias, assumptions, pseudo-concepts, “status quo” and complicity and to foster a sense of social justice and a spirit of relentlessness. Inspired by the work of Vygotsky and of Feuerstein and based upon their own action research, the authors propose recursive mediated learning experiences, detailing a number of activities that they are utilizing in courses on campus and during practice teaching to draw future teachers, university instructors and P-12 mentor teachers “under the hood” in engaging, collaborative, process-oriented, visceral and cerebral approaches to more informed and hopefully more successful professional practice.

Key words: teaching, learning to teach, situatedness, mediation, recursion

Introduction – the educational landscape
In the United States, a child’s home postal code, an indication of socioeconomic status, remains one of the strongest predictors of academic success and college completion. Disproportionality and relative risk ratio (National Education Association, 2007) for low SES, African American and Latino students as well as English Language Learners are evident (Kauchak and Eggen, 2008, National Center for Education Statistics, 2011a, National Center for Education Statistics, 2011b).

While inequities abound, the teaching task force remains somewhat of a “revolving door” with half of all new teachers leaving the profession within five years. Moreover, it is the nation’s most impoverished, under-resourced urban districts that experience the highest attrition rates. (National Commission on Teaching and America’s Future, 1996).

There is an alarming crisis in public education, especially for poor children, non-whites and English Language Learners. Meanwhile, with forty percent minority students but only five percent minority teachers, persistent, pervasive demographic dissonance diminishes positive relationships and effective communication between teachers and culturally and linguistically diverse students. (National Collaborative on Diversity in the Teaching Force, 2004).

Our charge
Given this crisis and dissonance, those responsible for preparing the next generation of educators need to identify innovative ways to confront bias, assumptions, pseudo-concepts, “status quo”, to reject complicity, to help prospective teachers realize and move beyond their “situatedness”, to foster a sense of social justice as well as a disposition toward resiliency and a spirit of relentlessness.
Recursive mediated learning experiences

Inspired by the work of Russian psychologist Lev Vygotsky and of Israeli psychologist Reuven Feuerstein and as a result of on-going action research that we are conducting in the teacher preparation program at our university, we propose recursive mediated learning experiences to strengthen the teaching and learning to teach curriculum and, ultimately, to nurture a more success-oriented schooling environment for all. We describe the intent and power behind educative tasks utilized in courses on campus and during field experiences, designed to draw future teachers “under the hood” and to lead them to fuse relevant theory and practice (Yarmus and Begum, 2013).

How one of the authors came to see with blindfolds on

Years ago, one of the authors volunteered for a community outreach program that paired university students with children given up by their families, confined to a state-run institution, children who were blind in addition to suffering from hearing loss and developmental delays.

Before meeting the children, volunteers had an hour-long orientation session where we were blindfolded. Instead of talking about handicapping conditions, instead of providing volunteers with a list of do’s and don’ts, the trainers provided us with a learning task and an opportunity to put ourselves “in the shoes” of those with whom we would be working. In so doing, trainers empowered and guided us to see with blindfolds on, not only to approach our impending work as volunteers with empathy and insight but also to carry this knowledge forward for individual applications in subsequent work in other settings. This was truly a transformative experience, remembered vividly despite the more than forty years that separate the author from the event.

From blindfolds to other recursive mediated learning experiences

As teacher educators, we are intentionally designing robust experiences for our prospective teachers comparable to this blindfolding. We find activities by, in and through which they will also develop empathy and insight as they prepare to face daunting challenges that await them in P-12 schools.

Mediation

The concept of mediation, of coming between, as described by Vygotsky (Kozulin, 1998), provides us with an underlying theoretical framework. For Vygotsky, cognitive development is viewed from a sociocultural perspective. Mental processes humans use in thinking and solving problems are a consequence of psychological tools developed through mediational agents and in interaction with the culture in which they are immersed.

Feuerstein elaborates upon the essential characteristics of mediated learning experiences (Feuerstein et al, 2010). Mediators abandon the notion of limitedness, of intelligence as a fixed, immutable entity. Instead, mediators see intelligence as incremental, recognizing the potential within each of us for cognitive modifiability. As mediators in the context of a teacher education program, we seek to understand and focus upon prospective teacher needs and begin with where they are. We stand beside them as they confront deliberately chosen stimuli – learning tasks – and beside them as they respond to these stimuli. During the mediated learning experiences, we attend to and value prospective teacher responses, abandon a transmission model with pre-determined “correct” answers, allow for risk-taking in a safe, supportive setting and, in so doing, continue our own journeys as learners, expecting the unpredictable, ready to travel with our students into uncharted territories.

Through the mediational process, prospective teacher personal narratives and situatedness evolve, enabling generalization and transfer of knowledge gained from learning tasks, building bridges from these tasks to new situations and developing general strategies rather than narrow skills. As mediators, we help prospective teachers interpret what they accomplish. Although the mediated learning experiences are always relevant, they are also springboards to transcend tasks at hand.
Recursion

There are two ways for something to re-occur. “Iteration”, doing the same process repeatedly, describes one form of recurrence. It is a linear process managed by a counter and involves identical replication. Iteration is involved in the transmission model of training. The trainer models and the trainees repeat exactly the same way or at least that is the goal. “Recursion”, on the other hand, is a more subtle recurrence that involves fractalized, non-linear, self-similar growth through self-reference. Recursive systems transform through levels of self-similarity. Recurrence is everywhere because a recursive system is self-composed, not simply repeated. Iteration copies past practices through outside agency. Recursion arises anew from within the essence of the requirements and enables significant transcendence. This distinction is at the heart of our success with recursive mediated learning experiences. The mediational tasks are significant transformative agents in our teaching and learning to teach curriculum. Each involves infinite self-composition of socially appropriated, individually enacted pedagogy.

Recursion allows teacher educators, prospective teachers and, in turn, their future students, to continually zoom in on an infinite number of “small-scale” learning tasks that are self-similar and self-composed yet incredibly complex in fact, infinitely complex. Within each learning task lies opportunity to explore, to extract meaning, to discard pseudo, “unscientific” concepts (Smagorinsky et al, 2003) and to think in new ways. The recursive nature of each task makes more likely the appropriation of the very mediational process being used. Agency awaits and spurs prospective teachers onward toward increasing self-regulation and self-assurance.

A visual model

Figure 1: Recursive mediational dynamics of teaching and learning to teach.

(Adapted from an unpublished paper by J. Vagliardo, 2004)

While the explanatory visual model of the recursive mediational dynamics of teaching and learning to teach presented above may appear linear, it is not. Recursive layers abound within designed tasks and by means of interactions among all involved. Figure 1 provides a view of prospective teacher cognitive development promoted by recursive mediational means. Recursive mediated experiences – thoughtfully designed, self-composed learning tasks that comprise the focus of a reconstituted teaching and learning to teach curriculum – lie between the prospective teachers and new ways of thinking. Teaching and learning to teach tasks are mediational agents that provide immersion in a problem setting and problem solving culture where extant cognitive schemata are intentionally unsettled and continuously transformed. The cognitive schemata appropriated by means of personal histories and experiences are challenged and evolve as a result of learning tasks designed and provided by university faculty, “more capable others” (Vygotsky, 1986).
Teaching and learning to teach begin with external manifestations of mental processes eventually internalized, becoming new forms of inner speech and cognition. Seen through the lens of Vygotsky and of Feuerstein, an appropriation of meaning occurs through the engagement of prospective teachers in a very different representational form of intellectual activity. Teaching and learning to teach in this way create in prospective teachers a repertoire of thinking tools that can be used to continuously engage in the quest for solutions to the most complex classroom problems. Additionally, the recursive nature of the engagement situates prospective teachers as partners with their mediators. That is to say, we, as teacher educators, engage simultaneously in the very transformative processes that we mediate with our students. Success ultimately changes the way in which meaning is made during consideration of each problem. Prospective teachers are led to consider their own thinking (Flavell, 1979) and in so doing, increase self-regulation and self-confidence as they tackle augmenting sets of didactic situations. Faculty likewise experience continuous growth by the mediational tasks that they have designed and implemented.

The learning context and examples of recursive mediated learning experiences

The demographics for our prospective teachers mirror national trends for U.S. public school teachers—the overwhelming majority of whom are white, female, have grown up in suburban or rural areas, and have little if any experience with cultural, racial or language difference. Although the design and success of specific mediated learning experiences are influenced by these demographics, the value of these experiences should also be considered in contexts beyond the U.S. borders where demographic differences between teachers and students prevail and wherever educational inequalities pervade.

Several examples of recursive mediated learning experiences that we have used with our prospective teachers will be discussed. These tasks have exercised a profound impact upon prospective teacher cognitive development and upon acquisition of the tools necessary to become “more capable others” for their own students.

Example one: school ratings and inequities

Instead of “telling” prospective teachers about national concerns related to the quality of American schools and talking to them about issues of inequity in educational opportunities from one school and district to another (Boykin and Noguera, 2011), they are asked to provide personal empirical evidence. Instead of covering this content, prospective teachers are led to uncover it. (Wiggins and McTighe, 2005) They are asked to write down an overall rating of their school experience on a scale of 1 to 10, 1 signifying the lowest rating and 10 signifying highest. Then, they consider the following questions:

What rating did you give your school?
What factors led you to this rating?
What influence did academic rigor, personal relevance, interpersonal relationships or learning outcomes and performance have upon your rating?

Prospective teachers share their responses in pairs and whole class forums, identifying commonalities and differences. Next, they examine prior and current class aggregate data. Finally, based upon data displays, they consider the following questions:

What does the mean score tell you about your collective school experience?
What does the range reveal about variation from one school and district to another?
What are the factors that may be contributing to the difference in ratings?
How do your class ratings compare with the ratings of prior course sections?
How is analyzing classroom data different from analyzing data from national surveys?

What comparable activities might you use with your own students in your future classrooms to engage them in self-study?
Reflective writing prompts include:

(a) Looking at school ratings has led me to consider…; and

(b) Based upon consideration of the mean and range of school rating scores, as a future teacher, I …

Data drawn from prospective teacher experiences interpreted with guiding questions from the teacher educator allow personal narratives and cognitive schemata to intersect and engender new ways of thinking about what is going on in present-day schools.

**Example two: campus map-making and diversity**

Instead of telling our prospective teachers about diverse learner characteristics, we prompt them to explore their own diverse characteristics when asked to generate a map of our university campus completely from memory and then to compare and contrast what they have drawn (Singelis, 1998 and M. Vagliardo, 2008). Through this task, a “dominant” world view and “other” views are discovered. Student analyses of their own maps and the maps drawn by classmates lead them to conclude that they do not see the campus as it “really is” but rather they see the campus as “they are”. They recognize their own “situatedness” and the “situatedness” of others. This perspective taking is vital to effective pedagogy in general but especially important in culturally and linguistically diverse settings. The more general principle – “We do not see the world the way it is, we see the world the way we are.” – constitutes a significant new way of thinking that has been socially constructed and individually enacted. (See Figure 1.)

**Example three: the French class and submersion**

Many of our prospective teachers are English-only speakers who have never considered what life is like for an English Language Learner in an English-only classroom. Instead of “explaining” the difference between submersion and immersion, instead of telling them about the importance of making content comprehensible, of lightening the linguistic load, of lowering children’s affective filter and of respecting the silent period, an in-class simulation leads to personal, deep and lasting understanding, emotionally and intellectually. Again, instead of covering course content, prospective teachers are led to uncover it.

To introduce instructional do’s and don’ts when working with English Language Learners, one of the authors teaches a fifteen minute class entirely in French to a group of prospective teachers in the class who have never studied the language. Following this submersion activity, “students” and “observers” consider questions and writing prompts individually, in pairs and then in a whole class de-briefing.

**Students**

How did you feel in a classroom where a language that you did not understand or speak was the language of instruction?

What was the gist of the lesson?

How did you know?

What else might have helped you better understand the content?

How else might you have been able to demonstrate your understanding?

Reflective writing prompts include:

(a) As a student in a French-language class, I…; and
(b) Based upon participation as a student in this submersion experience, as a future teacher of English Language Learners, I…

Observers
How did the students respond to the lesson?
Was there variation in response? If so, what accounts for this?
How did the teacher assist students in understanding content?
What else should the teacher have done to ensure student comprehension?
What else should the teacher have done so that students could demonstrate their learning?

Reflective writing prompts include:
(a) As an observer of non-French-speaking students in a French-language class, I…; and
(b) Based upon my observation of this submersion simulation, as a future teacher of English Language Learners, I…

Subsequent reflections by students bear evidence of new ways of thinking. Karleigh B. captures the visceral impact and recursive nature of her learning:

“I won’t soon forget the experience of sitting in class as a student participant in a French classroom. I was forced to reflect upon instructional strategies and the affective filter….It made me think about my own students when they don’t understand….That feeling of submersion and having literally no clue what was going on placed me in the shoes of the students that I pass every day in the hallway and teach in my classroom.”

Example four: using the other hand
Will future teachers be flexible in pedagogical approach based upon the learning context after completing teacher education requirements and obtaining their certifications? Instead of presenting information about Universal Design for Learning, instead of telling teacher education candidates that they must educate all students and that it is their responsibility to design multiple means for presentation of content, student engagement and expression of learning (Gargiulo and Metcalf, 2010), an in-class experience leads to internalization of these critical understandings.

As part of a simulated geography lesson, prospective teachers draw an outline map of the continental U.S. and then cut out the outline map that they have traced. To trace and cut, they must use their left hand if they are right-handed and their right hand if they are left-handed.

Afterwards, students consider the following questions:
What was the impact on student engagement by having to trace and cut with the other hand?
Was the activity fair?
Did it yield an accurate snapshot of knowledge and skill?
What if right-handed students were permitted to use their dominant hands and only left-handed students had to use their right hands?
What other insights do you have based upon this experience related to accessibility, fairness and disabling vs. enabling curriculum?
In what ways does this experience demonstrate the principles and the importance of Universal Design for Learning?

In a recursive fashion, Amy E., for a subsequent project focusing upon accommodations and adaptations for students with special needs, writes:

“Every student has a different way of learning, even two students with the same disability. Creating projects that cannot be completed by certain students as in the example of asking right-handed students to write with their left hands, alienates them. Students feel as though there is something irreversibly wrong with them and cannot complete assignments.”

**Example five: who is the president?**

Instead of telling prospective teachers about culturally responsive pedagogy, an in-class learning task uncovers assumptions about what constitutes common knowledge and again leads to a deeper understanding of situatedness. Prospective teachers are asked to answer the following six questions:

Who is the president?
When does the presidential term begin?
How long is the presidential term?
Can a first-time president be immediately re-elected?
Who is the country’s most famous person?
What is the country’s most famous landmark?

Responses are shared. Then, prospective teachers are told that the fact checks were for the Dominican Republic, not for the U.S.A. as they had all assumed.

Reflective writing prompts include:

(a) As a “student” responding to the fact check, I …

(b) Based upon my participation as a student in this fact check exercise, as a future teacher, I …

Working through this task, prospective teachers come to grips with consequences of unconscious, contextual, cultural assumptions rooted in personal narratives. Tim M. reflects:

“I never thought to consider countries other than my own. I was thrown into a situation where I could easily put my ELL students. Without qualifiers, questions can easily be misunderstood. This, in turn, sets students up for failure.”

**Example six: through the looking glass and preparing for practice teaching**

Instead of professors talking to pre-practice teachers about their upcoming challenges or to practice teachers about their experiences in P-12 classrooms, both groups are brought together for an on-campus workshop dedicated to practice teaching and what to expect. Visiting practice teachers sit at different “stations” in the classroom talking about what they wanted to know prior to their field teaching, what they learned, what they still need and hope to learn as well as anything else that they want to share. Pre-practice teachers assume the role of newspaper reporters recording personally meaningful remarks with the goal of writing articles for a class newspaper. Reporters move in small groups from one station to another, learning about and from the off-campus field experiences. These shared
experiences become a platform for thinking about the teaching profession. All participants, including faculty, “relive”, summarize, analyze, synthesize, evaluate and create as they communicate experiences with one another within a recursive context that enables transformative opportunities on multiple levels.

Analysis and conclusions

Focus upon recursive mediated learning experiences such as those described above has led us to rethink the teaching and learning to teach curriculum. The recursive nature of the mediation has effects beyond those of a more linear approach. The “school ratings” activity, for example, allows prospective teachers to be in the very analysis they construct. Conversely, the “campus maps” sequence aims to relocate prospective teachers outside themselves, providing a broadened vision of their teaching responsibilities to include those students currently invisible as a consequence of being outside the dominant culture. The “French submersion” and “using the other hand” recursive tasks require prospective teachers to feel what English Language Learners feel and to experience what students with handicapping conditions experience. Recursive mediation promotes metacognition in the “who is the president?” activity, challenging assumptions of geopolitical context as well as self-imposed limitations on context in general. The final example, “through the looking glass”, capitalizes on recursion to mediate the notion of professionalism on multiple levels simultaneously. By means of these interactions, prospective teachers learn to individually negotiate the uneven, fractalized space inherent in all professional conversations focused on teaching and learning. This sociocultural construction is enhanced by careful design and implementation of each activity. Intent for subgroups in the event is dually defined and functions on both external sociocultural and internal cognitive schema planes (See Figure 1.)

Development and refinement of activities that exploit the power of recursive mediated learning suggest a means of transforming our teaching and learning to teach curriculum from a linear to non-linear one. This transformation has many attributes capable of alleviating the crisis in public education including the following:

1. Guiding but not dominating, moving away from a scripted transmission model into an asset-focused one
2. Encouraging new ways of thinking, student voice, agency and the subordination of teaching to learning exemplified by questions such as “What do you think about that?”
3. Honoring all participants, offering choice as well as empowering, allowing for the unpredictable, drawing out rather than pouring in
4. Enabling the appropriation of process as well as outcome.
5. Recognizing that tasks are self-similar and self-composed, and that by its recursive nature, mediation educates all involved
6. Exploring the essence of issues, seeking to understand the deep core relational context involved, never exhausting the possibility for further insight or discovery, unendingly meaningful

It is through recursive mediated learning experiences that we immerse ourselves in the psychological space where teacher educators and prospective teachers share knowledge and understanding, where we seize opportunities to learn from one another. In this space, prospective teachers can shed past culturally appropriated blindfolds, take risks, rise up upon our shoulders and reach toward new ways of thinking.
References


**Biographical notes**

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