HW 2 Six Standards as Radical Change

Sociocultural Theory as Everyday Practice: The Challenge of PK-12 Teacher Preparation for Multilingual and Multicultural Learners

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INTRODUCTION

Educating English Language Learners (ELLs) with equity has been at the forefront of U.S. PK-12 (preschool, primary, and secondary school) educational policy, programs, and practices for decades. The ELL student population in the U.S. has grown to 9.3% or 11.8 million in public schools (U.S. Department of Education, 2016), with Spanish, Arabic, Chinese, Vietnamese, and Haitian among the most common L1s among ELLs (OELA, 2015). Demographically, multilingual and multicultural (MLMC) student populations are predicted to soon surpass majority culture L1 English White students (Maxwell, 2014).

Unfortunately, persistent inequities of access to academic opportunities, resources, and outcomes are well documented for MLMC and economically poor students (e.g., López & López, 2010; Gándara, 2013; McField, 2014). It is generally accepted that the predominately white, female, middle class, and monolingual PK-12 teaching force is poorly equipped to educate its rapidly changing student population (Friedman, 2015; Grant & Gibson, 2011; Hollins & Guzman, 2005; U.S. Department of Education, 2016).

We need radical change in schools to unsettle the status quo of educational injustices for MCML students. Fullan (2007) describes this need as reculturing schools; that is, to engage in a process that invites teachers to “come to question and change their beliefs and habits” (p. 25). However, personal change is not enough to stem persistent inequalities. Hargreaves and Fullan (2012) explain that it is not:

the effect of the individual teacher, for better or worse, here and there, that counts, but rather how you maximize the cumulative effect of many, many teachers over time for each and every student. Students do very well because they have a series of very good teachers—not by chance, but by design. In other words, you have to transform the entire profession. (p. 15-16).

Radical transformation, therefore, couples individual teacher change with social change (Etting, 2012) and systems change (Milner, 2013). Milner (2013, p. 8) argues educators need to “think about how systems, processes, and institutions are overtly and covertly designed to maintain the status quo and sustain depressingly complicated disparities in education.”

The purpose of this chapter is to highlight the potential and challenges of sociocultural theory (SCT) as a driver of change in the classroom ecology of teaching and learning for MLMC learners. Specifically, this chapter will situate PK-12 language teacher education historically to examine the extent to which SCT has been realized as pedagogical practice, or what Lantolf and Poehner (2014) have conceptualized as praxis. This theory-practice connection is especially relevant for re-envisioning teacher preparation programs. On a daily basis, teachers enact their own “theories” or sets of beliefs (examined or not, supported by empirical research or purely experientially derived) regarding how students learn and might be supported through particular kinds of interactions, materials, activities, and environments. Their “theories” are thus revealed by the myriad of instructional choices they make. Put simply, teachers’ beliefs are realized through their pedagogy, which Tharp (2006) characterizes as “the crucial element of the classroom” comprising “the organization of instructional activity and the patterns of teacher and student relationships” (p. 6).
Pedagogy, of course, extends beyond the technical and managerial aspects of instruction. MacNeill and Silcox (2003) define pedagogy as “reasoned, moral, human interaction, within a reflective, socio-political, educative context that facilitates the acquisition of new knowledge, beliefs, or skills.” Pedagogy, therefore, also encompasses humanness, discourse, reflection and action (i.e., praxis), risk-taking, classroom culture, and democratic decision-making (Okoth, 2016). This chapter highlights how SCT, as a theory situated in fundamental relation with practice, offers potential for radical change in how we view language teaching in the context of PK-12 teacher education.

TOWARD A CRITICAL SOCIOCULTURAL THEORY OF PEDAGOGY

According to Bernard Spolsky (1989), the central question to answer about L2 learning is: “Who learns how much of what language under what conditions?” (p. 3). Historically, early theory development in SLA led to an explosion of teaching methods (e.g., grammar translation, audiolinguualism, the natural approach, etc.) focused on finding a definitive method or set of procedures for teaching language. By the 1990’s, scholars became more cautious in drawing implications for teaching from existing SLA theories. Noam Chomsky (1965), for example, was simultaneously exerting a powerful influence through his theory of universal grammar, which argued humans were equipped with innate language universals or rules. To some extent, this also reflected realization that much of SLA research, concerned with modeling and measuring what were believed to be learner-internal cognitive processes and discrete abilities, had little to offer in terms of recommendations for how instruction might usefully guide L2 development, if indeed it could at all (Pienemann, 1984; 1989). For example, Spolsky argued that a theory of language learning should only serve as a “heuristic” to guide teaching “rather than a prescription for how to teach” (p. 4). Kumaravadivelu (1994) declared the need to become “post-method” in language learning, teaching, and teacher education, arguing to move teachers themselves into the center of theorizing language pedagogy. Much of this early scholarship focused on the teaching and learning of English itself in foreign and additional language contexts.

The focus in PK-12 education, however, was on learning language and academic content simultaneously, making bilingual education, content-based instruction, sheltered instruction, structured English immersion (sink or swim), and push-in/pull out services more relevant options. Despite the clear benefits of bilingual education (e.g., McField, 2014b; Slavin & Cheung, 2004), the U.S. has opted intentionally for less effective approaches. Continuing with Spolsky’s (1989) question, in PK-12 contexts today MLMC learners (who) are expected to develop on par with native speakers of English (how much) in learning academic English and content (what language) in general education classrooms despite the fact that these teachers have little to no preparation for supporting MLMC learners (under what conditions). While in many school settings English as a Second Language (ESL) specialists support novice English learners through 30-minute push-in or pull-out services, MLMC students spend the majority of their time in general education classrooms where they are taught by predominately monolingual teachers. Crawford and Reyes (2015, p. vii) characterize this arrangement as a “political backlash against bilingual education.” McField (2014a) similarly argues that “the English-only mandates currently in place that require SEI [Sheltered English Instruction] can only be described as the miseducation of English learners” (p. xvi).

It is in this context that three complementary but often isolated bodies of knowledge have been used to address the needs of MLMC learners in these conditions. These theoretical strands
can broadly be categorized as focusing uniquely on language, learning, or learners. Which knowledge base is privileged has largely depended on who the publishing scholars are.

**Focus on Language**

ESL scholars have focused on language development and relied heavily on SLA research. Larsen-Freeman (1991) posited 10 research-based generalizations to guide teaching. She characterized language learning as a cognitive process that is complex, gradual, nonlinear, dynamic, and social; that it is based on developmental readiness, previous knowledge and experience, and consciousness-raising focused on accuracy; and that it is marked by variability in outcomes for adults and children. From this list, other generalized principles for teaching language followed (e.g., Omaggio Hadley, 1993; Brown, 1994; TESOL, 1997).

A straight line can be drawn from Larsen-Freeman’s (1991) list to TESOL’s ESL PK-12 standards (1997) and on to Echevarria, Vogt, and Short’s (2000) Sheltered Instruction Observation Protocol (SIOP). SIOP translated SLA research into eight preparation, instruction, and assessment components defined by 30 instructional indicators. Unfortunately, SIOP is explicitly prescriptive and behavioristic in its approach to teacher preparation. As of 2013, no study of SIOP has met the Institution of Education Sciences (IES) evidence standards regarding its effectiveness. (See http://ies.ed.gov/ncee/wwc/EvidenceSnapshot/460.)

Another language-based PK-12 model is World-class Instructional Design and Assessment (WIDA, 2012). While WIDA’s framework includes mention of sociocultural context and content area learning, it privileges language (standards, proficiency levels, domains, features of academic language, performance indicators) over learning or learners.

**Focus on Learning**

Educational psychologists and teacher educators, on the other hand, have relied more heavily on theories of learning with clear implications for teaching pedagogies. Skinner’s behaviorism and Piaget’s cognitivism, which focused on the individual, both failed to satisfactorily explain the differential success of MLMC learners in school settings. Wells (2000) observed that, “the history of an individual’s development could therefore not be understood without also considering the history of the social group or groups of which the individual was becoming a member” (p. 51). The move toward Vygotsky’s “language-based theory of learning” (Wells, 1999), in particular, opened up more “situated, social, and distributed views of human cognition” (Johnson, 2006, p. 236).

Specifically targeting PK-12 education of MLMC students, researchers at the Center for Research on Education, Diversity, and Excellence (CREDE) synthesized 40 years of MLMC research into five “generic” but not “exhaustive” Vygotskian principles of learning to “transcend specific groups, localities, or risk factors” for creating the conditions of (language) learning (Tharp, 1997, p. 6). Tharp, Estrada, Dalton, and Yamauchi (2000) detail the Five Standards for Effective Pedagogy (Five Standards) instructional model, which combines the use of multiple, simultaneous, and diversified small group configurations (a teacher center and multiple independent student centers) with learning tasks designed with SCT principles of learning in mind. These principles or Five Standards include: (a) Joint Productive Activity or collaboration (the teacher and a small group of students collaborating to create a shared product together); (b) Language and Literacy Development or language use (providing sustained opportunities to read, write, or speak without assistance); (c) Contextualization or meaning making (activating students’ knowledge, experience, and skills from home, school, and community to learn academic
content); (d) Challenging Activities or teaching complex thinking (learning accompanied by expectations, assistance, and feedback); and the (e) Instructional Conversation or dialogic learning (the teacher engaging a small group of students in a sustained, goal-directed academic conversation). Integrating the Five Standards with a small group classroom organization radically increases the opportunities for appropriate assistance to learn per unit of classroom time, and – as predicted by Vygotsky (1978) and Tharp and Gallimore (1988) – significantly advances student learning.

Studies have documented the positive quantitative relationship between teachers' use of the Five Standards, both separately and in combination, and an array of student outcomes from the affective to student achievement (e.g., Doherty, Hilberg, Pinal, & Tharp, 2003; Estrada, 2004; Estrada & Imhoff, 1999; Hilberg, Tharp, & DeGeest, 2000; Teemant, 2014). Studies of the Instructional Conversation, in particular, by Saunders and Goldenberg (1999; randomized controlled trial) and Saunders (1999; quasi-experimental) have met the IES What Works evidence standards with reservations. Together, these studies present a strong case for teachers' use of the Five Standards with MLMC populations.

**Focus on Learners**

Finally, a growing number of teacher educators have drawn on the work of Paulo Freire (1994), a Brazilian educator and philosopher. Such teacher educators are social activists who use critical perspectives to reveal how race, class, and gender, for example, marginalize learners. Duncan-Andrade and Morrell (2008) explain the persistent inequities experienced by MLMC students are part of the design of schools as institutions: “When one set of schools is given the resources necessary to succeed and another group of schools is not, we have predetermined winners and losers,” (p. 1). To change the education system, they argue that MLMC youth need “preparation to confront the conditions of social and economic inequity in their daily lives and access to the academic literacies (computational and linguistic) that make college attendance a realistic option” (p. 7).

With a focus on learners themselves as part of social groups, educators unapologetically acknowledge that education is a political act and a tool of liberation. That is, schooling takes place within a social, cultural, historical, and political system that needs to be challenged for its marginalization of different sectors of society. Such educators call for teaching pedagogies and institutional practices to (a) affirm student identities, (b) re-examine power dynamics in relationships between teachers and students in learning communities, and (c) expand student agency in the face of inequities. Giroux (1988) argues that in a democracy, education must connect school objectives to students’ lives, communities, and sociopolitical realities outside of school. Funds of knowledge (Moll, Amanti, Neff, & Gonzalez, 1992), equitable mathematics (Moschkovich, 2013), critical literacy (Lewison, Leland, & Harste, 2015), and critical pedagogy in urban schools (Duncan-Andrade & Morrell, 2008) each represent pedagogies for teaching that privilege understanding the learner in sociocultural contexts. Critical researchers examine complex, multidimensional issues more suited to qualitative methods. Therefore, this body of work has not been examined using IES evidence standards, which focus solely on quantitative methodologies.

In summary, historically the education of MLMC students has been pursued through
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competing, albeit it complementary, knowledge bases: language, learning, and learners. To further professionalize teachers and teaching, educators for the 21st Century will need to understand and enact theories of language, learning, and learners simultaneously as “humanizing and just pedagogies and practices that speak to students’ lived experiences inside and outside of schools” (Carter Andrews, Bartell, & Richmond, 2016, p. 171). Moving away from privileging one body of knowledge to the productive and coherent integration of multiple theoretical perspectives on language, learning, and learners will require reframing. Lakoff (2014) writes “Frames are mental structures that shape the way we see the world. As a result, they shape the goals we seek, the plans we make, the way we act, and what counts as a good or bad outcome of our actions…. To change our frames is to change all of this. Reframing is social change” (p. xii-xiii). Lewison, Leland, and Hartse, (2015, p. 15) argue that by bringing our “unconscious frames into awareness and then using new language and new points of view” we can “modify our cultural models” of curriculum, pedagogy, and schooling. Nothing is more pressing in the education of MLMC students than for teachers to reframe what counts as schooling and for teacher educators to reframe their preparation. Sociocultural learning theory (Vygotsky, 1978) and critical social theory (Freire, 1994; Sleeter & Bernal, 2004) offer starting points for reculturing the ESL profession that has focused too narrowly on preparing language specialists from a language perspective at the expense of preparing every teacher to address interrelated aspects of human difference (Smagorinsky, 2013). The field of ESL must continue to challenge the very fundamentals of the profession: Who are we preparing to teach what in which contexts under what conditions and for what purposes in PK-12 education?

CRITICAL SOCIOCULTURAL THEORY AS PEDAGOGY IN PRACTICE: POSSIBILITIES AND CHALLENGES

In this section, I synthesize a rich set of data from classroom teaching to capture how teachers apply critical SCT as pedagogical practice. The larger project from which these data were drawn was supported by a U.S. Department of Education National Professional Development Grant (T195N070233). More detailed information on each element of the project are reported in a series of studies, and interested readers are referred to them (see Haneda, Teemant & Sherman, 2016; Teemant, 2014; Teemant, 2016; Teemant, Cen, & Wilson, 2015; Teemant & Hausman, 2013; Teemant, Hausman, & Kigamwa, 2016; Teemant, Hausman, & Tyra, 2017; Teemant, Leland, & Berghoff, 2014; and Teemant & Reveles, 2012). Following a brief overview of the project design, including the intervention, participants, and observation rubric, the synthesized findings from these studies are used to demonstrate the status quo, possibilities, and challenges of critical SCT pedagogy in practice.

Overview

With the explicit goal of increasing PK-12 elementary and secondary teacher use of critical SCT pedagogical practices, a professional development model was designed, combining use of a 30-hour workshop followed by seven cycles of individual instructional coaching by an expert. Teacher educators also participated in a 15-hour workshop and three cycles of coaching. All participants were from the Midwest, predominately White, female, middle class, and general education teachers or teacher educators, with some ESL specialists included.
For this project, critical SCT pedagogical practices are captured in the Six Standards for Effective Pedagogy or Six Standards. Teemant, Leland, and Berghoff (2014) added Critical Stance, as a new principle of learning to Tharp et al’s (2000) well-established Five Standards. As Figure 1 summarizes, the Six Standards focus on increasing use of collaboration (Joint Productive Activity), language production (Language and Literacy Development), co-construction of knowledge (Contextualization), higher order thinking (Challenging Activities), dialogic learning (Instructional Conversations), and civic engagement (Critical Stance).

These Six Standards, as principles of learning, operationalize teacher activity in what Vygotsky (1997) calls a learner’s Zone of Proximal Development (ZPD). ZPD activity, therefore, occurs when a more knowledgeable other—teachers, parents, or peers—collaborates with learners in ways that assist them to function beyond their current capabilities. Put simply, such mediating and dialogic interactions support learners to subsequently internalize and perform at that higher level independently. While teacher use of the Six Standards are the performance targets, the instructional coach starts where the teacher is and follows the teacher’s lead and plan for implementing the Six Standards. No coaching conversation is pre-scripted, no path to the Six Standards teaching is pre-determined, and no single vision of a Six Standards classroom exists.

An observation rubric called the Standards Performance Continuum Plus (SPC Plus) captures implementation of the Six Standards. (See Figure 2.) The continuum is a 5-point scale, where 0 = Not Observed, 1 = Emerging, 2 = Developing, 3 = Enacting (the target for individual standards), and 4 = Integrating (indicating simultaneous use of 3 or more standards in a single activity). The continuum captures behaviouristic/teacher-centered (0 to 1), cognitivist (2), and critical SCT (3 to 4) teaching. With a total score of 24 possible, four value ranges determine fidelity of implementation: (a) emerging < 7.50; (b) developing= 7.50 – 12.49; (c) enacting= 12.50 – 17.49; and (d) integrating= 17.50 – 24.00. As a classroom observation tool, the SPC Plus rubric has been found valid and reliable (e.g. Doherty, Hilberg, Epaloose, & Tharp; Teemant, Leland, & Berghoff, 2014). Coached teachers were observed before, during, after, and one year after the end of coaching. Teacher educators were observed prior to and during coaching.

The Status Quo

Baseline observations of teaching and teacher education from these studies confirm Cuban’s (2013) and Gallimore’s and Tharp’s (1990) claim that whole-class, teacher-dominated, abstract, recitation teaching dominates public education. No statistical differences were found between the quality of teaching of elementary (8.2/24) or secondary (6.7/24) teachers or between a highly diverse, low-income urban district (6.6/24) and a high-achieving, affluent suburban district (7.7/24). Teacher educators (9.2/24) who theoretically adhere to critical SCT perspectives in the content of their teaching did not significantly differ from these in-service teachers either. This demonstrates how difficult it is to translate textbook knowledge and theories into applied teaching practices, even for the most committed. The goal is not to abandon behaviorism or cognitivist practices, but to understand that educators should “create and sustain climates that support good and successful teaching drawn from different pedagogies” (Cuban, 2013, p. 181). The evidence suggests, however, that critical SCT pedagogy, as defined by the Six Standards, is not in use.

Did the intensive Six Standards workshop and individual Six Standards instructional coaching disrupt the observed status quo? The simple answer is yes. Elementary teachers (18/24), teacher educators (18/24), and student teachers (17.5/24) placed in coached teachers’ classrooms were able to enact critical sociocultural practices at the highest levels of fidelity to the Six Standards model (> 17.50 on 24-point scale). The students of elementary teachers
coached in the Six Standards significantly outperformed students of teachers not coached on a standardized English/Language Arts criterion-referenced exam and on the LAS Links test of English Proficiency. A year after the end of coaching, coached teachers were able to sustain use of the Six Standards model albeit at a slightly lower level of fidelity.

While secondary teachers did significantly increase their use of the Six Standards (6.7 to 11.53/24) with professional development, they did not, as a group, reach fidelity to the model. The data also revealed a significant difference in total score between STEM (6.6) and non-STEM (12.6) secondary teachers, suggesting STEM educators were more challenged in implementing critical SCT practices than their peers. This finding remains problematic: Cuban (2013) cautions that standard teaching practices are “insufficient to overcome the uncertainties inherent in teaching content to students from different backgrounds, interests, and motivations” (p. 169).

Based on total score teacher growth from pre-, post-, and one-year after intervention data, there is evidence that critical SCT practices represent a radical departure from the status quo of traditional pedagogy. With one year of instructional coaching, elementary teachers reached full fidelity to the Six Standards model, and measurably improve student achievement for native and non-native speakers of English. Secondary educators need additional support to reach full fidelity. The teacher educator findings further revealed what Whitehead (1989) called a “living contradiction” or “holding educational values whilst at the same time negating them” (p. 45). This contradiction reinforces what Gallimore and Tharp (1990) observed:

> Ordinary means of teacher preparation and training can provide cognitive structuring, but that alone will not assist teachers to develop new repertoires of complex social behavior necessary to meet the criterion of teaching-as-assisted-performance in the zone of proximal development. Without performance assistance for themselves, there is no chance that teachers will ever learn to assist the performance of their students. Without assistance, there is no chance that teachers will ever abandon the viewpoint common in American classrooms, now and since the 19th century, that students are supposed to learn on their own. (p. 201)

Taken together, these initial findings suggest that with instructional coaching, educators—specialists, general education elementary and secondary teachers, and teacher educators—can indeed adopt critical SCT pedagogical practice for the benefit of MLMC students.

**TIERS OF PRAXIS IN TEACHER PEDAGOGICAL CHANGE**

In this section, I present a synthesis of Six Standards findings across seven cycles of coaching using data on individual standards. Figure 3 summarizes the rank order of teacher use of each of the Six Standards prior to and at the end of coaching, including a change score ranking by standard showing elementary, secondary non-STEM, and secondary STEM teacher growth. The SPC Plus data, along with qualitative comments from teachers, are combined to illustrate the possibilities and challenges associated with implementing critical SCT as practice.

Teachers’ pedagogical change is captured in three tiers of reflection and action (praxis) across time. These tiers are explicitly connected to the following interpretations of Vygotsky’s writings: a) Development is Social, (b) Teaching is Assisting and Situated Performance, and (c) Knowledge is Cultural and Competent Participation. These interpretations are explained in greater detail in what follows. Each tier of praxis will be presented briefly with relevant connections to language, learning, and learner perspectives. Each tier is increasingly more demanding, challenging teachers to reflect, act, restructure, and reframe practice for the benefit of MLMC students.
Tier 1: Development is Social

Vygotsky (1978) viewed social interaction as the site in which teaching and learning activity guides development. That is, cognitive and linguistic development appear first in our interactions with others and only then become internalized and automatized in the individual’s mind (Gallimore & Tharp, 1990; Stetsenko & Arievitch, 1997). Stetsenko and Arievitch (2004, p. 477) explain that while development of the self is “a profoundly social phenomenon” the individual remains “agentive and unique,” with interpersonal and intrapersonal processes serving as “mutually dependent poles on the continuum” of development. Following from this, social interaction provides a context for verbalizing, negotiating, and creating shared meanings using various cultural tools, which include such things as language, literacy, numeracy, and reasoning. These cultural tools are used as dialogic expressions of agency in social interaction with others to mediate learning, allowing students to move from using knowledge and language in specific and situated contexts to new and generalized contexts.

Instructional coaching data from the critical SCT pedagogy project show that, following an intensive summer workshop, teachers immediately focus on changing the organization of their classroom instruction. Teachers readily accept that learning is indeed social, shifting to small group configurations designed to increase student collaboration, sustained language use, and the co-construction of meaning that results from collaborative work. Teachers begin to require students to co-construct a shared representation of their learning rather than producing individual work. The standards of Joint Productive Activity and Language and Literacy Development naturally result in access to more comprehensible input and opportunities to negotiate meaning. Elementary teachers use these two standards at a higher level than other standards prior to instructional coaching, but they also implement these standards at the highest level at the end of coaching. Secondary non-STEM teachers made the most growth in use of these standards as well. However, secondary STEM teachers grew the most in Language and Literacy Development and the least in Joint Productive Activity. These data suggest that elementary and non-STEM teachers were very responsive to understanding how to make group work productive for learning and language development. These changes pay high dividends in student learning. For example, Teemant and Hausman (2013) demonstrated that teacher use of Joint Productive Activity promoted significantly higher student achievement among both native and non-native speakers of English.

According to teachers, the central challenge in changing the organization of the classroom is classroom management. This has been especially true among secondary STEM teachers. All teachers benefit from content, discussions, and techniques for phasing in the use of small group learning activities, including routines, expectations for behavior and learning. However, while 100% of elementary teachers and 89% of non-STEM teachers were able to manage multiple and simultaneous small group activities, a mere 25% of secondary STEM teachers made this change by the end of seven coaching sessions. Secondary STEM teachers need more explicit strategies and ideas for STEM curriculum redesign that encourages authentic student engagement over ‘sit-and-get’ delivery of content.

Tier 2: Teaching is Assisting and Situated Performance

For Vygotsky (1997), “the educational process is an active one on three levels: the student is active, the teacher is active, and the environment created between them is an active one” (p. 54). He further characterized the importance of education by observing that through
interaction with a more knowledgeable other “what the child is able to do in collaboration today, he will be able to do independently tomorrow” (Vygotsky, 1997, p. 211). The quality of this interaction is particularly important, and its relevance to development stems from the ways in which it mediates the world to the learner. From this perspective, teachers are not merely to observe, monitor, or audit student learning. Indeed, Hattie (2009, p. 25) described “teachers as activators, as deliberate change agents, and as directors of learning.” Tharp (2012) further specified eight well-researched types of assistance used responsively in learning interactions. These include: task structuring/restructuring, physical propping/nudging, modeling, positive social reinforcement for existing behaviors, instructing directly, questioning, providing organizing cognitive structures, or feeding-back against a standard.

Of course, all of these mediating behaviors are done in a manner that is attuned to learner responsiveness, as learners in this view are not merely passive recipients of knowledge. For Vygotsky (1978; 1997), learners are active in co-constructing, reformulating, and innovating. Learner performance is viewed as dynamic, recursive, continuous, and discontinuous, with learners taking risks in cognitive, linguistic, social, and emotional ways in cultural and historical contexts. To describe Vygotsky’s perspective, Zebroski (1994) proposed the metaphor of a tidal wave, rather than a step or stage model of development, “because past experiences are continually being reconstructed in terms of new experiences” (p. 162).

The data from the critical SCT project reveal that the second tier of teacher development is for teachers to begin to actually assess and assist students in the learning process following the principles and practices they have learned. With the logistics of having multiple small group activities in control, teachers focus on four of the Six Standards. They maintain and improve their use of Joint Productive Activity and Language and Literacy Development while adding the standards of Challenging Activities and the Instructional Conversation. Challenging Activities requires higher order thinking be combined with (a) quality expectations, (b) assistance, and (c) formative feedback. While Joint Productive Activity requires the teacher and student to co-construct a shared product, the Instructional Conversation asks teachers to go farther by intentionally asking questions, eliciting more student talk than teacher talk, and pressing students to provide rationales for their thinking. In the Six Standards model using at least three of the Six Standards in a single activity promotes deeper learning.

Assisting students to learn unfolds in two ways during this tier of development, spanning as many as four coaching cycles. First, teachers plan for multiple student-led heterogeneous small groups where each group completes a different activity. Having thought more carefully about these learning activities, teachers float from group to group intentionally asking questions, modeling, rephrasing, giving feedback, and reinforcing use of academic language, literacy, and concepts. This kind of floating assistance is possible for the standards of Language and Literacy Development and Challenging Activities (See SPC Plus, Figure 2). Second, teachers plan for a teacher-led homogeneous small group where they can assess student ideas and thinking, and then assist students in the co-construction of new understandings. In the Six Standards model, assistance is considered more potent when teachers become a full participant with a single group of students for a specific purpose.

The quantitative data demonstrates that elementary teachers, in particular, successfully become full participants in small group activities with their students, and readily use questioning, modeling, and rephrasing. Secondary teachers, on the other hand, readily accept the importance of higher order thinking, successfully increasing the level of cognitive challenge and adding clear
expectations. The analysis of student achievement data show that merely increasing the level of cognitive challenge significantly improved learning for all students.

For this tier of teacher development, the challenges vary by teacher groups. Elementary and secondary non-STEM teachers do not struggle with the surface elements of grouping students, creating shared products, eliciting student talk, or questioning. Rather, they struggle to articulate the goals underpinning their activities, how they will recognize when a student has met an objective, or moving beyond questioning and rephrasing as forms of assistance. The assess-to-assist loop needs strengthening, with important connections to cognitive, linguistic, and affective aspects of (language) learning. These challenges are worthy and advanced sites of struggle in professional learning. It is likely that secondary STEM teachers would also have these same challenges; however, their growth is hindered by the ongoing challenge of classroom management. This plays out in secondary STEM teachers being less likely to engage students in unplanned or planned conversations. Although they have increased the level of cognitive challenge and use of collaboration and language use among students, they provide less assistance and feedback in the process of learning. As the Common Core State Standards Initiative (2012) and the Next Generation Science Standards (2013) become more common elements of teacher professional learning, all teachers will need support to move beyond teaching facts and skills to the assessment and co-construction of understandings using a wider repertoire of assistance, as conceptualized in dynamic assessment (e.g., Lantolf and Poehner, 2008) or Tharp’s (2012) means of responsive assistance.

It is the interplay between setting instructional goals that challenge students and providing the support to help move them toward those goals that is central to a critical SCT pedagogy committed to learner development. In this regard, it is useful to remember that Vygotsky (1997) was deeply concerned with teaching students how to think and investigate, and that he warned against the tendency to “banish every difficulty” in learning so that the student “has nothing left to guess at, nothing left to conclude, and only has to look and touch” (p. 174). Pedagogically, Vygotsky argued that students needed to be given the ultimate goal or “an exact and satisfactory answer…from the very start” to this question: “What is the reason for my thinking” (p. 176).

**Tier 3: Knowledge is Cultural and Competent Participation**

Rogoff (2003) explained that “Human development is a cultural process” which takes place as “people develop as participants in cultural communities” (p. 3). The child rearing socialization practices between adults and children exemplify how knowledge is passed on across generations in non-school sociocultural contexts (Gallimore & Tharp, 1990). These “cultural scripts are learned implicitly, through observation and participation, and not by deliberate study” (Stigler & Hiebert, 1999, p. 86). Rogoff (2003) explains that from the perspective of SCT individual development “must be understood in, and cannot be separated from, its social and cultural-historical context” (p. 50). Ibbotson and Tomasello (2016, p. 74), advocates of usage-based approaches to language development, similarly argue that “Grammatical structure is not innate. Instead grammar is the product of history (the processes that shape how languages are passed from one generation to the next) and human psychology (the set of social and cognitive capacities that allow generations to learn a language in the first place).” Adding to this, Luis Moll (2001) adds that a particular quality of development is possible in schooling, one that ultimately has consequences for the world outside of schools. Specifically, he explains that students’ everyday understandings “provide the ‘conceptual fabric’
for developing schooled concepts” and, in turn, students’ everyday concepts get “transformed through their connection to the more systematic concepts” of schooling (Moll, 2001, p. 114).

Of course, often MLMC learners’ worlds contrast starkly with schools, posing an additional set of challenges. Howard and Milner (2014) have made a strong case for “racial and cultural knowledge” being a necessary dimension of teacher preparation. Because most teachers no longer live in the communities where they teach, minimizing cultural bias in the curriculum requires concerted effort. Culturally relevant teachers “use their knowledge of students’ cultures—not only their race and ethnicity but also the nexus of their identities, in as local and specific of a way as possible—to shape their pedagogical practices and to make curricular decisions” (Grant and Gibson, 2011, p. 29).

When critical learner perspectives are integrated with Vygotsky’s SCT, the exploration of teacher and learner identity, power, and agency in the learning process is made possible (Lewis, Enciso, & Moje, 2007). When teachers adjust their curriculum, pedagogy, assessments, and expectations to meet the needs of learners marginalized in society and schools, they are supporting students to develop the types of cultural, linguistic, and academic proficiencies and performances needed for academic success. Hattie (2009, p. 245) aptly observed, “It is not a particular method, nor a particular script, that makes the difference; it is attending to personalizing the learning, getting greater precision about how students are progressing in this learning, and ensuring professional learning of the teachers about how and when to provide different or more effective strategies for teaching and learning. This is precisely the aim of critical SCT pedagogy.

In the critical SCT pedagogy project, the standards of Contextualization, Instructional Conversation, and Critical Stance are among the last standards teachers add to their practices. Each of these standards contributes to building a culture of recognition in the classroom that affirms MLMC students as learners and valued members of society. Contextualization asks teachers to build on what students already know or have experienced from home, school, or community. As Moll (2001) observes, Instructional Conversations with an “emphasis on extended discourse and responsivity to student contributions, help the teacher to understand the knowledge, experiences, and values of the students” (p. 123). Critical Stance invites teachers to co-design activities with their students that encourage the application of school learning to real-world contexts, problems, or injustices. Such activities consciously engage students in naming their experiences, reflecting upon them, and taking action within their sphere of influence, all of which aligns with the critical pedagogy advocated by Freire (1994).

Data from the critical SCT pedagogy project reveal that elementary teachers, who have a single group of students all day and all year, grew the most in use of the Instructional Conversation and Contextualization. These were the standards least observed prior to coaching. When these same teachers were observed a year after the end of coaching, they had sustained use of the Six Standards instructional model, but they declined in their use of Contextualization and the Instructional Conversation. They attributed this declined to not having the ongoing support of an instructional coach and larger class sizes. For secondary teachers, the Instructional Conversation was the standard used least at the beginning and end of coaching. However, non-STEM teachers grew more in their use of the Instructional Conversation, which accompanied their strong growth in Joint Productive Activity. Both STEM and non-STEM secondary teachers grew in their abilities to meaningfully contextualize learning.

Elementary and secondary teachers who implemented the Instructional Conversation shared that it was the standard they and their students valued and enjoyed the most. Teachers
reported learning social, emotional, as well as academically relevant things about their students that helped them view their learners from new perspectives.

For all teacher groups, Critical Stance was the standard they were least familiar with and able to enact. While elementary teachers, for example, were able to use more variety, multiple modalities, and multiple perspectives in their teaching, they were less able to meaningfully conceptualized curricular connections to students’ lives. Successful implementation of Critical Stance, more often than not, focused on environmental concerns, such as fundraising to save elephants or contribute to tornado victims. Other examples included planting a school garden, establishing an anti-bullying student group, and making welcome packets for new immigrants. At the secondary level, Critical Stance often took the form of multiple perspectives rather than using school knowledge to solve real-world problems or inequities. It is interesting to note that even modest gains in use of Critical Stance contributed to statistically significant positive gains in student achievement and English proficiency.

This tier challenges teachers and teacher educators to think deeply about what qualifies as meaningful and culturally responsive curriculum and practices. There are a plethora of state and national standards for every academic discipline that describe what students should know and be able to do. Yet standards and textbooks rarely focus on the local and real-world social, political, historical, cultural, or economic realities that shape the educational, economic, and personal opportunities for MLMC learners. Coached teachers felt pressured to follow pacing guides and textbooks at the expense of student engagement, experiences, and interests. Vygotsky (1997, p. 107) argued “Emotion is no less important a tool than is thinking. The teacher must be concerned not only that students think …but also feel deeply about it.” He continued:

- It is precisely the emotional reactions that have to serve as the foundation of the educational process…. Only new knowledge that has passed through the student’s senses may be inculcated. Everything else is lifeless knowledge that diminishes every vital relationship to the world. (ibid.).

While the Six Standards pedagogy supported teachers in building relationships, contextualizing curriculum, and planning for civic engagement, teachers also need additional and ongoing support to develop deeper understanding of knowledge being cultural and competent participation in multiple and varied communities.

In summary, learning as a social enterprise—collaborative, language rich, and co-constructed—is the easiest assumption to for educators to grasp and enact. While teachers reached a generalized level of visibility in assisting students to learn, there is also evidence from coaching that teachers need ongoing support to identify meaningful goals and evidence of learning and connect them through learning activities. Finally, teachers struggled most in reframing their teaching, textbooks, and curriculum resources from learner perspectives. Teachers made their instruction more dialogic, challenging, and contextualized; however, they still needed additional support to take up Critical Stance as both a pedagogical and curricular response.

**LOOKING AHEAD**

The Six Standards professional development shows promise for advancing teacher use of critical SCT pedagogical practices. Nevertheless, teachers will require more than one year of instructional coaching and more than any single intervention to sustain innovation. More research is needed to identify progressions in professional learning that are comprehensive yet
sequenced to bring about the full realization of critical SCT pedagogical practices. Three recommendations for such practice follow.

**Disrupt the Status Quo**

Tett (2015) observed that silos help us handle complexity, “but they exist in our minds and social groups too. Silos breed tribalism. But they can also go hand in hand with tunnel vision” (p. 13). In ESL education, the focus has almost singularly been on aspects of language and language development. We have built ESL certification programs around preparing the one language specialist in a school. The most promoted model of sheltered English instruction built its entire protocol around a list of well-researched facts about SLA. MLMC students are not only linguistic beings. They are, indeed, multidimensional beings with needs that extend beyond their labeled proficiency level or the displayed language objective. The peril of our expertise in SLA has to a degree “stifled innovation” and resulted in “fragmentation” (Tett, 2015, p. 14) in teacher professional learning. As teacher educators, we would be wise to intentionally become more interdisciplinary, focusing on the productive integration of theories of language, learning, and learners. Perhaps, the most visible efforts thus far at being interdisciplinary are culturally and linguistically responsive teaching (Villegas & Lucas, 2002; Lucas & Villegas, 2011), Quality Teaching for English Learners (Heritage, Walqui, & Linquanti, 2015), and Stanford’s Understanding Language (http://ell.stanford.edu/). What remains to be understood from such interdisciplinary work is how each becomes pedagogical practice and meaningful professional learning that disrupts the status quo.

**Become Pedagogically Driven**

SCT offers the ESL educator a theoretical platform for learning that aligns well with usage-based theories of SLA and critical theory. Textbook knowledge of Vygotskian ideas, however, does not and will not automatically translate into pedagogical practice for practitioners. Few teachers or teacher educators have actually experienced critical SCT practices as learners themselves. Campano (2009) suggests that the “process of theorizing can be the product of ongoing collaborative labor, often of school- and university-based educators working in solidarity to alter the material conditions of teaching and learning and liberate the fuller potentials of both students and teachers” (p. 327).

Hargreaves and Fullan (2012) argue that “The only solutions that will work on any scale are those that mobilize the teaching force as a whole” (p. 22). If ESL teacher educators are to take up the challenge of preparing every teacher, we will need more innovation in developing, implementing, and evaluating models of professional learning that are theoretically and pedagogically coherent. The Six Standards, with its dependence on instructional coaching, shows promise in radically improving teacher pedagogy while increasing student achievement. As we follow the evidence of impact, we will be able to determine which pedagogical practices, in what combinations, under which professional learning conditions, lead to improved student outcomes. Hollins and Guzman (2005) argue that “empirical examination of the relationship between teacher preparation for diversity and pupils’ learning and other outcomes is largely unchartered territory in the field of research on teacher education” (p. 512).

In my own journey with critical SCT pedagogy, I began by adding readings to university courses and progressed to explicitly modeling pedagogical practices in my own teaching. When subtle modeling and readings did not lead my inservice teachers to change their teaching practices, I turned to instructional coaching. Course work plus instructional coaching, which is
approximately 45 hours of professional learning, has led to the radical pedagogical change I envisioned. Becoming more pedagogically driven has led to pedagogical change. Nevertheless, critical SCT as practice lends itself well to multiple layers and opportunities for praxis.

**Mediate Culture**

From a critical SCT perspective, the least developed component of teacher preparation is captured by Vygotsky’s conception of knowledge as cultural and competent participation in varied discourse communities. Howard and Milner (2014) suggest racial and cultural knowledge are “extremely complex—perhaps more difficult than that of subject matter and pedagogical content knowledge” (p. 207). Without intentional program planning, such important concepts are often regulated to the isolated educational psychology course or addressed more generally under student diversity.

The mediation of culture in relationships and learning deserves deliberate attention, especially as pedagogical practice. It is common today for teachers and students to live in different communities and have different cultural, historical, economic, nutritional, and political experiences. These differences can create biases, misinterpretations, inequities, and distrust yet these issues are rarely talked about openly, especially in classrooms. Tharp et al (2000) described the importance of Joint Productive Activity—collaborative co-construction of learning—as an important pedagogical principle for creating shared understandings (i.e., intersubjectivity).

Contextualization, the Instructional Conversation, and Critical Stance are also pedagogical practices that create dialogic spaces for students’ real-world lives and realities to be discussed. Critical theories (e.g., Freire, 1994; Milner, 2008) contribute necessary depth to ESL teacher preparation for understanding how individual identities and agency are shaped by “asymmetries of power and privilege” in society (McLaren, 2007, p. 69). For radical change, every teacher will need to understand and make visible to students how knowledge is cultural and competent participation.

**CONCLUSION**

The underlying assumption of this chapter is that radical change is needed to improve learning outcomes for MLMC students. Unfortunately, much of what is promoted under the name of ESL education results in what Cuban (2013) describes as “incremental changes” that “have largely left intact teaching routines that students’ grandparents visiting these schools would find familiar” (p. 7). Given the decades of evidence that transmission models of teaching are not closing the achievement gap for MLMC learners, we would be naïve to continue advocating for the same content, practices, programs, and policies for another generation. All educators should contemplate Vygotsky’s (1997) declaration: “Education always denotes change. If nothing changes, then nothing has been taught” (p. 104).

*Related Topics: List chapters in the volume which you expect readers will find it useful to connect

**REFERENCES**


Campano, G. (2009). Teacher research as a collaborative struggle for humanization. In M. Cochran-Smith & S. L. Lytle (Eds.), *Inquiry as stance: Practitioner research for the next...*
A. Teemant


**FURTHER READING**


- An introduction to critical pedagogy with concrete applications to schooling.


- Detailed descriptions connecting second language development and assisted learning.


- An introduction to critical literacy written for classroom teachers.
- Comprehensive overview of how to become culturally competent, with applications to classroom teaching and various marginalized student groups.

- A unifying theory of how humans bring about change grounded in sociocultural theory.

- An educator friendly introduction to sociocultural theory.
Figure Caption:

*Figure 1.* Six Standards for Effective Pedagogy
STANDARDS FOR Effective Pedagogy

STANDARD 1
Joint Productive Activity (JPA) Teacher and Students Producing Together
Facilitate learning through joint productive activity among teacher and students.
Enacting Level: The teacher and a small group of students collaborate on a shared product.

STANDARD 2
Language & Literacy Development (LLD)
Developing Language and Literacy Across the Curriculum
Develop competence in the language and literacy of instruction across the curriculum.
Enacting Level: The teacher provides structured opportunities for students to engage in sustained reading, writing, or speaking activities; and assists academic language use or literacy development by questioning, rephrasing, or modeling.

STANDARD 3
Contextualization (CTX)
Making Meaning: Connecting School to Students' Lives
Connect teaching and curriculum to experiences and skills of students' home and community.
Enacting Level: The teacher integrates the new activity/information with what students already know from home, school, or community.

STANDARD 4
Challenging Activities (CA) Teaching Complex Thinking
Challenge students toward cognitive complexity.
Enacting Level: The teacher designs and enacts challenging activities with clear standards and performance feedback, and assists the development of more complex thinking.

STANDARD 5
Instructional Conversation (IC) Teaching Through Conversation
Engage students through dialogue, especially the Instructional Conversation.
Enacting Level: The teacher has a planned, goal-directed conversation with a small group of students on an academic topic; elicits student talk by questioning, listening, and responding to assess and assist student understanding; and inquires about students' views, judgments, or rationales. Student talk occurs at higher rates than teacher talk.

STANDARD 6
Critical Stance (CS) Teaching to Transform Inequities
Empower students to transform society's inequities through democracy and civic engagement.
Enacting Level: The teacher consciously engages learners in interrogating conventional wisdom and practices, reflecting upon ramifications, and seeking actively to transform inequities within their scope of influence in the classroom and larger community.
Figure Caption:

*Figure 2. Standards Performance Continuum: A Classroom Observation Rubric for the Six Standards*
<table>
<thead>
<tr>
<th>General Definition:</th>
<th>NOT OBSERVED</th>
<th>EMERGING</th>
<th>DEVELOPING</th>
<th>ENACTING</th>
<th>INTEGRATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>The standard is not observed.</td>
<td>One or more elements of the standard are enacted.</td>
<td>The teacher designs and enacts activities that demonstrate partial enactment of the standard.</td>
<td>The teacher designs, enacts, and assists in activities that demonstrate complete enactment of the standard.</td>
<td>The teacher designs, enacts, and assists in activities that demonstrate skillful integration of multiple standards simultaneously.</td>
<td></td>
</tr>
</tbody>
</table>

| Joint Productive Activity | Students' work independently of one another. | Students are seated with a partner or group, AND (a) collaborate or assist one another, OR (b) are instructed in how to work in groups, OR (c) contribute individual work, not requiring collaboration, to a joint product. | The teacher and students collaborate on a joint project in a whole-class setting, OR students collaborate on a joint product in pairs or small groups. | The teacher and a small group of students collaborate on a joint project. | The teacher designs, enacts, and collaborates in joint productive activities that demonstrate skillful integration of multiple standards simultaneously. |

| Language & Literacy Development | Instruction is dominated by teacher talk. | (a) The teacher explicitly models appropriate language; OR (b) students engage in brief, repetitive, or drill-like reading, writing, or speaking activities; OR (c) students engage in social talk while working. | The teacher provides structured opportunities for academic language development in sustained reading, writing, or speaking activities. (Sustained means at least 10 minutes. If it is a whole class arrangement, then more than 50% of the students are participating. No turn taking.) | The teacher designs and enacts instructional activities that generate language expression and development of 'content vocabulary,' AND assists student language use or literacy development through questioning, rephrasing, or modeling. | The teacher designs, enacts, and assists in language development activities that demonstrate skillful integration of multiple standards simultaneously. |

| Contextualization Making Meaning – Connecting School to Students’ Lives | New information is presented in an abstract, disconnected manner. | The teacher (a) includes some aspect of students’ everyday experience in instruction, OR (b) connects classroom activities to theme or builds on the current unit of instruction, OR (c) includes parents or community members in activities or instruction, OR (d) connects student comments to content concepts. | The teacher makes incidental connections between students’ prior knowledge from home, school, or community and the new activity/conceptual concepts. | The teacher integrates the new activity/conceptual concepts with students’ prior knowledge from home, school, or community to connect everyday and school concepts. | The teacher designs, enacts, and assists in contextualized activities that demonstrate skillful integration of multiple standards simultaneously. |

| Challenging Activities Teaching Complex Thinking | Activities rely on repetition, recall, or duplication to produce factual or procedural information. | The teacher (a) accommodates students’ varied ability levels, OR (b) sets and presents quality standards for student performance, OR (c) provides students with feedback on their performance. | The teacher designs and enacts challenging activities that connect instructional elements to academic content or advance student understanding to more complex levels. | The teacher designs and enacts challenging activities with clear standards/expectations and performance feedback, AND assists the development of more complex thinking. | The teacher designs, enacts, and assists in challenging activities that demonstrate skillful integration of multiple standards simultaneously. |

| Instructional Conversation Teaching Through Conversation | Lecture or whole-class instruction predominates. | With individuals or small groups of students, the teacher (a) responds in ways that are comfortable for students, OR (b) uses questioning, listening or rephrasing to elicit student talk, OR (c) converses on a nonacademic topic. | The teacher converses with a small group of students on an academic topic AND elicits student talk with questioning, listening, rephrasing, or modeling. | The teacher; designs and enacts an instructional conversation (C) with a clear academic goal, listens carefully to assess and assist student understanding; AND questions students on their views, judgments, or rationales. Student talk occurs at higher rates than teacher talk. | The teacher designs, enacts, and assists in instructional conversations that demonstrate skillful integration of multiple standards simultaneously. |

| Critical Stance Teaching to Transform Inequities | Instruction reflects appropriate content area standards. | The teacher designs instruction using variety, which includes (a) multiple sources of information; OR (b) values and respects multiple perspectives; OR (c) supports learning through multiple modalities. | Using variety, the teacher designs instruction that positions students to generate new knowledge resulting in (a) original contributions, products, or expertise; OR (b) students’ questioning and reflecting on issues from multiple perspectives. | The teacher designs or facilitates instruction that consciously engages learners in (a) interrogating conventional wisdom and practices; AND (b) reflection upon ramifications of such practices; AND (c) actively seeks to transform inequities within their scope of influence within the classroom and larger community. | The teacher designs, enacts, and assists in critical stance activities that demonstrate skillful integration of multiple standards simultaneously. |
Figure Caption:

*Figure 3.* Rank Order of Implementation for the Six Standards for Effective Pedagogy
### Elementary Teacher Order of Implementation

<table>
<thead>
<tr>
<th>Pre-Coaching Intervention Order</th>
<th>Post-Coaching Intervention Order</th>
<th>Rank Order of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language &amp; Literacy</td>
<td>Language &amp; Literacy</td>
<td>Instructional Conversation +2.78</td>
</tr>
<tr>
<td>Cognitive Challenge</td>
<td>Cognitive Challenge</td>
<td>Language &amp; Literacy +1.94</td>
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<tr>
<td>Contextualization</td>
<td>Contextualization</td>
<td>Joint Productivity +1.79</td>
</tr>
<tr>
<td>Instructional Conversation</td>
<td>Instructional Conversation</td>
<td>Cognitive Challenge +1.78</td>
</tr>
<tr>
<td>Critical Stance</td>
<td>Critical Stance</td>
<td>Critical Stance +1.14</td>
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</table>

<table>
<thead>
<tr>
<th>Non-Stem Teacher Order of Implementation</th>
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</thead>
<tbody>
<tr>
<td>Pre-Coaching Intervention Order</td>
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<tr>
<td>Language &amp; Literacy</td>
</tr>
<tr>
<td>Contextualization</td>
</tr>
<tr>
<td>Cognitive Challenge</td>
</tr>
<tr>
<td>Joint Productivity</td>
</tr>
<tr>
<td>Instructional Conversation</td>
</tr>
<tr>
<td>Critical Stance</td>
</tr>
<tr>
<td>Post-Coaching Intervention Order</td>
</tr>
<tr>
<td>Language &amp; Literacy</td>
</tr>
<tr>
<td>Cognitive Challenge</td>
</tr>
<tr>
<td>Contextualization</td>
</tr>
<tr>
<td>Instructional Conversation</td>
</tr>
<tr>
<td>Critical Stance</td>
</tr>
<tr>
<td>Rank Order of Change</td>
</tr>
<tr>
<td>Joint Productivity +1.34</td>
</tr>
<tr>
<td>Language &amp; Literacy +1.33</td>
</tr>
<tr>
<td>Instructional Conversation +1.11</td>
</tr>
<tr>
<td>Cognitive Challenge +1.00</td>
</tr>
<tr>
<td>Contextualization +0.89</td>
</tr>
<tr>
<td>Critical Stance +0.73</td>
</tr>
</tbody>
</table>

### Stem Teacher Order of Implementation

<table>
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<th>Pre-Coaching Intervention Order</th>
<th>Post-Coaching Intervention Order</th>
<th>Rank Order of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint Productivity</td>
<td>Language &amp; Literacy</td>
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<tr>
<td>Cognitive Challenge</td>
<td>Cognitive Challenge</td>
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<td>Language &amp; Literacy</td>
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<td>Joint Productivity</td>
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<tr>
<td>Instructional Conversation</td>
<td>Instructional Conversation</td>
<td>Critical Stance +0.20</td>
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<tr>
<td>Critical Stance</td>
<td>Critical Stance</td>
<td>Critical Stance +0.20</td>
</tr>
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