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THE AESTHETIC DIMENSIONS OF TEACHING:
WORKING IN THE CONCEPTUAL SPACE BETWEEN
STUDENTS' EXPERIENCES AND SUBJECT MATTER

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MARK C. BAILDON

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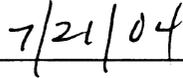
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THE AESTHETIC DIMENSIONS OF TEACHING:
WORKING IN THE CONCEPTUAL SPACE BETWEEN
STUDENTS' EXPERIENCES AND SUBJECT MATTER

By

Mark C. Baildon

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Teacher Education

2004

## ABSTRACT

## THE AESTHETIC DIMENSIONS OF TEACHING:
## WORKING IN THE CONCEPTUAL SPACE BETWEEN
## STUDENTS' EXPERIENCES AND SUBJECT MATTER

By

Mark C. Baildon

This dissertation is a qualitative study of four teachers' work in the medium of a curriculum designed to promote Meaningful Learning using Technology (ML/T) and their professional learning experiences in which they learned to manage key epistemological challenges through artful approaches to classroom practice. It examines how they think about their work in the medium of this complex curriculum, their professional learning experiences with this curriculum over a three-year period, and key epistemological challenges they faced. It investigates how they learned to manage these challenges and how they developed an aesthetic stance that supported their sense making and work in the medium of the curriculum.

This study drew on a broad range of data sources to investigate teachers' stances toward student knowing and disciplinary knowing as they taught two social studies units emphasizing disciplined inquiry and constructivist approaches to learning. The study examines the ways they think about and mediate relationships between students' experiences and subject matter using big ideas, and considers how teachers' epistemological stances might develop and change through engagements with curriculum, their professional relationships, and professional learning experiences.

In the study, I provide a rich description and analysis of teachers' epistemological stances and their role in teaching to understand better how teachers think about classroom

experience and make connections between students and subject matter. I argue that these teachers drew upon an aesthetic stance to manage key epistemological challenges presented by working in the conceptual space between students' ideas and experiences and subject matter.

Dedicated to Don, Lynn, Susan, and Tim — the many inspiring and gifted teachers who have contributed immeasurably to my own growth and understanding.

Dedicated to Don, Lynn, Susan, and Tim – for being inquiring and gifted teachers who have contributed immeasurably to my own knowing and understanding.

# ACKNOWLEDGEMENTS

I also want to thank Don, Lynn, Susan, and Tim for giving so much of themselves, and being willing to share their thinking and practice with me. I have always felt welcomed in their classrooms, and their commitment to inquiry and learning has been an inspiration to me. I am so very thankful for having the opportunity to collaboratively explore the many areas of educational practice we've explored these past few years.

Many colleagues and friends have contributed to this dissertation study and it wouldn't have been possible without their support and encouragement. I especially want to thank Betsy Ashburn, Gerri Newnum, Cindy Ruble, Bonnie Garbrecht, and Barbara Markle for making this study possible and providing such powerful professional enrichment during my involvement with the project. I also am indebted to several colleagues and friends with whom I have been fortunate to work these past few years. I especially acknowledge John Bell, Marcia Leone, Shari Levine-Rose, Karen Lowenstein, Mike Roessler, and Brian Vance for their intellectual support and friendship.

Finally, I want to thank my family. My wife, Rindi, son, Brady, and daughter, Taylor, have supported me every step of the way. Their love and encouragement sustained me and I am blessed to be a part of their lives.

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**CHAPTER ONE**

**TEACHING AS A WORK OF ART IN THE MEDIUM OF MEANINGFUL
LEARNING USING TECHNOLOGY (ML/T) CURRICULUM**

Recognizing when you have a topic, a metaphor, an analogy, whatever will work

for you…*being sensitive and being on the lookout for those kinds of opportunities*

is important… I think that's what becomes *part of the art of being a teacher* is to

recognize those opportunities… I think you have to know not just the social

studies content, but how your kids are doing as far as being writers and readers

and where their discussion skills are. That's *part of the art, part of recognizing*

*what will work and what won't work.* (Don, PLB session)

**Introduction**

For Don, being sensitive and attuned to opportunities for creating meaning within

the almost infinite possibilities for meaning making in the medium of curriculum

constitutes the art of the teacher. Recognizing opportunities, knowing what will work and

what won't work, creating generative connections, and seeking possible relationships

between students' ideas and subject matter that support understanding is an artful

enterprise for teachers like Don. It requires being sensitive and "on the lookout" for

opportunities, knowing the content, and knowing your students and the ways they

develop and articulate their understandings. Being artful as a teacher requires managing

the conceptual space between child and subject matter in ways that are responsive,

nuanced, and generative.

This dissertation is a story of four teachers' (Don, Susan, Lynn, and Tim[1]) work in the medium of two curriculum units designed to promote Meaningful Learning using Technology (ML/T). Specifically, I investigate how these teachers think about and manage two key epistemological challenges: (1.) *making connections between students' personal experience and subject matter* and (2.) *understanding student understanding*. In my investigation of how they learned to manage these challenges, I argue that they draw on aesthetic stances to support their sense making and work in the medium of curriculum.

### Statement of the research problem and focus of the study

I view these two challenges as epistemological challenges because they deal with the character of knowledge and knowing, how knowledge is constructed, the relationship between experience and knowing, and how knowing and knowledge are represented in the classroom. The main problem I address is the challenge teachers have with noticing and paying attention to students' ideas and talk in ways that allow them to make connections among students' ideas, their prior knowledge, lived experience, and social studies content. How teachers work in this conceptual space between students' understandings and learning outcomes in subject matter is an important quality of teaching for meaningful learning. It means that teachers must understand the structure and epistemological dimensions of the subject matter they teach, and they must develop certain sensitivities to students' ideas and talk, recognize relationships between subject matter and classroom experience, and build on students' ideas and work in ways that bring them into meaningful contact with important disciplinary ideas and processes.

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[1] Pseudonyms are used for all participants in this study.

Most research investigating the epistemological orientations that teachers draw upon to manage important epistemological challenges inherent in their work has been done with "expert" teachers in the social studies and other disciplines (Ball, 1993; Lampert, 2001; Wilson, 2001; Wilson & Wineburg, 1993; Wineburg & Wilson, 1988, 1991). The teachers studied in these accounts had strong disciplinary backgrounds and were described as having a firm understanding of the epistemologies of the disciplines they were teaching (Bransford, Brown, & Cocking, 2000). My study investigates how four middle school (6th-8th grade) teachers, lacking the strong disciplinary backgrounds typical of the teachers in these other studies, learned to manage epistemological challenges central to teaching for meaningful learning using disciplinary approaches.

The study makes the case that these teachers drew upon aesthetic ways of knowing in classroom practice to make connections between students' prior knowledge and lived experience and social studies subject matter. They drew upon important conceptual frames that served as "ends-in-view" to guide their sense-making, learned to be more attentive and attuned to students' ideas and experiences, and artfully created meaning with students by seeking generative relationships between students' ideas and experiences and social studies subject matter that supported student understanding.

### Research questions

At the heart of this study are two central questions:

- How do teachers make connections between students' prior knowledge and lived experience, and social studies subject matter?

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- What are the epistemological stances teachers bring to students' knowing/knowledge and disciplinary knowing/knowledge that enables them to make these connections?

To investigate these two questions, I drew upon several sources of data: (1.) data documenting teachers' professional learning experiences over a three-year period (e.g., field notes, e-mail correspondence, key professional learning documents, meeting agendas, videotaped professional learning meetings, etc.); (2.) a professional learning session in which the teachers responded to two videotaped segments of classroom practice in which curricular big ideas were used to mediate students' understandings of personal experience and subject matter; and (3.) follow-up interviews with each of the study participants to probe key issues raised during the professional learning session. By looking across this wide range of data, I document how teachers think about what students know, how they choose and utilize certain representations of subject matter, how they decide to use resources they believe will promote student understanding, and how they think about alternative courses of action they believe can help make subject matter accessible to students. To understand how these teachers know which representations or strategies are most useful in developing students' subject matter knowledge using big ideas, I consider how they work recursively between disciplinary understandings of the content and what they perceive to be students' prior knowledge and understandings.

**The contexts and background of the study**

The two challenges mentioned above have been central to the work of a curriculum, technology, and professional development project on which I worked for three years. The project was funded through a U.S. Department of Education Technology

Innovation Challenge Grant[2] to a consortium of five school districts in a mid-size, mid-western city in collaboration with a large midwestern state university. Collaborative efforts among faculty members at Midwestern University and administrators and teachers from the consortium districts helped conceptualize and implement ML/T curriculum development and professional development activities in the five consortium school districts over a period of five years. The project defined meaningful learning as "achieving deep understanding of complex ideas that are central to the discipline and also relevant to students' lives" and focused on ML/T professional development for secondary social studies teachers across these five districts. ML/T professional development was designed around two model ML/T curriculum units and the principled use of technology to support meaningful learning.

**The Model Units**

The two Model Units were designed by a curriculum development team at Midwestern University (of which I was Team Leader) and were implemented in several schools in the consortium of school districts over a three-year period. During the first year of curriculum implementation, one $6^{th}$ grade teacher from each district was identified to pilot the Mexico and Migration Unit. The second year included five more teachers, one additional teacher from each school district, with two $8^{th}$ grade teachers and a teacher in a combined $5^{th}/6^{th}$ grade classroom added to the initial Model Unit Teachers group. During the third year, the first part of the Mexico and Migration Unit was re-designed as a separate Inquiry Unit to orient students to the inquiry process and the technology students would use to support their learning. Both units required the use of technology tools

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developed by the university team and on-line resources to engage students in meaningful learning experiences about disciplined inquiry and Mexico and migration.

Both Model Units emphasized disciplined inquiry as a key approach to developing deep understandings of subject matter. Designed by the university curriculum development team to model ML/T, disciplined inquiry, the use of big ideas, and the principled use of technology, the Model Units served as focal points for professional learning experiences over the three-year period of my study.

The Model Units were intended to have students' knowledge and understandings play a primary role alongside disciplinary knowledge in making sense of the world. The curriculum was designed to promote student understanding of complex ideas by having students pose questions and problems worthy of inquiry, engage deeply with disciplinary big ideas, and present their findings through interpretive accounts of their own experiences and Mexico and migration. A key component of the curriculum included students investigating their own experiences in order to develop understanding of social studies subject matter.

Meaningful learning, then, is based on students' authentic and intentional work in important subject matter in ways that make the subject matter students are studying relevant to their lives. It means that teachers must work in the medium of an inquiry-oriented curriculum in ways that are flexible, sensitive, creative, and artful. They must be attentive and attuned to students and classroom experiences in ways that are aligned with disciplinary processes and knowledge. In this curriculum, learning and instruction focused on the creation of knowledge through the inquiry process itself rather than on the pre-formulated conclusions of disciplinary inquiry. Such work poses significant

epistemological challenges that were investigated.

## Professional learning

Professional learning activities (that I facilitated with other members of the university team) focused on teaching the Model Units and several challenges in ML/T classroom practice identified by the Model Unit Teachers and the university team. These challenges, or critical moments, in teaching the units included developing a culture of inquiry, using technology as a tool of inquiry, formulating investigative questions, analyzing and evaluating sources of information, developing understandings of big ideas, and making connections between students' prior knowledge and personal experience, and social studies content. It is the last two challenges that are the focus of my study.

Initial professional development efforts focused on orienting the Model Unit Teachers to the newly developed curriculum and its key features. This included professional learning activities that addressed the meaningful learning attributes, the principled use of technology, the inquiry process, and the big ideas that were central to the curricular content. Eventually, professional development activities that I co-facilitated focused on several challenges in the unit identified by the teachers and the university team. During the second year of professional development, a shift was made to focus professional learning around analyses of classroom artifacts, such as student work and videotaped episodes of classroom practice.

Over the course of three years, professional learning focused on four key elements in the curriculum: the Meaningful Learning Attributes, disciplined inquiry, the principled use of technology, and the use of big ideas to mediate student understanding of personal

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experience and subject matter. Each of these elements is briefly described below and more fully described in Chapter 3.

Meaningful Learning Attributes

An important part of the conceptual frames that supported teachers' work in the medium of the curriculum was the Meaningful Learning Attributes. The Meaningful Learning Attributes included: intentionality, authenticity, collaboration, the construction of mental models, content centrality, and disciplined inquiry. (See Appendix A.) These ML/T attributes provided an overarching conceptual framework that guided curriculum development and served as the focus for professional development during the first year. The curriculum was designed to incorporate these attributes in order to engage students in meaningful learning using technology and to serve as a model of how these attributes could become key features of curriculum and instruction. Initial professional development efforts emphasized developing shared understandings about the ML/T attributes and what they would look like in classrooms. As "ends-in-view," these attributes became key indicators that guided what teachers noticed and paid attention to in the curriculum, their teaching practice, and student learning. They also posed several challenges to teachers who were hoping to enact these principles in their practice.

Disciplined inquiry

Content centrality and disciplined inquiry were viewed as key features of the ML/T attributes. The conception of disciplined inquiry that became operationalized in the curriculum drew heavily on the work of Linda Levstik and Keith Barton (2001), and was viewed as the heart of meaningful learning. In particular, it was based on the definitions of disciplined inquiry and the inquiry process outlined in their text, *Doing History*

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(1997/2001). This was a primary text used in the Model Unit Teachers' professional

learning, with various chapters assigned and discussed at meetings.

According to Levstik and Barton (2001), "inquiry is the process of asking

meaningful questions, finding information, drawing conclusions, and reflecting on

solutions" (p. 13). It is the purposeful act of seeking information or knowledge and an

investigation into significant and important questions that takes place within a

community that establishes goals, standards, and procedures of study. In both units, the

inquiry process was described as a four-step process that included asking investigative

questions, gathering and evaluating information, analyzing and interpreting information,

and communicating new understandings through interpretive accounts. (See Appendix

B.)

This conception of inquiry was embedded in both Model Units and became a

focal point for teacher learning. It entailed certain epistemological demands on the

teachers to understand

the nature of scholarly historical knowledge, what historical knowledge might

mean to students, and a moral sensibility to guide instructional choice (since)

students in a classroom…can only constitute a community of inquiry for studying

history under the skillful direction of a teacher. (Seixas, 1993, p. 307)

This presented many challenges for teachers since it required them to help students ask

thoughtful investigative questions that both interested students AND engaged them in

significant investigations of subject matter. The units also expected teachers to help

students draw upon personal experience and prior knowledge AND engage with

important subject matter aligned with content standards and benchmarks in ways that

supported student understanding. The teachers were also expected to have students communicate their understandings in ways appropriate for diverse learners AND represent subject matter understandings in ways that were consistent with authentic intellectual products in a disciplinary community.

Since the social studies consist of several disciplines, the historical inquiry model suggested by Levstik and Barton (2001) was adopted as the inquiry process model for the units. The idea of "doing history" was an important quality that guided curriculum development and the professional development work with teachers. The inquiry process in the unit provided an underlying process for "doing social studies."

The principled use of technology

Another key aspect of ML/T is the principled use of technology to support inquiry and meaningful learning. The university team developed a set of technology tools to support the curriculum, and teachers were expected to learn how to use these tools to support disciplined inquiry and meaningful student learning in the curriculum. Much of the ongoing professional development focused on how to use these technology tools in the classroom.

Teaching and learning in both units were supported by wireless Internet-connected laptops for students (1:1 or 2:1) and innovative web-based software developed by the university team. Both units were on-line, and students used Internet resources to conduct investigations into social studies subject matter. To support meaningful learning and disciplined inquiry, students used the Meaningful Learning Classroom Toolbox (MLCT), which included iJournal, iMail, the Narration Creation Station, and the Source Explorer. These technology tools are described more fully in Chapter 3 and Appendix C.

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**Using big ideas to mediate understandings of student experience and subject matter**

Curriculum design and professional learning were guided by considerations of three "big ideas": *history as story*, *space becomes place*, and *culture as a human creation*. During the third year of curriculum development, the big idea of *history as story* was dropped in favor of the big idea *knowledge is subject to change and interpretation*. Using these three conceptual lenses, the lived experiences of students are used to help them understand subject matter, and subject matter is drawn upon to help students understand their lived experience. Because my data analysis focuses explicitly on these big ideas, I describe them in Chapter 3 in some depth.

In both units, the big ideas were considered lenses of inquiry and conceptual frameworks that offered students and teachers different ways of thinking about their experience, social studies content, and history. They were lenses for students and teachers to think about the world and themselves in the world, to develop understandings of their own and others' views of the world, and opportunities to re-see the world in novel ways. More specifically, big ideas, as the project used the term, were defined by two important characteristics. First, they are core conceptual frameworks and principles that experts within the discipline recognize as powerful for interpreting the social world and personal experience. Research on the knowledge of experts indicates that it "is not simply a list of facts and formulas that are relevant to their domain; instead, their knowledge is organized around core concepts or 'big ideas' that guide their thinking about their domains" (Bransford, Brown, & Cocking, 2000, p. 36). Second, big ideas make the complexity of social experience more accessible through reframing and renaming social phenomena. Big ideas act both as lenses that can relate, integrate, and transcend isolated concepts and

bits of information, and also as glue that can make coherent connections between the subject matter content and students' personal experiences (Ashburn, Baildon, Damico, & McNair, in press).

Of course, since teachers were expected to teach these big ideas and support students in using these conceptual lenses, it was imperative for the teachers to develop understandings of the big ideas and consider their implications for classroom practice. A great deal of professional development was aimed at developing shared understanding of the big ideas, considering the implications of teaching and learning the big ideas, and examining the ways students were understanding and making use of the big ideas in the curriculum. It is through these big ideas that teachers and students created meanings about personal experience and subject matter. Facets of teacher learning around the big ideas will be examined in the Chapter 4 narrative.

**Working in the conceptual space between students' experiences and subject matter**

Dewey (1902) believed the notion of subject matter as outside of the learner's experience should be replaced by a more fluid and dynamic relationship between the two, as a dialectical relation within a single process. As Maxine Greene (1995) notes,

A dialectical relation marks every human situation; it may be the relation between individual and environment, self and society, or living consciousness and object-world. Each such relation presupposes a mediation and a tension between the reflective and material dimensions of lived situations. Because both dimensions are equally significant, the tension cannot be overcome by a triumph of subjectivity or objectivity; the dialectic cannot be finally resolved. (p. 52)

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The unresolved nature of these dialectical relations is partly due to their dynamic, interrelated nature. However, they can be understood by considering their relationships and their shifting, contextual, and interrelated qualities.

Margaret Boden (1994) offers one way to understand this dialectic. In her description of a "conceptual space," she writes, "The dimensions of a conceptual space are the organizing principles that unify and give structure to a given domain of thinking. In other words, it is the generative system that underlies that domain and defines a certain range of possibilities…" (p. 79). I believe the construct of conceptual space between meaningful learning and disciplined inquiry, and between students' lived experiences and subject matter, is useful for understanding teaching as a work of art in the medium of ML/T curriculum.

This conceptual space is the space between the child and subject matter and helps us see the learner and subject matter as a continuum that is mediated by curriculum. In Figure 1, I show the conceptual space between the learner and subject matter to show how meaningful learning principles and disciplined inquiry might be viewed as a dialectical relation within a single process of making meaning. In the conceptual space between the learner and subject matter, meanings are mediated by the big ideas to help students develop understandings that are both central to the discipline and relevant to their lives. Thinking about teachers' working in this conceptual space helps us consider the two important epistemological challenges that are central to my study. Although the dialectic tension presented in this space cannot be resolved, it provides generative opportunities for teaching and learning.

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**Figure 1**: The conceptual space between meaningful learning and disciplined inquiry

The ML/T Curriculum

| The Learner | | Subject Matter |

Meaningful Learning
(ML Attributes:
Intentionality,
authenticity,
collaborative work,
construction of mental
models)

**Mediatory Tools
and Concepts**

*Big Ideas*,
(Technology tools
(ML Toolbox),
disciplinary tools
(criteria, heuristics,
etc.)

Disciplined Inquiry
(Develop investigative
questions, gather and
evaluate information,
analyze and interpret
information, and
communicate new
understandings)

In this overarching conceptual space, the teacher must understand key concepts of meaningful learning and disciplinary methods that support disciplined knowing, and understand the relationship between the two. Understanding relationships between meaningful learning and disciplined inquiry is especially challenging in this conceptual space. The relationships between the two is an area that has received some attention from educational researchers (Bain, 2002; Seixas, 1993; Wineburg, 1991, 1999) hoping to explore the cognitive and socio-cultural processes of constructing knowledge and understanding through disciplinary methods and procedures. How teachers manage these conceptual relationships, however, has received little attention.

Since my study investigates how four teachers think about knowledge and knowing while teaching an inquiry-oriented curriculum that aims to engage students in meaningful learning experiences, this conceptual space is central to my study. I make the case that it is critical to attend to teachers' epistemological stances as they address the many fundamental challenges central to teaching for meaningful learning using methods of disciplined inquiry. One of these central challenges is how teachers think about and

make connections between students' ideas and experiences and subject matter. A challenge related to making these connections is being able to understand student understanding in relationship to subject matter. In my analysis, then, I looked for the ways the four study participants talked about students' knowing and knowledge, disciplinary knowing and knowledge, and relationships between the two. More generally, I looked for responses that indicated how they made sense of teaching and learning as epistemic activities.

## Overview of chapters

In the following chapters, I make a case for better understanding the epistemological dimensions of teaching. I also describe the aesthetic dimensions of four teachers working in the conceptual space between students' experience and prior knowledge and subject matter knowing to manage two important epistemological challenges: (1.) *making connections between students' personal experience and subject matter* and (2.) *understanding student understanding.* I describe how they learned to notice or attend to key qualities of classroom experience, worked in the medium of the curriculum and the conceptual space between students and subject matter to create meaning, and how they thought about representing knowledge and knowing in teaching practice to help students develop understanding.

In Chapter 2, <u>Perspectives: Theorizing teaching as a work of art in the medium of ML/T curriculum,</u> I provide a conceptual orientation and theoretical perspectives that help to understand teaching as an "epistemic activity" fraught with key epistemological challenges that need to be addressed, and how conceptualizing teaching as artful work offers ways of managing these challenges that are useful and generative for teachers. I

explore and draw upon important epistemological, pragmatic, and aesthetic perspectives to develop an overarching framework for theorizing teaching as a work of art in the medium of ML/T curriculum. I also identify key gaps in the research literature that my study addresses.

In Chapter 3, Case study and narrative inquiry: A research methodology, I describe my work as a researcher through all stages of the study, present key challenges in conducting the study, and explain how I addressed these challenges. I also provide a detailed description of the two Model Units and the technology tools students and teachers used in the units, since the teachers' professional learning experiences were grounded in the curriculum.

In Chapter 4, An ML/T professional learning journey: A narrative account, I tell a story of the study participants' professional learning experiences in the medium of the ML/T curriculum. I offer key challenges that shaped teachers' learning and how they learned to manage these challenges. This narrative provides a rich background and contextual description of professional learning by describing how the teachers' learning unfolded over the course of their work with the project. It helps situate the work I did with teachers which is described in Chapter 5.

In Chapter 5, Understanding key epistemological challenges: Making sense of data from a professional learning block about big ideas, I offer close analysis of one professional learning session that I held with the study participants. This analysis provides an in-depth examination of one professional learning experience, and I use it to demonstrate the aesthetic sensibilities the teachers drew upon to make sense of and manage two key epistemological challenges. This chapter describes aesthetic ways of

knowing in action to manage the conceptual space between the learner and subject matter and the epistemological challenges it presents.

I examine the significance and implications of the study in Chapter 6, <u>Epistemology, aesthetics, and the medium of curriculum: Conclusions and implications</u>. I look back over the study to make the case for identifying and engaging teachers in work around important epistemological issues that are at the heart of teaching for meaningful learning using disciplined inquiry. In particular, I argue that my study points to the value of cultivating more artful ways of working in the medium of curriculum to manage these challenges. In this chapter, I move toward re-conceptualizing knowing and teaching as performative acts.

### Re-envisioning classroom practice

As Don noted during our professional learning session, working in the conceptual space between students' ideas and experiences and social studies subject matter requires more than knowledge of subject matter. It also requires a certain kind of sensitivity and vigilance on the part of teachers to recognize opportunities for creating meaning and developing understanding. Such work requires attention to the epistemological dimensions of subject matter, teaching and learning.

It also requires artfully creating meanings in the conceptual space between students' ideas and experiences and subject matter in ways that support student understanding. This suggests that teaching can be re-envisioned as a work of art in the medium of curriculum, an aesthetic and creative act that requires imagination. My study explores these possibilities by investigating how teachers learn to work artfully to

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manage key epistemological challenges in the medium of curriculum, especially as they

work in the conceptual space between students' experiences and subject matter.

MEDIUM OF AN MLT CURRICULUM

If only we refuse to take our world for granted, we can detect something artful

lurking at the heart of life, inviting us deeper into the world, allowing us to

penetrate further and further into the mystery of its creation, perhaps even

promising us a new relation to everything we know. (Boyd, 1990, p. 12)

## Introduction

This quote provides a sense of what I investigate in my dissertation: how we

might develop a "new relation to everything we know." I view teaching and learning as

epistemic activities, fundamentally about knowing and making meaning, and therefore

about relationships to what we know and how we come to know. In my study, I consider

what might happen if we could refuse to take the world for granted, when it comes to

classroom experience, teaching, and our students, for granted. What might happen if we

were able to detect something artful lurking, inviting us deeper into the world and our

experience, perhaps even promising us a new relation to everything we know. I believe

that at the heart of forging a new relation to the world, to experience, to ourselves, to

others, and to subject matter is an aesthetic stance that seeks to go deeper that can deepen

our understanding and appreciation, and bring us into a new relationship to ourselves and

what we know.

I explore these matters in educational practice by investigating how four teachers

teaching for meaningful learning using technology (MLT) and using disciplined inquiry

and big ideas in their instruction learned to acknowledge and embrace two key

epistemological challenges in their practice and professional learning and how they

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# CHAPTER TWO

## PERSPECTIVES: THEORIZING TEACHING AS A WORK OF ART IN THE MEDIUM OF AN ML/T CURRICULUM

If only we refuse to take our world for granted, we can detect something artful

lurking at the heart of life, inviting us deeper into the world, allowing us to

penetrate further and further into the mystery of its creation, perhaps even

promising us a new relation to everything we know. (Boyd, 1990, p. 12)

### Introduction

This quote provides a sense of what I investigate in my dissertation – how we might develop a "new relation to everything we know." I view teaching and learning as epistemic activities, fundamentally about knowing and making meaning, and therefore about relationships to what we know and how we come to know. In my study, I consider what might happen if we could refuse to take the world for granted, refuse to take classroom experience, teaching, and our students for granted. What might happen if we were able to detect something artful lurking, inviting us deeper into the world and experience, perhaps even promising us a new relation to everything we know? I believe that at the heart of forging a new relation to the world, to experience, to teaching, to others, and to subject matter is an aesthetic stance that seeks to go deeper, that can deepen our understanding and appreciation, and bring us into a new relationship to ourselves and what we know.

I explore these matters in educational practice by investigating how four teachers teaching for meaningful learning using technology (ML/T) and using disciplined inquiry and big ideas in their instruction learned to acknowledge and embrace two key epistemological challenges in their practice and professional learning and how they

developed a more artful approach to classroom practice. In particular, I investigate how they worked in the conceptual space between students and subject matter to manage the challenges of making connections between students' lived experience and subject matter to develop student understanding. I also explore how they understood student understanding to make these connections.

In this chapter, I develop a conceptual framework that helps us view and understand teaching as an epistemic activity that benefits from aesthetic approaches to making sense of classroom experience and teaching in the medium of a particular curriculum. I make a case for epistemology and aesthetics as useful theoretical lenses for understanding teaching and learning. This conceptual framework is used in the ensuing chapters as I examine how the four study participants draw upon certain stances or orientations that can be considered aesthetic to grapple with two key epistemological challenges.

I develop the idea of conceptual space as a useful theoretical construct to help us see teaching as a transaction between student and subject matter in the experiential space provided by curriculum and classroom practice. Like Smagorinsky's (2001) concept of the experiential space between reader and text in which reading takes place, the idea of a conceptual space between the student and subject matter helps us understand curriculum as an arena in which cultural mediation takes place to support students' sense making of personal experience and subject matter. It is a dynamic space in which certain instructional, conceptual, and cultural practices take place to create meaning. In this study, I focus on the use of big ideas as cultural mediation tools that help students and teachers navigate the space between making sense of students' personal experiences and

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subject matter. Working in this conceptual space to mediate and create meaning presents many epistemological challenges for teachers.

**The conceptual space between students' experiences and subject matter**

Based on my work with teachers teaching the Model Units in their classrooms, I believe they learned to work in the conceptual space between students and subject matter in ways that were artful and drew upon an aesthetic epistemological stance. They were able to blend meaningful learning approaches with disciplinary methods and procedures to support students in creating meaning and developing subject matter understanding. I believe their work in this conceptual space was a type of conceptual integration or "blending" of two "contributing spaces." The blended space between meaningful learning and disciplined inquiry, and between students and subject matter, is described by cognitive psychologist, Mark Turner, in his book, *Cognitive Dimensions of Social Science* (2001):

> The blend inherits some of its elements and some of its meaning from the influencing spaces, and in this way it is the conceptual descendent of the influencing spaces, just as a child is the biological and cultural descendent of its parents. But like the child, the blend develops its own identity and is not merely a copy of its parents. It has meaning that is its own: 'emergent' meaning. (p. 17).

Margaret Boden (1990) describes the importance of conceptual spaces for artistic creativity. She describes a conceptual space as a "problem-domain" (p. 101) in which rich networks of meaning make possible new ideas, creative thinking, and new connections or relationships that create new meanings. Since creation "involves some new combination of previously existing elements" (p. 29), a conceptual space is a

generative system that defines or delimits new possibilities for creating meaning. In the context of teachers' work in this project, I believe the conceptual space they worked in consisted of several "influencing spaces" that contributed to many possibilities for integration and creating new combinations and "emergent meanings."

As I introduced in Chapter 1, what defined this conceptual space in the project were the conceptual frames of meaningful learning and disciplined inquiry that shaped curriculum, classroom practice, professional development, the use of technology, and assessment. Several features, such as the Meaningful Learning Attributes and the inquiry process model, defined these "influencing spaces" and the conceptual space that teachers worked in between meaningful learning and disciplined inquiry. As Wanda May (1993) suggests, in the medium of curriculum these constructs shape how a teacher thinks about his or her materials and the relationships between the key elements of the medium. In the case of the model curriculum units, these elements helped define the emergent ends or "ends-in-view" that help the artistic teacher be responsive within the medium of curriculum and shape the "experimental exploration" that will take place within the medium. Teachers' work and professional learning in this conceptual space will be more fully described in Chapter 4.

## Teaching as an epistemic activity

Viewing teacher learning and practice as epistemic activities can help us better understand the "fundamental nexus between what teachers know and what they do" (Wineburg, 2001, p. 50). Viewing teaching and learning as fundamentally epistemic activities can also help teachers, teacher educators, and professional development leaders better support professional learning about epistemological issues at the heart of

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meaningful teaching and learning in significant social studies subject matter. Addressing teaching and learning in social studies as epistemic activities is supported by recent research (Bain, 2000, 2002; Carretero & Voss, 1994; Leinhardt, 1994; Stearns, Seixas, & Wineburg, 2000) and calls to significantly strengthen teaching and learning in subject matter by engaging students in disciplinary methods to construct knowledge.

Recent educational reforms call for curriculum, teaching, and student learning that promote deep subject matter understanding (Darling-Hammond & Sykes, 1999; Wiske, 1998). Reforms in social studies education advocated by groups such as the National Commission on Social Studies, the National Center for History in the Schools, the Bradley Commission, and represented by the National Standards for History (1994; 1996) stress that teachers begin with students' understandings, challenge students to think deeply about subject matter, and draw upon engaging stories to help students develop a rich network of understandings (Perrone, 1998). These reforms argue that teaching for understanding depends on teachers who can effectively engage students in meaningful learning experiences in subject matter by building upon students' prior knowledge and lived experience in ways that are aligned with disciplinary knowledge. Accordingly, teachers must be able to create classroom learning experiences in which students

actively try to solve problems, resolve dissonances between the way they initially understand a phenomenon and new evidence that challenges that understanding, put collections of facts or observations together into patterns, make and test conjectures, and build lines of reasoning about why claims are or are not true. (Thompson & Zeuli, 1999, p. 346)

Among other things, teaching for significant subject matter understandings, then, requires teachers to masterfully be able to make connections between students' prior knowledge and lived experience, and disciplinary knowledge and ways of knowing. It views teaching as an epistemic activity requiring substantive disciplinary understandings combined with sophisticated understandings about student learning (Bain, 2000), and suggests an alignment of constructivist learning theory with disciplinary modes of reasoning and knowledge construction.

Such a view of teaching implies certain epistemological orientations and sensitivities on the part of teachers. While there has been no shortage of theoretical work around important epistemological orientations teachers should have, some studies (Ball, 1993; Grossman, 1990; Lampert, 2001; Wineburg & Wilson, 1988) have investigated the epistemological dimensions of "expert" teachers' work and how certain epistemological beliefs influence teaching practice and the ways that teachers think about subject matter, curriculum, pedagogy, and student learning. These studies examine teaching as an epistemic activity and how teachers think about and manage epistemological relationships between student knowing and disciplinary knowing. In particular, they suggest expert teachers have deep understandings of the epistemological dimensions of their disciplines and are able to help students use disciplinary methods to develop subject matter understandings (Bransford, Brown, & Cocking, 2000).

### Epistemological perspectives: The case for epistemology

There is a body of theoretical work that outlines the epistemological dimensions of teaching (Bruner, 1960; Dewey, 1902; Shulman, 1986, 1987). Much of the literature suggests that making rich connections between students' prior knowledge and lived

experience and broader disciplinary understandings requires certain epistemological stances and ways of knowing and thinking about students, curriculum, and subject matter. John Dewey (1902), in *The Child and the Curriculum*, noted this epistemological orientation when he argued that the child's sense-making should be seen as consistent with disciplinary ways of knowing. Dewey wrote about the need to "psychologize" subject matter and reinstate experience into subject matter so that it made sense to the child's frames of reference. He also argued that the teacher must be able to structure learning experience within the disciplinary realm so that students would have meaningful engagements with disciplinary knowledge in ways that are consistent with their experience and understanding (Dewey, 1902). Bruner (1960) also noted that students should learn in ways that are authentic to the disciplines and that instruction should focus on the creation of knowledge through the inquiry process itself, rather than on the conclusions of disciplinary inquiry. Both Dewey and Bruner were recommending that teachers work in the conceptual space of experience and subject matter to support students' developing understanding. Such views of teaching, learning, and curriculum undoubtedly place significant demands on teachers and require some understanding of the epistemological and pedagogical challenges central to educational practices premised on these views.

According to McDiarmid, Ball, and Anderson (1989), an epistemological orientation that recognizes relationships between subject matter and student learning would entail knowing "what experts in the field do, how knowledge evolves, (and) what the standards of evidence are" (p. 194) in ways that make these understandings accessible to students. Teachers would "be able to view the subject matter through the eyes of the

learner, as well as interpret the learner's comments, questions, and activities through the lenses of the subject" (p. 194). Teaching for meaningful learning, then, would seem to depend upon teachers being able to view and understand student learning and classroom practice through certain disciplinary lenses, an epistemological stance that acknowledges and draws upon the similarities between student knowing and disciplinary knowing.

Making the complexities of teaching for meaningful student learning more comprehensible through a disciplinary framework aligns with an increased emphasis on inquiry and historical interpretation, as suggested by the reforms calling for teaching for understanding. Teachers and researchers are beginning to identify the many challenges and tensions that face educators hoping to merge constructivist approaches to learning and disciplinary inquiry (Bain, 2000; Scheurman, 1998). They note the difficulty of moving along the child and curriculum continuum and bridging student experience and disciplinary knowledge. Connecting student interest with systematic knowledge in ways that help students make the intellectual leap from their own experiences to the abstract ideas of the disciplines remains a key challenge for educators (Powell, Farrar, & Cohen, 1985). Cindy Hartzler-Miller (2001) cites the need for more work that further develops the relationships between disciplinary ways of knowing and the cognitive processes of constructing meaning:

Paralleling the interest in historians' mind-activity, a cognitive approach to learning considers students' thinking…. Although very little research exists which correlates the use of historical inquiry with improvements in students' historical understanding, on a conceptual level it is striking that, as Bain (1995) phrased it, a

"natural affinity exists between history and a cognitive understanding of

learning." (Hartzler-Miller, 2001, p. 673)

This suggests students can learn about the past by drawing upon disciplinary strategies

historians use to develop understandings about the past. For example, concepts used by

historians to make sense of the past may help students organize their knowledge in ways

that allow them to apply their understandings to new situations. The "cognitive

roadmaps" (Bransford, Brown, Cocking, 2000, p. 188) provided by the disciplines could

help teachers think about how they structure learning assignments and classroom

experiences for students to develop subject matter understanding.

A growing body of research also suggests "deep substantive knowledge of the

subject matter of history must be coupled with equally deep procedural knowledge"

(VanSledright, 2002, p. 14). It is this disciplinary procedural knowledge that seems to be

aligned with constructivist learning theories that describe the ways learners construct new

understandings. In other words, what reforms are calling for, the development of deep

understandings about social studies subject matter, requires development of the

intellectual skills and cognitive processes that are central to constructing disciplinary

knowledge itself. It is through these processes and habits of mind that students develop

understanding and construct new knowledge, much like historians or social scientists

construct their understandings. It requires that students develop more sophisticated

methods of working with data, reflect on their own and others' perspectives, investigate

competing claims and their evidentiary warrants, and be able to consider issues of

validity and reliability. Constructing new understandings, then, is viewed as

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a self-regulatory process of struggling with the conflict between existing personal models of the world and discrepant new insights, constructing new representations and models of reality as a human meaning-making venture with culturally developed tools and symbols, and further negotiating such meaning through cooperative social activity, discourse, and debate. (Fosnot, 1996, p. ix)

Disciplinary methods provide certain models of the world, representations of past and present experience, tools and symbols to construct knowledge, and discourse communities that can help students negotiate meaning. While more empirical research is beginning to describe the intellectual work and cognitive processes that seem to blend constructivist meaning-making with disciplinary understanding, little research investigates the epistemological orientations and beliefs that may help teachers manage this complex landscape in the classroom. For example, researchers (Shulman, 1986; Grossman, 1990) have identified and elaborated upon various domains of teacher knowledge, but studies about whether and **how** teachers draw upon and manage certain beliefs and understandings that enable them to make connections between students' prior knowledge and subject matter knowledge remain sparse. Whether and how teachers develop and draw upon certain professional understandings may be related to their perspectives about knowledge, especially their views about disciplinary knowledge and their students' ways of knowing.

While some empirical research has been done on teachers' cognitive processes (Clark & Peterson, 1986) and the knowledge base for teaching (Shulman, 1986, 1987), more empirical work has been called for on the epistemological contexts of teaching (Lyon, 1990; Windschitl, 2002). Studies of teacher thinking have tended to examine the

psychological processes of teaching or describe teacher knowledge as a reified body of knowledge in various domains. For example, Clark and Peterson (1986) offer a model of teacher thought and action that depicts two domains: teachers' thought processes and teachers' actions and their observable effects. They argue that since teacher thinking goes on "inside teachers' heads," it is unobservable (p. 257). This research seems to suggest that teachers' epistemological beliefs are a result of cognitive processes that exist solely in the teachers' head rather than developed through social activity, "born between people collectively searching for truth, in the process of their dialogic interaction" (Bahktin, 1984, p. 110). My study aims to situate teachers' epistemological stances in social activity and professional learning.

Nona Lyons (1990) also argues that more research is needed about the epistemological dimensions of teachers' work and development, especially about "the dynamics of the epistemological interactions at work in teaching" (p. 173). As Lyons notes, "the teacher's assessment of how to present subject matter is mediated by his or her understanding of students as knowers and is informed by his or her own stance towards a discipline and knowledge as well as consideration of the self as a knower" (p. 175). Furthermore, VanSledright (1996) has noted that the content history teachers tend to teach is shaped by their orientations to the subject matter, their beliefs about students, and the ways they understand curriculum. I would also add that not only their orientations to these various domains is important, but how they view the relationships among these areas of knowledge is key to understanding how teachers might manage this complex conceptual landscape of meaningful learning and disciplined inquiry.

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Jerome Harste (2001) notes that "education as inquiry" requires a certain philosophical stance. I argue that meaningful learning and inquiry-based education require certain epistemological stances or orientations that view knowledge as fluid and dynamic and knowing as a process of continually making meaning. Such stances also see teaching and learning as developing shared meaning and understanding, acknowledge multiple perspectives and ways of knowing, and view experience, knowledge, and knowing as contextual, fallible, and highly interrelated.

Viewing teaching from an epistemological perspective acknowledges that teachers are knowledge workers with certain beliefs about knowledge and knowing that affect their classroom practice. It considers the epistemological dimensions of teaching for understanding, of student knowing and learning, of disciplinary knowing, and relationships between student knowing and more disciplined forms of knowing. Such an epistemological perspective is especially important to understand better the challenges of implementing constructivist-oriented teaching practices called for by recent reforms. In particular, teachers must understand the underpinnings of cognitive and social constructivism, and the epistemological orientations necessary to support disciplined inquiry in constructivist classrooms.

Teachers also must honor "students' attempts to think for themselves while remaining faithful to accepted disciplinary ideas" to develop deep understanding of subject matter, learn to facilitate and manage disciplinary discourses, and "take advantage of experience, discourse patterns, and local knowledge of students" (Windschitl, 2002, p. 133). For example, in the Model Units, teachers must be aware of students' ideas and thinking, and support students in elaborating or restructuring their understanding, help

students use tools that mediate learning and develop understanding, be aware of and model the kinds of thinking processes necessary for disciplined inquiry, and structure learning activities that authentically engage students in meaningful learning experiences.

### Knowing and experience

As Deborah Britzman (1991) notes, "behind every understanding of experience is an implicit theory of knowing" (p. 34). I also believe that behind every theory of knowing is an implicit theory of experience. An epistemological stance that supports constructivist learning and disciplined inquiry might be described as rooted in a particular orientation toward experience in which knowing is viewed as a social process and grounded in experience. This socio-cultural perspective of learning places greater emphasis on creating learning environments in which students can construct knowledge through meaningful learning experiences. This stance is supported by Dewey's (1938/63) theory of experience that portrays all genuine education as coming through experience and interaction with others and the environment: "Every experience is a moving force. Its value can be judged only on the ground of what it moves toward and into" (p. 39). Working in the conceptual space between students' experiences and subject matter, then, would require teachers to be able to structure learning experiences that move "toward and into' significant subject matter that will further support their sense-making abilities.

Dewey (1938/63) also spoke to the educative possibilities of experience: "Experiences in order to be educative must lead out into an expanding world of subject matter.... This condition is satisfied only as the educator views teaching and learning as a continuous process of reconstruction of experience" (p. 87). Through a process of inquiry, the learner makes sense of experience but draws upon subject matter or

disciplinary understandings to support sense-making. Meaningful learning and inquiry-oriented education, then, needs to be grounded in real-life experience, but also needs to be an ongoing process of reconstructing subject matter to fit with experience, or of creating learning experiences in ways that are informed by subject matter. Content needs to be "psychologized" and connected to students' contexts and experiences, and have real-life relevance, connections, and implications.

As Deborah Britzman (1991) points out, Dewey's concern was with the "work of shaping and interpreting experience, and whether such interpretations lead to transformative knowledge about the self and the social world" (p. 34). According to Britzman, it is "our capacity to bestow experience with meanings, be reflective, and take action" (p. 34) that makes experience educative. Experience and knowing are intimately related, but it is through one's ability to reflect on experience, create meaning, and take action that meaningful learning occurs.

Unfortunately, this intimate relation between knowing and experience is not typically respected in academic settings. As Britzman (1991) argues,

> knowledge concerns all the ideas, discourse, and possibilities that enable one to reflect upon the meanings of experience. Yet in academic life, knowledge and experience are typically fragmented by tradition and design. There is a disjunction between the authoritative discourse required by the academy and internally persuasive discourse that can extend the understandings and meanings one already possesses. (p. 35)

In academic settings, knowledge and experience have been severed, and the relationships between subject matter and personal experience are neglected, lost, diminished, and

viewed as separate. Subject matter knowledge is viewed as a body of knowledge divorced from personal experience, to be mastered through methods that fix meanings and limit possibilities for understanding. It becomes fragmented, compartmentalized, abstracted, and de-contextualized in ways that don't support personal meaning making.

This separation of knowledge and experience drives a wedge between knowledge and the processes of knowing, and between content and pedagogy. Britzman (1991) reminds us, "This separation tends to mystify the actual and potential relations between the 'how' and the 'what,' and limits pedagogy to a mechanical problem of transmission" (p. 37). She cites David Lusted (1986) to argue that pedagogy is productive and should be understood in relationship to knowing and the production of knowledge. According to Lusted (1986), pedagogy is important because "it draws attention to the *process* through which knowledge is produced.... It enables us to... (ask) under what conditions and through what means we 'come to know'.... It becomes inseparable from what is being taught and, crucially, how one learns" (Lusted, 1986, p. 85). Subject matter understanding, then, depends on the pedagogical practices used to help students learn.

By re-establishing the intimate relationship between personal experience and subject matter, teachers' instructional practices represent key epistemological stances that view knowledge and experience as intertwined. Working in the conceptual space between the learner and subject matter depends on the conceptual frames, or epistemological orientations, they have about meaningful learning and disciplinary procedures, and makes epistemological issues much more visible, requiring teachers to confront important epistemological questions. They must consider the epistemological relationships between

students' ideas, experience, and subject matter; between processes of learning and processes of disciplinary knowing; and between what is to be taught and how it is taught.

## Pragmatism and aesthetics: An aesthetic epistemology

To understand teachers' professional learning experiences with the units and the challenges they faced in their professional learning and teaching for meaningful learning using inquiry approaches, I also draw upon pragmatic theoretical perspectives and develop an aesthetic epistemological stance that views teacher knowing as aesthetic. I believe pragmatism and aesthetics offer a theory of knowing grounded in experience, transaction, and in certain communities and social practices. They provide a useful framework for considering work in the medium of curriculum as fundamentally about creating meaning and developing understanding. They also help us view teaching and learning as creative and imaginative acts in which we can become "wide-awake to the world" (Greene, 1995), consider new perspectives, and re-conceive and re-visualize education in ways that might help re-conceptualize classroom practice.

My perspective is pragmatic in the sense that it draws upon several theorists who represent a pragmatic stance toward knowing and knowledge. These theorists include John Dewey, Richard Rorty, Cornell West, Cleo Cherryholmes, and feminist theorists, such as Barbara Thayer-Bacon and Maxine Greene. Each of these theorists view knowing as connected to experience and therefore situated, contextual, and contingent. They also move us toward considerations of aesthetics, since an aesthetic approach to knowing and creating meaning is integral to their work. First, I will outline my pragmatic perspective by drawing on these theorists and others, and then I will provide an overview of an

aesthetic epistemology that I believe is a useful framework for understanding key educational practices and perspectives of the teachers in the study.

Pragmatists view knowing as grounded in the knower's experience and relationship with others, therefore knowing is contextual, contingent, and necessarily limited. As a result, "pragmatists are fallibilists (believing in the impossibility of attaining knowledge that is certain) and pluralists (believing in the impossibility of attaining knowledge that is universal)" (Thayer-Bacon, 2000, p. 38). They highlight "the centrality of contingent and revisable social practices in acquiring knowledge" (West, 1989, p. 45) and emphasize a more holistic, transactional, and relational view of experience and knowing.

Cornell West (1989) provides an historical account of pragmatism that points to an emphasis on the constant movement, flux, and protean nature of experience. West argues that this view of experience necessitates epistemological openness, flexibility, and improvisation in creating meaning, since experience is dynamic, shifting, and moving in the continuous swirl of social relationship and interaction with one's environment. West argues that the goal of pragmatism is, "in the name of openness and revisability, to unsettle and undo our excessive claims.... The role of pragmatism is that of 'a happy harmonizer' and 'a mediator and reconciler...that unstiffens our theories" (p. 57). It enables us to juxtapose rigid dichotomies, such as theory/practice and knowledge/experience, and affirm a dynamic pluralism to work in a middle space among dualisms (West, 1989). For West, such a stance means the pragmatist is a cultural critic and creator, more of a poet than scientist, engaged in poetic creation in the struggle for meaning. West offers W.E.B. DuBois as an example of a pragmatic intellectual who

viewed his role as a poet creating new visions and vocabularies for the moral enhancement of society and individuals.

Nelson Goodman (1978) supports this notion of creating meaning at the heart of pragmatic epistemology:

> Briefly, then, truth of statements and rightness of descriptions, representations, exemplifications, expressions – of design, drawing, diction, rhythm – is primarily a matter of fit; fit to what is referred to in one way or another, or to other renderings, or to modes and manners of organization.... And knowing or understanding is seen as ranging beyond the acquiring of true-beliefs to the discovering and devising of fit of all sorts. (p. 138)

Goodman provides a conception of knowing as a creative process of recognizing "rightness of descriptions," "a matter of fit."

Patterns are not so much discovered, but created: "Discovering laws involves drafting them. Recognizing patterns is very much a matter of inventing and imposing them. Comprehension and creation go together" (Goodman, 1978, p. 22). Pragmatism gives us a sense of meaning making and knowing as aesthetic acts, since meaning making and acquiring true beliefs are matters of "fit" and "rightness" of description. An aesthetic sensibility and perceptivity helps us discern qualities of "rightness," judge "fit," appreciate satisfying meanings that are created within certain contexts and in accordance with certain criteria, and consider and evaluate possible consequences or outcomes.

These pragmatists describe experience as more than what can be described or articulated through language alone. It "exceeds our logic, overflows and surrounds it" (Thayer-Bacon, 2003, p. 96). We have immediate experience and name it with concepts.

According to Thayer-Bacon, however, "we find that first concepts become a method, then a habit, and finally a tyranny" (p. 59). Language and concepts that we become accustomed to can result in our not noticing certain things, and therefore, "are in need of constant critique and revision" (p. 61). Hence, pragmatists need to be critical, recognizing that meanings are contingent, tentative, and continually created and re-created.

As Cleo Cherryholmes (1999) reminds us, our concepts and lenses are "socially constructed within contexts that are political, economic, cultural, ethnic, socially stratified, linguistically diverse, and gendered.... We inherit preexisting conceptions, desires, and methodologies that we use..." (pp. 36-37). These preexisting conceptions and methodologies shape what we know and how we come to know. A critical pragmatism is therefore necessary to help us understand the concepts and lenses we use as needing constant critique and possibly revision.

In a similar fashion, Dewey believed inquiry is a continuous and ongoing interpretation of experience; ideas need to be continually tested, using best available evidence and criteria. Methods and criteria are also revisable and developed "within a cultural matrix which is ultimately determined by the nature of social relations" (Dewey, 1938, p. 487). For Dewey, understanding is a social activity and always in process. He believed that sympathetic understandings, noticing the other, listening intently, and being open to others' perspectives help us to see differently, notice new things, and think differently.

Pragmatism, then, moves us toward knowing as an aesthetic process of creating meaning, developing connections, inventing patterns, and sharing and testing our

understandings with others. It offers an experimental, fluid, open, and creative approach to inquiry and knowing. Thayer-Bacon (2003) notes that later in his career, Dewey "turned to art as a model for inquiry" (p. 70), and Cherryholmes (1999) concurs that Dewey later came to see research and inquiry as aesthetic endeavors. I believe this notion of inquiry and knowing as aesthetic acts are important when considering the epistemological stances teachers draw upon to make sense of classroom experience and knowledge.

In *Art as Experience*, Dewey (1934) noted, "discord is the occasion that induces reflection" (p. 15), and since discord and tension are full of emotion and energy, and highly productive, an artist seeks them, dwells in them, and cultivates them. According to Dewey, "Since the artist cares in a peculiar way for the phase of experience in which union is achieved, he does not shun moments of resistance and tension. He rather cultivates them, not for their own sake but because of their potentialities, bringing to living consciousness an experience that is unified and total" (p. 15).

Art provided a more holistic and unitary sense of experience and knowing for Dewey (1934): "In life that is truly life, everything overlaps and merges" (p. 18). According to Dewey, ways of knowing, relationships, past, present, and future, agent and context are interconnected in ways that require more holistic and multi-perspectival lenses that allow us to see connections and interrelationships, commonalities, and continuities. An artistic, aesthetic sensibility provides this perspective.

In the context of teachers' work in the medium of curriculum, challenges or discord that arise in classroom practice can provide rich opportunities for learning and creating new meanings. Artful or aesthetic approaches to classroom experience may also

help teachers develop more holistic and multi-perspectival lenses that support their work in the conceptual space between students and subject matter.

Describing teaching as artful and requiring aesthetic sensibilities is a re-conceptualization of classroom practice. Richard Rorty (1986) makes the case for "re-description" in which

> [T]he method is to re-describe lots and lots of things in new ways, until you have created a pattern of linguistic behavior which will tempt the rising generation to adopt it, thereby causing them to look for more appropriate new forms of nonlinguistic behavior... it works holistically and pragmatically. It say things like 'try thinking of it this way' – or more specifically, 'try to ignore the apparently futile traditional question by substituting the following new and possibly interesting question. (p. 9)

Rorty (1986) saw progress as a "history of increasingly useful metaphors" (p. 9). Paradigm shifts are caused by changes in language (new vocabularies) to describe phenomena and change "the way we talk, and thereby chang(e) what we want to do and what we think we are" (p. 20). Art and aesthetics, attentiveness, mindfulness, and creative meaning-making are useful re-descriptions that might change how we think about educational practice.

### Re-conceptualizing teaching as aesthetic practice

I view the process of attending carefully to experience, creating meaning, and understanding different ways of knowing, including our own lenses, as part of an aesthetic epistemology. I use an aesthetic framework to understand how teachers make sense of classroom experience and use classroom experience (curriculum, students' ideas,

the nuances and qualities of classroom experience) to respond artfully in the medium of an ML/T, inquiry-based curriculum. This framework builds on the work of Dewey (1934), Eliot Eisner (1990), Philip Jackson (1985), Maxine Greene (1995), Zygmunt Bauman (1997), Cleo Cherryholmes (1999), and Wanda May (1993). For example, Wanda May (1993) has noted that artistic teachers astutely perceive the nuances and qualities of students' experiences and how best to respond to them. She views teaching as a work of art in the medium of curriculum and classroom experience. Teaching as a work of art includes teachers making judgments based on qualities that unfold in the course of action and being responsive to the contingencies and complexities inherent in teaching.

Aesthetics is a powerful way to reframe the work of teaching because it allows for multiple forms of sense making (intuitive, experiential, rational, kinesthetic, etc.), since many modalities are used in creating art or thinking artfully. It opens up new possibilities for conceptualizing curriculum, teaching, and learning that have significant implications for classroom practice. Teaching for meaningful learning and working in the conceptual space between students' ideas and experience and subject matter involves aesthetic judgment, imagination, flexibility, and certain sensitivities and approaches to "imaginatively adapt curriculum to meet students' background, interests, and needs" (Henderson, 2001, p. 170).

Such a perspective sees teaching as fundamentally about meaning making and developing understanding, and as artistic in the sense that art is about meaning-making and expanding understanding. Zygmunt Bauman (1997) makes this point when he describes postmodern art:

The meaning of postmodern art, we may say, is to stimulate the process of meaning-making and guard it against the danger of ever grinding to a halt; to be alert to the inherent polyphony of meaning and to the intricacy of all interpretation; to act as a sort of intellectual and emotional antifreeze, which prevents solidification of any half-way finding into an icy canon arresting the flow of possibilities... postmodern art brings in to the open the perpetual incompleteness of meanings and thus the essential inexhaustibility of the realm of the possible. (p. 107)

Applying this definition of art to teaching would mean that teaching is about stimulating the process of meaning-making, being aware of and encouraging multiple meanings and interpretations, and recognizing teaching and learning as constant movement within a medium of curriculum, and the realization of infinite possibilities. Artful teaching would require methods that support these qualities of creating art forms.

Bauman (1997) goes on to say that,

Postmodern art is a critical and emancipatory force in as far as it compels the artist, now bereaved of binding schemas and foolproof methods, and the viewer/listener, now left without canons of seeing and the comforting uniformity of taste, to engage in the process of understanding/interpreting/meaning-making... By so doing, it liberates the possibilities of life, which are infinite... The meaning of postmodern art, I propose is to open wide the gate to the arts of meaning. (p. 111)

Teaching in accordance with such a vision would open wide the gate to the arts of meaning making in teaching and learning. It would encourage teachers to engage in the

processes of understanding, interpreting, and meaning-making in ways that support making generative connections between students' ideas and experiences and subject matter.

This artful approach to teaching and learning is especially important in inquiry-oriented classrooms. Meaningful learning requires that teachers are able to elicit students' ideas, knowledge, and experiences in relation to key content and help students build upon or restructure their ideas, knowledge, and experiences in the realm of infinite possibilities. Teachers must be sensitive to and able to understand and assess students' ideas, knowledge, and experience on the spot in order to engage in substantive conversation or make connections between their ideas and subject matter. Such work requires vigilance against grinding to a halt and arresting the flow of possibilities.

Such an aesthetic epistemological orientation would help teachers seek out relationships between subject matter and student learning. It would entail knowing and working in the medium of what experts in the field do and how knowledge is created in ways that make these understandings accessible to students. Teachers would be able to flexibly and responsively view the subject matter through the eyes of the learner, as well as interpret the learner's ideas, comments, questions, and activities through the lenses of the subject, which McDiarmid, Ball, and Anderson (1989) suggest is an important quality of teaching for meaningful learning.

## Metaphors for aesthetic practices

Several metaphors have been used to describe this aesthetic and relational way of thinking and classroom practice, and are helpful in seeing relationships between students and subject matter. Scaffolding is probably the most well known metaphor to describe

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how people construct new knowledge and understanding by building on what they already know. Scaffolding describes the way learners construct new understanding by building on pre-existing understandings and working in a "zone of proximal development" (Vygotsky, 1978), a virtual construction zone of knowing and learning.

This work, I believe, fundamentally draws upon aesthetic ways of knowing. The scaffolding or supports that are provided depend upon the learner being able to make connections and develop relationships that help them make the "leap" from where they are to where they want to go. This connectivity, or web of relationships, that helps them cross the conceptual space of where they start and where they end up is more of a feathery, gossamer-like web that is never quite as firm or solid as suggested by the scaffolding metaphor. When learners criss-cross the terrain of big ideas, for example, they may be exploring new territory and making new connections, creating new webs of understanding. In fact, they may rarely, if ever, draw upon the same path of understanding, since their understanding is continually reconstructed as they encounter new situations.

An aesthetic epistemology might also be viewed as a type of classroom literacy, a way of "reading" the classroom, students' ideas, and making intertextual connections. Making connections between these readings leads to another metaphor that has been used to describe teachers' work as a form of "bricolage." Teaching referred to as "bricolage" or "tinkering" (Huberman, 1993, 1995) represents how teachers' work consists of piecing together various elements of students' ideas and content. In other words, teachers must be able to work across and blend, or integrate, two "contributing" conceptual spaces, such as students' ideas and experiences and subject matter. Bricolage is an artful activity that

entails creating patterns, juxtaposing and putting things together in meaningful ways, and making connections between elements that are seemingly dissimilar.

Another metaphor that has been used is mapping. In a chapter I co-authored, entitled, *Mapping the Terrain for Meaningful Learning using Technology in Social Studies* (in press), we argue that teachers need to know how to "map" the location of learning at any given moment, so that instructional decisions build on prior knowledge and learning in ways that move students effectively toward learning goals. The options for instructional paths are infinite within the terrain for meaningful learning in social studies because of the nature of the "here" (beginning with students' current knowledge, experience, needs, and interests), "there" (achieving enduring understandings of complex ideas, skills, and content in multiple disciplines), and the diversity of possible content and paths for the learning journey. We believe that mapping in each moment the location of students in the terrain is critical to know what subsequent instructional steps will guide them toward a particular journey's end. This conception of teaching and learning is also supported in a report from the National Research Council's Committee on Developments in the Science of Learning which states, "Knowing where one is in a landscape requires a network of connections that link one's present location to the larger space . . . [I]t is the network, the connections among [learning] objectives, that is important" (Bransford, Brown, & Cocking, 2000, p.139). Again, an aesthetic sensibility that allows one to make connections and develop relationships among or between various locations in the terrain seems critical for teachers. I believe it is an aesthetic sensibility that allows one to be more aware of the "here" and the "there" in the medium of curriculum, and that creates and supports connections that lead to students creating meaning.

**Aesthetic dimensions of teaching and knowing: A framework for understanding**

**how teachers manage epistemological challenges**

This aesthetic framework requires further elaboration, since it plays an integral role in understanding how teachers work in the conceptual space outlined above and manage the epistemological challenges that are presented in this space. I present an aesthetic perspective that I believe provides an overarching framework to help me understand the work I did with the Model Unit Teachers, consider methodological approaches in my dissertation study, and guide further explorations into teaching and inquiry as aesthetic acts. This framework guided the work I did with study participants and how I made sense of the data I collected in the study. It builds upon frameworks developed (by the project team) to guide professional learning and the development of a professional learning curriculum.

This framework includes the following three aspects of knowing and coming to know as active processes: (1.) mindfulness and attentiveness to experience, (2.) the creation of meaning, and (3.) artfully expressing, considering, or acting upon implications for teaching and learning. Each of these qualities of aesthetic knowing will be explored below. How these aspects of the framework were developed and used by teachers will be examined in Chapter 4. In Chapter 5, I provide a case in which teachers draw upon these aspects of knowing to make sense of classroom experience.

In *Art as Experience*, Dewey's (1934) theory of experience is extended to include the possibilities of aesthetic experience, of knowing and experiencing life artfully. For Dewey, there are sources of art in everyday experience and it is possible to recover "the continuity of aesthetic experience with normal processes of living" (p. 10). His view of

aesthetic experience involves the full appreciation of immediate experience and a deeper sense of the world. He believed that all of experience could be treated artfully. According to Philip Jackson (1985), Dewey's claim is that even the most routine aspects of experience "could become more infused with significance and therefore more meaningful to us if crafted in a manner that roughly parallels the making of an art object" (p. 124). Artful experience, then, would seem to require attentiveness to one's activity, an understanding of significance or the creation of meaning through reflection, and the crafting of experience in an artful manner.

To structure Dewey's theory of aesthetics, three aspects of experience that can make experience aesthetic and educative will be examined. Jackson (1985) notes that such experience "is one that does something to prepare a person for later experience of a deeper and expansive quality" (p. 6). Each aspect of experience, then, can be attended to in an artful manner to make it educative. By doing so, a teacher, or a researcher, might attend to classroom experience in ways that heighten experience, create meanings that suggest new possibilities for practice, and enact or describe teaching practice in ways that are more artful.

Being attentive

In *Art as Experience*, Dewey (1934) describes the undergoing of certain experiences as oftentimes automatic, dull, and mechanical. For Dewey, we fail to experience fully, and we perceive qualities of experience through lenses that often prevent us from noticing certain aspects of experience. Experience becomes routine; we become inattentive and develop habitual ways of perceiving that preclude other possibilities for experiencing and making sense of experience.

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However, art can throw off "the covers that hide the expressiveness of experienced things; it quickens us from the slackness of routine and enables us to forget ourselves by finding ourselves in the delight of experiencing the world about us in its varied qualities and forms" (Dewey, 1934, p.104). For Dewey (1934), a more artful approach to experience makes possible fresh, new ways of experiencing life by developing sensitivities to the qualities of things. According to Dewey, "The esthetic or undergoing phase of experience is receptive. It involves surrender... To steep ourselves in a subject-matter we have first to plunge into it" (p. 53). Thus, an aesthetic stance is not just receptive, it is active and requires reflective engagement with experience. It is a matter of being wide-awake, attuned, and receptive to experience. We can learn to experience more fully, notice what we hadn't noticed before, and re-see the world in novel ways.

This aesthetic sensibility results in deeper perception, a perception of wider possibilities. According to Phillip Jackson (1985), "Perception is always open-ended. There is always more to see, or hear, or touch, or smell, or think about" (p. 62). We can learn to develop a cultivated taste or a refined sensibility, and learn to develop "a discriminating procedure which constantly uncovers in the object new meanings to be perceived and enjoyed" (p. 63). Dewey (1934) also described the importance of awakening to the ordinary and that aesthetic experience shifts perception, provides a sense of excitement or insight, a feeling that something has been discovered.

Developing an aesthetic sensibility requires close observation, attentiveness, and careful examination of the qualities of experience. Art can help "perfect the power to perceive" (Jackson, 1985, p. 113) and open the mind to qualities of experience. It

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requires a view of experience as unfolding, as moment by moment, as concentration on the here and now. As Jackson notes, "our capacity to perceive objects for their own sake is a learned ability" (Jackson, p. 149). This learned ability is what Elliot Eisner (1998) refers to as connoisseurship:

> Perception manifests itself in experience and is a function of the transactions between the qualities of the environment and what we bring to those qualities. The character of that experience is in large measure influence by our ability to differentiate among the qualities we attend to... The ability to make fine-grained discriminations among complex and subtle qualities is an instance of what I have called connoisseurship... It is a matter of noticing and noticing requires perceptivity. Perceptivity is the ability to differentiate and to experience the relationships...an interplay of qualitative relationships. (p. 63-64)

Eisner also addressed the importance of perception and connoisseurship to education, since what we learn is what we pay attention to, and what we pay attention to helps us differentiate experiences and expand our understanding. Eisner refers to this awareness of the qualities of experience and the differentiation of experience as "epistemic seeing." It is an ability to discern complexities, nuances, and subtleties in experience. It allows us to perceive the richness of experience by paying close attention to the qualities of experience.

Dewey (1934) provides a good example of what this type of "epistemic seeing" looks like. It consists of

> turning an idea around, the way a jeweler might examine a gem, looking at it first from this angle and then from that, examining its depths, testing its instrumental

worth, pursuing its connections with other ideas and with the world of action,

moving close to it, then backing away for a view from afar, even abandoning it

for a time, the way an artist might temporarily lay a work aside, only to return to

it with renewed energy on another occasion. (p. 158-159)

However, seeing things in certain ways is also a way of not seeing. Antecedent

knowledge helps us see and label things but also limits our perceptions and fixes it in

certain ways. Viewing experience through the lenses we bring to experience means we

foreclose on certain possibilities of exploring or noticing certain qualities. According to

Eisner (1998), "Learning to see what we have learned not to notice remains one of the

most critical and difficult tasks of educational connoisseurs" (p. 77).

Richard Rorty (1986) notes the importance of this aesthetic way of noticing:

All that is required to act well is to do what artists are good at – noticing things

that most other people do not notice, being curious about what others take for

granted, seeing the momentary iridescence and not just the underlying formal

structure. The curious, sensitive artist will be the paradigm of morality because he

[sic] is the only one who always notices everything. (p. 159)

Maxine Greene (1988) calls for moving ourselves toward "wide-awakedness" to become

more attentive, to cultivate multiple ways of seeing so that we can recognize patterns,

connections, and possibilities. Doing so allows for greater possibilities to create meaning

and develop understanding.

Creating meaning

According to Dewey (1934), meaning is created through a process of reflection.

By stepping back from experience and thinking deeply about the qualities of experience,

we are able to create meaning. Dewey argued that we engage in experience, undergo

certain tensions that arise in experiencing, and reflect upon tensions and problematic

situations to create new meanings and find momentary resolution. It is the process of

reflecting upon doing and undergoing that allows for the creation of new meaning.

Thus, there is relationship between the immediate situation and a pervasive sense

of the qualitative whole through which meaning is created. This process requires

reflection and a conscious effort at meaning making, since "as long as we remain

immersed in a situation, we cannot describe it" (Jackson, 1985, p. 19). This suggests that

once experience becomes an object of reflection, new meanings can be bestowed upon it.

When there is disequilibrium or puzzlement "we are led to search for elements and

relations within the situation that will reveal its' meaning, thereby causing it to make

sense" (ibid, p. 21). This disequilibrium leads us to seek significance and meaning, to

make sense of a problematic situation so that we can act to reduce felt tensions.

Again, Jackson (1985) helps us understand this processes of making meaning:

"The event with meaning (i.e., the object) is not to be mistaken for the event itself... The

more we know about an object, the more we discover about its connections with other

worldly things, the richer its' meaning becomes" (p. 25). It is the connections and

relationships that are forged that imbue an object or situation with meaning. By creating

new connections and relationships, either with other objects and situations, or between

the object/situation and the larger, qualitative whole, we create meaning. Oftentimes

these connections and relationships are only vaguely perceived. In describing the work of

artists, scientists, and thinkers, Dewey (1934) noted, "They...press forward toward some

end dimly and imprecisely prefigured, groping their way as they are lured on by the identity of an aura in which their observations and reflections swim" (p. 73).

Meanings may be difficult to formulate and articulate, but Dewey believed there is no limit to the growth of meaning, that multiple and endless meanings are possible. And, "As meaning accrues...experience grows with it. Indeed, experiential growth is but the expansion of meaning" (Jackson, 1985, p. 111). Thus, Dewey argued that an "educative experience" is that which allows us to experience certain qualities of experience more fully and expand meaning. Art makes possible new meaning or the expansion of meaning.

Part of this process of creating meaning involves coming to know through relationships with others who will necessarily have different perspectives than yours because they have had different experiences. For example, as Eliot Eisner (1990) notes, "As one's ability to take different perspectives grows, what is considered relevant shifts. The data one seeks change. The interpretation that is appropriate alters. Taking various perspectives is a way of examining situations from different angles" (p. 49). Others' perspectives are important to the meaning making process for artists and pragmatists, because these help us overcome our own limited and fallible knowledge to create new meaning or deepen our own understanding. Others' perspectives "deepen and broaden our experience and help us understand what we are looking at" (Eisner, 1990, p. 59).

For Dewey and other pragmatists, knowing is done in community, through sharing perspectives, and inviting diverse viewpoints. We give meanings to experience because it is useful and enjoyable. Creating meaning is creating and seeing relationships or patterns, and thinking about "objects as having connections with other elements within

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the environment, to see how (they) bear on other things" (Jackson, 1985, p. 26). Others

help us create new patterns and connections that can support meaning making. According

to Dewey (1925/1981, p. 283), "thinking is preeminently an art," an art in which new

meanings are created.

Teaching is fundamentally about creating meaning and developing understanding.

Teachers must know how meanings are constructed in the subjects they teach, recognize

the variety of meanings that might be possible in reading texts, interweave meanings

across texts, and work with students' ideas and experiences to create connections and

relationships to significant subject matter. It requires working in the "in-betweens":

between the individual's perspective and others' perspectives, between text and reader,

between personal experience and subject matter, between what one knows and what one

hopes to know, and between current realities and possible futures. The pragmatist,

Richard Bernstein (1992) writes that the activity of thinking takes place in such "gaps":

"It is in this gap that the experience of thinking occurs – thinking that must be practiced

and exercised over and over again but which knows no finality" (p. 15). It is in these

generative spaces that teaching and learning take place.

Working in these "gaps" or conceptual spaces requires keeping open the spaces

for creating meaning, inviting multiple perspectives and diverse viewpoints, and using

our imaginations to try to understand difference. As Bernstein (1992) notes, "there can be

no escape from plurality – a plurality of traditions, perspectives, philosophical

orientations" (p. 329). As a result, we have an obligation to acknowledge and respond to

this plurality, hear others' perspectives with the aim of understanding, while recognizing

that conflict may be unavoidable. Bernstein (1992) calls for a model of dialogic

encounter that can help us respond to conflicting perspectives and disagreement. For him this means we begin with

> the assumption that the other has something to say to us and to contribute to our understanding… this requires imagination, sensitivity and perfecting hermeneutical skills. There is a play, a to-and-fro movement in dialogical encounters, a seeking for a common ground in which we can understand our differences. The other is not an adversary or an opponent, but a conversational partner. (p. 337)

Artfully expressing understanding

According to Jackson (1985), aesthetic acts and art works have implications since they "contribute meaning and value to future experience. They modify our ways of perceiving the world, thus leaving us and the world itself irrevocably changed" (p. 33). Expressions of aesthetic activity offer and make possible new ways of thinking and perceiving. Art involves physical materials that are converted into forms that convey meaning. They hold transformative potentialities since they provide a break in the ongoing flow of experience, deepen understanding, and help us imagine possibilities or allow us to see things as otherwise. They have the capacity to help us uncover, discover, and see differently. For Eisner (1990), this is a key purpose and implication of art: "We learn to write and to draw, to dance and to sing, in order to *re*-present the world as we know it" (p. 27). Expression and representation are a process of reconstruction and the creation of meaning that puts forth new meanings in the world. According to Dewey (1934), "

In art as an experience, actuality and possibility or ideality, the new and the old, objective material and personal response, the individual and the universal, surface and depth, sense and meaning, are integrated in an experience in which they are all transfigured from the significance that belongs to them when isolated in reflection. (p. 301)

The expression of understanding and meanings created provide an embodiment of this integration and transfiguration. The raw materials of experience are reworked for artistic expression. Aesthetic expression is the clarification of emotion and tension, the sharing of meaning and value, and the ordering of experience in ways that express meaning and communicate new understanding. This expression results in a "growing experience," in which greater order and unity are achieved. Aesthetic expression means creating subject matter anew. The creation of subject matter into new forms of expression is "a developing process" (Dewey, 1934, p. 111) that "keeps alive the power to experience the common world in its fullness" (p. 133). According to Dewey (1934), "Experience occurs continuously" (p. 35), but *an experience* must lead to fulfillment, be demarcated from other experiences, be consummated, stand out. Art communicates new understanding, re-presents experience, and in doing so helps us experience differently or more fully.

Artful expression must provide a sense of what it's about and where it's going, a sense of undergoing and reconstruction, in which actions and consequences are seen as interrelated. The artist "has to see each particular connection of doing and undergoing in relation to the whole that he desires to produce" (Dewey, 1934, p. 45). Means and ends are never separated. The artist has in mind "ends-in-view" while working to create

meaning: "Until the artist is satisfied in perception with what he is doing, he continues shaping and reshaping" (ibid, p. 49).

This is an important element of teaching artfully. The teacher has "ends-in-view" in mind while working to create meaning. S/he continues shaping and re-shaping until satisfied in relationship to outcomes and qualities of student learning. Individual lessons and activities, instructional strategies, and learning experiences must be seen in relation to the whole that is desired. Artful teaching and learning must lead to fulfillment, stand out, contribute meaning, and modify our ways of perceiving the world.

Cleo Cherryholmes (1999) uses the term "aesthetically desirable" to describe how we evaluate the consequences and outcomes of our actions. We want things to "turn out well." We apply an aesthetic lens to consider possible implications, satisfying meanings, and desired outcomes. We evaluate and assess our work and meanings created based on our desires ("ends-in-view"), the quality of the processes we engage in or employ, and the consequences or effects they produce.

## Considering possibilities

Artful teachers, then, have developed these sensibilities and schemas. How are they developed? Possibly, by making the epistemological dimensions of their work more explicit, using various conceptual frameworks to make sense of classroom experience, and being purposefully reflective about epistemological issues and challenges that are central to working in the conceptual space of meaningful learning and disciplined inquiry. By being more aware of and using different epistemological lenses and frameworks to understand classroom experience, they might become more aware of their

own views about knowing, students' ways of knowing, and more disciplined forms of knowing.

To examine teachers' conceptions of knowing, and in particular, certain big ideas, their utility, and their implications for teaching and learning, I pay attention to what they said and did while participating in my study. I make a case for teaching as an epistemic activity that presents many epistemological challenges. By examining how four teachers worked in the conceptual space between meaningful learning and disciplined inquiry to manage these challenges, I demonstrate how these teachers artfully and creatively responded to the particularities of the various elements provided by their students, their contexts, and the curriculum.

# CHAPTER THREE

## CASE STUDY AND NARRATIVE INQUIRY: A RESEARCH METHODOLOGY

It is not a matter of starting from certain theoretical or methodological problems:

it is a matter of starting from what we want to *do*, and then seeing which methods

and theories will best help us achieve these ends. (Eagleton, 1996, p. 183)

### Introduction

My dissertation study is situated in the work I have been doing with the project

and the teachers I worked with for three years. It emerged from our collaborative

inquiries into teaching for ML/T and the many challenges it poses. This is an interpretive

study (Erickson, 1986) that attempts to understand how teachers think about creating

meaning in the conceptual space between students' ideas and experiences and subject

matter using big ideas in the medium of an ML/T curriculum. To investigate teachers'

thinking about knowing across the contexts of their work, I used qualitative, multi-

method approaches that are described in this chapter. These methods evolved in the

process of my investigation and were selected according to which approaches seemed

most satisfactory and effective in developing a sense of teachers' epistemological

orientations.

In this chapter, I also provide a detailed description of the ML/T curriculum, since

the teachers' professional learning experiences were grounded in the two Model Units.

The curriculum units are an important data source and served as an object of inquiry

during the teachers' professional learning experiences. Understanding key facets and

elements of the curriculum are important for understanding the teachers' learning

experiences in Chapter 4, a narrative analysis of their work in the curriculum, and for

understanding their conversation during the Professional Learning Block about big ideas, which is the focus of Chapter 5. I describe key aspects of the curriculum at the end of this chapter, as a way to orient the reader to my data analysis in chapters 4 and 5.

As Denzin and Lincoln (1994) suggest, qualitative research that analyzes multiple data sources across multiple contexts and draws upon multiple strategies and paradigms to make sense of experience can be seen as a form of bricolage. This form of research is an interactive and iterative process that investigates how meanings are constructed within social activity. This approach is consistent with my overarching conceptual framework that views knowing as participatory and constructed in action. It draws upon a pragmatic view of knowing and research that favors methods and criteria for knowing that are flexible, responsive, and based upon what works or proves useful for certain purposes. Gergen and Gergen (1991) support this pragmatic and socio-cultural notion of research in which the researcher participates as a co-inquirer with those seeking to develop understanding and meaning: "Accounts of the world...take place within shared systems of intelligibility... These accounts are not viewed as the external expression of the speaker's internal processes (such as cognition, intention), but as an expression of relationships among persons" (p. 78). In this respect, my study is part of the ongoing collaborative inquiries into curriculum, teaching, student learning, and classroom experience in which I participated with the study participants during our work in the project.

During my work developing curriculum and leading professional development activities with the Model Unit Teachers, there were several tensions and challenges that I struggled to better understand and address. Generally, these tensions and challenges

seemed to be central to implementing the inquiry process and ML/T practice in educational settings. These challenges included the two epistemological challenges that are central to my study. These issues were fundamental to curriculum development and implementation, the inquiry process, teaching for understanding, meaningful learning, and professional development. Based on my work in the project and with the Model Unit Teachers, I began to view teaching as an epistemic activity and teacher thinking and orientations to knowledge as the epistemological contexts through which curriculum is enacted in classrooms.

I also formulated several questions that addressed the epistemological issues and challenges that seemed central to teachers' work in the medium of ML/T curriculum. The following questions became the questions that frame my study:

- How do teachers make connections between students' prior knowledge and lived experience and social studies subject matter?

- What are the epistemological stances teachers bring to students' knowing/knowledge and disciplinary knowing/knowledge that enables them to make these connections?

These questions also guided my selection of research methods described in this chapter. In the remaining sections of this chapter, I describe the participants in the study, describe challenges I faced as a researcher, and explain my methods.

## Study participants

The four teachers in the study, Lynn, Susan, Tim, and Don, were selected because they had demonstrated a commitment to the ML/T framework and inquiry-based approaches to teaching. Each had committed to ongoing professional learning around

ML/T to continue improving their ML/T practice in instruction, and each indicated a willingness to participate in the study.

Two of the teachers, Lynn and Don, had piloted the Mexico and Migration Unit during the first year of implementation, while the other two, Susan and Tim, came on board during the second year of teaching the Model Unit. Each of the teachers is white and middle-class, and taught in different schools and districts in the consortium of school districts participating in the project. These districts are located in and around a mid-size city of about 55,000 people in the Midwest.

None of the teachers described their social studies subject matter backgrounds as strong. In this respect, they differed from the teachers in the previous studies that were conducted with "expert" teachers characterized as having strong disciplinary backgrounds that they drew upon in their teaching.

<u>Don</u>

Don, a veteran teacher of 30 years, taught 6th grade social studies and language arts in a K-6 elementary school serving 475 students in a predominantly middle-class, white, rural neighborhood on the perimeter of this mid-size city. Located near an older section of the city, the school is not racially diverse, but is fairly diverse socio-economically. Along with new housing in the area are five trailer parks and many students who live in single-parent households. One hundred fifty-four students in Don's school qualified for free and reduced lunches. He typically had between 25-28 students in his two social studies classes.

Don majored in education and psychology at a small, private, midwestern university, and had been teaching mainly language arts and English before his

participation with the project. He cited Levstik and Barton's (2001) *Doing History* as having had a significant impact on his thinking about and teaching social studies, and noted that he had re-read the text during the summer after the first year of teaching the unit.

Don noted that he had been involved with many reform efforts that had been implemented in his school district over the years but had not found one that had significantly shifted his thinking or practice in social studies education. According to Don, his involvement with the project resulted in a significant move from a textbook approach to the intensive use of technology to support disciplined inquiry in the social studies. An admitted "techno-phobe" prior to teaching the curriculum units, he repeatedly noted that the integration of technology with disciplinary approaches in the units helped him change his teaching practice.

Lynn

Lynn taught $6^{th}$-$8^{th}$ grade social studies in a K-12 Catholic school with 700 students located in the downtown area of the city. She had taught social studies at this school for 11 of her 26 years of teaching. Prior to teaching at this school she taught $5^{th}$ grade. She taught two classes of $6^{th}$, $7^{th}$, and $8^{th}$ grade social studies, normally had 23-28 students in each of her classes, and taught all 150 middle school students at the school. She taught the Model Units to $6^{th}$ graders during 70-minute class sessions on Mondays and Wednesdays, and for 40 minutes on Fridays.

Lynn majored in Health and Physical Education and was certified in Elementary Education and Gifted and Talented Education. She had about 15-18 undergraduate credit hours in the social sciences and believed she mostly learned about social studies content

when planning units and preparing to teach the units. She described her social studies instruction as "textbook-based" prior to her involvement with the project. Lynn was very excited about teaching the Model Units, the experience of ML/T as an instructional framework, and her professional learning. She willingly participated in many conference presentations about ML/T and was involved during the summers in making revisions to the units with the university curriculum development team.

Susan

Susan taught four classes of 8th grade social studies in a school located in the main district of the same city. The district had 7,471 students and in Susan's school 59% of the 420 students qualified for free and reduced lunches. Susan had been teaching social studies for four years and noted that she still felt like she was a beginning teacher in many respects. Of the school's 420 students, approximately 70% were white, 20% African-American, and 10% Latino. Lynn had 20-27 students in her classes.

Susan majored in political science and had a post-baccalaureate certificate in history. She identified her understanding of social studies content, including history, as weak and at the "surface level." She said she had never learned about disciplined inquiry in her course work and that most of her courses provided surface coverage of topics and issues.

Tim

Tim taught 6th grade social studies and math in a middle class section of the city. Most of his students were white and 13% of the 287 students in this 6th grade building qualified for free and reduced lunches.

Tim had been teaching for six years, five of which were at his current school. He had been teaching social studies for only two years and was able to teach the Model Units during both years. Tim had three minors with his undergraduate degree: one in Elementary Education, one in English/Language Arts, and one in Science/Math. Tim described his understanding of social studies as average, but noted that he was very interested in social studies topics and issues. His father was a history teacher, and Tim noted that he was a good resource for him.

The teachers were also selected because of their record working together collaboratively and collegially. They had been four of the five teachers asked to participate in the summer work to develop the on-line professional learning curriculum that would be used to orient other teachers to ML/T teaching practice. Over time and as a group, they had demonstrated commitment to investigating ML/T teaching practice and collaborative professional development. They had been willing to participate in curriculum development and revision activities during their summer vacations, participated in presenting their work with the project at various conferences, and took an active role as teacher leaders in their schools and districts.

Rather than present case studies of each of these teachers, I describe their learning as a group, since their work was highly collaborative and situated in the context of a community of inquiry. Like Bereiter and Scardamalia (1994), I argue that when we focus on individual teachers' abilities and dispositions, we fail to "grasp the social structure and dynamics that are required for progressive knowledge building" (p. 270). By writing about the learning and knowledge building of a group of teachers, I hope to capture a sense of the socially situated components of knowing.

## My role as researcher

It's also important to note the extent to which my own interests and involvement in the project shaped my research interests. While I tried to make the process as deliberative as possible, as Erickson (1986) points out, there are no pure inductions, and we draw upon certain frames of interpretation that shape what data we collect and how we make sense of that data. While I am not the focus of my study, and don't necessarily feel the need to elaborate upon the development of the conceptual framework that I outlined in the previous chapter, it is important to note that I was by no means a neutral, disinterested researcher. I played a key role in conceptualizing and designing the curriculum around which the study participants created meanings and understandings. I designed and led professional learning experiences related to the curriculum and participated in classrooms with teachers and students when the units were taught. This insider view gave me many valuable insights and understandings that helped me identify key challenges and issues that I thought worthy of study. My research questions evolved from this close and intimate insider perspective that I had due to my extensive work with the project and the study participants over a period of three years.

However, as a result of my deep involvement in the project, I had a personal stake in seeing the curriculum and professional development "succeed." As Avner Segall (1999) has noted, "research can no longer be regarded as an unproblematic, objective, value-free process where data is [sic] neutrally and naturally collected, interpreted, and textualized by disinterested researchers" (p. 40). It is thus important to acknowledge the interests and positions that shaped what I investigated and how I conducted my research.

I actively participated in teachers' meaning making and wanted to see myself as a

co-inquirer with the Model Unit Teachers while I facilitated professional learning

experiences. However, I was not merely a co-inquirer. I had certain positions and

interests that represented certain power relationships, which undoubtedly shaped and

influenced what we attended to, the meanings we created, and how we acted on those

meanings. While it is impossible to disentangle myself from the work I did with the

project and my interests, I hope to provide a sense of the methodological approaches I

used to address these issues.

As Segall (1999) noted, "exploring methodology while engaging in it brings

anxiety to the surface; it highlights its problematics and discontinuities instead of hiding

them..., for every decision opens one door and closes another. But to proceed, we

nevertheless make choices, we must enter" (p. 41). These problematics and the

concomitant choices I needed to make have been felt every step of the way in the

research process. I recognize that what I write has closed certain doors and can never be

fully complete or disinterested. I have, however, tried to be reflexive about these choices

and considered possible consequences of these choices. For example, I chose to provide

"rich description" (Geertz, 1973) so that readers can make their own connections and

meanings. I have selected methods and approaches that I believe provide a deliberative

process of inquiry, with the hope that I still have plenty to say as a situated speaker about

the world as I perceive it (Richardson, 1994). My study is deliberative in the sense that it

involved long-term participation with the study participants, gathered and drew on a

range of documentary evidence, (e.g., classroom observation notes, notes and agendas

from Model Unit Teacher meetings, e-mail correspondence, videotape and transcripts,

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etc.), and utilized a variety of analytic methods (coding, charts, graphic organizers, detailed descriptions).

According to Britzman (1991), one way to manage these challenges is to treat the process of theorizing as a "lived relationship, grounded in the practical experience of persons" (p. 50), so that research becomes a constructivist approach to making claims or assertions. Narrative is an especially useful method that allows for the researcher to view teachers as sources of knowledge and meaning making as a collaborative process over time. Britzman argues,

> Studying the personal practical knowledge of teachers...requires a research
>
> relationship based upon mutuality, respect, and the recognition of vulnerability of
>
> both researcher and teacher. No psychometric measures distance the researcher
>
> from the teacher. Indeed, it is for researchers to narrate and interpret the words of
>
> others and render explicit their own process of understanding. This type of
>
> knowledge production requires the researcher to be sensitive to representing the
>
> voices of those experience educational life as sources of knowledge, and to be
>
> committed to preserving their dignity and struggle. (p. 51)

While this approach doesn't seem very "scientific" or systematic, it provides an accurate description of how I hope to address some of the dilemmas and problematics presented by own interests and positions as a curriculum developer, professional development leader, and researcher. It is an approach that draws upon honesty, mutuality, respect, recognition of vulnerability, and the desire to learn from and with the study participants. This describes the kinds of relationships I have tried to foster and maintain throughout

my work with the project and the teachers involved in the study, and it is an approach I hope to continue to use as a researcher in the future.

Britzman (1991) calls for "methodological humility" and "methodological caution" as important stances for the researcher. These are stances that I bring to my research and work with the study participants. They are similar, I believe, to the pragmatic stance of "epistemological modesty" (Berger, 1997) in which the researcher believes certain things but is modest about the claims that can be made. Of course, researchers should assume they do not know everything there is to know, and the critical voice of the researcher should delicately rearticulate the tensions that arise in practice while questioning "the consequences of the taken-for-granted knowledge shaping responses to everyday life and the meanings fashioned from them" (Britzman, 1991, p. 13). Interpretive work is required, yet needs to be tempered by the understanding that this work is always partial, selective, and fraught with problematics, as Segall (1999) noted. I have tried to assume these stances throughout the methodological approaches used in my study.

## An overview of two methodological approaches

In an effort to examine the multi-, cross-, and interstitial nature of teacher thinking and learning, I drew on data from curriculum work, teachers' classrooms, professional development activities, a reflective journal, and conversations and interviews with teachers.

In my study, then, I tried to capture a sense of how understandings develop in multiple arenas and contexts, and through the variety of activities in which the study participants were engaged. My approach represents the belief that understandings are

constructed in responsive, interactive, and emergent processes across and within multiple sites. I view theory and practice as linked and try to represent some of the ways the Model Unit Teachers and the university team inquired together to make sense of theory, classroom experience, and the ways experience could inform theory and theory could be implemented in practice. Since my study is based on the premise that knowing is contextual and embedded in activities in which individuals create knowledge and shared meanings, I use methods that help describe these settings and activities over time. In particular, I draw upon case study methodology and narrative inquiry approaches to describe teachers' work and the epistemological challenges they learned to manage as they developed understandings of subject matter, teaching, and student learning in the medium of ML/T curriculum.

Generally, this study is naturalistic (Bogdan and Biklen, 1998; Lincoln & Guba, 1985) in the sense that I paid close attention to these contexts of professional life and was concerned with the processes by which teachers drew upon and developed ways of thinking that helped them develop understanding in each of these contexts. I utilized multiple inquiry approaches and research methods, including ethnographic data-gathering techniques such as participant observation and interviews, and a dynamic and flexible approach that continually moved back and forth between processes of data collection, analysis, critique, and synthesis. I view the sense-making process as fluid, messy, and iterative, in which methods emerge out of various research activities and in the process of developing understanding.

Huberman and Miles (1994) refer to this recursive and reflexive process as analytic induction. For example, my research questions were revised and refined as data

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were collected and analyzed. Also, coding strategies and broader analytic domains used to analyze and then synthesize data emerged from the process of analysis itself, and then were revised as I analyzed the data I had collected. This process meant that field notes and interview transcripts were used to develop a set of initial coding categories, and then the data were put to a more systematic analysis to further categorize evidence according to these initial categories. From this analysis, initial categories were revised and other categories and themes identified. An ongoing, iterative, and systematic investigation of the data identified possible patterns or themes and discrepant evidence that needed to be addressed. According to Huberman and Miles, "when a theme, hypothesis, or pattern is identified inductively, the researcher then moves into a verification mode, trying to confirm or qualify the finding. This then keys off a new inductive cycle" (p. 431). Patterns and themes were combined into broader analytic domains and conceptual coherence developed through ongoing analysis. Evidence was drawn from the data to support the claims and conclusions that I developed through ongoing analysis.

For example, I initially identified three key epistemological challenges that teachers seemed to especially address in the Professional Learning Block session. Further analysis resulted in my merging two of the challenges into one, since they seemed to be more alike than dissimilar. As a result, I used data from the third epistemological challenge to inform my thinking about the two challenges that became the focus of my study.

Narrative inquiry and case study are two research designs that support this process of analytic induction. Both draw upon empirical data to explain complex relationships in real-life contexts. As noted in Chapter 1, much of the research previously done around
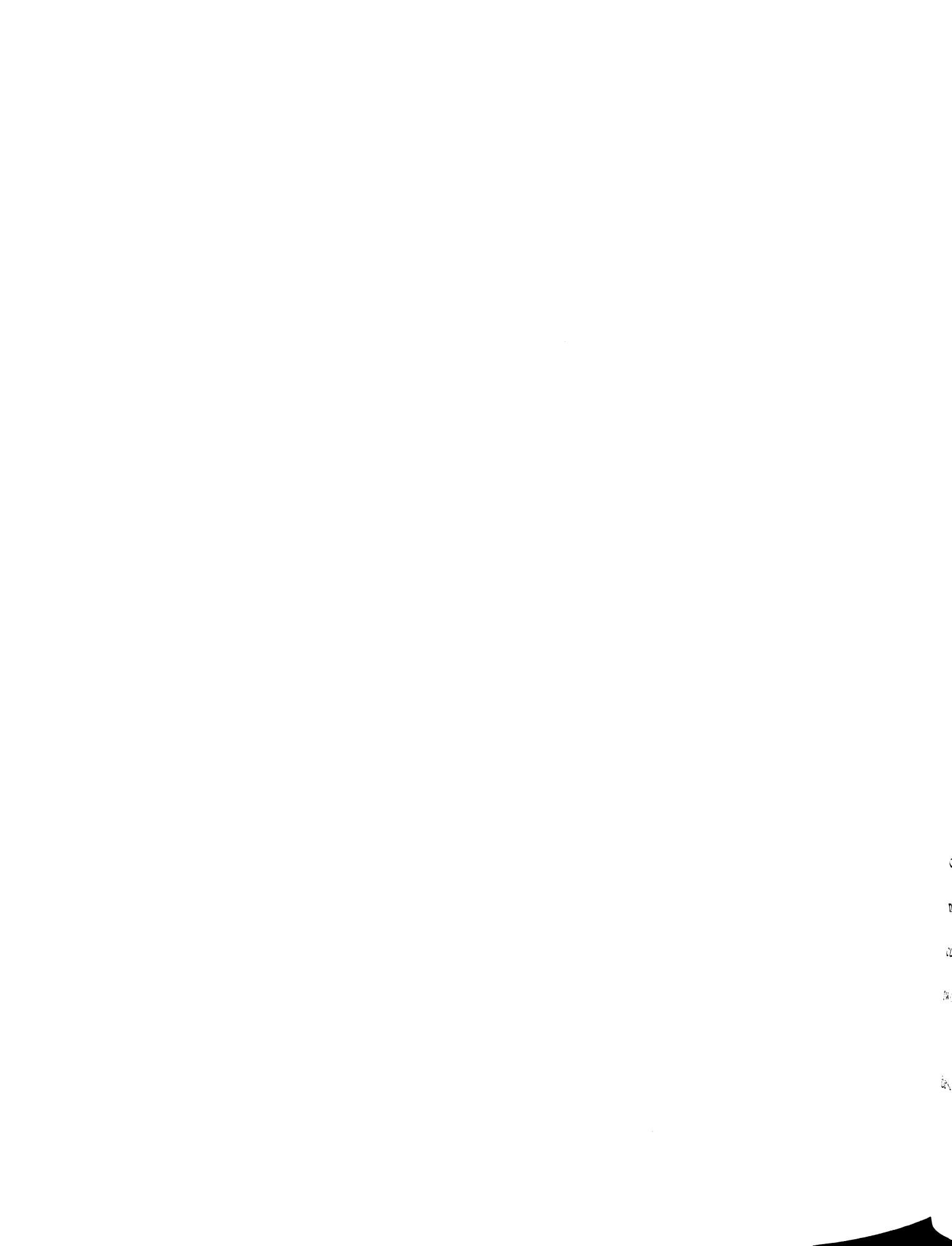
teachers' epistemological stances and the epistemological dimensions of teachers' work is mostly theoretical or investigated "expert" teachers with strong disciplinary backgrounds. My study provides empirical evidence of how teachers who admittedly lack such strong disciplinary foundations address important epistemological challenges in teaching for meaningful learning using disciplined inquiry. I also describe their sense making and ways of thinking that help them manage these challenges as aesthetic and artful. By providing empirical evidence that teachers can learn and draw upon aesthetic stances in professional practice, I also present what more artful approaches to classroom practice might look like.

In particular, I offer an analysis of one three-hour professional learning session that I held with the study participants as part of the case study. This Professional Learning Block about how big ideas are used to mediate student understanding involved the four teachers viewing and discussing two videotaped segments of classrooms (Lynn's and Tim's) in which students and teachers were using big ideas in Model Unit lessons. My analysis examines the epistemological challenges teachers identified during their discussion of these classroom artifacts and demonstrates the aesthetic sensibilities the study participants drew upon to make sense of and manage two key epistemological challenges. I also provide a broader, more contextual view of teacher learning in a narrative description of teachers' professional learning experiences in the ML/T curriculum over a three-year period. By providing both views of teacher learning, I offer two perspectives of teacher learning and look across both to consider implications.

The purposes of using narrative and case study methods are to provide rich description of key epistemological challenges, teacher knowing, teachers' professional

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learning experiences, and the many interrelated factors that shaped their professional

learning. In other words, they both can be used to tell a story and document what people

have done, their thinking, and the professional contexts and relationships of both. Both

case study and narrative emphasize detailed contextual analysis of conditions and their

relationships within their real-life contexts. The approaches I used in my study are

described in the remainder of this chapter.

Case study methodology

Case studies offer rich representations of the complexities of teachers'

conceptions of knowledge and teaching practice. As Pamela Grossman (1990) has noted,

> Each individual case becomes the first unit of analysis, as the researcher identifies
>
> patterns and themes within the individual case... Case study research can draw on
>
> a wide variety of data collection strategies: the common thread of case study
>
> research is the identification, conceptualization, and elaboration of an individual
>
> case, while setting the particular case within a larger theoretical and naturalistic
>
> context. (p. 150)

Case study methodology, then, may best address the complexity and interrelated qualities

of teacher thinking and understanding in multiple contexts. Robert Stake (1994) also

points to case study as a way to develop themes or issues that represent certain tensions,

problems, and dilemmas, and he states that they lend themselves to multiple disciplinary

lenses for analysis.

My dissertation provides a case study of professional learning experiences in the

context of the medium of ML/T curriculum, investigating teachers' conceptions of

knowledge and knowing. Since it draws upon multiple sources of data across several

contexts of professional practice, such as their classrooms, curriculum work, and professional learning meetings, case study methods also provide opportunities for triangulation to support findings. As Sonia Nieto (1992) suggested, by looking across a wide range of data through multiple approaches, I provide rich descriptions of epistemological challenges and teacher knowing in a particular situation "so that solutions for more general situations can be hypothesized and developed" (p. 7). Based on the rich description provided by the case study and narrative, I offer "solutions for more general situations" in Chapter 6.

Narrative inquiry

In Chapter 4, I provide a narrative account of the study participants' professional learning contexts and experiences. I use narrative inquiry as an approach to develop the case study of teacher learning. The narrative account of the Model Unit Teachers' professional learning experiences also provides background and context for the study. This narrative is intended to richly describe important contextual factors and provide opportunities to look for significant intersections, patterns, and themes in experience. The narrative account of professional learning experiences provided a methodological approach to explore and make sense of the many challenges that were central to the Model Unit Teachers' professional learning and teaching. Through narrative inquiry, I believe it was possible to provide a powerful case for professional learning that emphasized inquiries into "critical moments" of curriculum, teaching, and learning in an inquiry-oriented, ML/T curriculum.

Clandinin and Connelly (1994) argue, "personal experience methods inevitably are relationship methods" (p. 425). Writing the narrative provided a means to describe

epistemological problems and challenges in teaching and learning, and contextual factors, as well as opportunities for inquiry into and reflection on my own sense-making. Developing the narrative account of teachers' learning experiences forced me to think about the story I was trying to tell, the relationships between key themes and patterns in the story, and the ways I might represent teachers' learning over time.

I used "continuous narrative description...what can less formally be called 'writing like crazy'" (Erickson, 1986, p. 119) to develop a sense of the many sites and activities in which the Model Unit Teachers engaged with ML/T theory and practice, and identified and learned to manage several challenges that I viewed as epistemological in nature. These sites were considered distinct, yet highly interdependent, and included the following:

- Curriculum and how teachers think about and interact or engage with curriculum.

- Classroom practice and how teachers think about and engage with students and pedagogy.

- Professional development and how teachers think about professional development and their own learning.

Each of these sites are described and investigated to identify teacher learning that is relevant to their epistemological work and stances in the medium of the curriculum, as well as to describe how teachers developed aesthetic and artful approaches to managing the epistemological challenges that were central to their work.

### Narrative of professional learning (Chapter 4)

Narrative inquiry helps researchers look for significant intersections, patterns, and themes in teachers' experience. Narrative inquiry lends itself to cross-site case analyses

and capturing epistemological complexity. It provides a means to make sense of, organize, and structure understandings of teacher thinking and experience that began with certain tensions and a qualitative vagueness, yet allowed for a "working through" that yielded new understandings and insights. This was definitely the case as I worked with a broad range of data, created a story of teacher learning, and continued to revise and refine that story. Denzin and Lincoln (1994) describe writing as a "method of inquiry that moves through successive stages of self-reflection" (p. 10); through narrative inquiry and case study writing, my own sense-making about experience could be reflected upon.

Data collection

In creating this narrative account of teacher learning, I drew on a great deal of data generated from teaching the curriculum and the professional development activities that teachers experienced over this three-year period. Data used to construct this narrative included:

- Personal e-mail correspondence and e-mail correspondence to the e-mail group set up to support communication and collaboration

- Annual Reports that were developed for evaluation purposes and yearly reporting to the funding agency

- Key documents created as part of curriculum development and professional development (debriefing reports, Professional Development Plan, Inquiry Partners Plan, etc.)

- Classroom observation notes taken during classroom visits

- Agendas and notes from Model Unit Teacher meetings and professional development activities (Social Studies Innovators Institute, bi-weekly Model Unit Teacher (MUT) meetings, debriefings, etc.)

- Notes from Executive Committee meetings

- Videotapes of classrooms and MUT meetings

- Personal notes, reflections, and analytic memos

- Initial writing (some of which was part of a practicum) that was then reflected upon and analyzed for patterns and themes.

Analysis of the narrative of professional learning

Data analysis was part of my ongoing work with the teachers to revise the curriculum and technology, and design and implement professional learning experiences. As Hammersley and Atkinson (1983) note, "data analysis is not a distinct stage of research," but includes the "pre-field work phase...and continues into the process of writing" (p. 174).

As I began to formulate my study and collect data, I began with a general review of the data. As I analyzed data, I recorded insights and ideas, generated questions and puzzlements, noted tensions and challenges, and described feelings and intuitions I had from these initial engagements with the data. Reflective and analytical notes were made while reviewing the data, and some of these initial analyses were part of my practicum study. These comments and notes were used to generate conceptual categories and write analytic memos that synthesized and summarized emergent insights, ideas, themes, patterns, and puzzlements from the data. According to Erickson (1986), such an approach

allows the researcher to make and test assertions based on evidentiary warrants by seeking confirming or disconfirming evidence in the data.

During the process of data analysis, I sought out literature to assist in analysis and reflection. Bogdan and Biklin (1998) and Conle (2000) have argued that an on-going literature review helps answer questions that emerge during analysis, such as the following:

- What are some crucial issues that I am struggling with, and how have other studies addressed these issues?

- What past findings have a bearing on these issues and my study?

- How does my perspective differ from what I've read? How does it agree?

- What has been neglected in the literature? What has been neglected in my study?

I also developed a set of visual graphics and organizers, such as webs, diagrams, and tables that helped me further conceptualize certain patterns or connections across various data. These were especially important for discerning relationships between various ways of knowing in different contexts and patterns in teachers' professional learning experiences over time.

### Analysis of the Professional Learning Block

<u>An analytic framework for the PLB</u>

Consistent with the view of knowing and experience outlined in my conceptual framework in Chapter 2, I developed an analytic framework to help me attend to teachers' thinking and talk during the Professional Learning Block (PLB) I held with them on December 30, 2003. In Chapter 5, I analyze the conversations and work I did

with teachers in this PLB, which focused on using big ideas to develop student understanding.

To analyze the uses of language that mediate and articulate teacher thinking about various ways of knowing, I draw on socio-cultural theories of dialogic inquiry. As Halliday (1993) notes, "language is the essential condition of knowing, the process by which experience becomes knowledge" (p. 94). A systematic effort was made to focus on the ways teachers used language to talk about their ways of knowing and thinking about knowledge and knowing. Teachers' uses of language were analyzed, such as their use of key metaphors, to describe their thinking about classroom practice and how they managed key epistemological challenges that they identified.

My analytic framework leans heavily on the work of Gordon C. Wells (1999) and his socio-cultural theory of dialogic inquiry, which views research and inquiry as collaborative endeavors and processes of knowing and coming to know. Wells draws upon the work of Halliday (1993) and Vygotsky (1978) to argue that language encodes culture's theory of experience and is an essential condition of learning and knowing. According to a socio-cultural theory of knowing, knowledge and ways of knowing are constructed in the context of significant problems through a dialectical process in which certain tools or practices are used to solve problems. Those tools or practices are adapted and extended by participants to meet particular needs in specific situations.

Language and knowledge are thus tools and practices that are highly flexible and responsive to contexts and continually constructed and reconstructed through usage. Knowledge and ways of knowing are bound up in activity, socially situated, and serve to mediate further collective activity. Wells (1999) argues that consciousness is

collaboratively created as co-knowledge, "developed in the discourse between people doing things together" (p. 58). In asking where knowledge is located, he makes the case for a dynamic conception of knowing that resides in the interactions and relationships between people, contexts, and the tools or artifacts of knowledge. According to Wells, like theory, knowledge is a linguistic construct and we are often misled in trying to reify and separate it from activity, contexts, and people. In summarizing his work, Wells argues, "my major conclusion is that...in attempting to understand the nature of knowledge, attention should be redirected to the activity of knowing" (p. 76). Wells' work points to knowing as an active, dynamic process that is shaped by activity within certain contexts. It also views language as representing and mediating knowing.

To analyze the teachers' language during the PLB, I used coding strategies. As Straus and Corbin (1990) note, coding involves "the process of breaking down, examining, comparing, conceptualizing, and categorizing data" (p. 61). To develop analytic codes for conversation in the PLB, I used a process of axial coding: "a set of procedures whereby data are put back together in new ways after open coding, by making connections between categories" (Straus & Corbin, 1990, p. 96). My analytical approach for the Professional Learning Block is described below.

Based on my initial analyses, what emerged from the professional development data and the narrative of teachers' professional learning journey was the importance of teachers' work in the conceptual space between students' experiences and subject matter. During the three-hour long PLB, they spoke about some of the challenges and tensions that presented themselves in this conceptual space. In doing so, they seemed to be affirming two key concepts central to my study: (1.) That problems, dilemmas,

challenges, and tensions are key opportunities for learning. They provide rich and

generative conceptual spaces that must be acknowledged, embraced, and worked for

meaningful professional learning, and (2.) Working in these conceptual spaces, working

these tensions, challenges, problems, and dilemmas, is a creative act that requires an

aesthetic stance and an artful approach to making connections, seeing relationships, and

creating meaning.

<u>Description of the PLB</u>

This PLB was a focus group session that I designed to engage teachers in

conversations about the role of big ideas in the two Model Units. I asked them to view

and talk about two videotaped segments of classrooms in which big ideas were discussed.

While the PLB was organized around the two video segments with the initial intent to

carefully analyze the segments, the teachers often moved in and across contexts – time

and place – making connections to their own classrooms and experiences teaching the

unit. However, since watching the two video segments stimulated much of the discussion,

I provide some description of the two lessons during which the video segments were

filmed to provide necessary context and background for the PLB. The first video clip was

of a classroom discussion in Lynn's classroom about the big idea *Space becomes place*

during Lesson 8, *Inquiring into Borders and Classroom Spaces*, in the first version of the

Mexico and Migration Unit. (In the revised and final version of the unit, this became

Lesson 5.)

In this lesson, students investigate spaces in their personal experience and then

investigate spaces along the U.S. and Mexico border in the subsequent lesson. The lesson

is one class period, and has students consider *space* as "an area, an empty place; an open

area that may be used and defined in a number of ways," and *place* as "a particular part of space that has been marked off and claimed by someone; an area or space with boundaries or special characteristics that define it and set it apart from other spaces or places" (Lesson 8 plan). In the lesson, students are asked to first consider spaces and places in their own personal experience, such as spaces on the playground or in the local mall, and how these are established, identified, and protected. A major part of the lesson includes students creating maps of classroom spaces in small groups. As part of this activity, students are asked to:

- Draw in the key borders that exist in the classroom.

- Determine the different uses of classroom space and develop a color code, or key, that identifies all of the spaces and places.

- Develop another code or symbol that shows who primarily uses each space or determines how each space is to be used. (Lesson 8 plan)

The lesson has the teacher use the following questions to support students in their thinking about classroom spaces:

- Are some spaces for everyone and others just for certain individuals?

- Are there places the teacher alone uses?

- Are there places reserved for other class periods?

- Is the classroom divided into common spaces and personal places?

- Where did you draw in the borders in this classroom? Why?

- Are these borders sharply defined or fuzzy? Rigid or loosely defined?

- What parts of the classroom did you identify as someone's special place?

- How is that special place marked out?

- What special rules apply to it?

- Do some classroom places seem to have developed a mini-culture around them (like some people believe that a locker room or a bathroom has its own culture)?

- Why do some places have more meaning than others?

- Why do we claim ownership of certain places?

- How is our identity affected by the claims made on these special places? (For example, what is the importance of someone saying, "Hey, that's MY TABLE!" or something like that? Also, how does this confrontation affect the self-concept of the person who is being turned away?) (Lesson 8 plan)

    Students then share their maps and their analyses of classroom spaces.

    The video segment used in the PLB is a discussion of personal spaces that launched the lesson prior to students creating their classroom maps. A transcript of the discussion in the ten-minute video segment was provided for the group. During the segment, Lynn asked her students, "How do gender, race, social class, and nationality become involved in the ways people claim spaces/places?" During the discussion, students drew upon their own experiences in spaces at school and school camp, and then made connections across a conceptual landscape that included references to popular film, historical events, such as slavery and the California gold rush, spaces, such as Chinatown, and the Mexico and Migration Unit content.

    The second video clip was of a discussion of the big idea *Knowledge is subject to change and interpretation* in Tim's classroom during Lesson 7 of the Inquiry Unit. In Lesson 7, *Analyzing an Interpretive Account*, students view the Vase/Faces illusion from the gallery at http://dragon.uml.edu/psych on the overhead screen. They study it for 15

seconds and then write down what they saw. Students share what they see and discuss different interpretations of the same image. Suggestions in the lesson plan to guide the discussion include:

- *Why do people have these different interpretations?*

- *How do I make interpretations?*

- You may want to discuss the way prior knowledge and experience sometimes affect what we see and the way we view things.

- If time allows, you may wish to put up a second image from the gallery such as the Figure of a Woman. (Lesson 7 plan)

The definition of interpretation provided in the unit is "an explanation of the perceived meaning of something, of what someone understands something to mean."

Later in the lesson, which is supposed to be two class periods, students view the "Ladder of Interpretation," based on Senge's (2000) "Ladder of Inference," to provide a concrete image/metaphor that helps them think about the interpretive process. According to this on-line resource for students, the ladder "stands on the ground of our experience, observations, and investigations," and as we move up the rungs of the ladder we "select certain data and information to attend to," make sense of that data and "make generalizations and claims based on the meaning we make of our data and information," and then "take actions based on our conclusions" (Inquiry Unit, Lesson 7). Students then view and analyze an interpretive account in the Narration Creation Station ("Rural to Urban Migration: An Interpretive Account") that was created by the curriculum development team. Students share their analyses of the interpretive account and use

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iJournal to consider how an interpretive account demonstrates that *knowledge is subject to change and interpretation.*

In the PLB video clip of Tim's class during this lesson, students discussed their different perceptions and interpretations of three different illusions from the on-line gallery of illusions. They then talked about stereotypical thinking when they see certain people in public, such as immigrants or poor people, and why people have different perceptions and interpretations about the same data.

Conversation during this PLB allowed the four teachers opportunities to talk about students' understandings of the big ideas, their own understandings of the big ideas, the role of big ideas in understanding subject matter, and how the big ideas mediate understanding about personal experience and subject matter. By analyzing teachers' responses through these elements as they talked about the challenges of understanding, teaching, and learning an inquiry-based, ML/T curriculum, I was able to get a sense of their epistemological stances. My analyses focused on how the study participants talked about students' use of the units' big ideas and how they mediated student knowing about personal experience and subject matter. I examined how these teachers worked back and forth between disciplinary understandings of the content and what they perceived to be students' prior knowledge and understandings, and how they thought students develop understandings of subject matter.

During this three-hour session, the four study participants, another university team member, and I discussed the role of big ideas in developing student understanding. This PLB followed the same protocol as an earlier PLB that had been developed and piloted with a group of teachers. I selected the videotape that would be viewed, facilitated the

discussion, and provided a handout that identified enduring understandings, learning outcomes, essential questions, and a lesson plan with guiding questions. (See Appendix D.)

One difference from the work we had done during the summer was my pre-selecting the videotape for viewing. I selected two 9-10 minute video segments that I thought richly represented teachers and students using big ideas in classroom practice. The first video segment, from Lynn's classroom, was one that we had viewed during one of our bi-weekly professional learning meetings several months before our session. The group hadn't viewed the second videotape from Tim's classroom.

The session was framed as a pilot PLB around big ideas to analyze how students use big ideas and how teachers use big ideas to mediate student understanding. It was intended to be similar to the work this group had done over the summer, in which we looked at several segments of videotape to identify "compelling moments" (identified as rich, generative, or provocative video segments, in terms of having potential for teacher inquiry and learning). During these summer sessions the group talked about what we noticed and shared how we made sense of the classroom data provided by the videotape. These sessions and the big ideas PLB were framed as a collaborative inquiry into various aspects of ML/T and inquiry-based teaching and learning. We used the What?, So what?, Now what? framework that was developed for collaboratively viewing and analyzing artifacts of classroom practice, such as videotape.

This framework served as an inquiry framework to support professional inquiries into classroom data and classroom practice. Guiding questions were intended to support participants in using the *What?* to notice, observe and attend carefully to video clips and

other artifacts of practice, the *So what?* to create patterns and relationships and construct new understandings of classroom experience, and the *Now what?* to make connections to one's own classroom, school, and professional learning or develop a professional learning plan to enact their new understandings. This framework and its development over the course of the project are described in Chapter 4.

The PLB was structured around two key interactions with these videotapes and included several guiding questions. It began with several questions to "launch" the PLB and included debriefing questions intended to help wrap up and debrief the session. (See Appendix D.) The essential questions that were to guide our conversation during the session were:

- How do the Big Ideas help students develop understandings about subject matter and personal experience? How do we know if students are developing understandings about subject matter and personal experience by using Big Ideas?

- How do the Big Ideas help students make connections between subject matter and their personal experience? How do we know if students are making connections between subject matter and personal experience in ways that support subject matter understanding?

Analysis of the PLB

What I wanted to examine in this PLB is how teachers think about managing key epistemological challenges that I believe are central to these questions and the role of epistemological and aesthetic stances in managing these challenges. For these purposes, I analyzed conversation in the Professional Learning Block according to three epistemological dimensions. Drawing on Nona Lyons' (1990) work investigating

teachers' epistemological stances, I used the following epistemological dimensions to analyze data from the PLB:

1. Teacher's stance toward self as knower and mediator of knowing in the classroom:

2. Teacher's stance toward students as knowers and learners:

3. Teacher's stance toward disciplinary or subject matter knowing/knowledge:

I also used the following aesthetic dimensions as a framework for analyzing teachers' talk in this professional learning session:

Aesthetic dimensions of working in the conceptual space:

1. Attending to or noticing students' ideas, talk, knowing and/or subject matter ideas, concepts, knowing;

2. Creating meaning or patterns that make connections between students' ideas, talk, and experiences and subject matter ideas, concepts, and knowledge; and

3. Consideration of the implications for practice in making such connections and interweavings:

The conversation in the Professional Learning Block, then, was analyzed to see to what extent the teachers were drawing upon certain epistemological or aesthetic stances to address the several challenges that had been identified in teaching the curriculum and using key big ideas to work in the conceptual space between students and subject matter. I also wanted to examine the intersection of these two dimensions. To help me analyze intersections and interrelationships and see to what extent the study participants' epistemologies might be characterized as aesthetic, I developed the following analytical matrix (Figure 2):

**Figure 2**: Analytical Matrix: Relationships between Epistemological Stances and

Aesthetic Dimensions of Teachers' Responses

| Aesthetic →<br>Dimensions;<br>Epistemological ↓<br>Stances | Attending/Noticing | Creating<br>Connections/Meaning | Considering<br>Implications |
|---|---|---|---|
| (Teaching) Self as Knower and Mediator of Knowing | Teacher attends to own moves and ways of knowing that help make connections in classroom. | Teacher is able to make connections between students' ideas/experiences and subject matter. | Teacher considers implications for making connections between students and subject matter. |
| Student as Knower | Teacher attends to students' ideas and experiences | Teacher makes connections between students' ideas/experiences; ways they make sense of student knowing | Teacher considers implications of making connections between students' ideas/experiences for student knowing |
| Disciplinary/Subject Matter Knowing | Teacher attends to subject matter content, big ideas, inquiry process | Teacher makes connections between subject matter topics/ideas/ processes; ways T's make sense of subject matter knowing | Teacher considers implications of making connections, creating meaning in subject matter |

In this professional learning session, what I wanted to explore was how teachers would attend to or notice themselves as knowers and mediators of student knowing and disciplinary knowing, what they attended to or noticed about students as knowers, and what they attended to and noticed about subject matter in the videotape. I also wanted to analyze how they made connections between themselves as knowers and mediators of knowing and students' knowing and subject matter, which could be represented in the middle column. The middle column represents how the teachers understood themselves

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as mediators of knowing, how they understood students as knowers, and how they understood subject matter knowing. I also wanted to analyze how they discussed the implications of this work for their teaching practice, student learning, and professional learning.

While going through the transcript of the teachers' talk during the viewing of the videotaped segments in the PLB, I coded the conversation using the following codes for what seemed like responses that fit into the aesthetic dimensions of the matrix above:

- Attending/Noticing = AN

- Creating Connections/Meaning = CC

- Considering Implications = CI

For responses that seemed to identify an epistemological stance toward one of the elements in the matrix above, I used the following codes:

- (Teaching) Self as Knower = TAK

- Student as Knower = SAK

- Disciplinary/Subject Matter Knowing = DK

If a response seemed to represent both an aesthetic dimension and an epistemological stance, I used both. Using this coding scheme, I wanted to see what the relationships between teachers' epistemological stances and the aesthetic dimensions of their making sense of students' ideas, classroom experience, curriculum, and subject matter might be.

I used this coding scheme in my initial analyses to help me identify three initial epistemological challenges: making connections between students' personal experience and subject matter; considering almost endless possibilities for creating meaning; and understanding student understanding. As I looked for places in the transcript where these

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challenges were identified and discussed, I examined how these challenges were viewed and managed by the teachers as epistemic activities. In other words, I wanted to see how the teachers thought about and mediated these challenges, how they saw them as issues of student knowing, and/or how they viewed them as issues of disciplinary knowing. How the teachers thought about these challenges and managing them would help me understand the epistemological stances they brought to bear on these challenges.

I also wanted to see how the teachers drew on the aesthetic framework that had been developed to guide their professional learning. This What?, So What?, Now What? framework had been developed when professional learning started to focus more directly on classroom data, such as student work and videotapes of classroom practice. This framework was designed to guide close observation of classroom data, collaborative meaning making about classroom experience, especially student learning and understanding, and consideration of implications for student learning, teaching, and curriculum. The codes for the aesthetic dimensions outlined above were intended to parallel each of these areas.

Based on a preliminary analysis of the transcript of the PLB, I noticed three key challenges that we kept addressing during the session. I organized my data according to these three key epistemological challenges and then looked at each using the coding scheme described above. As I looked at how teachers described epistemological challenges, I wanted to look at their epistemological stances in addressing and managing these challenges and how aesthetic ways of looking at these challenges helped them think about and manage these challenges.

After further analysis, I decided to merge the first two challenges into one. I combined "considering almost endless possibilities for creating meaning" into the challenge of making connections between students' personal experience and subject matter since part of making meaningful connections depends on the possible meanings that teachers believe can be created in classroom practice.

I followed up this PLB session with individual interviews with the teachers. These 45-60 minute semi-structured interviews were conducted four months after the PLB session in each teacher's classroom, either during a planning period or after school. Each interview was video and audio taped and transcribed. I used these interviews as a way to raise questions I had from the PLB session based on what different study participants had talked about, to probe into certain issues people had raised and key terms or phrases (including metaphors) they had used, and to generally follow lines of inquiry that seemed significant in terms of my research questions. Interview questions were developed after analyzing the PLB data. (See Appendix E.) For example, I asked Don to elaborate on his use of the ladder and calliope metaphors that he had used in the PLB. I asked Lynn to explain why she liked to teach the content first and why she felt this helped students relate the big ideas and their personal experiences to what they had learned about Mexico and migration. I included these data in my ongoing analyses of the PLB and teacher thinking about managing the epistemological challenges that were identified during the session.

### Methodological challenges

As noted in Chapter 2, some research has been done on teachers' cognitive processes (Clark and Peterson, 1986) and the knowledge base for teaching (Shulman,

1986; Grossman, 1990). As Clark and Peterson note, however, since this research often depends heavily on various forms of self-report by teachers, a central methodological problem deals with how to elicit and interpret valid and reliable self-reports about teacher thinking. Investigating teachers' epistemological frames posed similar challenges and necessitated rich descriptions of teacher practice to confirm or disconfirm teachers' self-reporting.

Since this study specifically aimed at researching teachers' epistemological orientations toward knowing in various contexts, there were also methodological problems in trying to understand knowing as an active, dynamic process, rather than studying knowledge as a static, reified product of teacher learning and practice. This suggests that teachers' ways of knowing and stances toward knowledge are bound up in the contexts, communities, activities, and social interactions of their work rather than de-contextualized and located in teachers' minds as some sort of capital that is drawn upon or activated when necessary. It thus locates teachers' thinking and epistemologies not only "inside" their heads but in their socio-cultural contexts and practices.

Rather than view teacher knowledge as cognitive structures, or as propositional knowledge, it suggests that knowledge doesn't exist independently, but "is what is recreated, modified, and extended in and through collaborative knowledge building and individual understanding" (Wells, 1999, p. 89) in the contexts of practice. "Knowing, then, is both situated and dialogic" (ibid, p. 196), and comes into existence through participation in particular activities. Knowing and coming to know are undoubtedly slippery areas to investigate, since it is constantly shifting and is "reachieved in another utterance that is responsive to whatever demands the new activity, or later phase of the

same activity, makes. And since these occasions are always different to some degree, so also is the understanding" (ibid, p. 108). Since this study views teacher thinking as embedded in these contexts, continually and actively reconstituted, iterative, and dynamic in relationship to context, mapping this terrain is fraught with certain methodological difficulties. However my methodological choices helped investigate the interrelationships between epistemological stances and their contexts. A methodological flexibility that draws on a range of related theories in qualitative research is an intended aspect of the study for these purposes.

In the next two chapters. I draw upon an extensive and wide-ranging body of data and develop a narrative account of teacher learning and the epistemological dimensions of their work in Chapter 4 and investigate one PLB session held with teachers in Chapter 5. Methodologically, my primary goal is to provide rich description of teachers' learning, key epistemological challenges, and the ways teachers thought about and managed these challenges. However, before moving to my analyses, it's important to understand key aspects of the Model Units that anchored teacher learning, work, and conversation.

## Description of the Model Units

The Model Unit Teachers' professional learning experiences were grounded in the Model Units. These units are an important data source and served as an object of inquiry during the teachers' professional learning experiences. In this section I describe both Model Units, the technology tools that supported the curriculum, and the big ideas.

### Inquiry: A Way of Knowing Differently

*Inquiry: A Way of Knowing Differently* is a 3-week unit for 6th-8th grade students introducing inquiry in the context of Mexico and migration social studies content. In the eight lessons in this unit, students learn how to work in a community of inquiry to: ask

investigative questions; use social science tools to gather, analyze, and interpret sources of information from the Internet; and develop and communicate an interpretive account of their findings. Using the inquiry process and the big idea *knowledge is subject to change and interpretation*, students learn to: identify, classify, and use criteria to develop investigative questions; analyze and interpret photographs, Web sites, and other interpretive accounts; identify and make valid generalizations; make claims supported by evidence; and present and compare interpretive accounts.

In the first lesson, *Asking Questions and Gathering Information*, students are introduced to the four-step inquiry process, generate questions about Mexico and migration, and are introduced to surveys and interviews as social science methods to gather information. In Lesson 2, *Forming a Community of Inquiry*, students share their initial questions about Mexico and migration and learn that a community of inquiry is a place for raising and sharing questions, investigating those questions collaboratively, and following certain procedures and methods for conducting their investigations. Lesson 3, *Identifying Investigative Questions*, has students classify their questions, develop criteria for good investigative questions, and analyze their questions using these criteria. In this lesson, several categories for classification are suggested, such as social studies content areas, and teachers can refer to "Experts Criteria for Investigative Questions" to help the class co-develop their own criteria. The next lesson, *Analyzing and Interpreting Information: Making Valid Generalizations*, has students examine survey data and make generalizations about Mexico and migration based on their analyses. They learn about generalizations and criteria for making valid generalizations. In Lesson 5, *Analyzing and Interpreting Information: Photographs*, students analyze on-line photos of the Mazahua,

an indigenous people in Mexico who make a rural to urban migration. During the lesson, students are instructed to observe closely, make hypotheses about the data, and develop questions based on their analyses. In Lesson 6, *Gathering and Evaluating Information*, students assess their hypotheses and investigate their initial questions by returning to the Mazahua Web site. At this site, students are able to hear oral narratives by Mazahuan people about their rural to urban migrations and gather other information that helps them better understand the photos they viewed in the previous lesson. In Lesson 7, *Analyzing an Interpretive Account*, students view on-line optical illusions and share their different interpretations of the images. Later in the lesson, students view and analyze an interpretive account in the Narration Creation Station ("Rural to Urban Migration: An Interpretive Account") that was created by the curriculum development team. Students share their analyses of the interpretive account and use iJournal to consider how an interpretive account demonstrates that *knowledge is subject to change and interpretation.* In the final lesson of the Inquiry Unit, *Developing and Communicating an Interpretive Account*, students culminate the unit by creating a PowerPoint slide presentation in which they make claims supported by evidence to report their investigative findings about Mexico and migration.

During the unit, students are introduced to the Meaningful Learning Classroom Toolbox (MLCT) and the special technology tools that were developed by the university team to support the curriculum. The unit also requires the use of Inspiration, software designed to enable students to organize and map ideas visually on the computer, and PowerPoint as a presentation tool.

## Mexico and Migration Unit

The *Mexico and Migration Unit* is a 5-6 week unit in which 6th-8th grade students extend their investigations into Mexico and migration content using the inquiry process. In Part I of the unit, *Developing Understandings of Mexico and Migration*, students make connections between their personal experience and social studies content using three big ideas, *knowledge is subject to change and interpretation, space becomes place*, and *culture as human creation*. In the seven lessons that make up Part I, students probe their experiences of moving, use a case study to explore Mexico and migration, and compare their experiences moving with Mexican immigration stories. By looking across their own experiences and those of Mexican immigrants, they investigate the process of fitting in, classroom spaces and US-Mexico border issues, and the culture of the borderlands.

In Part II of the unit, *Investigating Mexico and Migration and Communicating Findings*, students conduct investigations about Mexico and migration on the basis of their own questions and construct interpretive accounts of their findings in the form of multimedia historical narratives. In the eight lessons that make up Part II, students work collaboratively to develop understandings of historical narrative as interpretive accounts about the past, generate investigative questions that will guide their inquiries, and learn to analyze, interpret, and use a variety of sources of information. Special emphasis is given to supporting students identifying and evaluating claims and evidence, determining the relevance and credibility of sources, and writing historical narratives that make claims supported by evidence.

An outline of the lessons for Parts I and II is provided Table 1 below.

**Table 1**: Mexico and Migration Unit lessons

| |
|---|
| ***Part 1: Developing Understandings of Mexico and Migration*** |
| <u>Lesson 1</u>: Probing Student Experiences with Moving (2 class sessions) |
| <u>Lesson 2</u>: Using a Case Study to Further Explore Mexico and Migration (2 class sessions) |
| <u>Lesson 3</u>: Comparing Mexican Migration Trends with Personal and Family Migration Experiences (2 class sessions) |
| <u>Lesson 4</u>: Reflecting on the Process of Fitting In (2 class sessions) |
| <u>Lesson 5</u>: Inquiring into Borders and Classroom Spaces (1 class session) |
| <u>Lesson 6</u>: Exploring Water Issues on the Border (1 class session) |
| <u>Lesson 7</u>: Exploring the Culture of the Borderlands (2 class sessions) |
| ***Part 2: Investigating Mexico and Migration and Communicating Findings*** |
| <u>Lesson 8</u>: Reading Historical Narratives as Interpretive Accounts about the Past (2 class sessions) |
| <u>Lesson 9</u>: Generating Investigative Questions and Choosing a Special Audience (1 class session) |
| <u>Lesson 10</u>: Organizing Group Investigations and Performing Initial Investigations (3 class sessions) |
| <u>Lesson 11</u>: Analyzing, Interpreting and Using Information (3 class sessions) |
| <u>Lesson 12</u>: Using Information to Write Historical Narratives (3 class sessions) |
| <u>Lesson 13</u>: Submitting Tentative Claims for Feedback and Making Revisions (2 class sessions) |
| <u>Lesson 14</u>: Revising and Preparing to Share Historical Narratives (2 class sessions) |
| <u>Lesson 15</u>: Presenting the Historical Narratives and Debriefing the Experience (2 class sessions) |

Part II is especially challenging to students and teachers, since students are expected to analyze and interpret a range of Web resources to conduct their research. They are expected to identify and evaluate claims and evidence of Web sites that are often difficult for middle school students to read and understand. Their investigative work also requires the use of the Source Explorer and the Narration Creation Station to support their analytical work and create multimedia historical narratives to convey their findings to an audience of their choice. The technology tools and how they are used in the units is described in the next section.

The Meaningful Learning Classroom Toolbox (MLCT)

All lessons for both Model Units were on-line and accessed using a classroom set of wireless laptops that the project had provided for each teacher's classroom. To access each lesson, students had to get a laptop from the computer cart, open a Web browser (e.g., Internet Explorer, Netscape), type in the URL for the Meaningful Learning Classroom Toolbox (MLCT), and log in using their log-in name and password. Each teacher's classroom was equipped with a computer cart housing the laptops and an airport device for wireless Internet connection, a projection device hooked up to a desktop computer so that teachers could project lessons and student work that was done on-line using the technology tools in the MLCT, and other peripherals, such as a video camera, a digital camera, and a scanner.

Each lesson had a "Launching Page" that provided an agenda for the lesson and links to any Web resources students would be using for the lesson. (See Figure 3: Sample Student Launching Page.) These resources included both Internet resources, such as Web

sites, and resources that were part of the curriculum, such as handouts, reference

materials, and other curriculum materials.

**Figure 3**: Sample Student Launching Page

Inquiry: A Way of Knowing Differently
Lesson 7: Analyzing an Interpretive Account

**Learning Tasks**

**Launch: Understanding different interpretations**

1. View illusion(s)
2. Share what you see
3. Discuss different interpretations of the same data

**L.T. 7.1: Climbing the Ladder of Interpretation**

1. Discuss the Ladder of Interpretation
2. Apply the Ladder of Interpretation

**L.T. 7.2: Analyzing one person's interpretive account**

1. Viewing an interpretive account: Rural to Urban Migration   An Interpretive Account.
2. Analyze the interpretive account: Complete LT 7.2 Data Analysis Chart Organizer

**L.T. 7.3: Comparing our analyses in a community of inquiry**

1. Share analyses of the interpretive account

**Connect: Interpretive accounts, the Inquiry Process, and the Big Idea**

1. Make connections to the Inquiry Process Chart
2. Use Journal to respond to these questions:
   How does an interpretive account demonstrate that knowledge is subject to interpretation?  How does an interpretive account demonstrate that knowledge is subject to change?

Technology tools that students used for lessons in both units were accessed

through the Meaningful Learning Classroom Toolbox (MLCT). These were available

while students worked in the unit and located on a tool bar at the top of their Web page.

(See Figure 4: The Meaningful Learning Classroom Toolbox.)

**Figure 4**: The Meaningful Learning Classroom Toolbox (MLCT)
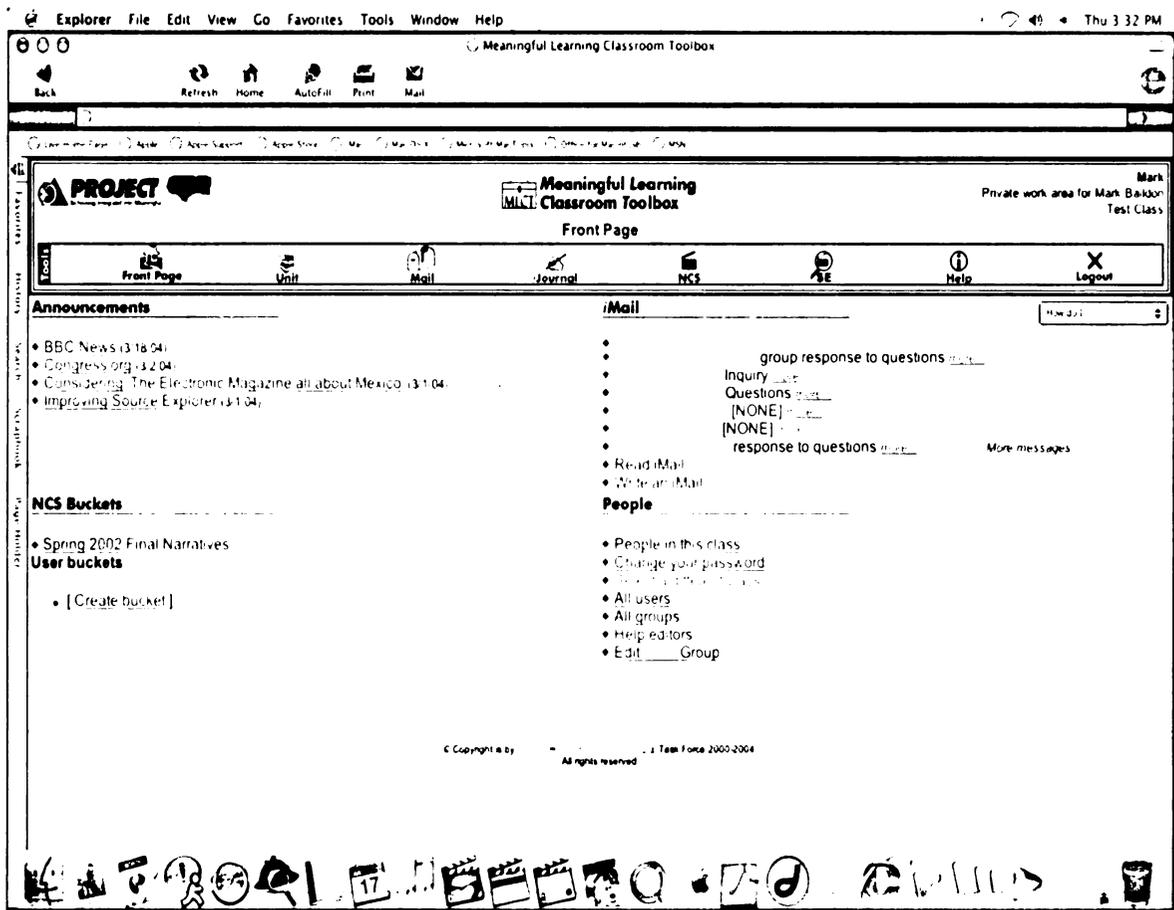


The MLCT includes iMail, iJournal, the Narration Creation Station (NCS), the Source

Explorer (SE), help features (tutorials for using each of the tools), and access to both

units. During each lesson, students had access to these tools, but each lesson specified

which tools would be used in the lesson to support students' investigations.

The MLCT is an integrated Web-based set of tools designed to support effective

classroom interaction that leads to a deep understanding of content. iJournal was

designed to support student journaling and reflection on particular questions about the

content and help students think about connections between their own experience and

subject matter. It provides teachers with a tool to make student thinking and writing

visible and public, since it can be used to exhibit students' ideas about a range of topics

and issues. iMail is an internal email program intended to support efficient collaboration and communication among students and with the teacher. For example, through iMail students shared questions and resources with each other or with the teacher. Source Explorer helps students work with sources of information by framing Web sites students decide to use in their investigations and having them consider issues of relevance and credibility, conduct analysis and interpretation, and decide how they will use the source of information. The Source Explorer frame includes guiding questions that students must respond to as they do this analytical, interpretive, and evaluative work with information. Students' entries to these questions can then be stored in the Narration Creation Station (NCS) for assessment purposes and ongoing inquiries into social studies content. The iConnect tool helps students look across the information they have gathered in NCS to write claims and summaries of evidence to support their claims.

The Narration Creation Station guides students through a four-step process of disciplined inquiry. In response to their own investigative questions, students can individually or in groups (1.) find Internet sources related to their questions; (2.) make text, image, audio and video clips from these Internet sources; (3.) make claims based on the evidence they find; and (4.) assemble their clips into an interpretive account that is essentially a Web page that they use to tell their story or explain their findings. Using the NCS, interpretive accounts can then be easily shared within and across classes. In addition, teachers can customize various features of the MLCT. The MLCT provides the ability to post class announcements, select various features to make available to students, develop iJournal and Source Explorer questions, and provide multimedia resources for students to use in their investigations.

The technology tools offered by the MLCT software support students' sense-making of important social studies content and the units' big ideas, especially as students select and evaluate web-based information. These technology tools help stimulate student questioning, efficiently provide multiple perspectives about content being investigated, and foster students making connections to the world beyond the classroom.

The MLCT also provides many features that support teaching in the model units. Using the MLCT, teachers can use a computer connected to a projection device to model and scaffold the kinds of thinking required in disciplined inquiry. In addition to modeling by making their own thinking public--for example, in evaluating web sources for credibility and relevance--teachers can also easily make student thinking visible by sharing iJournal and iMail responses. By using technology in these ways, teachers support student engagement with subject matter content and engage students in inquiry.

Teachers can also view student journal entries, email messages, storage buckets, and in-process interpretive accounts as data that represents students' thinking and work in progress. This information enables teachers to gather a range of data about student learning and understanding that can be used to inform ongoing decisions about instruction to improve student learning.

Big ideas

Because my data analysis focuses explicitly on the big ideas in the Model Units, I describe them here in some depth. In the overview to Mexico and Migration Unit, the importance of big ideas was explained:

In this unit, students explore their life experiences within the context of big ideas central to the social sciences and relate their own experiences to the unit's subject

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matter content. The intention is that they will begin to develop the big idea lenses of social scientists. Most students are unlikely to have developed such large mental models. To help students organize their knowledge around big ideas, this unit starts by connecting students to their lived experiences--in the classroom and school, as well as personal histories--and by scaffolding the development of these big idea lenses in ways that make sense to them. It then relates these personal contexts to the unit's subject matter content and, finally, to applications in the world beyond. (Unit Overview, 2002)

Three big ideas anchored the subject matter content in the units: *knowledge is subject to change and interpretation*, *space becomes place*, and *culture as human creation*.

The big idea, *knowledge is subject to change and interpretation* helps students see that knowledge is tentative. Students are encouraged to consider why there are different accounts of events and to think about what these multiple perspectives afford them as readers and citizens. In coming to understand why people have different perspectives about issues and events, students also consider how their own perspectives are shaped by their experiences and backgrounds. (This big idea replaced *history as story* – the idea that history is controversial because differing accounts and interpretations exist about what happened in the past - after the second year of revisions, since the curriculum development team thought it encompassed a broader conceptual perspective.)

Through *space becomes place*, students see how individuals and groups claim spaces and make them their own places governed by their own rules. Students come to understand how individuals and groups define identity, membership, and relationships

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through different uses of space. They are also encouraged to examine how these different spaces are shaped by issues of gender, race, class, nationality, and power.

Through *culture as human creation*, students are introduced to culture as a dynamic and relative framework that changes with time and context. This lens helps students explore questions about how humans create culture, why cultures change, and how individual and cultural identities are intertwined.

Using these three conceptual lenses, the lived experiences of students are used to help them understand subject matter, and subject matter is drawn upon to help students understand their lived experience. These ideas provide focal points for connections that help students make sense of complex content and experience. They encourage students to think about their own knowledge, stories, spaces, and cultures; consider multiple perspectives; and make connections between their experience and the experiences of others, such as Mexican immigrants. Big ideas "help students 'learn their way around'" the discipline, to connect specific content knowledge to a larger network, "to understand an overall picture that will ensure the development of integrated knowledge structures and information about conditions of applicability" (Bransford, Brown, & Cocking, 2000, p. 139). By compelling learners to engage with the content in ways that have meaning for them and to connect the content to big ideas, students come to think broadly about the world and themselves in the world, develop understandings of their own and others' views of the world, and re-see the world in novel ways. As lenses, big ideas can be applied across disciplines and to issues beyond the classroom.

In the next chapter, I provide a narrative account of the teachers' professional learning and their work with these facts of the curriculum.

# CHAPTER FOUR

## WORKING IN THE MEDIUM OF ML/T CURRICULUM:
## A NARRATIVE ACCOUNT

The medium of teachers is the curriculum... It is formed, co-created, enacted, and experienced with students in schools and classrooms...The object(ive) of artistic teaching is to create meaning within this space or medium. (May, 1993, p. 211)

A hallmark of teaching as an art or profession, then, is an acknowledgement that it cannot be "mastered." (Hoban, 2002, p. 174)

### Introduction

The purpose of this chapter is to provide a context that situates the professional learning of the study participants with the project. I tell the story of three phases of the Model Unit Teachers' professional learning:

1. developing shared understandings about important theoretical frameworks or conceptual frames that served as "ends-in-view;"

2. identifying and addressing "critical moments" or challenges in teaching the Model Units; and

3. making sense of classroom practice and student learning through classroom artifacts and videotape of teaching and learning in the curriculum.

In doing so, I describe the epistemological challenges teachers found, particularly while working in the conceptual space between students' lived experience and subject matter, and how these teachers learned to manage these challenges artfully. I describe the content and processes of learning in each of these three phases of professional learning as they pertain to key challenges and how they were managed.

In this chapter, I also hope to provide a sense of the network of influences and interactions that contributed to professional learning over a three-year period. These influences and interactions resulted in a "community of practice" (Lave & Wegner, 1991) in which professional learning had social and situated dimensions. Professional learning was highly collaborative and situated in challenges central to teaching key features of a the ML/T curriculum. I hope to describe and analyze the relationships among the features that contributed to the community of practice and professional learning experiences in which the teachers participated. Each of these played an important role in helping participants develop insight and understanding around key challenges and more artful approaches to teaching, and it is the ways they interacted that created the dynamic for teacher learning in the project.

## Conceptual Frames: Developing shared understandings of "ends-in-view"

In this first section, I examine how teachers developed shared understandings about conceptual frames. The Model Unit Teachers' professional learning experiences in the first year of engagement with the curriculum emphasized developing a set of common understandings about several key features of ML/T and the curriculum under development. Huberman (1995) refers to these common theoretical understandings as conceptual inputs. Conceptual inputs introduce key ideas that help frame curriculum and teachers' practice. Boden (1990) refers to these as "ordered conceptual structures" (p. 23) and "generative systems" (p. 39) that create a conceptual space in which new ideas and creative combinations of elements from different domains of thinking are possible. In this section, I describe these conceptual structures as conceptual frames that provided project curriculum developers and the Model Unit Teachers with a sense of "ends-in-view" and a

vision of teaching and learning that guided their work. These "ends-in-view" helped frame curriculum development, professional learning, and teaching and learning in the curriculum. They provided the theoretical framework that helped those involved in the project organize and reflect on their experiences and learning, and work artfully in the conceptual space between students' experiences and subject matter.

To describe the work teachers did in the curriculum, however, it is important to note some of the professional learning experiences they had prior to their work with the Model Units. These professional learning experiences were carried out in their schools and districts, but were guided by the initial efforts districts were making toward developing understandings of ML/T. These early professional learning experiences helped teachers develop a common language they could use when talking about teaching for ML/T. They provided a conceptual orientation that guided the work teachers were doing around unit development, assessment, and instruction in their own schools and districts, and it is this conceptual orientation that was further developed and deepened in their intensive work with the project.

Teachers participating in the project were expected to show evidence of the use of technology to support meaningful learning experiences and the teaching and learning of complex ideas in subject matter. Teachers would extend and deepen their beginning understandings of ML/T by engaging in professional learning experiences around model curriculum units and designing curriculum that emphasized ML/T. The Year 2 Report indicated the centrality of the model units to professional learning:

> Key to this ML/T PD model are curriculum units that use technology for students achieving enduring understandings about big ideas in the discipline. Model units

are important to demonstrate how difficult and important aspects of subject matter can be taught feasibly and effectively using computers in new ways. For example, the project's model social studies curriculum unit is designed to deeply engage students via technology with multiple perspectives on Mexico and migration, so that they develop enduring understandings about the big ideas of history as story and culture as human creation, and also about how historians think. In addition, at the core of the ML/T PD model is the development by teachers of ML/T curriculum units. Furthermore, we are implementing state-of-the-art wireless computers in classroom instruction. The core innovation, then, lies at the intersection of what students learn (complex ideas, inquiry, and complex problem-solving), what teachers learn (knowledge, beliefs, and skills in teaching for meaningful student learning using technology), how instruction occurs (through curriculum units that connect lesson activities with complex ideas, inquiry, and problem-solving), and how and what technology expands and deepens this kind of teaching and learning. (Year 2 Report, 2002)

The Mexico and migration curriculum unit developed by the university curriculum development team, then, was intended to provide opportunities for instantiating ML/T principles and engaging teachers in ML/T professional development. The curriculum was designed to incorporate the ML/T attributes, the principled use of technology, big ideas, and disciplined inquiry. In terms of curriculum, it provided a model of the ends-in-view. As one of the Model Unit Teachers noted, "Before doing this, I wouldn't know what a good unit looked like.... Just looking at our unit helps you envision units like it in other areas" (Year 4 Evaluation Report, 2004, p. 36). By teaching the curriculum and engaging

in professional learning experiences to develop shared understandings about key conceptual features, the Model Unit Teachers were expected to deepen their understandings about each of these features and how they interacted to support meaningful learning.

It was expected that teaching for ML/T would require a "paradigm shift" in thinking about teaching and learning. As the Year 2 Report suggested,

> The project's goals are very ambitious. They involve no less than changing the way students think. In particular, we seek to instill habits of mind that anticipate and appreciate myriad aspects of complexity in subject matter. Unfortunately, habits of mind are very hard to change, and the established ways of many students' thinking are antithetical to dealing with the complexities of content that is important but difficult to learn. If teachers are to help effect such a change in students, then teachers' habits of mind must also be addressed. When instructional materials and practices tend toward maladaptive oversimplification, it is important that teachers re-examine those, so that they may help their students change. Thus, a crucial component is professional development. (Year 2 Report, 2002)

Professional development, then, would support teachers in making this "paradigm shift" and help them develop the habits of mind necessary to understand and deal with the complexities and challenges posed by teaching for ML/T. Such a shift was epistemological in nature, since it involved the ways teachers thought about knowledge and knowing. It would pose significant epistemological challenges. Initially, teachers would make this shift by developing shared understanding of the principles of meaningful learning using technology, teaching the curriculum unit designed to foster ML/T, and

implementing ML/T in their practice. To understand these complexities, it is important to understand the theoretical underpinnings of the model units that were developed by the curriculum development team.

### The "ends-in-view": Defining the conceptual space of meaningful learning and disciplined inquiry

The conceptual underpinnings of curriculum development included several interrelated features. The first of these was the creation of a working definition of meaningful learning. Based on the work of Jonassen, Peck, & Wilson (1999), Caine & Caine (1994), Stone-Wiske (1998), Tomlinson (1999), and others, this included several important conceptual principles:

- Students learn from thinking and engaging in more disciplined ways of thinking. Teachers must learn to design learning experiences in which students are engaged in thinking, model thinking for students, and scaffold or support student thinking while engaged in authentic intellectual work.

- Learners construct knowledge by creating meaningful patterns of knowledge to help them make sense of their experience and the world. The instructional emphasis shifts from teaching to creating learning experiences that provide opportunities for learners to create knowledge and develop understanding.

- Students learn, think, and create knowledge in many different ways. Curriculum and teachers should provide a variety of opportunities for students to learn and construct meaning.

- Cognition and emotions are intertwined. Learning and creating meaning is prompted by felt need, felt problems, authentic questions, and dissonance, and is motivated by a deep sense of personal need.

- Meaningful learning is active, constructive, intentional, authentic, and cooperative (Jonassen, et.al., 1999). (Content centrality and disciplined inquiry were added to these constructivist principles to make up the Meaningful Learning Attributes.)

- Subject matter should be central to the domain or discipline, accessible and interesting to students, exciting to the teacher's intellectual passions, and integrated or connected to other topics either inside or outside the discipline (Wiske, 1998). Big Ideas should guide curriculum development and teaching and learning.

- Professional learning should be guided by learning about alternative perspectives on practice, opportunities to try new approaches with students, and regular feedback for assessing progress and the effects on students' learning. Professional learning should focus on content-specific issues fundamental to ML/T and include intensive, subject –matter focused institutes, mentoring, coaching and reflection activities.

While subject matter and disciplinary understandings are central to the meaningful learning principles, a parallel conceptual framework for social studies education also was developed. Avner Segall's paper, "Social Studies Education: A Re-conceptualized Framework" (2002), played an important role in the conceptual development of the project's units. Segall outlined 10 inter-related ideas as a framework for the kind of thinking important to teaching and learning in social studies. As Segall noted, "The aim of the model units is to generate a culture of teaching and learning in social education that challenges…existing regularities (social studies education and

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classroom practice); a culture that works against those regularities by moving beyond" (p. 1). The ten conceptual principles outlined to move social studies education beyond existing regularities and to guide curriculum and professional development included:

- Social studies as the study of big ideas. Big ideas are conceptual frameworks that can integrate content, pedagogy, and learning.

- Social studies as an inter-, multi-, and cross-disciplinary project, in which interrelationships between concepts, ideas, and content are explored and connections across subject matters are made.

- The importance of understanding the role of language in shaping conceptual understandings and the construction of meaning. This includes thinking about social studies as a form of literacy in which students learn to analyze and interpret texts and construct their own texts.

- Social studies as a study of complexity. This includes not only simplifying complex understandings about the world, but also complexifying what is often perceived as simple and routine.

- Understanding the relationship between history and the past. The past is what has happened, while history is the stories or interpretive accounts of what happened in the past.

- The pedagogy of the question, rather than the pedagogy of the answer. Greater emphasis should be placed on helping students become questioners, rather than only having them answer others' questions.

- Turning around the negative lessons of social studies. Social studies educators need to create a vision of social studies education as active, dynamic, and meaningful to students' lives.

- Social studies as citizenship education, in which students learn to become active and critical knowers.

- An emphasis on media education. Since media plays an important part in students' lives and experiences and shapes how they understand the world, students need to learn how to critically analyze and interpret media.

- Social studies education as conversations about (and in) the world. Students should be engaged in meaningful conversations about their experiences and real world problems.

Based on research and national standards, the curriculum was designed to engage students deeply with powerful ideas (Prawatt, 2000) and authentic intellectual work (Sheurman & Newman 1998), make connections between students' lives and disciplinary understandings (Stone-Wiske, 1998), address significant disciplinary problems using disciplinary methods of inquiry (Levstik & Barton, 2001; Stone-Wiske, 1998), and use story and narrative to support deep understandings (Bruner, 1986; Levstik & Barton, 2001).

Out of this work, the Meaningful Learning Attributes (See Appendix A) were developed to integrate social studies disciplinary features with principles of meaningful learning. Content centrality and disciplined inquiry became key features of the attributes. A central feature of the project's work included further conceptualizing teaching as an "epistemic activity" requiring substantive disciplinary understandings combined with

sophisticated understandings about student learning (Bain, 2000). In curriculum development and professional learning, the university team explored the alignment of constructivist learning theory with disciplinary modes of reasoning and knowledge construction. For example, the team noted parallels between the study of history focusing on significant themes and questions (Levstik & Barton, 2001) and the importance of students generating their own authentic questions to guide their inquiries. The challenge was helping students raise authentic questions (authenticity) that would sustain their investigations (intentionality) and engage them with questions and problems central to the subject matter in the unit. Developing shared understandings of these conceptual frames, translating them into classroom practice, and managing the many challenges this complex curriculum posed for teachers became the focus of professional learning.

Outlining the two key conceptual frames briefly described above provides a sense of the conceptual space that teachers were expected to understand. As Windschitl (2002) has argued, teachers hoping to teach for understanding and meaningful learning in ways consistent with these principles should not only learn how these fundamentals translate into classroom strategies but also "undergo a major transformation of thinking about teaching and learning" (p. 143). Don conveyed a sense of the shift in his own thinking when he explained,

> This [ML/T] is causing me to rethink the way that I approach everything.... I
> mean [the Tao] talks about the sage throughout – and I don't necessarily consider
> myself a sage – but it does say that the sage learns to unlearn his own learning,
> which to me means that you learn to change...to look at something from a
> different viewpoint or if new knowledge becomes available, then you acquire the

new knowledge and you go about working with it from that point. You don't just

stay in a fixed spot. I think that's good. I like that and that has helped me to

understand how meaningful learning is different than the fact-based types of

things that kids have approached. (Year 4 Evaluation Report, 2004, p. 22)

Initially, at least, the conceptual principles outlined above were intended to help

teachers, curriculum developers, and district leaders develop a mental model of the key

features of ML/T. This beginning orientation to ML/T and a re-conceptualized view of

social studies education gave teachers initial conceptual frames that would help them

think about curriculum, teaching practice, and learning in social studies. They would

deepen their understandings of these principles by teaching the curriculum and engaging

in professional learning that focused on teaching and learning in an ML/T curriculum.

### Preparing to work in the conceptual space

Arthur Koestler (1975) explained creativity as the 'bisociation' of two "conceptual

matrices." Creative work is a process of creative synthesis in which ideas drawn from

different domains are combined or interwoven. Such creative work requires preparation

and apprenticeship in these knowledge domains.

Project leaders planned ongoing professional development activities aligned with

project goals and frameworks. For example, 38 secondary social studies teachers from 14

different schools in the five consortium districts participated in the Social Studies

Innovators' Institute held from June 18 to June 22, 2001. This Institute was designed to

further orient teachers to the theories, concepts, and strategies of ML/T, the technology

tools that were being developed at by the university team, the inquiry process, and the big

ideas central to the Mexico and Migration Unit.

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Emphasis was placed on developing shared meaning and a common language that teachers would be able to refer to in continued work. In response to a survey given at the end of the Institute, several participants believed the Institute articulated and gave them a way to communicate beliefs, values, and hypotheses about how to promote meaningful learning among students. As one respondent stated, "After the Institute, we had a language to begin sharing ideas with one another. Before, I didn't know how to talk about it or if I should talk about my ideas with my colleagues" (Year 4 Report, 2003, p. 5).

At the end of the Institute, the Executive Committee (district-level administrators from each of the Consortium districts) identified teacher candidates they thought would be willing to engage in the significant challenges that professional learning and teaching for ML/T would likely pose. Three interrelated factors contributed to these teachers developing a sense of "ends-in-view" that would provide a vision of ML/T and professional learning that would sustain their learning in the project. These three factors included the creation of a strong conceptual framework, a supportive context for developing shared conceptual understandings, and a systems approach to teaching and learning that viewed interrelationships between curriculum, teaching and learning, and professional development as important to teacher learning.

First of all, a strong conceptual framework had been developed and disseminated through professional development activities in each of the districts. This conceptual framework was "principled knowledge" (Kennedy, 1999) that would help the Model Unit Teachers organize, classify, and make sense of their experiences with curriculum. This framework provided concepts and principles to guide what teachers noticed and paid attention to in classroom experience. It framed how they would create meaning in their

professional experiences in ways that could be shared in a larger community of practice. This "ends-in-view" perspective provided what might be referred to as propositional or "expert" knowledge that could be transformed into experiential knowledge or expertise (Kennedy, 1999). This "ends-in-view" perspective is key to an aesthetic vision of teaching and learning, since it enables teachers to name their experiences, notice and interpret their experience in certain ways, and act flexibly in ways that are consistent with the ends-in view, yet sensitive to their context.

It also provided teachers with knowledge from different domains that could be drawn upon for purposes of creative synthesis. Teachers would be able to combine previously existing elements from the domains of meaningful learning and disciplinary subject matter. As Boden (1990) argues, creativity requires expert knowledge and the ability to do a set of technical practices, but it "also requires the skilled and typically unconscious deployment of a large number of everyday psychological abilities, such as noticing, remembering, recognizing. Each of these abilities involves subtle interpretative processes and complex mental structures" (p. 12). The conceptual frameworks of meaningful learning and disciplined inquiry provided these complex mental structures that influenced teachers' interpretive processes and the elements they would draw upon to work in the conceptual space between students' experiences and subject matter.

The second feature of the "ends-in-view" that supported teacher learning was the establishment of a supportive context for learning about ML/T. Each of the districts had already started to implement key features of ML/T in professional development practice. Shared beliefs and values around ML/T helped develop a culture of professional learning that was guided by a strong vision and sense of purpose. District and school leaders had

been involved in developing and disseminating this vision throughout their districts. The teachers' deep engagement with ML/T was supported and reinforced in their districts in ways that were important to sustain their high level of involvement, risk-taking, and change. District and school leaders were expected to support teachers' efforts in a number of ways: by providing necessary technology support, time and space for ongoing learning, and coordinating efforts as much as possible around a broad vision of ML/T.

Interrelationships between curriculum, teaching and learning, and professional development were also developed in the project at this time. Curriculum was seen as an important way to engage teachers in conversation and work around big ideas, ML/T, disciplined inquiry, and the principled use of technology. Developing shared understanding around the curriculum, considering implications for teaching and learning, and keeping conversation grounded in curriculum, teaching, and learning were key qualities of professional learning. The dynamic relationship between curriculum, teaching, and learning was foregrounded during the summer institute as the institute leaders tried to keep teachers' learning experiences connected to the Mexico and Migration Unit still under development, the use of technology in the unit, and key principles and content in the unit.

## Working in the medium of an ML/T curriculum

Since my study is situated in the work I did with a group of teachers teaching innovative, inquiry-oriented, social studies units, it is important to understand the nature of this curriculum and the challenges it presented. Not only were these challenges related to the several key theoretical facets that guided curriculum development and implementation, but each of these facets were highly interrelated and interacted in a range

of ways when enacted by teachers in different contexts. This curriculum provided the focus for the professional learning experiences during the bi-monthly sessions that I helped design and facilitate. In this section, I describe in some detail several key qualities of the units that guided professional learning and teaching and students' learning in the curriculum.

It is important to note that unit development was ongoing and iterative while professional development plans and activities were being designed and implemented. In other words, key parts of the curriculum were being formulated as professional development activities started with the teachers. At some points, lessons were handed to teachers only a few days before teachers taught them. This created a great deal of anxiety and uncertainty among the teachers. Nevertheless, the fact that the unit was in various stages of development resulted in there being a great deal of collaborative, ongoing sense-making between the development team and the Model Unit Teachers. For the teachers, it meant that they were trying to understand important conceptual principles, figure out how to teach the curriculum, and make sense of student learning in the curriculum. They were trying to translate several conceptual principles into practice, while developing ongoing understanding of these principles.

The Model Units emerged from ongoing conceptual development and curriculum development and revision. Although we started with several key theoretical principles and guidelines, further conceptualization of learning goals, teaching methodologies, and theoretical guidelines emerged as we worked with these theoretical principles and tried to implement them in curriculum development. Also, the more we learned in working with teachers and their efforts to implement the curriculum, the more we were able to refine

and revise our conceptual understandings of key principles and qualities of curriculum and professional development. Being in teachers' classrooms as they taught the curriculum provided opportunities for the university team to learn from the teachers, identify challenges needing to be addressed in curriculum and professional learning, and collaborate with teachers around curriculum development and professional development design and implementation. This process meant that the university curriculum development team and teachers began to see the curriculum development process as ongoing and recursive. The dynamic nature of the curriculum required ongoing sense-making and conversation, and the process of curriculum development became a key focus rather than viewing the curriculum as a product developed by the team and enacted by teachers. The curriculum was viewed as a vehicle for professional learning and conversation around which shared understandings might develop that would enrich curriculum developers, professional development leaders, and teachers through continued learning and sense-making opportunities.

As Arthur Applebee (1996) has noted, "curriculum as conversation" provides a way for teachers to address problems that are central to teaching and curriculum. According to Applebee, knowledge comes from participation, shared experience, and learning to participate in certain discourses; the Model Unit Teachers addressed several of the many challenges and tensions that were central to this complex curriculum. By foregrounding challenges identified in unit development and later in teaching and learning in the curriculum, teachers and the university team were engaged in important conversations about ways to manage these challenges. As one of the Model Unit Teachers indicated,

We talk about many things when we have our meetings. How did this lesson or that lesson go for you – did it take more time or less time? Being able to talk to the people who work on the unit at [the university] – they listen to what we say and they are very willing to make changes in the unit. I think that is great they are adaptable to making changes. We don't often get the opportunity to talk with curriculum development people. That is important to me. Teachers tend to be isolated. It is great when we have opportunities to talk with people from other districts and to talk with curriculum development leaders. (Year 4 Evaluation Report, 2004, p. 32)

The Model Unit Teachers participated in disciplinary discourses around processes of disciplined inquiry, habits of mind necessary for disciplined inquiry, and the big ideas. Teachers also engaged in discourses about curriculum and curriculum development. As Applebee (1996) notes, "Exploring a conversational domain – making sense of the experiences and voices – also involves engaging in particular ways of thinking and doing that are associated with the domain (and with the larger tradition of discourse of which it is a part)" (p. 39). By engaging the Model Unit Teachers in challenges and issues related to curriculum, they were engaging in disciplinary conversations and the conversational domains of learning theory, curriculum development, and curriculum theory. The iterative quality of curriculum development and teachers' professional learning was situated in a larger collaborative inquiry into teaching and learning in which central challenges and issues were treated as problems that could be addressed collectively.

These challenges were viewed as important learning opportunities for both the teachers and the curriculum and professional development leaders:

The paradox of knowledge-in-action is that in order to learn something new, one

must do what one doesn't yet know how to do. The way out of this paradox is to

realize that learning is a social process: We can learn to do new things by doing

them with others. Lev Vygotsky captured this insight when he argued (1962) that

learning progresses from an inter- to an intra- psychological plane. Tomorrow we

do on our own what today we do in the company of others. (Applebee, 1996, p.

108)

Early in the project, district leaders, university team members, and the teachers saw the

need for "learning as we went along." As one teacher remarked, "each time we met, we

had real authentic tasks to work over and in working them over, appreciated...more

deeply why authentic learning is an attribute of ML/T" (Year 4 Evaluation Report, 2004,

p. 32).

The recursive quality of curriculum development and professional learning

resulted in a deepening sense of the complexity of the curriculum, the interrelated quality

of its underlying principles, and the "reciprocal spiral relationship" (Salomon & Perkins,

1998, p. 18) or synergy that developed between curriculum development, teaching and

learning, and professional learning.

### Beginning Model Unit Teacher meetings

The Mexico and Migration Unit became the focal point for understanding

important relationships among the several facets of the curriculum, which is represented

in the following diagram (Figure 5):

**Figure 5**: Key facets of the curriculum

Mexico and migration
content and Big Ideas

Meaningful Learning

Mexico and Migration
Unit/Professional
Learning

Disciplined Inquiry

Principled use of
technology
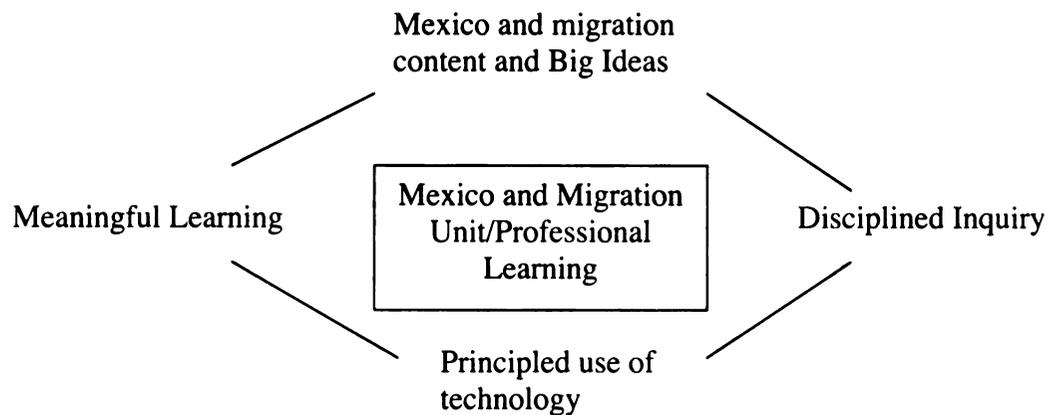
As Windschitl (2002) has noted, making personal sense of these learning

principles and their implications for instruction and classroom culture is a profound

challenge, and "one of the most powerful determinants of whether constructivist

approaches flourish or flounder in classrooms is the *degree to which individual teachers*

*understand the concept of constructivism"(p. 138)*. As Windschitl argued, to be able to

put the principles of teaching for meaningful learning using technology and disciplined

inquiry into practice requires teachers to undergo an epistemological shift "akin to

conversions or gestalt shifts" (p. 143). Such a shift requires deep and sustained

engagement with principles and practices that can give rise to different ways of thinking

and knowing. In the fall 2001, the Model Unit Teachers began the kind of deep and

sustained engagement with principles and practices central to ML/T and disciplined

inquiry necessary to develop deep understandings that can change classroom practice.

After the summer institute, five teachers (one from each district) were invited to

teach the model Mexico and Migration Unit and begin professional development

activities with the university team. (Two of the four study participants, Don and Lynn,

were Model Unit Teachers in the first year of curriculum implementation.) These

activities oriented teachers to the curriculum, the technology, and the meaningful learning attributes. Starting in mid-August, 2001, these five teachers met every other week with the university team leaders and the Project Director.

There were also several logistical issues that needed to be addressed during these first meetings and throughout the piloting. Many of these concerned the use of technology and developing a schedule and plan for teaching the unit. These, too, were considered practical issues for collaborative investigation and problem solving.

The first meeting on August 15, 2001 was intended to be brief and informal, and included:

- answering any questions about the unit, piloting, etc.

- setting a schedule for piloting the unit

- arranging times to collaborate on lesson planning, technology issues, etc.

- sharing ideas, strategies, tools and resources, etc. in the unit

- continuing the conversation around meaningful learning that began at the institute (8/15/01 agenda – personal notes)

This agenda was typical of agendas for subsequent meetings, since it reflected the purposes of providing opportunities for ongoing conversation and inquiry, for teachers to raise questions they had, for sharing ideas and strategies, and for dealing with logistical issues related to the unit.

Norms for collaborative work were established at these first meetings. Since the curriculum and technology were still under development, it was stressed that these meetings were intended to support collaborative efforts to understand theoretical principles embedded in the unit and their practical implications for teaching and learning.

The meetings also focused on details of lessons, as a way to highlight key theoretical principles while also talking about possible implications for classroom practice.

Several powerful norms guided these first professional learning sessions. First of all, there was an assumption that teaching this complex curriculum would be challenging and present problems and issues that would need to be addressed and managed collaboratively. The teachers and professional development leaders would identify challenges and work together to problem-solve and, if necessary, determine ways to modify curriculum, technology, instruction, and professional learning to address these challenges.

Secondly, the practical concerns of the teachers were balanced with efforts to develop shared understanding around key conceptual principles. Talking about conceptual principles and their implications for practice and looking at lessons as instantiations of these principles helped merge theory and practice as part of the effort to understand the unit. Although this balance was hard to maintain, teachers felt they could raise questions, seek advice and practical solutions to problems of practice, or critique the curriculum when it didn't support fundamental learning principles.

A third norm established at these early meetings was that it was okay to acknowledge uncertainty. Oftentimes the curriculum developers were uncertain about curriculum design and how lessons might be implemented in practice. Teachers expressed uncertainty about their own conceptual understandings and their ability to translate theory into practice. As Shulman (1999) has argued, at the core of any profession is an inherent and inescapable uncertainty. By making uncertainties and

challenges explicit and objects of collective investigation, the teachers were establishing an important norm for professional learning.

### Professional learning as collaborative conversation about curriculum

Professional development leaders tried to weave together theoretical understanding of key principles guiding curriculum and the practical concerns of the teachers around the use of narrative, big ideas, inquiry, and technology. For example, a key feature of the unit was the use of narrative and personal stories about migration. Not only were students expected to develop their own family migration stories, they also heard personal stories of Mexican immigrants to the United States. These stories were video clips that students could access through the Narration Creation Station and were developed from interviews done with local Mexican immigrants.

Jonassen, Peck, and Wilson's (1999) *Learning with Technology: A Constructivist Approach* and Levstik and Barton's (2001) *Doing History: Investigating with Children in Elementary and Middle Schools* were key texts used in professional learning. The work of Jonassen, Peck, and Wilson served as a conceptual foundation for ML/T and the meaningful learning attributes. *Doing History* provided the conceptual framework for disciplined inquiry in the unit.

During each of the professional development meetings, time was allotted for taking stock or reflecting on where people were in their learning, what they were wondering about, questions or challenges they had, and what they were excited about. This was an opportunity to share frustrations and how participants were making sense of the many facets of curriculum, pedagogy, and learning that were being addressed. Many times these conversations revealed epistemological issues.

For example, one teacher noted that while he had some in-services on constructivism and inquiry, he was still nervous about teaching in ways that were consistent with these approaches. He noted, "Meaningful learning approaches are still fairly new to me, and I'm still trying to figure out how to implement these principles in my teaching and unit planning" (12/12/02 Model Unit Teacher meeting). Other teachers mentioned that they were still unsure of the big ideas and how students would use and develop understandings of the big ideas in the unit. For example, one teacher believed students were able to understand big ideas, but she needed better assessments that could provide more information about student understanding.

Teachers also addressed the shift from "pedagogy of the answer to pedagogy of the question." This shift required a move from "teacher as fountain of knowledge" to one in which teachers needed to structure appropriate learning experiences and connect students with resources to engage them in meaningful content. One teacher mentioned, "My students are asking more questions, many of them 'what if' questions" (12/12/02), and she was spending more time helping students learn how to ask thoughtful questions. She noted the need to scaffold students in asking good investigative questions and talked about guiding and coaching students to consider criteria for good questions so they could reach consensus on good questions for small group investigations. Students' questions became a focal point for instruction. For example, one teacher stressed to his students,

> You are researching the questions you formed. You are analyzing information to
> see if it relates to your questions. How does what you are finding relate back to
> your question? What does the information tell you about your question? What else

do you need to know to answer your questions? (Year 4 Evaluation Report, 2004, p. 27)

The teachers often talked about the importance of students' encountering multiple perspectives since the Web made multiple perspectives on issues more accessible for students. They thought this supported student learning because students had to consider different perspectives and hold different points of view in mind when doing their research. The Project Director suggested that this approach also "introduces uncertainty about which accounts are credible and this can cause anxiety for students and teachers" (12/12/02). The pilot teachers talked about this type of learning taking more time than conventional methods of learning, since students were expected to go deeper into subject matter and consider different perspectives about issues rather than superficially cover content.

During the bi-monthly sessions, teachers also were able to raise questions that they wanted to investigate further. Many of these represented key epistemological challenges. For example, at one meeting Don noted that he wanted to think more about the relationships between literacy learning and inquiry. He thought the project's curriculum moved the emphasis from "learning to read" to "reading to learn" (4/24/02 personal notes) and he wondered how this supported students' literacies. He noted that his students still needed to develop strategies to read informational text, and wanted to see how the inquiry approach might affect students' abilities to read informational text. Since students read multiple texts (photos, film, music, etc.) and analyzed and interpreted these texts, he wondered how students used literacy strategies to develop subject matter understanding. According to Don, this signaled "a shift, since many students were used to

reading for facts and to fill in worksheets" (4/24/02 personal notes). During this conversation, another teacher noted that she believed students developed reading strategies and subject matter understanding when working collaboratively, due to their dialogue and conversation. She talked about the need to provide opportunities for dialogue, by arguing that "when kids talk there's more depth to their thinking and learning" (4/24/02 personal notes).

Another question that teachers often raised in these meetings was related to assessment. The teachers wondered how best to assess students' thinking and conversation, and talked about the challenges of doing on-going assessment. They noted that assessing understanding of the big ideas and how to analyze and interpret information was especially difficult, since these understandings and strategies developed over time.

Many of these questions became questions that were central to project work for the entirety of the project. The idea that the Model Unit Teachers would be making their practice public while teaching a complex curriculum was also an important issue in these early meetings. A main challenge for the teachers was trying something new and unknown in front of colleagues, administrators, and the university team. For example, the Project Director noted that it was important for teachers to understand that these issues and challenges could provide important learning opportunities:

> This kind of communication will help the larger project team understand more about what it takes to do a pilot like this, and what we are learning about is both the content and technology. A message that is worth repeating regularly to ourselves is that THIS IS A PILOT. We expect things to be frustrating and

imperfect. That is the point of a pilot! It's important to keep in mind that we are still developing this unit, and the pilot provides us with significant information to make the unit feasible in the classroom. I want to acknowledge the courage and hard work from the five of you who are taking the risk to try this out with your students, and the incredible push by all the schools and districts to make this happen. It is a stretch for everyone. So I encourage deep breathing to help us enjoy this stretch - it really is amazing what is happening. (E-mail to teachers, 2/20/02)

The pedagogical challenges of using technology were a major concern for teachers. As one noted, "Managing a room full of kids is one thing. Managing a room full of kids with computers is another thing all together" (1/29/02). The teachers were expected to have a classroom of students use wireless laptop computers, access the on-line unit and Web resources required for lessons, and use new technology tools that had been developed by the university team. This intensive use of technology may have served as a catalyst that required teachers to reconsider their practice. As Windschitl (2002) and Windschitl and Sahl (2002) have argued, the intensive use of technology in classrooms often acts as a catalyst for reconsidering classroom practice and may help teachers become more aware of and willing to address problems of practice. Since technology was a major concern for these teachers, along with a complex curriculum, they may have been more willing to re-conceptualize their practice, acknowledge problems, and make their classroom and teaching a site for collaborative inquiry.

Teaching thinking processes embedded in the unit also posed problems. It included what Scheurman and Newmann (1998) have called "authentic intellectual

work," requiring students to evaluate, interpret, and synthesize complex information, demonstrate methods and procedures used by disciplinary experts, and present findings and claims supported by credible evidence through extended forms of language. Teachers were also expected to develop understandings of the unit's three big ideas.

I think the fact that these teachers were exploring uncharted territories made them more willing to acknowledge and confront the uncertainties inherent in such work. It made their own epistemological orientations a focus of ongoing inquiry and reflection, since so much of their work involved considerations of knowledge and knowing. It required them to think more explicitly about the ways knowledge is constructed, how understandings develop, and the relationships between meaningful learning and disciplined inquiry. They also had to think about themselves as knowers and how they learn to manage uncertainty and key challenges in a complex curriculum.

### 1ˢᵗ Year piloting: Identifying challenges and insights from classroom experience

During the piloting of the unit in the spring semester 2002, the project's two professional development leaders tried to be present on an almost daily basis in the five pilot teacher classrooms. Based on observations and work with teachers around the unit in their classrooms, the bi-monthly professional development meetings directly focused on implementing the curriculum. During this time, several insights, questions and challenges were identified and addressed in the meetings.

For example, the teachers believed that having more diverse resources on the Internet, such as photos and videos, to support inquiry provided more opportunities for students to explore content. However, many teachers weren't sure if students were able to do the analytical work necessary to more critically make sense of information. They

noted the challenge of supporting students in analyzing and interpreting various sources of information they encountered on the Web.

Don believed the inquiry approach was a bonus for students with different learning styles. For example, he believed that students with a "more artistic bent" were able to explore their artistic interests and express more creative ways of thinking (4/22/02 field notes). Don saw inquiry as a process of using different strategies and approaches that were more aligned with students' learning styles, and noted that there was a creative element to creating meaning through inquiry. Don believed inquiry allowed for "multiple ways to develop and share understanding" and that multiple representations of content were important to help students develop subject matter understanding. However, he expressed concern about being able to discern the level of student understanding from these multiple representations of student learning.

Another teacher shared that her students seemed to have greater confidence in their "knowledge base" since they were more actively constructing understanding through inquiry. She believed that students struggled with "having access to so much information that it was difficult for them to organize it and see how things fit together" (4/19/02 field notes). She mentioned that through class discussion, students were able to use the big ideas to help them organize the content they were studying. For example, they came up with possible inquiry questions related to the unit's big ideas and these seemed to help students organize their questions and the information they gathered for their investigations.

Don believed his students were asking higher-level questions, such as "Why are U.S. corporations paying lower wages to Mexicans?" and "Did the U.S. steal the

Southwest from Mexico?" (5/14/02 field notes) He said that he was "not used to hearing those kinds of questions when using a textbook" (5/14/02 field notes). He attributed this to their using the inquiry process, and a variety of sources and different ways to investigate their questions. Helping students ask meaningful questions was a key challenge in making sure inquiry engaged students with important content. Don reported that he was discovering that 6th-grade students were capable of asking sophisticated questions and using a variety of resources to engage in inquiry. However, all of the teachers noted that students had difficulty organizing information and doing the analytical and interpretive work necessary to make sense of different kinds of information.

Time issues also were raised, because inquiry took much longer than more traditional kinds of learning. Students needed time to work with their questions, explore and gather resources, and make sense of information. Teachers noted that this work required a more active role for the teacher in the classroom, since the teacher had to model this work, coach students, and continually move among students and groups to support their learning. For example, Don coached a group of five students in their thinking about whether or not certain information they had gathered could be used to support claims the group wanted to make about maquiladoras (factories) along the U.S.-Mexico border causing environmental problems. The group examined photos that they believed supported their claim, and Don wanted them to explain their thinking and provide details about the photos that gave evidence of these factories causing pollution (5/17/02 field notes).

Inquiry also required substantive conversation and dialogue, and this was stimulated and engendered by issues that engaged students emotionally. For example, one teacher reported students wanted to investigate levels of poverty in Mexico after they saw photos of border poverty on Web sties and viewed a video in one of the lessons that showed contrasting uses and availability of water on both sides of the Mexico and U.S. border. After watching the video, she facilitated a discussion in response to the following questions: "What does the quote from the video mean – 'Water goes downstream because of gravity and then goes upstream because of money?' What was the central point of the story? Is the story in the video told from a Mexican perspective, American perspective, or another perspective?" (Year 4 Evaluation Report, 2004, p. 50) She noted that her students were upset about the unequal distribution of water and that this led to powerful discussions. She believed students were more emotionally engaged with visual data and issues that raised questions about social justice and different perspectives. According to the Year 4 Evaluation Report (2004), "the students engaged in a very good discussion of perspective and point-of-view at this point. They appeared to understand how interests were represented in the video and that the narrative was a construction, however truthful, rather than a recitation of objective facts" (p. 50).

## Epistemological challenges central to meaningful learning and disciplined inquiry

A central theme that emerged from these professional learning conversations was related to inquiry and what it means to "do inquiry" in a 6th-grade classroom. During the professional learning meetings, teachers described and began to explore some of the tensions, dilemmas, and challenges related to using inquiry to engage students in meaningful learning that emerged from the piloting experience.

One question was related to what skills, habits of mind, understandings, and knowledge were necessary prerequisites for inquiry and whether these could be developed through the inquiry process itself. For example, prior to teaching the Mexico and Migration unit, one teacher provided an overview of what she considered key Mexico and migration content so students would have knowledge and understandings necessary to begin the unit. She believed that in order for students to engage in inquiry, they needed some fundamental prerequisite knowledge and understandings to provide a foundation for meaningful learning in the unit. She believed that students needed a content knowledge base to be able to ask good investigative questions and make sense of available resources.

This teacher believed that in order for students to learn social studies subject matter, they must already have some understanding of that subject matter to build upon. This learning paradox is supported in the literature: "The more historical knowledge we have, the more we can learn from any given piece of evidence; if we had none, we could learn nothing… It follows that historical knowledge can only grow out of historical knowledge" (Collingwood, 1946, p. 247). Thus, the more students know about a particular topic, the more likely they can ask meaningful questions, think more critically about information they encounter, and utilize their pre-existing knowledge in ways that can guide their inquiries.

Another key question was related to how a culture of inquiry could be created in different contexts. One of the initial pilot teachers taught in an urban setting. His classroom was more diverse racially and socio-economically than other teachers' classrooms. In his classroom, many students were described as having learning

difficulties, and this teacher believed they lacked certain skills and habits of mind

necessary for inquiry. Such assumptions implied that certain cultural capital and

competencies were necessary for inquiry.

Teachers struggled with ways to ground meaningful learning and inquiry in

students' experiences and contexts so that students could build upon their prior

knowledge(s) and lived experiences to develop subject matter understanding. Also,

important and relevant subject matter understanding might also vary according to

students' histories, interests, and contexts, making it difficult to know how to make

appropriate connections between students and subject matter to support meaningful

learning and subject matter understanding.

Another question that emerged in teachers' work was, "What are the relationships

between inquiry, narrative, and historical thinking?" In Don's classroom, students spent a

lot of time talking about their thinking in preparing their narratives. Students were

expected to learn to support their claims with evidence. They were encouraged to analyze

and interpret data and think critically about sources of information and claims in order to

create a narrative of their learning and understanding. Don modeled classroom

thoughtfulness and encouraged students to share their thinking and reflect upon it. The

following vignette demonstrates Don's work with his students:

> As students shared the information they had in their Narration Creation Station
>
> (NCS) buckets, Don encouraged students to be aware of circular reasoning
>
> ("saying it fits because it fits"), to provide supporting evidence and details for any
>
> claims they were making, and to explain their reasoning for how individual NCS
>
> clips helped answer their question. Don had students report what they had written

for the "how it fits" section for clips they had placed in their NCS buckets. For example, one group explained their reasons for loading image clips on environmental problems associated with maquiladoras by noting that they were powerful photos that showed the environmental harm in Mexico caused by these factories. Another group explained that a text clip told about what goes on in maquiladoras and what working conditions are like. As students explained their reasoning, Don encouraged them to be more specific about how the clip fit, to provide more details or explanation, and to think about their own thinking. He referred them back to their group sub-questions and asked how particular clips helped them answer their question. During the discussion, students commented at times on their own circular reasoning, their lack of specific supporting details or examples, and the disconnect between a particular clip and their question.

(10/1/02 briefing paper based on classroom observations)

Don wanted to move students more deeply into the inquiry process and help them make connections between their own ways of knowing and established disciplinary procedures for creating knowledge. He continually reinforced the importance of students thinking about their own thinking and reasoning, and modeled key steps in the inquiry process. By providing students with an explicit map of this disciplinary landscape, Don encouraged students to practice the thinking skills necessary to the inquiry process.

At the same time, however, Don also wanted to explore more creative aspects of narrative and inquiry. Like Clandinin and Connelly (2000), he seemed to be asking if inquiry and narrative could be more fluid and creative, "a way of thinking in which an inquiry is not clearly governed by theories, methodological tactics, and strategies"(p.

121). One of Don's questions was about how students might experiment with narrative form and engage in literary, visual, poetic, dramatic, and aesthetic expressions. Two questions teachers wrestled with was to what extent does narrative lend itself to experimentation in ways of knowing and expression, and how might ways of exploring new forms of representation and arts-based forms of inquiry be accommodated in the inquiry process and creation of historical narratives.

One teacher experimented with narrative by having her students create a fictional narrative of a Mexican family migrating from rural Mexico to the town in which her students lived. She believed the fictional account required students to provide many rich details that helped them personalize important content in the unit and the big ideas. For example, she noted that it helped students think about how and why moving into new spaces and cultures are challenging human experiences. Lynn also noted the importance of narrative and the big ideas to help students answer several questions she often raised in her classroom to have students think about connections between their own experiences and the experiences of others: "How does this fit in with your experience? How was this like what you have felt in the past when you entered a new situation?" (Year 4 Evaluation Report, 2004, p. 46)

Another central question that emerged during the first year of piloting the curriculum centered on the commitments necessary to teach in inquiry-oriented ways. During our meetings, one teacher noted that other teachers in his district were reluctant to teach the ML/T unit due to the time and effort required to teach such a complex and challenging inquiry-oriented curriculum and change one's teaching practice in ways that supported ML/T and inquiry. Inquiry-oriented teaching is messy, fraught with

uncertainty, poses significant epistemological challenges, and requires a different role for teachers. These shifts include the teacher often moving into the background but still maintaining the timing, structure, and sequencing of activities; providing support and scaffolding for inquiry skills and processes; helping students locate resources; and structuring ongoing assessment. A major commitment was involved in creating and maintaining a classroom culture of inquiry.

As stated earlier, inquiry-based curricula require teachers to have "sufficient mastery of the concepts and structures of a discipline to bridge the gap between students and an age-appropriate version of the scholarly discipline" (Scheurman, 2000, p. 10). Using disciplined inquiry for ML/T required deep teacher understanding of disciplinary structures of inquiry and subject matter knowledge. But it also required deep understanding of the ways their students develop understanding and construct meaning. The teacher's knowledge of subject matter and their students is likely to influence how they modify the materials used and the representations they draw upon, such as metaphors, analogies, and examples, to teach subject matter in meaningful ways. Some researchers (e.g., Stanley, 1991; Wilson, 2001; Wilson & Wineburg, 1988) argue that how teachers view meaningful learning may be a function of their subject matter knowledge and experience with disciplinary forms of inquiry. However, can disciplinary understandings of inquiry be developed through teaching an inquiry-based curriculum? This was a key question during the first year of professional development.

## "Gradual approximations" of disciplined inquiry

Engaging students in ML/T means engaging students in processes of disciplined inquiry to identify authentic and meaningful questions; gather data from personal

experience and Web resources that can help them answer their questions; analyze, interpret, and evaluate that data in light of disciplined standards for claims and evidence; and develop new understandings through collaboration and the construction of narrative. Don and other teachers in the project were engaging students in "gradual approximations" of disciplined inquiry,

> in which the most difficult components of complex tasks are strategically facilitated by the teacher; modeling, in which the teacher either thinks aloud or acts out how she would approach a problem; coaching, guiding, or advising, which are loosely defined as providing prompts, probes, or suggestions to learners at varying degrees of explicitness; providing heuristics or conceptual structures for learners to use in approaching problems; and using various technologies that help learners select, organize, and represent information and ideas. (Windschitl, 2002, pp. 144-145)

Don used these facilitative strategies to manage the complexities of meaningful learning and disciplined inquiry in ways that suggested an epistemological orientation that allowed him to integrate the principles of ML/T and disciplined inquiry, and put them into practice to make connections between student's experiences and subject matter.

How teachers manage the complexities of teaching will depend on their orientation to subject matter knowledge and knowing and students' ideas and ways of knowing, as well as their view of the relationships between the two. In Lynn's case, she was willing to let students explore the vast terrain between personal experience and subject matter, believing that students' explorations would uncover rich representations of key ideas about space and place.

For example, in the Mexico and Migration unit, Lynn and her 6th graders

discussed the big idea *space becomes place*. After juxtaposing family migration stories

and the stories of Mexican immigrants to the United States, students were asked to

consider some of the special experiences and problems of newcomers as they entered

new cultural spaces. As part of the handout for this lesson, students were asked the

following questions related to space and place: "What spaces are available to

newcomers? What do they have to do to find and claim them? What do newcomers do

to make their new spaces feel like special places?" After some discussion of the

experiences of the Aldaba family, a Mexican family that is depicted in a video, students

began to talk about their own experiences as newcomers to certain spaces. As students

started to discuss their experiences, Lynn wanted students to consider the following Big

Idea Questions outlined in the unit:

- How do people claim a space and make it their place governed by their rules?

- How do groups share a space?

- How do people define their identity through their uses of space?

- How do gender, race, social class, and nationality become involved in the way groups

  claim places?

During the discussion, students moved back and forth between stories about their

own personal experience with various spaces and stories of Mexicans and immigrants

entering new spaces. For example, when asked by Lynn, "What do you have to do to

make spaces your places?" students talked about their recent camp experiences and how

individuals and groups were expected to share space. Students talked about cabins at

camp and how spaces were defined, the school lunch line, and the basketball court as

spaces where people negotiate and define certain uses of space. When asked how people define their identity through uses of space/place, students talked about what they brought to camp, about their rooms at home, and their lockers at school and how these related to their sense of identity. Students interspersed some of their discussion about personal experience with references to Mexican immigrants and their experiences in new spaces, both within Mexico and in the United States after they had migrated.

However, it was when Lynn asked, "How do gender, race, social class, and nationality become involved in the ways people claim spaces/place?", that students started to not only draw upon their own experiences but moved to making connections across a conceptual landscape that included references to popular film, historical events such as slavery and the California gold rush, spaces such as Chinatown, along with the Mexico and migration unit content. For example, when the class was unsure about a definition of social class, one of the students in the class referred to the movie, *Titanic*, to illustrate the concept of social class and how it defined the use of space on the ship. This occurred during a class discussion about the Mazahua, an indigenous people who had made a rural to urban migration in Mexico:

**Lynn**: The Mazahuans: were they rich or poor?

**Several students**: Poor.

**Lynn**: Poor...lower class. Lower class are the... poorer people.

**Jeff**: Kind of like on the Titanic. They had the first class, which was like the rich people, second class was the people who (inaudible)... Third class was like the poor.

**Lynn**: Excellent, excellent, yes… did everybody hear that over here? What was he talking about though?

**Students**: The rich, the poor.

**Lynn**: What movie?

**Students**: Titanic.

**Lynn**: The Titantic… Okay… So they're also put into different areas on the ship, weren't they Jeff…because of their social class?

**Jeff**: Yeah… The third class was like in the…like in the boiler room.

**Lynn**: The third class? Which would be equivalent to what?

**Jeff**: Um, the Mazahuans.

**Lynn**: Very good. The poorer people were down in the hull of the boat near the boiler room. Probably the worst rooms you can get. The middle class…could be… could be in between rich…they're not rich or poor. And, where were their rooms?

**Jeff**: They were like…they're in the middle like where the dining hall was and the music rooms and stuff like that.

**Lynn**: Very good. And then your…um… What's the other class called?

**Jeff**: First class…the rich people, like Bill Gates.

**Kristen**: No, Bill Gates would be on the very top, like the top of the ship.

In this classroom example, the teacher and her students are creating new maps of the subject matter terrain and considering the complexities that are inherent in thinking about spaces. In addition to the Titanic example, students explored these complexities by talking about several historical and geographic examples (slavery, the gold rush,

Chinatown), Mexico and migration curricular content (the Mazahua and Mexican immigrant experiences), and their own personal experiences (camp, school and home spaces, popular culture).

Teachers face a myriad of pedagogical decisions, and in this example Lynn decided to let her students explore this terrain, possibly with little inkling of where this exploration might lead. She faced infinite complexity in terms of social studies subject matter, students' ideas and thinking, and ways connections might be made between subject matter content and students' ideas. In this example, Lynn was willing to allow students opportunities to explore the terrain offered by the big idea of *space becomes place* before helping students make connections, discern patterns, and create meanings that might help them make sense of this complexity.

She hoped to draw on the representations offered by students to help them learn the differences between spaces (areas that have no intrinsic meaning) and places (areas that someone has staked out and claimed), that relations of power, race, gender, and class define how spaces are used and interpreted, and that identities are constructed through the uses and demarcations of certain spaces. However, she was willing to allow students the opportunity to create their own meanings and understandings through these explorations rather than prescribe certain knowledge transmitted through more static and reified representations that she might offer. Integrating meaningful learning attributes, such as those outlined earlier, with student inquiry into space and place, Lynn was willing to explore and map a terrain in which she and her students could construct meaning.

I offer this teaching example not to portray exemplary teaching practice but to highlight the tension between balancing meaningful learning goals with subject matter

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learning outcomes. As Lynn noted, it requires thinking about "How far do you go with letting students do what they want?" and the content you want students to learn. She said she wanted to see students "excited, engaged in what they are doing. On the other hand, you have certain things you want them to learn. Weighing one against the other can be tricky" (Year 4 Evaluation Report, 2004, pp. 36-37). The creative process of moving back and forth between personal, social, and historical understandings depends not only on what teachers know about subject matter. It also depends on how teachers think about students' ideas and how they are able to make connections between students' ideas and subject matter. Teachers undoubtedly play an important role in helping students develop "more sophisticated modes of thinking" *with* the beliefs, understandings and intellectual tools they already possess so that they can further develop the intellectual tools needed to acquire "new levels of thought." The tension between disciplinary knowing with students' ways of knowing seemed to be addressed by Don and Lynn's efforts to see knowing more holistically, by seeing the relationships and affinities that exist between what students know and subject matter.

Navigating and facilitating such a process seemed to require the sort of epistemological and aesthetic perspectives outlined in Chapter 2. It required a stance that views knowledge and knowing as perspectival and interconnected. Gaddis (2002) described this way of thinking as being intellectually facile and able to move back and forth between deductive and inductive thinking, seeking a good "fit" across various levels of activity. In the classroom, this "fitting things together" involves beginning with what's there (data), such as students' ideas, to develop theories (an inductive process) about social experience. It also includes interpreting what's there through our own distinctive

viewpoints or through important conceptual lenses, such as those provided by the big ideas (a deductive process), and then testing and revising our ideas when we share them with others. By allowing students opportunities to move across various levels of activity, such as between personal, social, and historical understandings, teachers can help students make connections that support deeper understanding of their own experiences and subject matter.

## Learning in and from practice

In order to prepare people who were truly able to use knowledge to learn in and from practice, professional education would emphasize questions, investigations, analysis, and criticism.... Thus, the pedagogy of professional education would in considerable part be a "pedagogy of investigation." (Ball & Cohen, 1999, p. 13)

At the end of the first-year piloting, we held two debriefing sessions with the teachers to get feedback on curriculum, assessment, technology, and professional development. These two-day sessions provided opportunities for the teachers to share their experiences teaching the unit and in their professional learning, and provided valuable input that was used to revise and further develop the unit, technology, assessment, and the professional learning plan.

The teachers discussed ways to make the big ideas more explicit and visible in the curriculum, and used the metaphors of "spiraling" and "criss-crossing the landscape" to consider how deeper content understanding developed. The group noted that they had some difficulty keeping the many facets of curriculum and learner outcomes in mind as they were teaching the lessons. They needed a better sense of how each of the parts of the unit fit together and contributed to the inquiry process and narrative construction. The

teachers thought creating a visual schematic, such as a map, diagram, or wall poster that presented how different lessons supported student understanding of the big ideas, would give students and teachers a better sense of how they might be applied. They thought this would help show connections between the various parts of the unit (and the inquiry process) and unit goals (narrative construction) in relationship to the big ideas. The group also wanted to develop their own shared understanding of the big ideas and how they might be used more effectively during professional development meetings.

The teachers reported that they valued the bi-weekly professional learning meetings and saw these as an opportunity to share challenges they were facing, raise questions they had about teaching the unit, and work collaboratively to address challenges and questions. At the end of the first year of piloting, several challenges had been identified, a dynamic model of iterative and ongoing curriculum development and revision connected to professional learning had been established, and the teachers believed they had deeper understandings of ML/T and inquiry-based classroom practice. The teachers said they saw themselves as learners and were continuing to develop their understandings about key elements of the curriculum.

Several key challenges had been identified and addressed in professional learning activities. These included: the need for ongoing sense-making of the complexity of the unit; the intensive use of technology in classrooms (which disrupted normal procedures and required re-thinking classroom practice); thinking about curriculum as a "living, breathing document," since they were encouraged to enact it in ways that fit their contexts, and it was literally being developed as they were teaching it; using inquiry and

the big ideas to move back and forth between lived experience and subject matter; and

reconsidering the roles of the teacher and learner in an ML/T classroom.

**Year 2 of curriculum implementation: A new professional learning plan**

At the first Model Unit Teachers meeting of the second year of implementing the

unit, we went over revisions to the unit and technology, established inquiry partners, and

talked about "critical moments" in the unit. A new professional learning plan included

three key components to guide teachers' professional learning. The first was setting up

inquiry partners to support each other in teaching the unit and professional learning

during the second year of teaching the curriculum. Having these unit partners was also an

attempt to match up a first-year Model Unit Teacher with a second-year veteran to the

unit. The second component, the "critical moments," identified the challenges teachers

had noted in the first year of teaching the unit. These became areas for more systematic

investigations. More emphasis was placed on the teachers conducting their own inquiries

into classroom practice and helping each other do this as inquiry partners.

Loosely based on the Coalition of Essential Schools' "Critical Friends Groups"

(http://www.essentialschools.org/), the main purpose of the inquiry partners was to

develop and foster relationships of collaboration, mutual support, and honest critical

feedback to support professional learning and improve teaching practice and student

learning. Utilizing the project's inquiry model, inquiry partners were expected to pose

their own questions or problems, collect, analyze, and interpret data (classroom artifacts,

student work, etc.), and reach tentative conclusions that might shift their practice or

contribute to their understandings about teaching and learning in meaningful ways. They

were encouraged to support each other and work collaboratively to learn in and from

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practice by considering strategies and artifacts of their teaching practice during the unit. In order to enhance and improve student learning and understanding, professional learning was linked to assessing student learning. Identifying and working toward professional development goals was expected not only to improve teaching practice but also improve student learning in the unit in ways that were consistent with the project curriculum and school and district student learning goals.

According to the Year 4 Evaluation Report (2004), the new Model Unit Teachers found these partnerships to be "helpful" to them, and they "had in fact consulted through e-mail, telephone, or at the model unit teacher meetings with their veteran partners about questions related to the unit, to lesson plans and activities, and to challenges in classroom instruction" (p. 30). One new teacher remarked, "I honestly didn't feel like I had a clue about what was going on or what this [ML/T] was going to look like in the classroom. It helped to see [my partner] working with students on the laptops...handling kids' questions and seeing the kids working in teams" (p. 30).

Areas of inquiry were expected to focus professional development on concrete classroom applications of ideas and strategies central to the curriculum. Toward this purpose, the critical moments or challenges in the unit were identified as sites for teacher inquiry and professional learning. Key lessons were identified as valuable times for the unit partners to be in each other's classroom, and were lessons around which artifacts and videotape for professional development activities could be collected. In Table 2, the critical moments are identified in the unit with issues or challenges related to each critical moment, and key lessons when these critical moments were most salient. This chart was shared with the teachers at the beginning of the school year.

Other critical moments and challenges throughout the unit included: engaging students in the inquiry process; developing a classroom culture of inquiry; developing deep understandings of the Mexico and migration content; and developing the skills and habits of mind central to the inquiry process. Partners were encouraged to visit each other's classrooms, collect data, and engage in collaborative sense-making of student learning and classroom practice around these critical moments.

**Table 2**: Model Unit Critical Moments

| CRITICAL MOMENT | ISSUES/CHALLENGES | KEY LESSONS (Lesson #'s) |
|---|---|---|
| Using technology as a tool of inquiry | Orienting students to tech. use; establishing routines and procedures; pedagogy using tech.; | Lessons: 1-2; 22 |
| Formulating inquiry questions | Helping students identify characteristics of thoughtful questions; revising initial questions; developing researchable sub-questions | Lessons: 2; 15; 21 |
| Analysis and evaluation of sources of information | Helping students read for understanding, analyze, interpret, and evaluate sources of information | Lessons: 3-4; 18-20 |
| Developing understandings of the big ideas | Engaging in substantive conversation about the big ideas; assessing students' developing understandings; | Lessons: 8; 12-13 |
| Making connections between prior knowledge/personal experience and social studies content | Using prior knowledge and personal experience to help students understand content and Big Ideas; using content and Big Ideas to help students understand their personal experience; moving back and forth between the two | Lessons: 6-8; 9;10 |
| Understanding narrative and completing a narrative to represent student learning/understanding | Understanding narrative as culmination of inquiry process and authentic intellectual product; creating the narrative; thinking about the story they are telling and how to support claims they are making | Lessons: 5; 14; 23 |

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The new professional learning plan developed over the summer and implemented during the second year emphasized professional learning as a process of inquiry. (See Appendix F: ML/T Professional Development Model.) The several principles outlined were intended to be interrelated and mutually reinforcing to support professional learning and the improvement of student learning that was standards-based and consistent with the ML/T Attributes. This plan included the following "Core Guiding Principles":

- ML/T PD is teacher-directed.

- ML/T PD is inquiry-oriented.

- ML/T PD promotes and supports a culture of inquiry and professional learning.

- ML/T PD is embedded in teaching standards-based curriculum characterized by the ML/T attributes.

- ML/T PD takes into account the contexts of practice.

- ML/T PD develops understanding and skill in the "principled use of technology."

Efforts were made to implement these "Core Guiding Principles" throughout the year by following the key features of implementation outlined.

The bi-weekly Model Unit Teacher meetings at the beginning of the second year focused on the principled use of technology to support inquiry and meaningful learning. Several of these training sessions were designed to orient teachers to the Meaningful Learning Classroom Toolbox (MLCT) and its features. During these sessions, we tried to keep the big ideas foregrounded while using the technology, since teachers said they had weak understandings of the big ideas. For example, at one session we took a photo of the classroom we were using and had the group use the big idea of *space becomes place* as a lens for examining this classroom space. In this way, two of the critical moments were

addressed: the use of technology to support inquiry and developing understandings of the big ideas. While teachers learned to use the technology and explored big ideas through the use of technology, there were explicit attempts made to have teachers reflect on the implications for classroom practice in both of these areas. In this way, we were hoping the teachers were not only developing the technology skills to use the new set of technology tools with their students and shared understandings about the big ideas, but also considering instructional practices that were necessary to implement the tools and have students develop understandings of the big ideas.

In effect, the teachers were learning how to use the technology tools to work in the conceptual space between students' lived experiences and subject matter, and to support meaningful learning and disciplined inquiry. The goal of these technology training sessions for the teachers was to have them use the tools as students would, model instruction using these tools, and then talk about the implications for their use in the classroom. For example, the new iJournal tool in the MLCT was used as a way to collaborate and develop a community of inquiry by having users share questions they had about sources of information. iJournal was used to demonstrate how student thinking could be made visible by projecting students' ideas and having conversation about their ideas and thinking. By focusing on the uses of technology to support inquiry and meaningful learning, the focus was on student learning goals and effective instructional practices, not just learning how to use the tools.

In November 2002, a dialogue session was held around a Narration Creation Station-created multimedia pastiche of *space becomes place*. The Project Director established norms for the dialogue session, and the group discussed this big idea and how

learners develop understandings of big ideas. The multimedia pastiche combined images, video, text, and sound to stimulate teacher thinking and have the teachers consider questions related to *space becomes place*. The teachers were instructed to consider the main question, "What does "*Space becomes Place*" mean to you/us?", to read the assorted NCS clips related to *space becomes place*, and record any insights, puzzlements, wonderings, or new questions they might have. As I noted in my e-mail to the teachers,

> Like the Big Ideas, these text, image, URL, video, and audio clips are intended to generate thinking and conversation that may lead to shared and new understandings. The clips are framed around questions that are raised in various lessons in the unit. Please be prepared to contribute your ideas to a conversation about "Space becomes Place" at our November 6 meeting. (E-mail to teachers, 11/1/02)

During this session, teachers examined both their own understandings of the big idea and the pedagogical implications for teaching big ideas. Dialogue as an instructional strategy was presented and modeled, and the teachers engaged in dialogue following the norms and procedures that were established. During the debriefing, teachers noted conditions that they thought were important for using dialogue with their students. These included the following "intentions" or norms for dialogue:

- Suspend judgment
- Inquire into thinking
- Identify and suspend assumptions
- Seek out differences
- Pause and listen and include others

- Speak when moved to speak (avoid "popcorning")

- Speak to the whole (avoid "pingponging") (11/13/02 Model Unit Teacher meeting notes)

The teachers said they wanted to use these approaches with their students and thought this would help students develop understandings of the big ideas by learning to listen to and respect others' ideas. Although the debriefing focused on the process of dialogue, the conversation during the session centered on the pastiche and the big idea *space becomes place*. During this conversation, the teachers shared their ideas, made connections to their own personal experiences and contemporary issues and events. For example, several teachers talked about the corporate use of spaces for advertising and how different spaces in their hometowns that had deep personal meaning for them when they were growing up had changed completely and no longer had similar meanings for people new to these communities. The teachers noted the value of the big ideas and dialogue for making connections between their own personal experiences and larger social phenomena. They thought that applying the big idea of *space becomes place* to their own experiences helped them think about other spaces and people's experiences in those spaces.

## Meeting a challenge in professional learning: Learning how to examine issues of student learning and assessment

After emphasizing uses of the new technology tools, working to develop understanding of the big ideas, and managing logistical issues for those starting the revised unit in the fall, the focus of the bi-weekly meetings shifted to assessment and how to assess student understanding, since this was identified by the Model Unit Teachers as

an important area for ongoing professional learning. As a follow-up to the conversation about the big idea *space becomes place*, we asked teachers to assess student work related to this big idea. We started by asking the teachers to consider the following questions:

1. Starting with the end/desired results in mind: Thinking about the Big Idea of "*Space becomes Place*," what do you want students to understand, do, etc. with the big idea? What would be your standards for assessing student work? What should students know, understand, be able to do, etc. and how might they demonstrate their understandings? (Refer to Narrative Rubric.) What evidence would suggest that they have or are developing understanding appropriate for 6th graders? What's good enough evidence?

2. Considering evidence of understanding: Looking at student work, what evidence do we have of their understandings of this Big Idea? What does the evidence tell us about their level of understanding?

3. What do we do with our understanding of their understandings? How do we grade it? What feedback would we give? How might we re-teach or build upon their understandings? What do we do with this assessment and how might it guide our teaching? (Personal notes, plan for meeting, 11/20/04)

During these sessions on student learning and assessment, we hoped to develop shared understanding about what student learning and understanding related to the big ideas might look like, what evidence to examine, and how we might use information about student learning to address curriculum, assessment, and instructional issues to better support student learning. To focus conversation, teachers worked with their inquiry partner to examine selected artifacts of student work in their classrooms.

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This was the first time the group analyzed student work during a meeting. Since one of the issues related to the critical moment of developing understandings of the big ideas was assessing students' developing understandings, the teachers brainstormed a list of characteristics that they thought would help them determine if students were "getting" the big idea:

Students who "get it,"

- Make connections to their own lives and similar situations

- Give examples not mentioned in class

- Develop/raise relevant, insightful questions about space becoming place

- List attributes of place, e.g., name it, personal artifacts, rules

- Are able to summarize, distill into own words, and add detail

- Recognize emotional component

- Note there are gains and losses (benefits and costs) (11/20/02 MUT meeting notes)

They also talked about what it might look like if students didn't seem to have an understanding of the big idea. They noted that they would probably "take space literally" and wouldn't be able to put it into words, either written or orally. Still, because the big ideas were so broad and encompassed many possible representations and trajectories of student understanding, it was difficult to negotiate the criteria for assessment. A key question facing inquiry-based learning continues to be: "If the task of the students is to generate their own understandings, what are the limits of the meanings that the students might take?" (Windschitl, 2002, p. 149). The ambiguity and uncertainty of assessing student understanding continued to be challenging for the teachers, and analyzing student

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work collaboratively was still a new process for the group. As Ball and Cohen (1999) have noted, teachers "need to learn how to elicit children's ideas and how to interpret them in the context of classroom work... need to learn how to investigate what students are doing and thinking, and how instruction has been understood... and need to learn to use such knowledge to improve their practice" (p. 11). Such work undoubtedly takes time and practice, but the group was starting to move into this work.

At the next meeting, two short video segments and transcripts of Don and Lynn's classrooms were viewed for analysis. Both video segments showed whole-class discussion of the big idea *space becomes place*. In Don's classroom, students were discussing the essential questions in Lesson 6: "Why do people move? What happens to them when they move?" The video segment showed students talking about what happened when people moved to Mexico City. Students referred to several Mazahua photos that showed overcrowded conditions and talked about what happened when traditional culture and urban culture collided in an urban space. In the video of Lynn's classroom, students talked about how class, race, gender, and nationality affect how spaces are defined. As noted earlier, students made several connections with their own personal experience (camp, school spaces), popular culture (the movie, *Titanic*), historical events (the Gold Rush), geographic locations (Chinatowns), and content in the unit (the Mazahua). Using the same questions from the previous meeting, the group discussed what they saw in the videotapes, and there was some discussion about the value of viewing videotape to talk about students' ideas and levels of understanding. Lynn was asked to frame the videotape of her class' discussion and lead the group's analysis of

classroom data. The university team co-facilitators met with her, viewed the video segment together, and went over how she might want to focus the group's conversation.

During the session, we noted several difficulties in doing this work. First of all, most of the teachers had never had their practice videotaped. Don, a veteran teacher of over 25 years, had never had his teaching videotaped. Both teachers had taken considerable risk in opening up their practice to their colleagues for analysis and discussion. A second problem we noted was that the group was unsure about what to focus on in discussing the video. Lynn framed her video segment by explaining her intentions as a teacher and why she made certain moves during the lesson. This put the focus on the teacher, which hadn't necessarily been our intention. As a result of our not framing the teachers' viewing adequately and making explicit the norms for viewing classroom data, the conversation meandered along several different paths without any clear direction or purpose. At times, the group talked about students' ideas and use of language; at other times they talked about the teacher's moves in the video; and many related what they were seeing to their own experiences teaching the lesson or similar lessons. The conversation moved between focusing on what teachers noticed and observed to their interpretations of different elements in the video, sharing their own similar experiences, and talking about implications.

This session helped surface the challenges and complexities of this type of work. For example, we wanted students to demonstrate understandings of the big ideas, but we also recognized that these big ideas, especially *space becomes place*, cannot be easily defined. As a result, we weren't sure what evidence might help us think about whether or not students were demonstrating understanding in the conversations we were viewing.

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There was still a great deal of uncertainty about the role of dialogue in the inquiry process and in developing understanding, and uncertainty about the purposes and value of viewing classroom artifacts of teacher's practice and teaching the unit. There was also a lack of structure that could help the group attend to the data presented. The group wasn't sure if we were supposed to focus on students' ideas and talk, teachers' moves and classroom practice, or try to assess student understanding. There was a lack of clear purpose, framing, and guidelines during the conversation.

As a result of this meeting and some of the issues it raised, the co-facilitators debriefed the session with the Project Director and developed a plan that might address some of these issues. Some of the challenges we noted during the debriefing included the need to more clearly articulate the norms for meetings and for doing this kind of work. We decided to build upon the norms that had been shared and modeled as part of the dialogue session about the big idea *space becomes place*. For example, some teachers were dominating discussion, while others were not participating much, so we wanted to establish some patterns of interaction that would ensure a more evenly distributed pattern of participation.

We also noted that when teachers posed questions or problems of practice, there was a tendency for others to offer "solutions" and tell them what they should do. The emphasis was on strategies and solutions rather than on problematizing or interrogating practice. We wanted to establish norms that would support questions, analysis, and investigation rather than quick solutions, which tended to close off conversation and inquiry. We noted that recent meetings had not gone in the directions we were hoping, especially since we were moving into conversation and work around classroom artifacts,

such as student work and videotapes of classroom practice. We thought part of this was because we had not clearly stated purposes and expectations for these conversations and activities, hoping the group would naturally analyze the artifacts. As co-facilitators we had been reluctant to take leadership in terms of clearly stating purposes and expectations, guiding the discussion, or providing opportunity for reflection and debriefing at the end of meetings. We had hoped the teachers would take the lead in doing this work and that the direction would naturally flow out of the work we were doing.

Since the beginning of the year, we had begun to develop a vision of professional learning but had not mapped out the paths we needed to take to get there. The "Core Guiding Principles" and the Inquiry Partners Plan had been developed, but we needed to think more carefully about how we might move toward these visions and develop a shared vision of professional learning. The teachers had identified possible inquiry paths they had expressed interest in pursuing. For example, one teacher expressed interest in having her students create a fictional narrative as a culminating product. Tim wanted to focus on helping students differentiate between fact, opinion, and perspective and how to deal with perspectives that weren't necessarily supported by evidence. Lynn had expressed interest in helping students more critically evaluate web sites and sources of information. We needed to support their investigations in these areas and shift the culture and discourse so that teachers could engage in professional investigation, analysis, and reflection. We wanted to both support the teachers' inquiries and meaningful learning and support them in teaching the unit and making sense of student learning.

**Making the shift to "Learning from data to improve student learning"**

After winter break, we explicitly named the shift we were making in professional learning toward inquiry into student work and artifacts of practice. We viewed this as both a continuation and a shift, since we wanted to use investigations of student learning and understanding in the unit as a springboard for continuing to investigate the curriculum and instruction in the curriculum. It was also planned to be a continuation of our inquiries into meaningful learning and assessment, with a more systematic focus on students' ideas, classroom conversation, and student work.

To frame this shift in professional learning, I developed and presented a PowerPoint slide show titled "Learning from Data to Improve Student Learning." I used the following diagrams (Figures 6, 7) to represent this shift. (See Figures 6, 7.) It started by reviewing "where we'd been" (understanding big ideas, using the MLCT for ML/T, inquiry and what it meant for our own learning, as well as our students, and student learning and assessment) and noted the recent shift we had made toward focusing on the critical moments in teaching and learning, teachers' inquiries into ML/T, and student learning and understanding. I characterized the shift as an "inquiry into student work, learning, understanding, and engagement to help us think about curriculum, assessment, instruction, and our own learning" (Slide show, slide 4).

**Figure 6**: Keeping student learning at the heart of our work

Teacher/Instruction

Student
Learning

Curriculum/
Content

Assessment
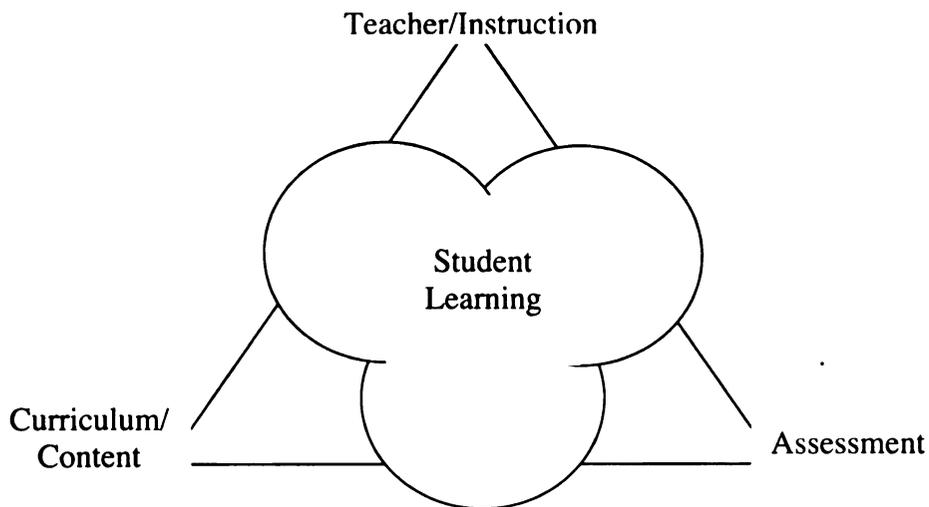
**Figure 7**: Learning from Data

Our inquiries
& learning

"Using student work related
to critical moments in the
unit to focus everything we
do"

Wed.
meetings

Presentations

Student
Work

Videotaping
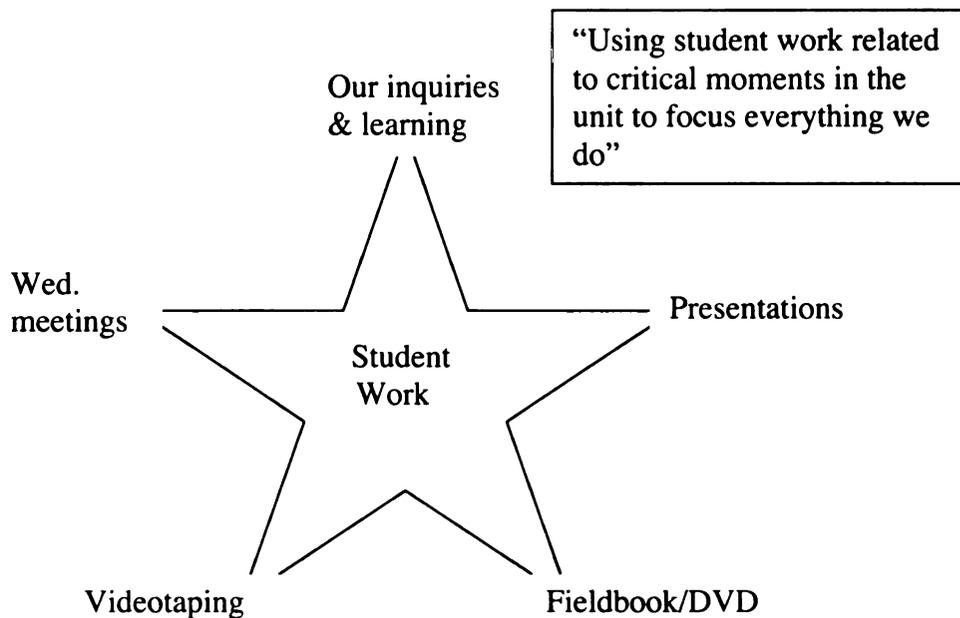
Fieldbook/DVD

Examples of what this might look like were provided, based on teachers' investigative

interests. Also, we shared a plan for videotaping classroom practice to develop a

fieldbook and DVD that would represent ML/T classroom practice for other practitioners.

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Filming would serve several purposes: to document the work we were doing, support our own professional learning by using these artifacts in our bi-weekly meetings, and share our learning with others in a professional development fieldbook and DVD. The university team and project leaders hoped that the teachers would be involved in planning and developing these materials. The group discussed the implications of making this work more intentional, systematic, and collaborative. Two big ideas and essential questions were provided to frame this work:

- Big Ideas: 1.) Learning from data to improve student learning; 2.) Inquiry is central to meaningful learning.

- Essential Questions: 1.) How do we learn from data to improve student learning? (What data?, What can we learn from it?, How do we use it to improve student learning?); 2.) What are the implications (of inquiry and learning from data) for our work together? (Slide show, Slide #11)

The norms for dialogue were revisited, and we started to develop an analytical framework to guide this work. Still in an early stage of development, the following guidelines structured the next meeting that was held to investigate student work, learning, and understanding in Lesson 4 of the unit:

- Range finding; <u>What</u> is the range of student understandings that we see in the work? (e.g., Rank order students' questions according to thoughtfulness using criteria given in Part I, and their generalizations according to what they demonstrate about student understanding of the content.)

- Making sense of the data: What does this tell us about students' understanding, learning, work; (<u>so what</u>); what does it tell us about individual's understandings,

about the group's/class's understandings; it's the pattern of answers that are important, one may not tell you enough;

- How does this help us think about instruction, about teaching the content, about the curriculum, about assessment?; (now what) (2/12/02 Agenda)

This framework was further developed to guide teachers in analyzing video cases of teaching for ML/T. Using this framework, we looked at questions that students generated and whole-class questions that had been formulated to guide student investigations in the unit. To examine student questions, the following essential questions were used to guide teacher analysis:

- What is the range of student understandings that we see in the work? (What?)

- What does this tell us about students' understandings, learning, and work? (So What?)

- How does this help us think about instruction, about teaching the content, about the curriculum, about assessment? (Now What?)" (2/26/02 meeting agenda)

This framework helped keep discussion grounded in student work and thinking and provided an analytical tool for making sense of artifacts of practice. By examining students' questions in the unit, we were also addressing the critical moment of supporting student questioning. By analyzing students' questions, we were also able to discuss pedagogical and curricular strategies to help students become thoughtful questioners. For example, Tim noted in an e-mail to the group that

> This data says a ton about questioning, in general, I noticed the idea concerning Personal Questions the most. I think that in order for students to become better questioners they must have a personal connection with the topic(s) (which is hard

with Mexico) or they must feel like they have some connection (which is often

hard to develop).... My next steps will be to try to analyze where I am leading my

kids.... I struggle with making things meaningful, knowing that in today's day

and age rap music and MTV seem like the only things meaningful to some of my

students.... I would like my students to pose more questions which create debate

and controversy.... I would like my students to ask more 'why's' and maybe even

ask more questions that can lead in a variety of directions (Personal e-mail,

3/11/02)

Tim identified the importance of students making personal connections with subject

matter. He noted the challenge of making student learning meaningful and wanting them

to develop investigative questions that will engage them deeply in subject matter. The

epistemological challenge of providing students opportunities to ask their own

meaningful questions, yet make sure these questions lead them into meaningful

engagement with subject matter, is evident in this e-mail from Tim.

### Scaffolding student work in the conceptual space

Another critical moment that posed key epistemological challenges, the analysis

and evaluation of sources of information, became the focus of our next meetings. The

challenge of supporting and scaffolding student learning to analyze, interpret, and

evaluate information had been identified as especially critical in the unit. The teachers

identified a lack of resources in the curriculum to support and scaffold students in doing

this work, and they were unsure about pedagogical strategies to support this work.

Over the summer, the university team developed a "Strategic Reading Guide"

which was added to the unit as a resource that teachers and students could use to work

with sources of information in their inquiries. The Strategic Reading Guide was a set of guiding questions that teachers and students could use to help students cultivate their strategic reading skills. These questions asked students to consider when and where the document was created, who created it and why, the main ideas and supporting evidence, strengths and weaknesses of the document, such as "loaded words" and omissions, possible alternative interpretations, and the reader's own experiences, beliefs, and values that might shape how they interact with the text. This guide was part of the revisions, but teachers had reported that they weren't sure how to use it to support student work on narratives. They talked about this interpretive work continuing to be challenging for both them and their students.

To address some of these challenges, we decided it would be important to develop shared understanding about what this work entailed. To get a sense of the thinking required to work critically with sources of information, and to keep our work grounded in disciplinary sense-making, we used the "History Matters" Web site (http://www.historymatters.gmu.edu), which includes historians talking about their craft. In particular, we had the teachers explore the "Making Sense of Evidence" page (http://www.historymatters.gmu.edu/browse/makesense/) to hear or read historians talking about how they analyze documents, such as diaries or journals, political cartoons, film, photographs, and songs from the past. This site has a "Making Sense of Documents" section that provides guides and strategies that can be used for analyzing primary materials and a "Scholars in Action" section that shows how scholars puzzle and make sense of various documents. We used this site as a resource to help us think about

the kinds of thinking and habits of mind we were hoping students would develop, and approaches that might help the teachers develop such habits of mind.

After viewing and discussing this Web site and the work of historians while they thought aloud analyzing, interpreting, and evaluating sources of information, we discussed what this work would look like when students engaged in similar processes during the Mexico and Migration unit. To do this, we viewed a videotape of two students doing a "think aloud" as they analyzed, interpreted, and evaluated sources of information while conducting their investigations in the unit.

During these meetings, a chart was developed to help the teachers compare the work of historians and students in making sense of data (see Table 3). The observation, interpretation, and questions roughly paralleled the questions the historians were asked as they worked with various sources of information. This chart was filled in together as we listened to the historians describe their thinking as they analyzed a photo and as the two students talked through their thinking with a photo that they were using in their narrative. The group also did this analytical and interpretive work by making sense of the photo and sharing analyses and interpretations.

After reading, hearing, discussing, and recording what the historians did as they talked about analyzing photos and developing a sense of the kinds of thinking and habits of mind this work entailed, the teachers analyzed and interpreted the same photograph that the two focal students had selected for their "think aloud." As a group, we shared what we noticed and attended to in the photo, how we interpreted it, and the questions we had about this particular source of information.

**Table 3**: Making sense of data: What kinds of thinking do we notice? (3/26/03 MUT

meeting artifact)

| Questions | Students | Similarities/Differences in Thinking about Data | Historians | Implications/Insights: What would you want students to be able to do in doing this intellectual work? |
|---|---|---|---|---|
| **Observation**: What is noticed? What is attended to? | | | | |
| **Interpretation**: How are these sources of information "read"? | | | | |
| **Questions**: What questions are asked of this information? What advice is given to others doing this work (and what does it tell us about the thinking required to make sense of data?) | | | | |
| Other? | | | | |

A new section in the chart was added to record our own thinking as we did this

work. In their analysis of their own interpretations of the photo, the teachers noted the

importance of prior knowledge and assumptions in shaping what they noticed and

attended to, and the interpretations they made. For example, the photo they analyzed was

of a new Humvee, a military vehicle that was being used by the U.S. Border Patrol. The

Project Director had never seen one before and didn't know that they were military

vehicles that were now being sold to civilians. She and the group talked about how this affected her analysis and interpretation of the photo. For the teachers, it raised the question of "how do you know what constitutes a sufficient base of information or knowledge to be able to more accurately analyze, interpret, and evaluate information?" (Personal notes, 4/17/02). The teachers also were surprised at the number of different interpretations they developed as they continued to look at the photo. They cited the following categories or perspectives as different ways they made sense of the photo: historical, political, economic, aesthetic, geographic, and social, and noted that within each of these broad perspectives there were different points of view and interpretations. They became more aware of the distinction between data and interpretation and how they often jumped to interpretation when trying to describe in detail what they were observing or noticing. They also cited the importance of collaborative sense-making, since their own perspective and understanding was limited and further developed only by hearing others' perspectives and ideas.

Once teachers reported they had a better sense of what the thinking and interpretive work to make sense of photographs entailed, we turned to the video and transcript of the student "think aloud." The next part of this work involved making sense of student thinking and looking for similarities and differences between student thinking and their own thinking, as well as the ways the historians did this intellectual work. Generally, the teachers were surprised at some of the similarities between their own work, the historians' work, and their students' thinking, albeit with some notable differences. The students brought their own prior knowledge to bear on making sense of the photograph. They read with purpose (for them it was trying to answer their

investigative question and complete their narrative), tried to contextualize (although their

contextual knowledge was quite limited compared to the historians'), and analyzed and

interpreted the photo based on what they noticed and attended to. The students also had a

set of questions they thought significant for understanding the photo. While the students

noticed and attended to certain things and questioned authorship and purpose in less

sophisticated ways than the historians, there were some similarities across the thinking

the students did and the thinking of the historians and teachers.

As a result of these sessions, the teachers suggested criteria, heuristics, and

strategies that could support students and teachers in doing this work. They also noted

that certain pedagogical strategies seemed important, such as modeling and making more

visible this kind of thinking for students, the need to coach students in doing this work,

and a framework or tools that guided students through analysis, interpretation, and

evaluation of sources of information. They thought the "Strategic Reading Guide" could

serve as a model, but the number of questions needed to be reduced.

Teachers noted the following challenges for students and themselves analyzing,

interpreting, and evaluating texts and data: vocabulary and sentence structure was

complex and difficult for middle school students, a lack of background knowledge to

contextualize sources of information, difficulty determining significance, and difficulty

interrogating sources rather than looking for answers (Notes from the 4/17/02 meeting).

Many of these challenges have been noted in research investigating students' doing

historical investigation (VanSledright, 2002, Wineburg, 1991, 1999). For example,

Wineburg (1991) notes historians' "knowledge of how to establish warrant and determine

the validity of competing truth claims" is a rather complex intellectual skill that seems to require a sophisticated set of heuristics and strategies (pp. 84-85).

As mentioned above, the teachers thought that there were also some similarities between historians' investigative work and students' interpretive work with sources of information. However, they saw a need for different levels of scaffolding depending on where students are ("to change and adjust scaffolding to meet students where they're at"). They believed student learning could be scaffolded by making sure the task was meaningful to the student and providing specific heuristics or guidelines that could guide students in their interpretive work. They also believed that students were beginning to see at least two sides of an issue and were able to question and ask for verification of sources, but needed strong models and explicit criteria for more disciplined forms of thinking. Teachers thought one way to support students in doing this work was to have them "use artifacts of their own lives and the works they author to help them see issues of authorship (and) help them connect with their own humanity, stories, experience(s)" (4/24/02 MUT meeting notes). Having students do analytical and interpretive work with artifacts in popular culture rather than from the past, for example, was posed as a way to engage students in the skills and strategies that historians use.

In some respects, the teachers seemed to be supporting the notion that there are parallels between the cognitive processes for investigating experience and the past that must be further explored and mapped. As Tom Holt (1990) noted:

> We are all historians. History, after all, is past human experience recollected.
> Thus our own everyday experience is the substance of history: our individual life
> cycles, our family's or community's stories, the succession of generations. To

construct coherent stories about this collective experience – something we all do –

is to create histories. (p. 11)

Holt suggests children's sense-making of their own experience may be similar to the

work of the historian. While they noted significant differences, as have researchers, the

teachers also seemed to suggest that the parallels between students' ways of thinking and

more disciplined forms of thinking could be bridged with appropriate models, heuristics,

and guidance.

### Deepening understandings through collaboration and technology use

At the end of the year (June, 2003), we held a debriefing session to reflect on

teaching and learning in the unit and professional learning, share ideas about ways to

revise the unit and technology tools, and explore ways to help make professional learning

more powerful and meaningful. As stated in the June 12th debriefing agenda, "the

purpose of the work session is to gather as much feedback as possible to inform the

curriculum, assessment, technology and professional development work that needs to be

done in Year 5 of the project" (6/12/03 debriefing agenda).

Several teachers reported they most wanted students to understand the uses of

disciplined inquiry and be able to apply inquiry as a learning strategy. They wanted students to

be able to see, understand, and respect other people's perspectives by listening carefully to

others and realize that their own particular point of view is not the only view possible. When

asked how the unit contributed to this, the teachers noted that the Web sites and the movies

about Mexican immigration experiences used in the unit seemed to help students step out of

their own perspectives and into others' roles and points of view. By engaging with these

resources, they believed students started to see the world from others' eyes. Lynn noted that

stories, such as the video about the Aldaba family, helped because students could identify with the Mexican children in the video who were their age. Another teacher noted that certain stories and issues that were emotionally charged, such as water issues along the border, provided powerful stimuli for considering other perspectives. Through the inquiry process, the teachers wanted students to challenge their own "tunnel vision" and be able to discern bias. They also wanted students to be able to "think like" demographers, geographers, and historians, which included an understanding of key concepts, a recognition of individual and cultural diversity, and the ability to collect, analyze, and evaluate information.

Assessment of student understandings of the big ideas remained problematic. The teachers thought they would be able to better assess student understanding of the big ideas by keeping portfolios of their work, providing more opportunities for students to apply the big ideas to their personal experience and content, and by using a range of assessment strategies to collect more evidence of student understanding. Several teachers noted the value of journaling as a way to assess students' understandings of the big ideas, especially since evaluating class discussions and small-group discussion of big ideas was difficult. Several teachers also noted challenges in assessing and supporting students analyzing, interpreting, and evaluating data. They noted the importance of modeling reading strategies and the analysis, interpretation, and evaluation of Web sites and different texts, as well as the importance of scaffolding this work over time.

Continuing to talk about curriculum and identifying issues related to curriculum development engaged the teachers in ongoing curriculum inquiry and contributed to their developing professional knowledge and understanding. These conversations about curriculum grounded their work in the tasks, questions, and problems of curriculum

practice and teaching/learning in the context of their work in the unit. As a result, these

conversations provided opportunities for teachers to deepen their understandings about

ML/T, inquiry, the big ideas, curriculum, and assessment. As Elmore and Burney (1999)

point out,

> We know a good deal about the characteristics of successful professional
>
> development: it focuses on concrete classroom applications of general ideas; it
>
> exposes teachers to actual practice rather than to descriptions of practice; it offers
>
> opportunities for observation, critique, and reflection; it provides opportunities for
>
> group support and collaboration; and it involves deliberate evaluation and
>
> feedback by skilled practitioners with expertise about good teaching. (p. 263)

By engaging teachers in reflection and conversation about the curriculum, they were

focused on concrete applications of the key principles of ML/T and disciplined inquiry.

They had opportunities for observation, critique, and reflection on curriculum and its

implementation, and they had opportunities for group support and collaboration. By

engaging in deliberate evaluation and feedback, I believe they were developing greater

expertise in curriculum development and teaching for ML/T. Some of these

characteristics of successful professional development and teacher learning were evident

in the Model Unit Teachers' conversation about their professional learning experiences.

They cited collaboration, the classroom support they received, their experience of

teaching the unit, and making their work public as especially powerful experiences. For

example, Don noted,

> Many veteran teachers say, "I wish they would just close my door and let me
>
> teach." This year I said that I was going to open my door and let others in. I've

allowed videotaping of my students. I've allowed outside evaluators to come in.

I've done phone interviews with outside evaluators. I've had a lot of people come

into my classroom, and that was a powerful experience for me to continue my

education as a lifelong learner. (6/12/03 debriefing)

Don shared the value of conversations he had with university team members during his

lunch times after teaching lessons in the unit. During these conversations, he was able to

immediately reflect on and discuss teaching and learning in the lesson, and he believed

this helped him address challenges and highlight what he saw as successes in the lesson.

He also believed his conversations with the outside evaluator helped him think about

which students were succeeding and why. He especially noted the value of the evaluator

interviewing his students, since it gave him more evidence of student learning and

thinking. When the project evaluator asked students about their learning, Don was able to

pay attention to students' ideas and the understandings they shared with the evaluator.

For Don, student conversation with the evaluator served as an exit interview in which

students could explain their thinking and learning in the unit.

Susan believed she learned a great deal about student thinking: "I got better at looking at

things from their perspective and figuring out how to get it [the content] across." She also felt

she had become more reflective ("Now, I'm really reflective!"), especially about student

learning, "seeing when they weren't getting it and thinking about what to do about it.... I

realized that my kids needed everything broken down step by step and then they got it" (6/12/03

debriefing). Susan said she felt more confident as a teacher and that watching videotape made

her feel like her students were developing understanding. She noted that looking at videotape

allowed her to notice students' ideas and their level of understanding, since it was hard to make

sense of what students were saying in the normal course of a class period. She thought the iJournals helped her gauge student thinking also. For her, the iJournal entries gave her insights about students' abilities to think critically about subject matter and noted, "Wow, I didn't know that they could think like that!" For Don and Susan, video, interviews, and iJournal were a means to slow down action and attend more carefully to student thinking and learning. They reported that collaborative sense-making of student work and videotapes of classroom practice during recent meetings had also helped them think more carefully about student learning and understanding.

Tim stated that teaching the unit, "the entire struggle of it all," was the most powerful professional development experience he'd ever had. He noted that he learns best by "doing" and that having to figure out how to teach the unit was a powerful learning experience. He also drew several parallels between coaching soccer and coaching in the classroom. He noted that he often models a skill, breaks it down into manageable parts, has students practice the skill by having them practice each component, and coaches them in the process to ensure they are using proper mechanics. Don further supported this idea of teaching thinking as similar to coaching by noting that videotaping is helpful in breaking down and analyzing things in both sports and the classroom.

Lynn noted that being able to work with her inquiry partner ended up being "more of a collaboration than a mentoring." They were able to share ideas, and she noted that her partner ended up giving her a lot of good ideas, even though she hadn't taught the unit before. Her inquiry partner was able to provide another perspective that Lynn found valuable. She also thought learning about dialogue was very helpful and had tried to incorporate this into her teaching. She noted that being involved with the project helped "stretch my boundaries, like

getting me out to do presentations." Lynn had given several presentations about ML/T and teaching the unit to local groups and at conferences, and she noted that these were valuable professional learning experiences because they required her to think more carefully about what she was doing in her classroom.

When asked to report how the infusion of technology in their classrooms affected them as a learner and a teacher, teachers reported mainly positive results. Most reported feeling more confident as technology users and integrating technology into teaching and learning subject matter. For example, one teacher noted, "I, too, have learned a lot regarding content and realize the wealth of information that is at our fingertips. I am actually excited to learn and found myself just as intrigued with what the kids were learning." Another teacher commented, "I try to use technology with every unit I teach now. I saw how engaged students are using the technology. But there has to be a purpose for using it." Other comments included, "technology infusion helps me to see ways to attempt to meet the needs of different learning styles.... Technology provides some ways to meet the needs of students with varied learning styles which traditional textbooks don't" (Tabulated survey results).

Generally, the Model Unit Teachers' comments reflect the broad base of research about teachers' use of technology suggesting "teachers can and do change their instructional practices when using technology (Baker, Herman, & Gearhart, 1996; Sandholtz, Ringstaff, & Dwyer, 1977). In particular, several studies suggest that teachers who use technology tend to become more constructivist in their pedagogical orientation over time (Becker & Ravitz, 1999; Means, 1994; Mehlinger, 1996; Windschitl & Sahl, 2002), although these studies don't necessarily explain why teachers transform their practice when using technology. Windschitl and Sahl (2002), however, noted that teacher learning and thinking should be viewed as "social in nature

and distributed across individuals" (p. 166). By considering such learning and thinking as socially situated and distributed, it's possible to understand teacher learning in the broader contexts of their collaboration and ongoing professional development. In this sense, learning to use technology for teaching and learning in an ML/T curriculum can be viewed within the larger network of teacher learning and activity.

Technology learning and use were thus situated in the midst of learning about several interacting components of a complex curriculum. As Windschitl and Sahl (2002) concluded, the use of technology is "mediated in substantial ways by teacher's interconnected belief systems" (p. 201) about learners, the curriculum, and what constitutes good teaching in their particular context. In some cases, the use of technology serves as a catalyst to change teacher practice or support pre-existing dissatisfaction with traditional methods of teaching and learning. Most importantly, however, is their contention that a vision of technology use cannot exist "separately from beliefs about learners, beliefs about what characterizes meaningful learning, and beliefs about the role of the teacher within the vision" (p. 202). The project's vision of principled technology use, disciplined inquiry, and ML/T may have provided this network of beliefs necessary for changing classroom practice.

## Deepening our work with artifacts of practice: Developing the TIMESpan professional learning curriculum

As Ball and Cohen (1999) argue, grounding professional learning in classroom practice embeds "teachers' opportunities to learn subject matter in materials of practice – in student work, curriculum materials, or classroom videotapes" (p. 29). Much of the Model Unit Teachers' ongoing work had been embedded in curriculum materials, the technology tools, and the content of the unit with a shift during the second year of

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professional learning toward focusing on student work and classroom videotapes. As stated earlier, we viewed this as a continuation of the work and inquiries we had been doing around curriculum and ML/T with a shift toward investigations of student learning and understanding in the unit.

Part of this work included videotaping classroom practice for professional learning purposes and to collect data that could be used to develop an on-line professional learning curriculum that supported ML/T practice. This ML/T professional learning curriculum was conceptualized in the spring of 2003, with the idea that several teachers would be invited to participate in developing these materials during the summer. Initially, the idea was to develop a DVD and field book about ML/T practice that professional development leaders and teachers could use to provide concrete examples of ML/T practice and explore ML/T principles in their own contexts and professional learning. The materials would provide specific examples of practice and be entry points for conversation about curriculum, teaching, and learning, since videotaping was done around the critical moments that had been identified in teaching and learning in the unit.

A team consisting of university staff and project staff developed the overarching conceptual framework and plan for the ML/T professional learning curriculum intended to take collaborative analysis of classroom practice deeper. This framework was based on the What?, So What?, Now What? guidelines that had been used with the Model Unit Teachers to examine student work and classroom videotape during the spring 2003. Drawing on the work of Senge (2000), the collaborative analysis of student learning (Langer, Goff, & Colton, 2003) and practice-based professional learning (Ball & Cohen, 1999; Thompson & Zeuli, 1999), this framework was developed to support collaborative

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analysis by offering guidelines for viewing and analyzing videotape of classroom practice. Eventually called TIMESpan, this framework would help teachers and professional development leaders use video cases of classroom practice to foreground the tensions and challenges of ML/T and inquiry-based learning using technology.

The What? section of the framework was intended to guide teachers in carefully observing (seeing and listening to) classroom data provided by the videotape to develop shared understanding about what there is to be observed. During Model Unit Teacher meetings, we had observed the tendency to quickly jump from observations to interpretations and advice – that is, move from what can be directly seen and heard from the video clip to considering what the data in the clip might *mean*. Although there is overlap between "seeing and hearing" and "interpreting what is going on and why it is going on," we believed it was important at this point to focus on carefully observing and describing the data. Key questions to guide close observation included questions, such as "What are we attending to? What do we notice? Does anything surprise or puzzle us?"

The next step, the So What?, was intended to support viewers to ask questions and identify problems, develop new ideas and perspectives, and analyze, evaluate, and interpret the data. Questions were also aimed at helping teachers think about assumptions or beliefs that might guide their interpretations and analyses. At this point, borrowing from Senge's (2000) *Ladder of Inference*, we built in a "reflexive loop" to help viewers consider reasons they might have noticed or attended to particular parts of the data, what beliefs and assumptions they brought to bear on the data, and what other data or perspectives they might consider to help them develop understandings of the data. Key questions to help participants construct meaning included: "What meanings do we

construct as we view video clips? How are we making sense of this? How does this help us think about teaching and/or learning? How does this help us think about students? What relationships do we see?"

The Now What? phase was designed to help participants develop new or refined understandings, draw tentative conclusions, apply new understandings to their classroom experience, and reflect on tentative conclusions and actions taken. The Now What? section was intended to have participants consider the implications of their learning and consider next steps they might take in their professional learning or classroom practice. Key questions included: "What connections do we see to our own classrooms? How might this work help me refine or attempt something new in my classroom? How might this help me experience being a teacher/learner more deeply and fully?"

We saw this conceptual framework as an inquiry framework to support professional inquiries into classroom data and classroom practice. Participants could use the *What?* to notice, observe and attend carefully to video clips and other artifacts of practice, the *So what?* to create patterns and relationships and construct new understandings, and the *Now what?* to make connections to one's own classroom, school, and professional learning or develop a professional learning plan to enact their new understandings.

The TIMESpan professional learning curriculum was organized into three sections, one focusing on subject matter learning and processes of disciplined inquiry, one to support the examination of teachers and students engaged in ML/T practices, and a third in which teachers would conduct inquiries into their own practice. The team decided to develop the section to support inquiry into teachers and students engaging in ML/T

first. Each section was further organized into three areas (columns) of classroom practice to direct the focus of teacher learning and analyses of teacher actions, student actions, or assessing learning.

Each of the sections consisted of several 90-120 minute Professional Learning Blocks (PLBs) that were organized by four steps that paralleled the inquiry process: framing, questions, data, and conclusions. (See Table 4.) Each PLB could be treated as a stand-alone session or as part of a larger professional learning program. In other words, if professional development leaders and/or teachers wanted to examine *teacher actions* in developing student or class inquiry questions, they could engage in a 90-120 minute PLB in the section about teachers and students engaging in ML/T and the row related to questions for teacher actions. Each PLB would have enduring understandings, essential questions, and learning outcomes. The work teachers would do during the session was described in a lesson plan outline that identified the resources to be used, a plan for launching the PLB, and a description of interactions that would structure the learning experience with guiding questions. The PLB also had a debriefing component.

**Table 4**: Organizational structure of TIMESpan sections

|  | Teacher Actions | Student Actions | Assessing Learning |
|---|---|---|---|
| **Framing** |  |  |  |
| **Questions** |  |  |  |
| **Data** |  |  |  |
| **Conclusions** |  |  |  |

Our work over the summer was viewed as a work in progress. Developing the professional learning curriculum was viewed as an emergent exploration into more uncharted territory. We wanted to continue working in a spirit of collaboration, collegiality, and inquiry with a willingness to take risks and have confidence and faith in

each other to create something meaningful that could be helpful to others wanting to "do" ML/T in social studies.

Five Model Unit Teachers (which included all four of the study participants) were invited to participate in development work with two university team members and two members of the project staff. These teachers had been identified as most committed to ML/T and their own professional learning, and were excited about possibilities for deepening their understandings about ML/T and inquiry-based education. At the first meeting in the summer, we provided an overview of the TIMESpan framework and shared a prototype of a Professional Learning Block. We viewed a short segment of videotape and talked about why this segment was selected. We also viewed a video segment using a checklist to guide viewing and conversation, and then talked about the video clip and what people saw as compelling, interesting, or puzzling. We discussed where it might fit in the TIMESpan structure and how it might support teacher learning.

Each teacher was given CDs with classroom video segments for viewing prior to the next meeting. The participants in the group were expected to look for compelling moments and clips that might fit into the TIMESpan framework. The following guiding questions were part of the video analysis guide they were to use:

- What is going on in this segment? What do you find most compelling? Why is it compelling to you?

- What would you most want other teachers to notice and think about with this clip?

- What questions do you have about this clip? What would you be interested in talking about with colleagues?

- Where might the clip fit in our TIME*Span* design? Does it focus on 'Framing, Questions, Data, or Conclusions?' Does it focus on 'Teacher Actions,' 'Student Actions' or 'Assessing Learning' – more than one of these areas?

At the next meeting, the teachers noted that they really enjoyed doing this work and the process of viewing videotape of classroom practice. They liked being able to view others' teaching and see what happened in other classrooms with the same lessons they had taught. Tim noted that this was one of the few times he had ever been able to watch someone else teach, and he liked being able to see how teachers framed lessons and questioned students during a lesson. Lynn expressed the issue of there being overlap between the three columns ("Student Actions, Teacher Actions, Assessing Learning") because she saw everything as about assessing learning. The teachers also noted that it took much longer than they expected to carefully look at the videotape. For example, Don said it took twice as long as expected (four hours instead of two).

At this and subsequent meetings, the group viewed videotape together, shared what they saw as compelling moments, and talked about what various clips showed and how they might be used by other teachers to think about ML/T practices. The What?, So What?, Now What? framework was used to guide our viewing and conversations, and the teachers talked about what they noticed, the meanings and interpretations they developed, and possible implications for professional learning and classroom practice. Sometimes conversation focused on specific phrases and words students or teachers used; at other times there was discussion of the complexities of teaching for ML/T with teachers raising questions or issues that they were wondering about. For example, after viewing a videotape of class discussion in her classroom, Susan wondered what she might have

gone differently to get students to challenge the stereotypes they expressed about rural people and southerners. While viewing the videotape she believed there were so many possibilities of where the conversation could have gone and many "teachable moments" or opportunities for taking the discussion deeper that she may have missed (7/22/03 meeting notes).

The teachers often reiterated that it was important to see different teaching methods and styles of teaching, to observe what works and what doesn't work when teaching lessons they were familiar with, and to think about what approaches might apply in their own classroom. They saw this work as valuable to thinking about their own teaching and that this made it possible to "get into" others' classrooms, since it was difficult during the normal school year with different daily schedules, time constraints, and other logistical issues related to being in different schools and districts. They also liked having the opportunity to see how other students responded to different lessons, and they were able to compare student work and learning in other classrooms with students they taught.

While viewing different clips, it also became apparent that we might want to tell a fuller story of classroom practice, rather than have teachers focus on separate clips. This would help contextualize the various segments that could be used, and a whole class period might better serve as a unit of analysis that could be analyzed in multiple ways to increase depth of understanding. For example, a story of a single class period could give more contextual information about student learning, teacher actions, and issues of assessment; provide a fuller sense of the richness ML/T practice; and be analyzed for teacher actions, student actions, and assessment to see how these elements are

interrelated. It would give viewers a more holistic or integrated sense of ML/T practice in a single classroom during a single class period.

For example, at one session Tim nominated a "Nancy" video clip as a story with a beginning, middle, and end, and a conflict and tension related to using technology and coaching students to work with data. He saw this as a story of a teacher modeling and then coaching certain kinds of thinking and work with sources of information. It was also a story of students struggling to do this kind of thinking and work during a single class period. According to Tim, in this particular class period, Nancy faced the challenge of "weening students" from certain kinds of support, such as teacher direction and guidance, and allowing students to do this work without their getting too frustrated. The challenge of providing support but allowing students opportunities for independent practice in which they might struggle and experience some frustration was an important story for Tim. Others agreed that the issue of learners becoming more independent varies from class to class and student to student, and decisions about how much to let them run with it, yet not get too frustrated, was a key learning issue. Teacher decision-making and thinking about the level of teacher engagement and guidance to provide were key teaching issues. They saw ongoing assessment as a way to gauge student learning and skill development that determined how much support the teacher should provide as very important throughout this entire lesson.

## Conclusion

This example provides a sense of the deepening understanding and sensitivities teachers were developing as part of this work. They were able to notice certain complexities and nuances of classroom practice that were grounded in their

understanding of curriculum, teaching, and learning that had developed over time and through deep engagement with the curriculum. The teachers had developed a strong sense of the ends-in-view provided by the conceptual frameworks of ML/T and disciplined inquiry that helped them think about their work and the relationships between students' ideas, personal experiences, and subject matter. Their collaborative work to identify and consider ways to manage key challenges in the curriculum helped them learn to "think within the constraints and affordances of the medium" (Eisner, 2002, p. 10). The framework designed to focus attention and collaborative meaning making around student work and classroom practice supported more artful ways of thinking about classroom practice.

Some of these understandings and what this work meant to the teachers' professional learning were shared at a debriefing session held with Don and Nancy at the end of the summer. During this session, both teachers talked about their sense of developing deeper understandings of what this type of teaching and learning entailed. A summary of what they shared is provided below.

Nancy cited the value of inquiring into curriculum, teaching, and learning collaboratively with some teachers who had taught the unit before and with teachers from different schools and districts and in different contexts. She also cited the importance of working together over a sustained period of time. She said that being able to see video of others' classrooms and engage in this type of analysis and process was valuable. She unequivocally stated, "I think every teacher could be so lucky as to go through this process. I don't think PD gets much better than this: doing, sharing, and collaborating like this is the ultimate PD experience" (Personal notes, 8/12/03). She thought that it

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wasn't any single component of professional development that contributed most to her learning, but the whole process of collaborative professional learning that was most important, including the workshops, the symposium, learning about important ML/T principles, then "doing it" by teaching the curriculum and sharing with others, and collaborating at bi-weekly meetings while teaching it. Being able to watch other teachers teach it and have conversations about teaching and learning in the unit was especially valuable.

Nancy talked about starting out not knowing much about what this type of teaching entailed and having her "eyes opened" by sharing with others, hearing others talk about their practice, and reflecting with others about practice. She noted that this reflection process "takes you from teaching something to feeling more a part of what you're teaching." In teaching "you put your toes into a lot of things, but this engrosses you, it changes you and the kids, changes how you think and how you look at life" (8/12/03 notes). Through this process, she believed her eyes had been opened to multiple perspectives, and that she was beginning to "teach from the inside out, not from the outside in."

Nancy said she felt more interested and confident in teaching social studies and hadn't felt very strong in this content area prior to these experiences. She felt like she didn't have to know everything, that kids can become self-discoverers, and that she became one too. This work changed her conception of social studies to being an investigation of the world we live in, and she said that it personalized history for her and her students. This confidence in her own learning and abilities to construct knowledge

and understanding about content and teaching seemed to suggest more of an "inside out" perspective without having to rely on outside texts or authorities for this knowledge.

Don noted that he had been looking for "something different" in his teaching and hadn't found approaches that significantly ignited his passions, in spite of the many changes, including curricular changes, that had been introduced in his district during his many years of teaching. He thought ML/T was "something different," especially as it was presented at the Summer Institute, that would be positive for him and his students. He saw ML/T approaches as a way to shed the reliance on textbooks that seemed to often drive curriculum trends. He noted that the Summer Institute was very influential by presenting social studies in a way that was not textbook or fact-oriented only.

Although he had considered himself a "techno-phobe," he also wanted to explore how technology could support student learning and historical thinking. He saw ML/T as a way to support students in learning history by using primary sources and comparing different perspectives to develop deeper understanding of content than they would get from just reading their textbook. For example, he cited the Holt (1990) book on thinking historically as helping him think about ways to personalize history for students and make it more engaging. In this book there are letters from slaves in which slaves expressed feelings about land being returned after the Civil War to confederates; he thought his students would react to this and find this more interesting and engaging.

Don said he liked the blend of theory and practice that the project offered and that he liked to understand the theory behind what we're doing. He noted that reading books, such as *Doing History*,

in addition to having collegial meetings and looking at practice does it for me. Before, theory was on a piece of paper, but doing the unit and talking to people and watching videotapes brings a sense of completeness to me. Videotapes are valuable, I learned a lot from watching my kids.... I saw potential for using videotape and the possibilities of showing videotape to kids and having them reflect on their own information and learning. (Personal notes, 8/12/03)

He cited the videotape of his students with the project evaluator as an important artifact that helped him realize the need to consider successful approximations to historical understanding, since it looks differently for 6th graders. Don also noted the importance of moving away from broad coverage to work on developing skills, concepts, applications, and deep understanding of content through the big ideas. According to Don, in the past "we've just dabbled and tried to cover too much, so students just get bits and pieces, just facts, but they don't get broader understandings. When you go into depth you need to study something well, rather than a broad variety less well" (Personal notes, 8/12/03). He believed the inquiry approach resulted in a more sophisticated level of discussion in his classroom, and that more students participated through the inquiry approach. To Don, this discussion raises "the floor of understanding," since more students give information, their opinions, and perspectives.

In talking about the value of video, Don referred to the combination of watching his own video with others as important to his professional learning because he felt like he was really struggling and "we weren't getting anywhere," but when he heard comments from others who viewed it, it helped him think through some of the challenges he felt. He noted, "I felt better about it, but it was a very difficult lesson." He said that identifying

these as critical moments and challenging moments for others helped him realize that they presented opportunities for learning and growth rather than something he should be embarrassed about. In talking about viewing of his own practice, Don commented: "I noticed that I hadn't waited long enough to get a response. It was a good contrast to what I think I do and provided areas that I can self-analyze or can look at in PD and think about doing something different. Finding three to four things to really concentrate on is more valuable and the process helps bring focus to what you want to concentrate on." Don suggested this was like watching basketball videos when he coached:

I look for success places, where things break down, weaknesses in opponents. It's also like 'seeing the court' and players have different abilities to see the court, see things others might miss. We see the classroom, some just see people running and don't see what's happening; sometimes it's where the ball isn't. Using videotape helps us become better at seeing the classroom. We might see things that are breakdowns, compelling moments, can see what's important for kids to see. This is important if we're going to sell this to other teachers, we need some places to have them grab a hold of, a lead-in for those that have coached may be a way to [do this]. (Personal notes, 8/12/03)

Nancy noted the importance of others helping her see: "I would have a pretty narrow perspective of things if it wasn't for others. The rapport and relationship, because we've been with each other for so long, makes a difference. We disagree and have agreed to disagree. You can't do this in a conference. You need trust, good leadership" (8/12/03).

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Don and Nancy identified important elements of doing this work collaboratively. Metaphors such a coaching and "seeing the court" are valuable for making sense of this work and helping others understand the nature of the work. Trust and leadership are key components so that people can disagree, investigate common problems, share ideas, and take risks to deepen understanding. Using videotape to observe carefully, notice what might not otherwise be noticed, and to think deeply about classroom practice is an important part of developing deeper understanding of classroom practice. Taken together, these elements help teachers focus more reflectively and strategically on problems of practice, challenges they and their students face in ML/T, and inquiry teaching and learning. These and other key themes related to professional learning grounded in curriculum, classroom practice, and student learning and understanding will be explored more fully in the next chapter.

# CHAPTER FIVE

## UNDERSTANDING TWO KEY EPISTEMOLOGICAL CHALLENGES: ANALYZYING A PROFESSIONAL LEARNING BLOCK ABOUT BIG IDEAS

Because we are in the world, we are condemned to meaning ... True philosophy consists in relearning how to look at the world. (Merleau-Ponty, 1962/1967, pp. xix-xx)

### Introduction

In Chapter 4, I provided a narrative account of the study participants' professional learning experiences to show how they developed conceptual frames that served as "ends-in-view" for their work in the medium of an ML/T curriculum. In particular, the conceptual frames of meaningful learning and disciplined inquiry offered two theoretical frameworks that they were able to refer to and draw upon to work creatively in the conceptual space between students' ideas and experiences and subject matter.

Their professional learning experiences engaged them in creating meaning in the model units, key challenges that were generative for professional learning, and student learning by investigating artifacts of classroom practice. These experiences helped teachers develop aesthetic stances that enabled them to manage epistemological challenges central to working in the conceptual space between students and subject matter. These aesthetic stances can be broadly described as having a sense of "ends-in-view," learning to pay attention to key qualities of curriculum and classroom experience, creating meaning around these key qualities and the challenges they presented in teaching and learning, and artfully thinking about and acting upon the implications and consequences of their understandings developed through the course of their professional learning.

In this chapter, I build from the narrative account in Chapter 4 to analyze the conversations and work I did with teachers in a Professional Learning Block (PLB) that focused on using big ideas to develop student understanding. I also draw upon follow-up interviews in my analysis of the PLB.

In the PLB, they spoke about key challenges and tensions using big ideas to work in the conceptual space between students and subject matter. In doing so, they seemed to be affirming two key concepts central to my dissertation study: 1. That problems, dilemmas, challenges, and tensions are key opportunities for learning. They provide rich and generative conceptual spaces that must be acknowledged, embraced, and worked for meaningful professional learning to occur, and 2. Working in these conceptual spaces, working these tensions, challenges, problems, and dilemmas, is a creative act that requires an aesthetic stance and an artful approach to making connections, seeing relationships, and creating meaning. These two concepts will be further explored in this chapter and in Chapter 6.

This PLB engaged teachers in conversations about the role of big ideas in the two model units by having them talk about two videotaped segments of classrooms in which big ideas (*Space becomes place* and *Knowledge is subject to change and interpretation*) were discussed. Conversation during this PLB allowed the four teachers opportunities to talk about student understandings of the big ideas, their own understandings of the big ideas, the role of big ideas in understanding subject matter, how the big ideas mediate understanding about personal experience and subject matter, and issues of assessing student understanding.

**Working in the conceptual space with big ideas: Two key epistemological challenges**

The teachers noted two key challenges related to working in this conceptual space: 1. the overarching challenge of making connections between students' personal experiences and subject matter; and 2. understanding student understanding. Findings from the data analysis point to these two framing challenges to better understand what transpired during the PLB. Each of these are briefly described below:

- **Epistemological challenge #1: Making connections between students' personal experience and subject matter**: The teachers talked about students developing understanding by exploring multiple examples or representations of the big ideas and using the big ideas as lenses. However, they noted that they must move beyond their own experience to consider others' experiences and subject matter content in order to develop deeper understandings of the big ideas, their own experience, and subject matter. Also, since students need to move back and forth between investigations of their own experiences, others' experiences, and subject matter to develop understandings of the big ideas, a dynamic and flexible curriculum and teaching approach is necessary that allows for this movement. There is a tension between following the curriculum and following students' ideas in order to develop connections between lived experience and subject matter in ways that support the learning goals of the curriculum.

    Another tension related to this is the challenge of managing this movement and making decisions in the moment as to whether or not certain "paths" or directions that students seem to be moving toward are worthy to pursue. In other words, a key question seems to be: Are there possibilities for rich and generative explorations of

students' ideas that might lead to significant subject matter understanding? Or, should students be steered back toward the curricular content? These are difficult decisions for teachers and require a strong sense of subject matter possibilities and sensitivity to students' ideas and possible connections to significant subject matter. Managing this challenge seems to require an artful approach to exploring possibilities and making connections that are rich and generative for creating meaning in the classroom.

- **Epistemological Challenge #2: Understanding student understanding**: Assessing student understanding and use of the big ideas is challenging because understanding looks differently for different students and develops over time. The big ideas are incredibly complex and seem to require movement between students' prior knowledge and lived experience, and subject matter content to develop understanding of the big ideas. There doesn't seem to be any sort of straightforward, linear movement toward content understanding, but rather a continual movement back and forth between students' understandings about personal experience and subject matter.

Also, what counts as knowing is a dilemma the teachers talked about. They expressed some concern about whether students understanding the big ideas in relation to their own personal experience or using them as lenses to understand personal experience counts as understanding. The teachers talked about needing certain indicators or post markers that could help them determine if students are developing appropriating understandings and deepening their understandings in ways that support subject matter understanding. This challenge required teachers to be sensitive to classroom experience while having a strong sense of the "ends-in-view." It required strong sense-making capacities during specific moments of classroom

practice, while also being able to look more broadly and globally at student learning and understanding over time. This challenge is also related to the first challenge, since teachers must be able to discern which student understandings seem to be appropriate representations of learner outcomes or subject matter. Understanding student understanding has implications for the moves teachers make to ensure students develop understanding and the connections or representations teachers think they must make to better support student understanding.

Each of these challenges will be examined in more detail by drawing on data from the PLB and follow-up interviews. My analyses of these key epistemological challenges reveal the nature of these challenges and how they were managed. The analyses of the conversation of this PLB are divided into the two epistemological challenges that the teachers kept returning to during the session. Each section is organized chronologically to maintain the flow of the conversation. However, while the PLB was organized around two video segments with the initial intent to carefully analyze the segments, the teachers often moved in and across contexts – time and place – making connections to their own classrooms and experiences teaching the unit. I also italicize parts of the transcript to alert readers of significant segments. The sections are organized by epistemological challenge, but key questions and themes overlap and intersect in significant ways that are also explored in the final chapter.

### Epistemological challenge #1: Making connections between students' personal experience and subject matter

Recognizing when you have a topic, a metaphor, an analogy, whatever will work for you...being sensitive and being on the lookout for those kinds of opportunities

is important…. I think that's what becomes part of the art of being a teacher is to recognize those opportunities. Last year's group wasn't as adept in using written skills, or as readers. So, I think you have to know not just the social studies content, but how your kids are doing as far as being writers and readers and where their discussion skills are. That's part of the art, part of recognizing what will work and what won't work. (Don, 6th grade teacher)

One of the main challenges of working in the conceptual space of students' ideas and experiences and subject matter lies in considering *how* students make connections between their personal experience and subject matter in ways that support subject matter understanding. This process was discussed at some length during the PLB. At the beginning of the session, the four teachers drew upon their own experiences working in this space with their students. For example, referring to the class discussion that we were about to view (and which Lynn had taught), Lynn thought, "When the students were talking about the Titanic, that was a connection they made to *space becomes place* and then [a discussion of] social classes developed from that discussion. So, they went from one small concept [space allocation on the Titanic] to a larger concept of social classes." Her students talked about *space becomes place* on the Titanic and how it was defined by income or wealth, and this led to her students exploring the concept of social class. For Lynn, the big ideas can be used in a number of ways and circumstances to help students develop relationships between their own experience, such as viewing the popular movie, *The Titanic*, and subject matter concepts. For her, this example illustrated how students might use a big idea to explore a social studies concept such as social class and develop

understanding by referring to personal experience and knowledge, such as their experiences in spaces at school and camp.

In the discussion prior to viewing the videotape, Don extensively built on this idea of developing relationships and making connections between ideas and examples. He saw the process of developing subject matter understanding as a matter of making connections across a number of examples, including examples from personal experience and others' experiences. This would then make it possible for students to see relationships between the examples and subject matter examples. For Don, developing understanding is a process of moving back and forth among different examples to develop a network of examples and representations that support understanding:

> I think sometimes the kids have to hear it not only from their own personal perspective, but they also have to hear others' personal perspectives. *They're making a connection* not only with their own personal experience, but also with what your friend is talking about as his or her personal experience. I think *there is a linking there that then allows some of the kids to get beyond just their own personal experience and to then make a connection, a hook-up, if you will, with the bigger ideas or from the content.* I don't know if I'm saying it right, it's more than just your own personal experience, *it's the integration of other students' personal experiences* that you're listening to that help you feel you reach that comfort zone where *then you can make a transition to the content* that happened to be in that particular lesson, and I'm not thinking about a particular lesson.

Don is describing a process of developing understanding that is worth noting here. He suggests that students develop understanding by criss-crossing the terrain of personal

experience, others' experiences, and subject matter content, and making connections between examples and instantiations that they hear or explore. He refers to this inter-weaving between one's own personal experience, examples from others' personal experiences, and content as a process of "connection" or "linking," a "hook-up" that helps students make the transition from understanding big ideas, not just in relationship to their own experience, but also in relationship to important subject matter. In the follow-up interview, Don noted that, "personal experience (is) the foundation" that spurs students to share their experiences, stories, and ideas that help form this rich network that supports student understanding and connection to subject matter representations.

Using metaphors to think about key challenges

In the PLB session, Don offered two metaphors that focus on this process of moving among examples and representations to help students make connections between their own experiences and subject matter:

It's still at that student level...to make that jump, that transition into what the content of the day was or what you can get out of the content of the day... and then to go back down *that ladder* with the idea of the big idea ...[you] gradually get a better understanding of what the big idea is as it relates to your personal experience... but *students are not only going up the little ladder toward the content of the day, but in some respects going back down the ladder to apply what they transition to and then come back to their personal experiences. It all ends up back at your own personal experience*, maybe they stop at a few rungs along the way *to reinterpret* what their friends said or what their friends' personal experience was... that seems to happen in classrooms, kids that I've observed,

[but] I don't think it happens equally to everyone. *We have this calliope of where everyone's at* and I think it's ongoing with everyone all the time, so someone's up here because they're going up the ladder and someone else is coming back down the ladder because they already have that understanding, so we get this calliope of what's going on...

Don provided a sense of students moving up and down a "ladder" of understanding in which they draw on personal experience and others' experiences to understand subject matter content, and draw upon subject matter to better understand personal experience. They may stop at different rungs on the ladder as they "reinterpret" what their friends said or their friends' personal experience. Don provided a very dynamic sense of student understanding that is constantly shifting and moving as they move from different kinds of instantiations of the big ideas or apply the big ideas to different situations.

He refers to this movement as a "calliope," which is both an instrument with varying levels of pipes that create different sounds and the hub of a merry-go-round, which also suggests an up and down movement. In the follow-up interview, Don said that like a calliope, "there are all these different levels of understanding that are going on at any one time in the classroom," and this requires paying attention to and "making judgments" about where students are in their "level of understanding." In the interview, he referred to the many different "notes" playing at a particular time in the classroom, and noted that "some kids are at this point on the ladder or at this note on the calliope and other kids are at different notes, and the calliope makes music hopefully.... And the trick is then to try to get some of those kids who were kind of at a low note to try to move to a

higher note" (Don interview, 4/29/04). This notion of a "calliope" is an important

metaphor that suggests that students may be in many different places in terms of their

understanding, an idea that will be further examined in the section on understanding

student understanding.

Don provided two very useful metaphors for how students develop understanding

by making connections between personal experiences, others' personal experiences

shared in the classroom, and subject matter topics and concepts. The metaphor of a

"ladder" that Don offered to make sense of how students develop understanding suggests

that students require moving back and forth (or up and down) among multiple

representations of important ideas and concepts in order to develop rich webs of

relationship that support understanding. His use of this metaphor does not seem to

suggest a static ladder, since there is a sense of the dynamic movement of students and

their developing understanding.

Don may have also been referring to the "Ladder of Interpretation" that is used in

Lesson 7 of the Inquiry Unit. The "Ladder of Interpretation" provides a concrete

reference of the interpretive process for students and teachers. It shows how we move

from the ground of experience up the ladder to select certain data and information to pay

attention to, make generalizations and claims, and take actions based on our

interpretations. However, none of the teachers explicitly referred to it during the PLB.

Don's metaphor of a "calliope" also suggests multiple experiences and

understandings that students bring to their learning that can be shared and drawn upon to

provide variability across examples. Don also used this metaphor to help us understand

how students develop understanding. In the follow-up interview, Don noted, "I think that

scaffolding is one way that we've talked about a lot [in] trying to make little steps to lead

up to that next little note wherever that happens to be" (Don interview, 4/29/04).

Lakoff and Johnson (1980) argue that metaphors, such as those used by Don, help

us conceptualize our experience. In particular, they help us understand and experience

"one kind of thing in terms of another" (p. 5). Don used the metaphors of a ladder and a

calliope to help make sense of the complexity of classroom experience in which there are

multiple levels of understanding represented simultaneously by students. Teaching also

requires moving back and forth among many, varied representations of personal

experience and subject matter to make connections that support understanding. As

Lampert (2001) points out, teaching takes place in a multi-dimensional terrain that

requires constantly moving among "overlapping complexities" (p. 38). Metaphors serve

as useful tools for making sense of and communicating certain qualities of experience

that are often difficult to represent. In the case of classroom experience, there is ongoing

movement all the time, and an artful teacher must be able to see and "experience the

qualitative relationships that emerge in his or her work and make judgments about them"

(Eisner, 2002, p. 8).

I believe Don's use of these two metaphors represents an example of an aesthetic

sensibility that helps him understand and manage the epistemological challenge of

developing student understanding by helping them make connections between their

personal experiences and subject matter. In many ways, Don's metaphors parallel

metaphors that have been used by cognitive flexibility theorists. For example, Spiro,

Coulson, Feitovich, and Anderson (1988) have used the metaphor of criss-crossing the

landscape to suggest that deep understanding of complex conceptual terrain requires

multiple transversals of many conceptual representations to master its complexity. They suggest that deep understanding of complex subject matter, such as big ideas, requires investigation of multiple representations, multi-directional and multi-dimensional (much like the sounds or up and down movement of a calliope) criss-crossing of cases and examples with explorations of interconnections and relationships, and the assemblage of diverse knowledge sources to develop understanding.

Using the metaphors of a "ladder" and a "calliope" helps Don to think about the value of student experiences and examples from their personal experience in developing subject matter understanding. Allowing for this "calliope" and students' movement along the various rungs of the "ladder" supports the connections, links, and transitions that are only possible when students are allowed to criss-cross the landscape of personal experience and subject matter using the big ideas. The notion of a calliope or ladder suggests sounds or rungs from personal experience, others' personal experience, and subject matter in a rich array of representations that support student understanding if drawn upon artfully.

Multiple traversals along the rungs of the ladder or multiple sounds from the calliope provide rich opportunities for interconnections that may support understanding. However, the teacher must be able to support students in making connections that are educative by leading "out into an expanding world of subject matter" (Dewey (1938/63, p. 87). The teacher must recognize which representations are generative for developing understandings about personal experience or subject matter. They must be on the "look-out" for these, recognize them when they are offered, and use them to make connections that support understanding.

Don described an example of teachers' work in this conceptual space from the Mexico and Migration unit in which students hear other rich examples that seem to help illuminate their own experiences. He referred to students sharing their own family migration stories and hearing stories of others in which migration experiences are shared in narrative form. During this lesson, Don recorded data from students' moving experiences so his students could then look across their experiences to see relationships between stories. Don noted, "I think the more that they see this data, the more that they see examples from their own peers, that really it helps them to make that *transition* to the content that we may be trying to get across." In the unit, students also considered data that represented larger patterns of Mexican migration both within Mexico as patterns of rural to urban migration and into the United States.

The unit also provided several "transition" stories of Mexican migration. One was a video of a Mexican family's migration from rural Durango to Ciudad Juarez along the Mexico-US border. Students also heard an interview with a Mexican immigrant to the United States and Michigan in which she describes her experiences. These stories raise possibilities for students to explore each of the unit's big ideas, and lessons are designed for students to consider and engage in conversation about the big idea questions that are provided in the unit. According to Don, having students share their own family migration stories, hear other students' migration stories and the migration stories of Mexican immigrants, and investigate statistical data of migration patterns helps them move back and forth between personal experience, others' experiences, and subject matter content in ways he described above. This movement among representations provides students rich examples and plenty of opportunities for them to develop relationships and make

connections between examples so they can develop deeper understanding of the big ideas, their personal experience, and subject matter.

<u>Helping students make connections</u>

Tim, however, raised several difficulties students had in making connections between personal experiences and subject matter. According to Tim, part of the reason is because students are accustomed to more traditional social studies in which they have to memorize capitals or names of famous people. He referred to the big idea *knowledge is subject to change and interpretation* as especially challenging because students "have been taught that there are right and wrong answers, and what the teacher says is right, and you have to say what the teacher says." He wanted to "get them away from that type of thinking." Part of the challenge for teachers that Tim raised lies in shifting student thinking and helping students see themselves as capable of constructing their own knowledge. According to Tim, this required making the big ideas relevant to students, helping them make practical connections, and seeing the utility of using the big ideas. One way for them to see their utility is to have them apply the big ideas to their own experience.

Tim made the case that the big idea *knowledge is subject to change and interpretation* also has application across other subject matter, which helps students develop understanding of the big idea. He noted that his students made connections to what they were doing in math class, since he had been emphasizing in math that there may be one correct answer, but there is more than one way to do a problem to arrive at that answer. Tim believed there had been crossover in math class with the big idea of *knowledge being subject to change and interpretation* since students were learning that

you could understand and even do a math problem in different ways. For Tim, this was similar to having different interpretations of the same data. However, Tim believed that these connections were more implicit than explicit for students, and that they might not make connections between the big ideas, their personal experience, and content in ways that are easily discernible. So, it is very important for the teacher to be aware of possible connections students might be exploring. This also raised implications for how the teacher understands student understanding.

These comments by Lynn, Don, and Tim seem to point to the interrelated nature of the conceptual spaces that students and teachers are working in to create meaning and the need for teachers to see knowing as an ongoing process of exploring generative possibilities for meaning making. It also suggests they view the curriculum as flexible and dynamic to allow for these movements between students' personal experiences, others' experiences, and subject matter. Making the big ideas and key subject matter concepts relevant to students' lives is a key attribute of meaningful learning experiences. This can mean starting with key concepts and helping students see how they relate to their experiences in and outside of school.

For example, Lynn noted that she likes to start with content first so that students have something to refer to when they consider their own family migration experiences. She preferred to start with content so that her students will have content background knowledge they can connect to as they talk about their personal experience. This tension of picking a suitable starting place and deciding whether to start with students' personal experience and move to content, or to start with content and use students' personal experience to develop deeper understandings of that content is central to the challenge of

working in the conceptual space. Lynn still advocated a movement back and forth (or up and down Don's ladder) between the content and students' experiences in order to develop understanding, but she believed it is important for students to have referents in subject matter that they could connect to.

Lynn noted that her students' investigations of the Mazahua (a native group in Mexico that made a rural-to-urban migration) proved to be an important anchor for students to refer to as they were talking about their own migrations and experiences moving. For Lynn, her students "were able to get the content first, [they] had to take one step forward, then take two steps back, but they would always have that content in the back of their minds, and then relate it to something they understood more personal." Again, the metaphor of a ladder, or steps and rungs, may be important for teachers as they think about students moving along a continuum of understanding. What's important in such a conception is the movement, the active work of seeing and making connections, not necessarily where one ends up on the ladder. However, the "ends-in-view" must guide this movement to ensure it "does something to prepare a person for later experience of a deeper and expansive quality" (Jackson, 1985, p. 6).

For Lynn, this movement may be directional, with understanding about subject matter content "one step forward," and exploring personal experience "two steps back." However, I believe she places greater emphasis on the movement, and the idea that students can draw upon their content understandings to "relate it to something they understood more personal." In this sense, students are moving forward and backward all of the time, but it is the connections they make between personal experience and subject

matter that move them forward in their understanding. In the follow-up interview, Lynn noted,

> To have that [subject matter] content also helps them connect to their own personal life or their own personal connections to the content and brings along their ideas.... And then I'll say, "Okay, let's look at the bigger picture"... of the concepts of Mexico migration...and tell me how that's so similar to your own experiences. So I have a comparison group, and I'm just a facilitator asking questions and trying to help them make those connections. And as time goes on they start making them a little bit easier without so much direction from you. (Lynn interview, 4/20/04)

From the initial discussion in the PLB prior to viewing the video segments, the teachers talked about the importance of working in the conceptual space between students' ideas and experiences and subject matter. From the conversation, one gets a strong sense of the teachers wanting to support student understanding by allowing them opportunities to explore multiple representations and uses of the big ideas in both their personal experience and subject matter. Although this approach may be challenging for students, the teachers shared the importance of the big ideas for students moving between personal experience and subject matter, and that their moving among a variety of examples from both personal experience and subject matter supports their developing deeper understanding of the big ideas. The metaphors of a "ladder" and "calliope" provide useful tools for teachers thinking about the challenges this work presents. How students traverse this terrain and make use of multiple representations depends on how artful and responsive the teacher is in the medium of the curriculum.

<u>Viewing videotape of big ideas in use: Opening and closing doors on issues of class and</u>
<u>race</u>

After viewing the first video, Lynn said she noticed herself "trying to figure out where their knowledge was" and that her students struggled with "huge concepts," such as racism. Lynn said she tried to attend to students' prior knowledge because she was "trained to kind of figure out what information they already knew." For example, she wondered what connections her students made between the big idea *space becomes place* and issues of race. She noted that she didn't think her students understood the concept of race very well since they hadn't developed understandings of the role of race in history. She wasn't sure what her students had learned in social studies classes about race in previous years.

Here, she cited the importance of students' personal experience in making sense of concepts such as race and class by noting, "They had no clue about social class or racism, except through historic events...and movies." Lynn suggested that students could develop understanding of key concepts by drawing upon prior historical knowledge and popular referents, such as movies. However, although Lynn had noted the role of personal experience in helping students develop understanding, she didn't necessarily see students as "raced" or "classed" themselves, or as having personal experiences within those conceptual categories. Instead, she may have viewed personal understanding of these concepts as coming from their learning about historic events in school or through popular culture referents.

Lynn's comments suggest a view of social studies knowledge in which important concepts, such as race and class, are understood through formal exposure to these

concepts in school rather than through lived experiences that may make students more directly aware of how issues of class and race affect their lives. Her view of race and social class suggests that these are detached concepts that students must learn in certain settings rather than investigate as a part of everyone's experience. Rather than see race and social class as shaping experience and even students' school realities as an integral part of everyone's experiences, Lynn wanted students to have some prior understanding of the concepts as a starting point. This was consistent with her earlier discussion of wanting students to have content knowledge background so they were better able to talk about issues and examples of social studies content, such as race and class, by having certain conceptual referents that would help them make sense of their personal experience.

This is a challenge that the teachers struggled with in the curriculum. This tension stems from the learning paradox that suggests that in order for students to learn social studies subject matter, they must already have some understanding of that subject matter to build upon. Supposedly, by having this background knowledge of key concepts, for example, they are better able to make sense of other subject matter and their own personal experience. Thus, the more students know about a particular topic or concept, the more likely it will be that they can ask meaningful questions, think more critically about information they encounter, and make sense of their own experience. As suggested earlier, where to start in developing the relationships between personal experience and subject matter was a key tension in teaching for meaningful learning. Lynn expressed part of this tension.

However, working in the conceptual space between students' experiences and subject matter means that teachers are able to see subject matter concepts and theories as having their origin in social experience, and that students' lived experience contains experiences with or within these constructs. Working in the conceptual space between students' lived experiences and subject matter means that students' experiences offer opportunities to learn subject matter and interrogate issues such as race, class, and gender.

Lynn also suggested that considering personal experiences with concepts such as race or class might result in teachers and students delving into "sensitive issues." She believed it was important to be "careful" when exploring this terrain, saying,

> You don't know how much to push it. This kid might be internally thinking, "You know what, I'm poor, or my parents are racist." A lot of people don't want to talk about their nationalities either.... I had parents who had called me up because they had to take that sheet [family migration handout asking about families' ethnicity, nationality] home. They wanted to know why they should fill that out.

As Gloria Ladson-Billings (1996) has argued, "Issues of race are avoided in U.S. classrooms for the same reasons that they are avoided in everyday life. We have not found ways to talk about them without feelings of rancor and guilt" (p. 101). Professional learning in the project had provided teachers with the language to talk about meaningful learning, disciplined inquiry, and big ideas, but it had not necessarily provided the language for talking about issues such as race and class that remain problematic for many social studies educators. While the big ideas may offer opportunities for teachers and students to interrogate issues of race, class, and gender, both in personal experience and

subject matter, they may be reluctant to do so or lack the language to do so, since these topics are typically avoided in classrooms.

The teacher's stance toward critical issues such as race, class, and gender will affect how these issues are addressed in classrooms. How, or whether, they see these issues in relationship to students' lives maters. Their own comfort level in raising these issues and addressing them in lessons will determine how, and even whether, students will grapple with the complexities of these constructs, study their effects, and work to unlearn the racist, classist, and sexist thinking and behavior that permeates our daily lives. An "epistemological sensitivity" (Britzman, 1991, p. 43) that acknowledges one's own stance toward certain concepts and knowledge must be fostered so that teachers can become more aware of how and why they are making decisions within this conceptual space and creating certain meanings, while ignoring or rejecting others. In other words, working imaginatively in this conceptual space requires recognition of how power, ideology, and interests limit the kinds of meanings that might be created. According to Britzman (1991), it is a "critical awareness of perspectival boundaries" (p. 43) that may limit and interfere with the construction of meanings.

After viewing the first video, Tim said he noticed the many connections made in the classroom by students and teachers, citing the Titanic, "the chain effect [chain migration effect] and push-pull theory, and then there were also connections to racism, rich vs. poor, the big city connection, and then their connection with fitting in to different groups at school." Tim said this was similar to many conversations he has with his students in which they make many connections to the big idea, although they don't necessarily use the terminology of the big idea itself. In other words, students start to

build on the conversation by going off in many directions and making connections across topics and issues, such as race, class, urban spaces, and their own personal experiences, without necessarily referring back to the big idea. Tim believed, however, that students were expressing an implicit or tacit understanding of the big idea by making these connections. This issue is explored in the next section.

Susan believed that when students raise ideas or examples, like the Titanic, they are "opening doors" for the teacher and other students. When students draw upon personal experience or use examples they can relate to, this "opens doors" that can help them develop understandings of subject matter. When teachers pursue these "open doors" it is evidence of artful thinking, according to Eisner (2002). Eisner notes that in the arts, "ends shift; the work yields clues that one pursues" (p. 8). However, for Susan this raised the challenge of understanding students' levels of understanding when they draw upon these personal experiences. Pursuing "open doors" required paying careful attention to the qualities of classroom experience and students' ideas. She wanted to know what connections students are making and how they are making those connections. She also talked about wanting to know how she can better support students making these connections to develop deeper understandings, a significant pedagogical challenge.

Teaching as an aesthetic act in the medium of curriculum

Based on their comments and observations during the PLB session, the four teachers support students drawing upon their personal experiences and subject matter to provide multiple representations and opportunities to explore the big ideas. The big ideas provide rich opportunities for students to criss-cross the vast conceptual terrain between personal experience and subject matter in social studies. In many ways, teachers working

in this conceptual space make use of the conditions that cognitive flexibility theorists suggest support advanced knowledge acquisition. These conditions include avoidance of oversimplification and overregulation, the use of multiple representations and "cognitive lenses" (Spiro, et. al., 1988, p. 378), the use of ill-structured cases (such as those arising in personal experience and from social phenomena), and conceptual knowledge as "knowledge-in-use" (ibid, p. 380). The big ideas and the movement from examples in personal experience, the curriculum, and other social studies topics and issues immerse students in complexity, provide multiple representations for exploration, and encourage students to use and apply certain conceptual lenses in their investigations of personal experience and subject matter.

The teachers drew on their ends-in-view vision of ML/T and disciplined inquiry to support students as creators of their own understanding and knowledge. They also recognized their own role in paying close attention to students' ideas and examples from personal experience to identify rich opportunities for representation, exploration, and connection that might support student understanding of subject matter. They recognized the challenges in doing this work, since they had to be able to make connections and support students in making connections across diverse ideas and examples using the conceptual lenses of the big ideas.

Teaching as an epistemic activity in the context of ML/T requires an aesthetic stance that views teaching as creating meaning in this conceptual space, being attentive and attuned to students' ideas and curriculum, and being responsive in ways that support meaning-making by creating connections that are rich for students. Creating meaning by drawing upon multiple representations that are provided by students, the curriculum, and

subject matter, and developing connections across these multiple representations and dimensions that support student understanding requires a strong sense of the ends-in-view and a creative, flexible stance that is willing to explore almost endless possibilities for making meaning.

<u>Considering possibilities for meaning making in the conceptual space</u>

A key challenge is knowing *when* to make connections and *which* connections between students' ideas and experiences and subject matter are most appropriate or likely to be the most fruitful. There are multiple possible connections that might be made in teaching and learning using big ideas. During the PLB, Tim noted that there are almost infinite connections that can be made between content-related topics, between personal experience and content, and between students' experiences and ideas, and it is difficult at times to know which ones to pursue.

The range of possibilities can be overwhelming, and a lingering question remains as to *how* teachers make decisions in this vast conceptual space and determine which possibilities and directions are worth pursuing or exploring. Certainly, not all avenues of meaning-making would be generative or result in meaningful learning of subject matter. During the PLB, the teachers talked about how they determine which directions had potential for developing deep student understanding.

While discussing the first videotape, Don felt like this was a prime place for newer teachers to see the depth that's possible using the big ideas and "this type of teaching. " He noted that this lesson (and conversation) could have gone in any number of directions about race, gender, or class. He believed this complexity is important for other teachers to see, and that it's okay to take one of those areas (race, class, gender) to

explore in depth with students. Watching the videotape of the class talking about how race, class, gender, and nationality defined certain spaces raised many questions for Don that he thought would be worthy of further exploration:

> I just wrote down notes like, Why are people in social classes?, might be a good thing to talk about with kids. Who puts them there? How do they get there? Why do they get there? What keeps people within social classes? How much does perception play a role in people being within or out of a social class? I think that that's an example. You could do that with the gender issue. You could ask similar kinds of questions. You could ask racism questions, too. So here's an opportunity for you as a teacher to take the complexity of the lesson and go with the class, where the class is going to take you.

Don argued that this provided an opportunity for the teacher to take the complexity of the big idea and the social studies concepts students had raised and go in directions the students or class desired. He noted the conversation about the Titanic as an example of how social class defines certain spaces was an opportunity for the teacher to have the "joy stick" and say which way the class would go in exploring these important concepts. He noted that the students had an interest in this conversation, that it connected with them, and that often the teacher may not have control over the variables that might determine which direction should be taken. Don believed that when the teacher sees a direction or opening provided by the students, they should go for it and take it as deep as it will go, and that it's okay to go into depth in one of those directions rather than try to cover them all. Not only are the students interested in delving deeper into these concepts, these concepts are important social studies content for students to understand.

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Don was noting the importance of the teacher being able to flexibly respond to students' interests and the directions they might want to pursue. He asks, "Okay, which way are we going to go? Where are the kids taking me as a teacher, and once they take me there, can I just go with them?" The teacher must also flexibly respond and follow their students' lead in ways that make connections to significant subject matter content.

However, for teachers to know which directions to take or allow students to take them, it is important that they're able to recognize the potential or possibilities of students' ideas. This is where taking students' ideas and explorations into some depth requires an understanding of subject matter, students and their contexts, and life experiences that can be drawn upon to make generative connections that promote student understanding. Going into depth means being aware of deep potentialities that may lie in students' ideas and experience, and possibilities for making connections with subject matter. Teachers must also take students deeply into the content in ways that can develop subject matter understanding, or they must be able to draw upon subject matter understanding to develop understandings of experience.

Being a content expert, such as those described in much of the literature about teachers' epistemological orientations (Ball, 1993; Lampert, 2001; Wilson, 2001; Wilson & Wineburg, 1993; Wineburg & Wilson, 1988, 1991), means that you are able to make these connections and develop generative relationships between students' ideas and experiences and the content. However, I believe that these teachers had a strong sense of the ends-in-view and had developed capacities for creating meaning in the medium of this particular curriculum due to their intensive work in the curriculum. They may have developed what Delpit (1995) refers to as a "receptive, connected stance" in which

teachers learn "to be part of the world rather than (try) to dominate it...(learn) to see rather than merely to look, to feel rather than touch, to hear rather than listen: to learn, in short, about the world by being still and opening (one)self to experiencing it" (p. 92). Such a stance requires taking on multiple perspectives and trying to understand the world from different points of view. It requires being able to recognize "open doors."

> Referring to the Titanic example, Don noted that the student
>
> really had it down with what I saw in the movie as well. I'm thinking, yeah, that's where all the poor Irish people were down there on the third level, down in the boiler room, and that's where they remained because of the stratification that took place, how much your ticket cost, the birthings, and everything else.... That went on on that kind of an ocean liner. That's a point for me where you could get what he talked about and contrast what he first said. He was kind of joking around at first, but then he really had it when he started talking about the economics and how people were put in different places on the ship, or different spaces on the ship, and some of them just remained there.... They didn't go above that particular location. You could use the ship as an *analogy* to social classes and then branch out from there."

Using analogies, such as the analogy of a ship to social class, helps students understand something new and unknown in terms of what is already known. As described by pragmatist theorists in Chapter 2, it involves a creative process of recognizing "rightness of descriptions" or "a matter of fit" among different elements. Teachers must be able to recognize or create relationships, such as analogies, between subject matter and students' ideas. This would require being "able to view the subject matter through the eyes of the

learner, as well as interpret the learner's comments, questions, and activities through the lenses of the subject" (McDiarmid, Ball, & Anderson, 1989, p. 194). Teaching for meaningful learning, then, would seem to depend upon teachers being able to view and understand student learning and classroom practice through certain disciplinary lenses, an epistemological stance that acknowledges and draws upon the similarities between student knowing and disciplinary knowing, and between students' ideas and subject matter.

<u>"Meshing" students ideas' with subject matter</u>

Tim identified some of the challenges of working in this conceptual space. He said, "you have to be willing as a teacher to facilitate the conversation and make sure you *shape it* the way that you want it, and also go in the direction the kids want to take it. *The hardest thing for me is to try to mesh all this stuff together when the kids take it in different directions.*" For Tim, the issue of trying to "mesh" the many directions students may want to go with subject matter and curriculum was a significant challenge. It required being able to go in "the direction the kids want to take it" while shaping it the way the teacher wants. This is similar to the work of the artist: "The artist's task is to exploit the possibilities of the medium in order to realize aims he or she values" (Eisner, 2002, p. 10). Tim found it difficult to "shape" conversation in ways that respected students' interests and led to outcomes or ends that he valued.

Lynn agreed by saying that this is especially challenging in social studies since "we have all those strands," referring to the many social studies subject matter strands and standards that teachers must take into account and address as they teach. For Lynn, discussion about the Titanic and *space becomes place* became an opportunity to explore

concepts and issues that were related to the historical and economic strands of the standards and benchmarks. However, students' investigations of *space becomes place* did not easily map on to the state standards and benchmarks in history or economics. This poses a challenge for teachers who prefer to teach in more responsive ways. While the teachers felt they were addressing the standards and benchmarks in the inquiry strand of the state standards, they noted the challenge of fitting the unit's content and the work students did in the unit into other strands. In some ways, the state social studies standards served as "ends-in-view" that were determined by others external to the teachers' classrooms, and may have been in competition with the "ends-in-view" the teachers had developed through their work in the curriculum.

Again, making sure the directions and examples students are interested in exploring are generative for developing important content understandings requires a teacher who is able to create these connections AND help students understand these connections to support subject matter understanding. The challenge, however, remains trying to "mesh" these different strands coherently to support student understanding.

Teaching in ways that are flexible and responsive to students' ideas and experiences, yet mindful of subject matter and curriculum in ways that support deep student understanding of content is at the center of teaching for meaningful learning. How these teachers managed this challenge of "meshing" students' ideas and the directions they want to pursue with significant subject matter and standards and benchmarks in the medium of curriculum required seeing the historical, political, economic, social, and cultural strands of subject matter IN people's experience. It

required seeking, seeing, or being able to develop relationships between lived experience and subject matter, between lived experience and knowing.

One way the challenge of teaching to national, state, and local standards and a set of facts and concepts in a field such as social studies might be managed is to acknowledge students' ideas and experiences as subject matter-laden. By seeing subject matters and the disciplines they represent as our best efforts to understand past and present social phenomena and experience, teachers might begin to see how they connect to and illuminate present experience. Looking for ways to make connections between students' lives and subject matter, and helping students learn to apply the methods, procedures, and concepts of the disciplines is an important quality of "meshing" and restoring "the dialogic relationships among knowledge, lived experience, and theory' (Britzman, 1991, p. 33). Such a stance seeks out relationships and connections between lived experience and knowledge that is represented in curriculum, subject matter, and standards and benchmarks. As Britzman (1991) has argued, lived experience is often divorced and fragmented from disciplined knowing in school settings. As I argued earlier, behind every theory of knowing is an implicit theory of experience. In this case, the two are intertwined, and the challenge lies in recognizing the relationships between students' knowing and experience, between students' lived experience and social studies content, and working to create meaningful relationships between the two that support understanding. The teachers in this study worked in this conceptual space in which "pedagogy becomes productive, constituting the forms of knowing, the conditions for knowing, and the subjectivities of knowers" (Britzman, 1991, p. 38). As Thayer-Bacon (2000) has suggested, working in this conceptual space is a creative act involving

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imagination. This aesthetic and imaginative stance "helps us create new orders as it helps us bring parts that seem to be severed together, as it helps us see patterns where there appeared to be none" (p. 155).

When asked what helped them see patterns, make connections, and "mesh" students' ideas and interests with standards and benchmarks within the curriculum, the teachers noted that what helps them make decisions about what paths to pursue has to do with knowing what lies ahead and knowing what direction you want them to go. For Lynn, this was a very practical concern, like knowing what was in the next lesson, but it also involved having a sense of the overall purpose and flow of the unit. In other words, having a clear sense of the ends-in-view is crucial for teachers. It provides a horizon against which these decisions can be made. It allows them to work in the medium of curriculum in flexible and responsive ways, since they know what outcomes and understandings are important for students to be moving toward. The ends-in-view provide the horizon of possibilities that teachers want to be moving toward as they teach each lesson, yet allows them the flexibility of moving toward these possibilities in various ways depending on students' preferred paths and explorations. These preferred paths and explorations take the form of examples, experiences, and questions that students want to pursue.

In interviews following the PLB, the teachers referred to several ends-in-view that helped them "mesh" students' ideas and experiences with standards-based subject matter. For Susan, it comes from "knowing your content and knowing what may connect with what they're talking about...down the road." For Tim, it required looking for key issues and themes that students will be interested in, that are relevant to their lives, and will lead

them into significant subject matter. Not only does this require an understanding of the content, it requires an understanding of students' lives and how the content can be made relevant to their lives. Teachers like Susan are always looking for these connections:

> It's just a matter of trying to always, *always keep your eyes and ears peeled.* Even when you're outside of class, you know, it's just something I can bring back to my classroom. We are constantly ears peaked. You know, what are they saying, what are they *really* saying? How can I help them connect with their life and their neighbor's life?" (Susan Interview, 4/20/04)

Being artful

During the PLB session, Don spoke powerfully to the necessity of teachers being able to recognize opportunities for creating meaning with students. For Don this is what it means to be artful as a teacher:

> Recognizing when you have a topic, a metaphor, an analogy, whatever will work for you…*being sensitive and being on the lookout for those kinds of opportunities* is important. As you were saying, everybody wants a packaged approach. This is not a packaged approach. You have to *think*. That's why it becomes a little tougher to decide, okay, do I want to continue with this direction that the kids are taking me, or do I want to try to swing it back to the direction I was trying to get them to learn from the lesson for that day, to do what I was planning on doing that day? I think that the more the student -- again this will vary from year to year -- the more the students are able to stick with the concepts and express themselves in different ways, whether its interaction, verbal, or whether it's a collage, then you're going to get better understanding from the students. Some groups, that's

where you have to look at other things like writing scores, where your kids are at as writers. Maybe writing is not the way to go for that particular group that year, maybe it's more with a poster, maybe it's more with a ship analogy. I think that's what becomes *part of the art of being a teacher* is to recognize those opportunities. Last year's group wasn't as adept in using written skills, or as readers. So, I think you have to know not just the social studies content, but how your kids are doing as far as being writers and readers and where their discussion skills are. That's *part of the art, part of recognizing what will work and what won't work.*

For Don, being sensitive and on the lookout for opportunities, recognizing topics, metaphors, and analogies that will work, and thinking about what directions will be fruitful for developing understanding constituted the art of the teaching. Recognizing fit, creating generative connections, seeking possible relationships that support understanding is an artful enterprise. It required knowing subject matter and students' abilities and capacities to figure out what directions and activities should be pursued. It required constantly trying to understand what students are thinking, how they are thinking, and the ways they represent their thinking or understanding.

In the follow-up interview, Don referred to this capacity for artfully working in the medium of curriculum as a matter of judgment and decision-making:

Well, teachers make thousands of decisions in a day. Some of them are very technical decisions. Some of them are very meaningful kinds of decisions...about how the lesson's going. Where we're going to direct the lesson, and we're going to meet more of those "aha" moments that we hope are going to lead us to a really

good understanding [of content].... And I just think teachers are *conducting an orchestra....* You can think of it as, you know, *putting your decisions on canvas.... You have all these varieties of decisions that you make throughout the day...and it's recognizing when you've got something good going that you have to stick with it, and recognizing when it's just not going -- you know that you have to change.* (Don Interview, 4/29/04)

Don provides a sense of decision-making in teaching being like conducting an orchestra and putting your decisions on a canvas. He also provides a sense of the complexity of classroom practice and the many decisions needing to be made that draw on qualitative judgment, such as determining fit, what works and what doesn't. From Don's conversation we get a sense of teaching as "flow," in which people pay attention carefully to better understand what is happening and why, look for patterns and relationships, and actively consider alternatives to doing work that might make it more meaningful and satisfying (Csikszentmihalyi, 1997). These are qualitative judgments that are made in the moment.

Taken together, what these teachers are referring to is the capacity to be perceptive, "the ability to differentiate and to experience the relationships...an interplay of qualitative relationships" (Eisner, 1990, p. 64), and to make decisions based on those relationships. It is teachers' ability to perceive the qualitative relationships between subject matter and their students and their contexts in the medium of the curriculum that constitutes this artful approach to teaching.

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<u>Considering another metaphor</u>

In both the PLB and the follow-up interview, Don also referred to this capacity as "seeing the court," a basketball metaphor that highlights the ability to see the whole court and relationships on the court during play, to see the open player, what the defense is doing, where your teammates are located simultaneously, and fluidly make decisions that take these various factors into account. Being able to make decisions in the moment, during the action, means you have a sense of the qualitative whole, dynamic relationships within the whole, and possibilities of design or action (creation) that will result in favorable outcomes. It's knowing in action, the ability to quickly perceive relationships in the field of play (or vision) and make sense of what's going on, make decisions, and act in ways that support others' efforts in a concerted fashion.

<u>Tensions between personal experience and subject matter</u>

However, such perceptivity and decision-making are guided by the teacher's conception of subject matter, students, and the relationships between the two. Key tensions may exist, depending on the teachers' views and the contexts of their practice. For Lynn, issues of social class and race were perceived as "sensitive" to students, parents, and herself, especially since she was teaching in a religious, private school setting. She noted that students could opt out of having to publicly discuss these issues when she stated, "I don't require all the students to respond, so it's totally up to them. Through journaling they do answer a lot of that, they do journalize, through journal logs, about what happens, how they feel about it. I read a lot of their journals based on those same questions... They were talking about social class and racism and all that in their journals." Journaling, then, might provide an avenue for students to think about and share

their thinking about important social studies issues. Journaling seemed to be one way that Lynn and her students could manage the discussion of "sensitive issues" in her classroom, and it may have provided a means for students to make connections between personal experience and subject matter about these issues.

Tim referred to conversations about issues such as race and social class as "high intensity stuff" and noted, "I don't think it comes up in other classes because I think with this style of teaching, it's different. You really have to be a type of facilitator to push kids to think about different perspectives, different points of view." For Tim, this creates a tension between allowing students to share and explore different perspectives when appropriate and helping them discern correct and incorrect answers to certain questions:

Math class is a lot different because there are different ways to do math problems, but there are right and wrong answers, and somehow you have to arrive at the right answer. That's one thing I wrote down here. I think there was another connection to *knowledge is subject to change and interpretation*, because when is there a correct [answer]? Because Lynn was trying to get at the whole idea of social class.... Sometimes you just have to tell them. A lot of my kids would say, "Well, Mr. W., ... knowledge is...you can have different ideas about things, you know." But sometimes there are things that have, there's a correct answer to it, and sometimes there are things that have incorrect answers too. That big idea... this comes up in my classroom too, kids will say, "That's not really the right idea, that's not where we're going with this."

For Tim, this raised the question of how do you know when there's a right answer and when it's a matter of perspective? This raised questions about what's reasonable

within the boundaries of multiple perspectives. It also raised questions that are central to social studies educators about when it is appropriate for students to take a more relativistic stance or a more critical stance toward their own experience and subject matter. This is especially an issue because social studies classrooms often encounter (or gloss over) moral issues, political issues, and social issues that invite many different perspectives and competing "right answers." In the project, there was some discussion that there are some answers that are more credible, valid, or "better" supported than others, and that students must understand criteria for determining credibility and validity. The criteria that are developed will depend on the discipline, the community of learners, and the contexts within which they operate.

How teachers manage this tension may depend on the "perspectival boundaries" they bring to understanding particular kinds of knowledge and experience. In the case of what constitutes a valid claim supported by credible evidence, teachers and students will need to be aware of their own deeply-held, pre-existing beliefs about knowing and knowledge. They will need to recognize the limitations of their own perspectives and what they consider to be "right and wrong answers."

Constructing understanding through meaningful learning approaches and inquiry are not neutral practices that are value-free, politically neutral, or blind to cultural background. For example, Elizabeth Ellsworth (1997) states that "claims such as these hide the histories, cultural competencies and assumptions, and interested desires...require(d) of its participants and positions them within. It denies that [inquiry] circulates within pre-mapped and closed networks of social and political relations" (p. 85).

These and other tensions that operate within the conceptual space between students' lives and subject matter require further exploration. Norms and assumptions about knowing and knowledge need to be made explicit and critically examined by teachers and students. Cherryholmes (1999) reminds us that our concepts and lenses are "socially constructed within contexts that are political, economic, cultural, ethnic, socially stratified, linguistically diverse, and gendered...we inherit preexisting conceptions, desires, and methodologies that we use" (pp. 36-37). These preexisting conditions, conceptions, and methodologies shape what we know and how we come to know as well as what we conceive to be "possible." Considering the epistemological challenges and tensions that exist in the medium of ML/T curriculum, then, requires an awareness of our own knowledge and ways of knowing and the conditions and contexts that shape and constrain our beliefs and knowledge. This, too, I believe is an aesthetic act. It requires being aware of the means we use to construct meaning. As Iser (1980) notes,

> The ability to perceive oneself during the process of participation is an essential
>
> part of the aesthetic experience; the observer finds himself in a strange, halfway
>
> position; he is involved, and he watches himself being involved.... The resultant
>
> restructuring of stored experiences makes the reader aware not only of the
>
> experience but also of the means by which it develops. (p. 134)

Making connections between students' personal experience and subject matter requires such perception. It requires an awareness of how students create meaning and how their lived experience is the source of their meaning making. The teacher must also be aware

of how s/he constructs meaning from classroom experience and the conditions and contexts that shape how meanings are created in the classroom.

Such awareness may help teachers begin to recognize new or different possibilities for creating meaning. Maxine Greene (1991) speaks to the power of art and aesthetic perspectives to "move us into spaces where we can create visions of other ways of being and ponder what it might signify to realize them" (p. 27). With her, I believe such awareness calls for an "imaginative capacity" and "the ability to look at things as if they could be otherwise" (p. 19). As Greene notes, "imagination, more than any other capacity, breaks through the 'inertia of habit'" (p. 21).

### Epistemological Challenge #2: Understanding student understanding

The second epistemological challenge these teachers talked about during the PLB is related to understanding student understanding. Part of the challenge is identifying what counts as understanding. This was especially challenging considering students' different ways of constructing and articulating understanding of the big ideas, their different levels of understanding, and whether or not understanding big ideas in relation to personal experience, instead of content, constitutes understanding. As Don suggested, the classroom is often a calliope with many different sounds emanating from students.

What teachers notice and how they interpret students' ideas, work, and conversation is based on their sense of ends-in-view. These include what meaningful learning looks like in the classroom, their view of disciplined inquiry and the subject matter they teach, what understandings of the big ideas mean, and how students use the big ideas in the inquiry process and their learning.

For example Tim noted at the beginning of the session, "I think it is tough because they [students] don't come out and explain things sometimes when you want them to." Tim shared what he saw as the difficulty of making connections between students' understandings of big ideas and what he thought were the meanings of the big ideas, since they may be very different. Tim had a more sophisticated and nuanced understanding of the big ideas through his engagement with big ideas in the curriculum and professional learning experiences. It's difficult for teachers to identify what might constitute an appropriate level of understanding for a sixth or eighth grader who is just beginning to explore the rich conceptual landscape offered by big ideas.

However, it is important to note Tim's use of the word "when" in this discussion, which suggests that students eventually arrive at or develop an understanding of the big idea, if given enough time. Time was identified as an issue here, since teachers are looking for student understanding in relationship to the work they are doing around a particular idea at a particular time. Tim also stated that students may articulate this understanding outside of the classroom or in another class:

> I have a lot of kids say especially with the big idea *knowledge is subject to change and interpretation*...they'll talk about that in different classes, that they are talking about well one person thinks this and another person thinks this...and that's when I feel like, well, they are getting that big idea, but it doesn't always come out as "Oh yeah, that's our big idea, it's right up there." There are really small ways that they do that. *As a teacher you have to tune in to it.*

Tim suggested a need to be alert to students' ideas and conversations, even outside of the classroom or in other classes, and noted that there may be many variations of the idea,

which requires a flexible interpretive stance on the part of the teacher. Tim expressed the importance of being "tuned in to" students' ideas and conversation, but it also requires the teacher to create meaning about students' ideas in relationship to his or her own understanding about the big ideas.

Throughout the conversation, Tim referred to students' ideas and understandings as more tacit or implied than explicit. For example, he described the connections they make between the big ideas, personal experience, and subject matter as "subtle things that happen [and] at least prove to me a little...that they're taking these and using them in other places." Tim expressed an intuitive sense of where students were in terms of their understanding. This intuitive sense drew upon his understanding of what understanding of the big idea entails, his knowledge of his sixth-grade students and their abilities to communicate their understandings, and his sensitivity to a range of data that he encounters everyday in the classroom as students perform a variety of learning tasks. In some respects, understanding student understanding is an ethnographic task that requires a sensitivity to subtleties, a "tuning in" to discourse and behavior, and an interpretive stance that is constantly making sense of a steady stream of data, drawing on hunches or intuitions, and constructing meaning across a range of experiences in the classroom.

During this conversation, Lynn also noted that students often "can't verbalize" the big ideas. Since these big ideas are broad and can be understood and applied in many different ways to many different situations, the teacher may see a range of responses in the classroom. Tim agreed. "Kids have a hard time explaining this kind of stuff in writing because their writing is still developing." This further compounds the difficulty of discerning student understanding since they may struggle to articulate their understanding

due to "developing" abilities to communicate or articulate their understandings. Tim also questioned his own ability to represent his understanding: "I have a hard time putting it into words, and I think they do too." Tim conveys a sense of his knowledge and his students' knowledge being tacit, that "we know more than we can tell" (Polanyi, 1967).

"Getting" the big ideas

Lynn shared a view of student understanding that also suggested students "get" the big idea when they are able to relate it to their own personal experience: "And how I know if they get it or not is they start relating it to their own personal experiences. There's a connection there, and also they look at different perspectives, like *space becomes place*, there might be different ideas about what *space becomes place* means to them, but they're all correct, if it has anything to do with the big idea." A tension Lynn seemed to be raising is between having a sense that students "get" the big idea and that any understanding counts if students' ideas have "anything to do with the big idea." Again, this seems to suggest the teacher has an understanding of the big idea that they want students to "get," but that it's important to flexibly interpret students' ideas in ways that might make them "all correct."

In the follow-up interviews, the teachers identified several strategies they use to manage this "calliope" of student understanding and the developmental and unique qualities of understanding for individual students. Susan referred to drawing on a range of data in the classroom to help her determine the level and quality of her students' understandings. She noted that she has a sense of where students start and that she listens and watches students carefully in the work they're doing in class. Similarly, Lynn stated that she was able to "access it [student understanding] in different ways, through

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journaling, discussions, drawings, role play" (Lynn Interview, 4/20/04). Both teachers said they noted changes in the language students use. Lynn said that they're "using it. It's everyday language," whereas Susan said, "they're practiced in it. [They] incorporate it in everything that they do...using it in different settings." Both teachers noted that students initially struggle with using the terms, but after practice and using the language to talk about new and varied situations, they start to see students' greater facility and use of big idea language. This is similar to the project's first year of professional development in which teachers talked about the value of learning to use the language of ML/T and having a common language that could be used to share their understanding. Keying into students' language use was a key quality of understanding student's understanding of subject matter.

<u>"Understanding understanding not our own"</u>

After viewing the first video, Lynn noted that her students were struggling with understanding something for the first time. For example, when first discussing concepts such as social class or race, she believed it would take repeated exposure and work with these particular concepts to develop and deepen students' understanding. One issue this raised for Lynn was knowing whether or not her students were on track in developing their understandings about these complex topics. She wanted to know whether they were developing an appropriate understanding of social class and race from this first discussion and how she might be able to know, since understandings develop over time and through repeated conversations. To compound this difficult issue was the fact that each student would understand and articulate their understandings of these concepts differently.

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Understanding the big idea of *space becomes place* and how social class and race affect the ways spaces are defined adds further complexity to the issue of understanding student understanding. Students not only had to understand *space becomes place* but also the concepts of social class and race, and the ways they defined spaces or were played out in spaces.

> Referring to the videotaped conversation, Tim also thought
>
> the kids weren't necessarily referring back to the big idea all the time...they
>
> weren't saying, "Oh that's *space becomes place*." They were talking about it, you
>
> kind of get the idea that they understand the big picture of what's going on
>
> without necessarily using the words, *space becomes place*. I think they're not
>
> coming out and saying it, but I see the connections they're making, and it's not
>
> just a social studies class connection, it's a connection that they're making with
>
> big cities and rich vs. poor, and that kind of thing.

Tim believed students develop and build upon their understanding by making these connections between different topics and issues, although they may never use the terminology of the big idea. For Tim, this suggests the need to understand when they are able to make these kinds of connections.

Susan also talked about the difficulty of knowing student understanding. She questioned her own ability to know what students understand about subject matter, since she is unable to see what they're thinking. She wondered how they make certain connections (from a poster, from conversation, etc.) and why these connections come about. This uncertainty about student knowing and understanding contributed to Lynn's questioning whether she is "doing this right, is this what is supposed to be coming out?"

A key quality of classroom experience for Susan was making student thinking visible so that it is possible to somehow see what they're thinking, either in writing, think-aloud activities, or conversation. Referring to the videotaped classroom conversation, Susan felt that students did understand it without using the words "economic structures."

> They were saying that if you had limited funds you had a certain space on this boat. And that was where you'd be staying, and if you were very rich you had your place too and the two didn't mix, but you had certain spaces on this ship. So I understood that as a level of understanding about *space becomes place.*

Again, the teachers had a more holistic sense of students' understandings about *space becomes place* and social class, based on the conversation, and were able to draw on some specific evidence in the video to support their sense of student understanding. She noted the importance of contextualizing what students were saying and doing to get a better sense of whether or not what students were saying represented understanding of the big idea.

Susan's struggle with understanding student understanding is a challenge Clifford Geertz (1983) identified as central to ethnographic work. For Geertz (1983), a key issue in ethnography is to "understand understanding not our own" (p. 5). Much like Susan, even Geertz was skeptical about fully understanding others. Although multiple methodologies provide a fuller perspective, he noted the problems of translation and "how meaning in one system of expression is expressed in another" (p. 151). He suggested utilizing "experience-near" and "experience-distant" concepts in anthropological analysis. This is partly what the teachers were doing as they described what they saw in the videotape and related it to their own classroom experiences, and

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tried to provide a more careful analysis of what they viewed by describing some of the themes, issues, and challenges that seemed to emerge from their viewing.

Geertz (1983) described the "experience-near" concept as one used to "naturally and effortlessly" define what one sees, feels, thinks, imagines, and which can be readily understood if described by others. The experience-distant concept is one used by specialists to understand others and forward their aims, and suggests a more analytical and detached mode of understanding. Both, he claimed, are necessary for understanding since each is limiting: experience-near can leave one "awash in immediacies" and "entangled in vernacular," while experience-distant can leave one stranded in abstractions and jargon. He thus called for a method of "continuous dialectical tacking" that brings local (near) and global (distant) into simultaneous view, a moving back and forth through the parts that actualize the whole (p. 69). This, he argued, is similar to Dilthey's "hermeneutic circle" and what he later described as an "advancing spiral of general observations and specific remarks" (p. 69) that can move us toward understanding.

In many respects, the teachers seemed to be doing this in their viewing and discussion. They described what they saw, connected specific and local observations to their own experiences in the classroom, and applied certain theoretical lenses to help them analyze classroom experience. These lenses included their understanding of the big ideas, a conceptual orientation to meaningful learning and disciplined inquiry, and a professional learning framework that supported this meaning making process. These conceptual frames helped them pay attention to certain qualities and create meaning about student understanding.

Experience-near understanding allowed teachers to make sense of their students' language use and experiences, while being able to contextualize them with experience-distant concepts, such as their conceptual understandings of the big ideas, the subject matter, and meaningful learning theory. Playing both views off of each other and dialectically tacking back and forth between the two required a strong sense of local meanings and experiences, and the conceptual frames that could serve as useful analytical tools. It required great sensitivity and attunement to students' ideas and experiences and an understanding of the ends-in-view that helped give meaning in relationship to learning outcomes.

Are big ideas the means or ends of understanding?

During the session, Susan asked the group, "What is it we really want them to understand about *space becomes place*? What do we want them to get out of that whole social class [concept] in relationship to *space becomes place*?" Lynn suggested that they want students to be able to apply their understandings of *space becomes place* and that it would look differently when applied to different situations or content. This led to some discussion about the dual purposes of the big ideas. One purpose the teachers identified was a conceptual understanding of the big ideas as ends in themselves. They want students to understand *space becomes place*, how places are created, how people use spaces, and how they define spaces. They also want students to be able to use *space becomes place* as a tool to make sense of their own experience and social studies content. Thus, the second purpose of the big ideas was utilitarian. They provide lenses for understanding experience and content. What would need to be assessed in this case would be students' abilities to use or apply the big ideas.

This created a tension between the big ideas serving as outcomes that we want students to understand and being a tool that we want them to use and apply to understand their experience, others' experiences, and subject matter content. The teachers seemed to suggest that both learning outcomes are important indicators of student understanding. For example, the teachers seemed unsure about what would count as understanding of the big idea when asked if an understanding of the big idea *space becomes place* could be "applied" to personal spaces on the playground or at camp, or whether they had to be able to apply this big idea to the subject matter content. All of the teachers thought that they would want students to be able to apply the big ideas to both their personal experience and subject matter, and that their doing so would be a good indicator of understanding. The teachers talked about the need for indicators of knowing, that students are developing understandings, and going deeper when they can apply the big idea to more varied examples.

For example, Don noted that students can take the idea of *space becomes place* and apply it to the experiences of the Mazahua, the Aldaba family (a Mexican family that migrates to the border), and how people are treated in maquiladoras, so we can see how they are able to transfer and apply this idea. Don suggested that it would be helpful to have a list of personal understandings and places or examples in the curriculum where we would be able to see if kids can make the bridge, or transition, from personal understanding to subject matter understanding.

The big ideas can be understood and applied in many ways, taken in many directions, and represented in multiple forms. For Lynn, the nature of the big ideas raised questions about depth versus breadth:

How much of this understanding do you want them to walk away with? We know they know what it means and they can apply it to their own personal area and space, but to put it into terms of economics or gender or anything like that, I mean it's going really deep with *space becomes place*, and how far do we go with that?

Don thought it would be a good idea to develop examples of bridging or transition items that could help teachers discern whether or not students were able to apply their understandings to other areas. He suggested we ask students to apply their understandings of the big ideas to specific examples offered by the unit, such as the experiences of the Mazahua in moving to Mexico City, the Aldaba family's move to Ciudad Juarez, or the way that people are treated in the maquiladoras:

> [S]o we can begin to see this transition from personal understanding to social. Maybe what we need is a series of personal understandings and make a list of those and then a list of places where, or examples of, space becomes place that we see in the content...and see if the kids can make that bridge of examples from personal to ones of those other ones.

What constitutes understanding and how to discern understanding of the big ideas, since they are so vast, remained a constant challenge for the teachers and one that was important to continue struggling with. For Tim, *"This is the key question for all curriculum and education. How do you know when they're developing understanding, what they're understanding?"*

<u>Providing multiple opportunities for students to develop and demonstrate understanding</u>

This led to some conversation about providing multiple opportunities for students to share their thinking and ways to apply their understandings. For example, Don thought

"some kids are better at drawing a picture, especially kids who have a tough time expressing themselves on paper. And they can draw you a detailed picture of what they think went on in the conversation." Lynn talked about using iJournal as a way to have students share their understanding, but recognized that this may only be good for some students. Still, the teachers struggled with the idea that students express their understanding in very different ways and may not fully be able to articulate what they know. Don suggested,

> I think there can be other ways to show it rather than the verbal-analytical ways to show it. That's why I know I'm not getting it from some kids. I would like to become a better person who, a better teacher who can get it a from a drawing, from a student, and recognize that it's okay for that kid to do it that way just as much as it is for someone who's more of a writer to give it to me that way. I think that that's something that we are doing here, that we may not recognize it as often as it's occurring.

Don and the other teachers were becoming more aware of their own limited abilities to fully attend to and understand the range of representations of understanding students provided in their classrooms.

Don shared that he'd like to be more attentive and attuned to the ways students communicate understanding to be able to get a better sense of what students know and understand. Structuring different opportunities to develop and demonstrate understanding also provides greater evidence that the teacher can use to determine students' levels of understanding and implications for classroom practice. Providing students with a range of opportunities to develop and demonstrate understanding was identified as important to all

of the teachers. Tim and Don thought that interviewing students was a good way to assess students' understandings. Tim noted the value of having transcripts available as a way for him to see what kids were thinking by paying close attention to their language.

The teachers also talked about the value of having consistent big ideas across curriculum, since students' understandings can go deeper and deeper. For example, Tim believed that "after sixth grade they're going to understand *space becomes place* but issues of gender, race, and class need to be developed further." The teachers believed the big ideas provided opportunities for deepening understanding over time and that student understanding could spiral to more sophisticated levels of understanding and knowing. For the teachers, the big ideas provide opportunities for generative meaning making in many directions and levels of understanding and help organize and integrate content, pedagogy, and learning across grade levels.

<u>Having students apply the big idea *knowledge is subject to change and interpretation* to their own thinking</u>

In the videotape of the class discussion from Tim's class, different optical illusions were viewed and discussed. During the discussion, Tim guided students in talking about different interpretations students have and the big idea *knowledge is subject to change and interpretation.* A key challenge identified by the teachers was helping students become more aware of their own perspectives as they view data. They saw this as a challenge for students because it required students to have a sense of how this big idea relates to their own knowledge and understanding, and encouraged them to see their own perspectives as limited and subject to change. After viewing the tape, Tim framed what he was trying to do in this lesson by stating,

My main point [was] why we see things differently…with prior experiences, the

movies we watch, things like that that. I was trying to get them to think about the

fact that we always see something, we always happen to stereotype or generalize,

and we base it on our experiences.

Tim wanted his students to be aware of the frames and perspectives they bring to

data, such as optical illusions, that shape how they may view the data and the

interpretations they develop. For Tim, this idea of having students become more aware of

their own perspectives, as well as other perspectives, was an important learning outcome.

Again, using the big idea in this case meant that students become aware of their own

experiences and connect these understandings to their own thinking and perspectives. He

provided an example that illustrates how hearing other perspectives can help challenge

students' own thinking and the stereotypes and generalizations they may make:

For example, we use the example of a person walking down a sidewalk outside of

our school with a shopping cart. Ninety-nine point nine percent of the kids say

well that's a homeless person. And…they say, "Who is that out there? Well, it's a

bum." Well, what if we walked out there and that person is not a bum, but they

actually just went grocery shopping? You know, I was trying to get them to think

about the perspectives that they have, in spite of the fact that when we think it's

one thing and it might be a little different. Just because it's the person with a

grocery cart we can't qualify that as being a bum. Especially, where I guess a lot

of the kids have these maybe stereotypes or generalizations of things…. They

don't look at things and see all the points of view that could [be] placed [on it],

just the one. That was one of the most important lessons.

Both Tim and Lynn shared that their students had a hard time thinking about why people might see the optical illusions differently. They both referred to brain studies that might help them understand how people perceive visual images differently, but Tim thought, "it's not your brain's fault, it's your perceptions, of all prior knowledge's fault. Your generalizations, your stereotypes. I still have them." For Tim, it's important for his students, and himself, to be aware of their own biases and perspectives. Being aware of one's pre-conceptions and assumptions and how they shape our interpretations was a key challenge. Tim believed that considering other perspectives helped make students more aware of others' perspectives, including one's own, but noted that changing one's stereotypes and generalizations is difficult work.

The teachers shared several strategies for challenging students' stereotypical thinking. Tim said he frequently challenges students' assumptions and perspectives by asking, "Is it really that way? What data do you have to support that?" Susan said that she had students return to their list of things that they thought they knew about Mexicans and Mexico that were recorded at the beginning of the unit. She said her students found the stereotypes "atrocious" after they had learned about Mexico and migration, and they went back to "fix the mistakes they had made." Lynn shared that she now does this with every unit she teaches so that students can be more aware of the "huge generalizations" they often make and have a chance to revise them. Susan also talked about having students think about "wriggle words" they can use when making claims.

Here, the teachers seemed to be talking about not just accepting students' prior knowledge, but challenging it, having them reconsider their initial ideas or stereotypes and what they think they know and make revisions to their thinking based on their

learning. Not only were students learning about the big idea *knowledge is subject to change and interpretation* but they were learning how to apply it to their own knowing.

However, the teachers expressed some uncertainty about whether or not students were adequately developing this ability to be more aware of their own thinking. Susan noted the importance of this work in historical investigation. She wanted students to read historical text and ask, "Who is this person? Why did they write this? Why is it different from what someone else has written? Because to me, I see that leading into research, questioning." She also believed that students become more aware of their own thinking by considering how others think.

In response to a question about how other perspectives help students develop understanding, she responded by saying, "Tim tells the story... well, why did he tell it this way? Well, from...his experiences it's how he perceived it, and now my knowledge is changing because I have this perspective. I see it as a building." Understanding for Susan is a matter of building perspective. Tim, however, argued that this may contribute to one's understanding, but they may still have a different perspective because of their situatedness: "I still might have a different knowledge than her, about her story based on my interpretation, prior knowledge, and experience, how I saw it, whatever happened." Susan and Tim point out that different perspectives are due to the different experiences people have, and students can understand that people have different experiences and perspectives from their own. Understanding others' perspectives is an important part of developing understanding in social studies subject matter. For example, "understanding the perspectives of people in the past is a fundamental aspect of historical understanding" (Levstik & Barton, 2001, p. 147).

Tim and Susan wanted students to apply the big idea not only to their own experience but also to subject matter so that they were able to understand how texts, including historical texts, are authored and represent authors' perspectives. Tim and Susan suggested that the knower is situated and will have a certain perspective due to their situatedness and lived experience but that understanding develops when one considers others' situatedness, experiences, and perspectives. They want students to understand that knowledge is revisable and to be able to apply this to their own thinking and knowing. The consequences of such thinking were explored when they were asked, "How does this help them understand social studies content?"

Becoming "better viewers"

Susan shared an example that she thought helped answer this question: "For example, we talk about slavery and depending on whose perspective -- the master's, the male slave, the female slave -- my knowledge is going to change, and it's going to be different from the master's. And if I can combine them together... [my] knowledge is going to change when I get these different perspectives." Susan cited the importance of understanding the past through different perspectives and seeing history through different voices and perspectives to get a fuller and richer sense of what may have happened in the past. She referred to a technique gleaned from a presentation on historical representation in which students consider the proximity and perspective of the author in relationship to the event. She believed the "Where is the author in the hallway?" question helped students think about the author's location to the past and to the events they are representing. Tim also shared his use of a "fight on the playground" example in which students consider different perspectives to consider who started a playground fight.

However, Don argued that it's possible to "get stuck in that way of thinking." For Don, students can get caught up in different interpretations without close and careful consideration of the data:

We have this history of who did what to whom. If we get caught up in it, we get nowhere because someone has a previous insult that happened, and if you get caught up in that you get nowhere. *You need to stay in the specifics of the situation* or think about how to solve it. Kids get stuck because their "viewer" only allows them to see one view. *We need to help them become "better viewers"* because they have a limited view many times of what the world is about. They have a very limited view from adults about what the world is like, and if adults have only one view, it's hard to get away from that view. When we point out differences *it's very important for kids to be shown alternative views* of the way things are and become better at determining the accuracy of a particular position, even though they may be good or bad. But it's difficult over the long haul, and this is a good starting point. Later, they should be able to see the perspective and determine the accuracy of a perspective.

For Don, this is an important understanding for students to develop. They must become "better viewers," able to view things from different perspectives and consider multiple perspectives, but they also need to stay grounded in the "specifics of the situation" to carefully consider the data before making the leap to interpretation.

This also seemed to characterize what the teachers hoped to do, as well, in their work. They wanted to develop their abilities to "view" student understanding flexibly by being attentive and attuned to students' ideas so they would be better able to make rich

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connections to subject matter. They seemed to recognize key epistemological challenges in the medium of ML/T curriculum, while recognizing their own limited "views" and perspectives. Such work requires collaboration and a consideration of other perspectives and views that might help them see and make sense of ML/T curriculum and classroom experience.

## Concluding thoughts

During the PLB, the four teachers in my study addressed two key epistemological challenges central to working in the conceptual space between students and subject matter: (1.) the overarching challenge of making connections between students' personal experiences and subject matter; and (2.) the challenge of understanding student understanding. Similar to other problems, tensions, and challenges they learned to manage in the medium of the ML/T units, they saw these challenges as rich opportunities for meaning making and learning in the curriculum.

The teachers thought about these challenges and managed them by drawing on certain aesthetic stances. These stances can be characterized as: (1.) having a strong sense of ends-in-view; (2.) carefully attending to classroom experience and students' ideas; and (3.) creating meaning in the medium of curriculum by drawing on elements of students' ideas and experiences and subject matter in the unit. In particular, they drew on metaphors, such as "tuning in," "being on the lookout," "calliope," "ladder," and "seeing the court," as useful ways to help them think about working in the conceptual space between students' ideas and experiences and subject matter.

How the teachers managed the two epistemological challenges that I outlined above corresponded to three key qualities of the Model Unit Teachers' professional

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learning journey. These consisted of developing an ends-in-view vision of ML/T and disciplined inquiry, creating meaning collaboratively in the medium of the curriculum, and using classroom data to help them consider issues of teaching and learning in the curriculum. Both epistemological challenges are central to managing the space between students' ideas and personal experience and subject matter, and largely depend on teachers' conceptions of students as learners, student learning, and ML/T combined with their understanding of disciplined inquiry, the big ideas, and subject matter in the units. How they made connections in this conceptual space between the learner and subject matter depended on how and what they noticed in classroom practice, especially in students' ideas and conversation, how they thought about creating meaning in the medium of the Model Units, and what they considered to be the implications of these meanings for their practice and student learning.

Learning to work in the conceptual space between students and subject matter was a collaborative process, much like meaning making in the Model Unit Teachers' classrooms, and involved substantive discussion, consideration of multiple perspectives, and a willingness to explore possibilities. As Wanda May (1993) argued, "the objective of artistic teaching is to create meaning within this space or medium" of curriculum. Making connections between students' personal experience, others' experiences, and subject matter content is a creative process of meaning-making that support students' understandings of their lives, the past, and possibilities for their futures. Such work requires exploring possible combinations and connections that work to develop student understanding and create meanings that are significant to students' lives and enhance their understanding.

I believe the teachers' work in this PLB highlights key epistemological

dimensions in teaching for meaningful learning using disciplined inquiry and important

stances and approaches teachers can draw upon to manage these challenges. In the next

chapter, I consider these findings and their implications.

# CHAPTER SIX

## EPISTEMOLOGY, AESTHETICS, AND THE MEDIUM OF CURRICULUM: CONCLUSIONS AND IMPLICATIONS

Thus, both in the East and in the West, true insight may have been turned into something false and misleading by the procedure of learning mechanically through conformity to existent teachings, rather than through a creative and original grasp of the insights implicit in such teachings.... Rather, what is needed is to learn afresh, to observe, and to discover for ourselves the meaning of wholeness...to develop new insight into fragmentation and wholeness requires a creative work even more difficult than that needed to make fundamental new discoveries in science, or great and original works of art. (Bohm, 1980, p. 24)

### Introduction

This dissertation examined the ways four teachers thought about their work in the conceptual space between students' ideas and experiences and subject matter in the medium of an inquiry-oriented social studies curriculum. In particular, it described how these teachers learned to manage two key epistemological challenges presented in teaching for ML/T through aesthetic approaches to classroom practice.

In this concluding chapter, I summarize my findings and make a case for greater attention to the epistemological dimensions of teachers' work and aesthetic approaches to teaching and learning. I also suggest several implications for professional development, social studies education, teacher education, and future research. I conclude this chapter by suggesting that teaching and classroom practice be re-conceptualized and reframed as aesthetic acts.

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# The epistemological dimensions of teaching

Teaching and learning is inherently epistemological. Conceptions of knowledge and knowing, teaching and learning, and thinking and understanding are fundamentally epistemological matters. As I suggested in Chapter 2, the epistemological dimensions of teaching and learning help us pay attention to qualities of teaching that have thus far received little attention.

Attention to epistemological issues in education has taken on greater urgency, because "the very *status* of knowledge, learning, teaching and researching are currently in a state of profound upheaval under the double impact of rapid and far-reaching technological change and the massive assault on longstanding narratives of foundation and legitimation" (Lankshear, Peters, & Knobel, 2000, pp. 17-18). The digital age, the superabundance of information, the "legitimation crisis," and new information technologies have necessitated a shift in thinking about knowledge and knowing, especially in terms of educational practices.

According to Lankshear, Peters, and Knobel (2000), such a shift means a "rethinking [that] conceive[s] of epistemology in social terms as practices of knowing that reflect a range of strategies for 'assembling,' 'editing,' 'processing,' 'receiving,' 'sending,' and 'working on' information and data to transform 'data' into 'knowledge'" (p. 21). They refer to such practices as an "epistemology of performance," and I believe it necessitates much greater attention to the practices of knowing, such as those outlined in Chapter 2 and evidenced in the practices of teachers' professional learning experiences described in Chapter 4. Viewing knowing as socially situated and embedded in social practices and performances, as suggested by the pragmatist theorists cited in Chapter 2,

provides an epistemological orientation in which knowing is grounded in experience and participation.

According to Ginette Delandshere (2002), cognitive, constructivist, and socio-cultural theories of learning share this broad epistemological orientation. Although there are certainly different theoretical perspectives within each of these learning theories, such as different kinds of constructivisms (Phillips, 1995; Windschitl, 2002), I believe it is useful to think about the relationships between the knower and activity as a conceptual space that annuls arbitrary divisions (Popkewitz, 1995). These arbitrary divisions include those between agents and contexts, the individual and society, and students' sense-making and disciplinary knowing. By situating knowing in social practices within a conceptual space between students' ideas and experiences and subject matter, for example, it makes possible a re-conceptualization of teaching and learning. Such a view of knowing as social practice emphasizes

> the relational interdependency of agent and world, activity, meaning, cognition, learning, and knowing. It emphasizes the inherently socially negotiated character of meaning.... Learning, thinking, and knowing are relations among people in activity in, with, and arising from the socially and culturally structured world.
> (Lave & Wenger, 1991, pp. 50-51)

The implications for educational practice include viewing learning and knowing as action, interaction, and participation. It suggests a movement in educational practice toward a performative epistemology, or as Gill (1993) notes,

> a post-critical understanding of knowing [that] begins [by] acknowledging (1) that there is no knowledge apart from active engagement between the knowing subject

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and that which is known, and (2) that knowing itself is a kind of doing, that

knowledge is not had as much as it is done. In both of these respects participation

plays a crucial role. (p. 48)

Knowledge, then, is re-conceptualized as an activity to be engaged in, or performed.

According to Lynn Fendler (1999), such a re-conceptualization

effects an epistemological break by shifting from a descriptive to a performative

mode; it opens up possibilities for changing existing patterns of power by

challenging assumed structures; and it theoretically forecloses the possibility of

determinism by invoking the improvisational aspects of performance. (p. 181)

Such an epistemology has transformative possibilities, and I next make the case that it is

an aesthetic epistemology, since it is about creating and performing new meanings that

may have transformative potential.

## Aesthetic epistemology: Knowing and teaching artfully

Drawing on Wittgenstein's (1953) conceptualization of performative

epistemology, Lankshear, Peters, and Knobel (2000) argue that thinking about knowing

as making and doing can be applied to a range of emergent practices that are rapidly

changing the nature of knowing. These emergent practices involve the use of

technologies and strategies to assemble knowledge and "build perspective." According to

these authors, in the new information age, knowledge assembly includes gathering

information from multiple and diverse sources and requires being open to

unexpected connections, meaning and interpretation, options that were taken and

others that were not, authorial hunches, tensions and contradictions and so on.

This is an approach to knowledge/getting to know (about) something which

privileges intuition, the unexpected, openness to discoveries that overturn the questions we originally came to ask and to turning up something more important than the discovery we had originally hoped to make. (p. 32)

Such an approach to knowing is a creative force that explores possibilities for new meaning and understanding. I believe pragmatism and aesthetics offer a theory of knowing grounded in experience, transaction, and social practices that has much in common with performative epistemology.

Lankshear, Peters, and Knobel (2000) suggest that bricolage, the assemblage of elements, collage, "the practice of transferring materials from one context to another," and montage, "the practice of disseminating borrowings in a new setting," are important performative practices. They see knowledge assembly as a process of "collective assemblage" (p. 37) involving many people and sources of information and aiming at perspective and balance. The strategies of bricolage, collage, and montage require further investigation in relationship to the work and thinking of teachers managing the conceptual space between students' ideas and experiences and subject matter.

Of course, others have referred to teaching as "bricolage" or "tinkering" (Huberman, 1993, 1995; Thompson & Zeuli, 1999) to represent how teachers' work consists of piecing together various elements of students' ideas, curriculum, and content in classroom practice. For example, Huberman (1995) noted "the image of the 'bricoleur' entails a continuous dialogue with the instructional situation as it evolves; it is inherently personal and pragmatic" (p. 196). Bricolage entails creating patterns, putting things together in meaningful ways, and making connections between elements that are seemingly dissimilar from contributing conceptual spaces.

Collage is seldom used as a metaphor for teaching, but may be just as appropriate, since it involves pasting materials together, usually with unifying lines, shapes, patterns or colors into a whole. Having unifying threads, themes, or ideas, such as the big ideas, seems to be an important aspect of developing understanding when moving back and forth between elements provided by students and subject matter. These "throughlines" (Blythe, 1998) become a connecting thread to help students and teachers make connections between personal experience and subject matter.

Montage, the juxtaposition of many images into a single composition, is also fitting, since it involves working with several different elements to create a new image with meaning very different from the constituent elements. Juxtaposition, in particular, may help students re-see what was previously taken for granted or become more aware of differences. For example, placing two different images or perspectives next to each other may help emphasize their similarities or differences.

The metaphors of "calliope," "a ladder," and "seeing the court" may be useful for teachers thinking about teaching and learning and developing student understanding. Likewise, the practices of bricolage, collage, and montage may help teachers think about ways they can support their students in creating meaning and developing understanding in ways that are connecting and supportive.

I believe bricolage, collage, and montage are pragmatic and aesthetic practices that help re-conceptualize or reframe teaching and learning in more artful ways. They help us see meaning-making as a combinatory process, whereby elements from different domains and contexts are interwoven and combined in novel ways to create meaning. The strategies of assemblage, bricolage, collage, and montage may help us re-think teachers'

work in the medium of curriculum. Such work requires combinatory, integrative, or holistic ways of thinking that seek out relationships between and among seemingly disparate elements. I believe such work has profound implications for educational practice and more artful ways of teaching, learning, and knowing. I now turn to these.

## Implications for professional learning

One implication from my study is that professional learning experiences benefit from being situated in curriculum and subject matter contexts. The medium of curriculum *does* matter, in terms of teachers' professional learning experiences. Keeping professional learning grounded in curriculum took on three distinct phases that can provide a useful framework for professional learning in the medium of curriculum. These three phases included:

1. Developing shared understanding of curriculum and its underlying conceptual facets,

2. Identifying and managing challenges ("critical moments") central to teaching and learning in the curriculum, and

3. Analyzing and interpreting student learning and understanding by examining artifacts of classroom practice (student work and videotape).

In the third phase, the What?, So What?, Now What? framework supported teachers' analytical and interpretive work, and helped teachers and professional development leaders use video cases of classroom practice to foreground the tensions and challenges of ML/T and inquiry-based learning using technology.

Another implication is that using videotape, combined with a framework that facilitates work with classroom artifacts, such as the What?, So What?, Now What?

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framework, can provide opportunities for teachers to carefully attend to classroom experience, analyze teaching and learning, and develop professional understandings that benefit classroom practice. This framework and the three phases of professional learning in the medium of curriculum were important supports for teacher learning.

Other frameworks have been developed that can help guide teachers' collaborative sense-making (e.g., Denzin & Lincoln, 1994; Langer, Colton, & Goff, 2003; Pinar, Reynolds, Slattery, & Taubman, 1995; Tochon, 1999). For example, Tochon (1999) offers six frames he believes are useful for viewing and analyzing videotape of classroom practice. These frames include:

- A *functional frame* that focuses on effective behavior and performance in relationship to well-defined objectives.

- A *psycho-cognitive strategic frame* emphasizing "the conceptual structures of learning" (p. 86), such as the cognitive styles and strategies teachers and learners use in problem solving.

- A *socio-cognitive constructivist frame* would focus on the meaning making processes in a community of learners. It would help teachers analyze the community of inquiry and the ways meanings are socially negotiated.

- A *socio-critical frame* that draws upon social, democratic, and participative perspectives, such as feminist, ethnic, or class perspectives, to consider issues of identity, empowerment, and participation in classroom practice.

- A *personal frame* that focuses on the individual and considers personal choices and personal development.

- A *pragmatic frame* that "link[s] know-how to knowledge" (p. 87) and focuses on the intentions and consequences of actions.

Such frames serve the very practical purpose of helping teachers pay attention to various qualities of classroom experience that they might not ordinarily notice, develop alternative analyses and interpretations of classroom practice, and consider the implications of different frames and viewpoints for their practice. One of the pitfalls of the collaborative analysis of classroom practice might be the lack of diverse perspectives to inform meaning-making. For example, the Model Unit Teachers and the university team were middle class and white, and they most likely drew upon a fairly narrow range of experiences and perspectives that shaped what they noticed and the meanings they collaboratively created. Thinking more artfully requires that we help each other see and attend to qualities and relationships we might not see from our own limited perspective and consider different perspectives that might help create new meanings. Each of the frames outlined above could be used within the What?, So What?, Now What? framework to support teachers in considering other ways of seeing and making sense of classroom practice.

The Model Unit Teachers' professional learning in the medium of ML/T curriculum emphasized conversation and collaborative work to identify and manage important challenges in teaching and learning. Since I provide a view of teacher learning and knowing as situated in social practices, it's important to identify some of the norms and practices that I believe guided the professional learning conversations and collaborative efforts in this community of practice over a three-year period. These norms

and practices developed in and through practice and became important "ground rules" for professional learning sessions and curriculum work.

As Fullan (1991) has argued, innovation often doesn't follow an orderly logic and often depends on the complex interaction of several dimensions of the change process. As a result, a flexible approach to change, and the learning that accompanies change, is paramount. The professional learning experiences of the teachers in this study, and the professional development plan that emerged from their work in the curriculum, was responsive to the contingencies and needs of the teachers enacting the curriculum. Fullan provides a sense of the complexity involved in managing such innovation and change:

> Change is difficult because it is riddled with dilemmas, ambivalences, and paradoxes. It combines steps that seemingly do not go together: to have a clear vision and be open-minded; to take initiative and empower others; to provide support and pressure; to start small and think big; to expect results and be patient and persistent; to have a plan and be flexible; to use top-down and bottom-up strategies; to experience uncertainty and satisfaction. (p. 350)

I offer several norms that I believe supported professional learning in the conceptual spaces accompanying change Fullan described. Since many facets of this innovative curriculum required teachers to shift their thinking and practice, we adopted a stance of "experimental artists" (Cherryholmes, 1999, p. 107), exploring what worked in the midst of incomplete and uncertain knowledge in particular contexts. To make such work possible, I believe the following norms can support professional learning around innovative curriculum:

- **Make key conceptual principles central to everything you do**: For example, ML/T principles and inquiry became the guiding principles or ends-in-view for professional learning practice, curriculum development, and classroom practice;

- **Acknowledge and embrace uncertainties and challenges as possibilities for learning**: Uncertainties, tensions, and problems of practice were viewed as generative professional learning opportunities and sites for ongoing investigation, rather than problems to be "solved";

- **Encourage and support risk-taking**: This included creating a safe setting (based on trust) at professional learning sessions for sharing ideas, frustrations, insights, and critical feedback;

- **Create supportive contexts for professional learning**: District and project leaders developed a broad vision of ML/T, shared understandings of professional learning, and provided the necessary administrative supports (financial, technological, organizational, etc.) within and across districts;

- **Keep inquiry and questioning at the center of professional learning**: People were encouraged to ask questions about professional practice and inquire into curriculum, professional learning, thinking and classroom practice;

- **Keep teaching and teacher learning situated in curriculum and subject matter contexts**: Disciplined inquiry and content centrality were two key aspects of professional learning, and focusing on big ideas and the inquiry process embedded in the curriculum provided useful frames for considering appropriate teaching strategies and student learning;

- **Blend the practical and the theoretical**: Focusing on challenges, specific lessons, and learning activities provided opportunities to talk about conceptual principles as well their implications for practice, and to look at lessons as instantiations of these principles;

- **Debrief and reflect often**: Each professional learning session included time to share lingering questions, insights, and frustrations. This also provided opportunities to surface perspectives, experiences, and assumptions that guided thinking and practice.

While we didn't always "live up" to these guiding principles in our professional learning practice, they nevertheless were key guidelines and "ground rules" that helped support collaborative work, professional discourse, and professional learning.

It's also important to acknowledge the tensions and complexities that were inherent in the process of developing these norms and the professional development plan. A key tension in professional learning that is collaborative and emergent, as Fullan (1991) suggests, is the tension between having a clear vision and being open-ended. This also requires an aesthetic stance, since it depends on a strong sense of ends-in-view and making "judgments based largely on qualities that unfold during the course of action" (Eisner, 1985, p. 176).

One implication for professional development leaders is that they develop more artful approaches to their practice that are responsive to the contingencies and contexts of teachers' work. Such work is artful since ends are emergent in practice rather than predefined, measurable outcomes (May, 1993). It requires that professional development leaders continually process the processes and practices they use to engage teachers in professional learning. Professional development leaders must be able to work in the

medium of curriculum with teachers and be able to discern the qualities and relationships that are common and recursive between student learning and teacher learning. As Eisner notes (2002), it requires placing more emphasis on exploration than on discovery, on valuing than on measuring, and "regards the quality of the journey as more educationally significant than the speed at which the destination is reached" (p. 15).

The model of professional learning I have outlined deeply engaged teachers in a particular curriculum over a long period of time (three years) and required intensive, on-going commitments to teaching the curriculum, collaboratively managing challenges, making practice public, and engaging with key qualities (big ideas, inquiry, ML/T, etc.) of the curriculum for professional learning purposes. Such sustained, in-depth study and professional learning in a curricular context is an important quality of successful professional development (Ball & Cohen, 1999; Darling-Hammond & Sykes, 1999). It requires that teachers and professional development leaders recognize and be allowed to follow emergent features that are worth pursuing, such as the "critical moments" in the curriculum.

Teachers must have opportunities to identify problems, take risks, reflect on their experience, and engage in professional discourse in a community of colleagues. Changing teachers' thinking about practice requires that teachers come to see innovations in curriculum as having potential beneficial effects on their classroom practice and student learning. They need to feel supported in developing the knowledge, sensibilities, and skills necessary to implement change.

# Implications for social studies education

There are several implications for social studies education that emerge from my study. Age-appropriate disciplinary methods and procedures, along with the proper tools and scaffolds, can be embedded in social studies curriculum and guide curriculum development. Curriculum can be designed that deeply engages students in complex content and authentic, collaborative work as they: a) develop their own investigative questions, b) acquire, manipulate, evaluate, and analyze information addressing those questions, c) make interpretations and conclusions supported by historical evidence and reasoning, and d) communicate the products of their thoughtful investigations to audiences that matter to them. By engaging in disciplined inquiry, students can begin to develop important intellectual skills and strategies to help them think critically about their world, ask meaningful questions, and learn with understanding.

Such curriculum also helps social studies teachers become more familiar with the epistemological dimensions of the disciplines that make up their subject matter. In their professional learning, the Model Unit Teachers engaged with important scaffolds or tools embedded in the curriculum in ways that supported their understanding and use of these tools to support disciplined inquiry. For example, through their engagement with the curriculum, the teachers learned to use specific technology tools to support students in organizing, analyzing, and interpreting sources of information. "Unplugged" tools in the curriculum included models, heuristics, and graphic organizers for student and teacher use. The teachers and students were able to use criteria for investigative questions, refer to guiding questions that helped them consider the relevance and credibility of information sources, and make use of strategies for identifying claims and evidence.

Teachers learn to use these tools to support student learning and to develop their own understandings about subject matter. The big ideas served these purposes as well, by providing conceptual lenses through which both teachers and students could interrogate personal experience and subject matter to construct new understandings.

Another key implication is related to assessment. As Delandshire (2002) suggests, emphasizing the epistemological dimensions of classroom practice means that we should ask what it means to know and how knowing takes place, instead of asking what students know. Traditional behaviorist notions of learning see knowing as the accumulation of bits and pieces of knowledge, and assessment as the reproduction of this knowledge on demand (through tests and traditional assessment tasks). Since more constructivist or socio-cultural perspectives see learning as an active process through which students construct understanding and make connections between what they know and new information, more emphasis should be placed on knowing in authentic activity in which knowledge is created.

The study provided a sense of the perspective building that is required to better understand student learning and knowing. In other words, teachers must be able to consider student work and learning from different perspectives: the students' perspective (in terms of student abilities and ways of knowing, multiple or different representations, etc.); a curricular perspective (in terms of learning outcomes, competing goals and purposes, etc.); a subject matter perspective (in terms of subject matter content and procedures); and a contextual perspective (in terms of time, the contexts of the classroom, students' backgrounds and lived experiences, etc.). Assessment as an ethnographic, interpretive, or aesthetic process requires further investigation.

This view of knowledge and assessment flies in the face of standardized testing. By foregrounding epistemological issues, however, teachers might begin to interrogate the epistemological assumptions and values embedded in the standards and tests used to assess student learning and guide curriculum development. Stearns, Seixas, and Wineburg (2000) argue that standards, tests, and assignments convey assumptions about the nature of understanding, what ways of knowing are valued, and what counts for knowledge. By making the epistemological practices of social studies education more explicit, teachers may be able to make important epistemological issues part of the conversation to improve social studies education and assessment.

## Implications for teacher education

Learning to teach requires strong conceptual frames that can guide innovative educational practice. Meaningful learning and disciplined inquiry provided two conceptual frameworks that teachers were able to draw upon to support professional learning in the curriculum. However, most pre-service teachers say they get too much theory (Fullan, 1991). Instead, pre-service teacher education might be thought of as an "apprenticeship" in meaningful learning and disciplinary practices.

One implication of the "epistemology of experience" (Doll, 1993) I described in Chapter 2, is that teacher education must provide the kinds of experiences in subject matter learning that support deep understanding of the epistemological dimensions of the subjects they will teach. Since pre-service teachers will not have the luxury of working intensively in curriculum over a three-year period in the ways the Model Unit Teachers did, they can "practice" with important disciplinary methods and procedures to learn how to use these for their own learning. Teacher educators can establish important social

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practices in a community of learners around key tools and scaffolds that support inquiry and meaningful learning. Using disciplinary tools and social practices, and considering their implications and use for classroom practice can help beginning teachers understand important epistemological practices and issues in teaching and learning.

For example, pre-service teachers could use the big ideas to investigate their own personal experience and subject matter. Expert thought can be embedded in classroom artifacts and interactions (Bain, 2000). Using historians' heuristics, pre-service teachers can read and discuss historical documents for authorship, purpose, claims and evidence, and bias, and learn to draw upon the intellectual skills used by historians. Historical questions and problems can be investigated using disciplinary methods. Such approaches must aim to help pre-service teachers understand and be able to apply such epistemological practices to their own learning and teaching. Disciplinary experts and expert teachers should be encouraged to work with pre-service teachers to help them work in the conceptual space between meaningful learning and disciplined inquiry.

Another implication for teacher education is that using videotape, combined with a framework that supports analysis and interpretation of classroom artifacts, such as the What?, So What?, Now What? framework, may help pre-service teachers begin to carefully attend to classroom experience and share different perspectives about classroom experience. Interrogating classroom practice by viewing videotape might offer opportunities to re-think classroom practice. For example, Britzman, Dippo, Searle, and Pitt (1997) ask,

> What if teacher education began from the assumption that a great deal of its work is to produce debate, multiple perspectives on events, practices, and effects, to

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move toward creative dialogue on practices, and to experiment with negotiation within learning and teaching? (p. 20)

Videotape of classroom practice offers opportunities for novice and expert teachers to collaboratively engage in explorations into curriculum, teaching, and learning. Identifying what expert teachers notice and pay attention to related to subject matter, principles about teaching and learning, or specific contexts has the potential to help novice teachers understand the frames expert teachers bring to classroom experience, consider other ways to perceive classroom experience, and think about how instruction can flexibly respond to students' ideas and work. The six frames outlined earlier can also provide different lenses for noticing key qualities of classroom experience, and begin to challenge the assumptions and beliefs teacher candidates often have about teaching and learning.

Putnam and Borko (2000) suggest several approaches that can help situate learning experiences for prospective teachers in both university and K-12 classrooms. They note that classroom experiences carefully combined with university course experiences can provide "coordinated opportunities for pre-service teachers to learn new ideas and practices, as well as to reflect and receive feedback on their teaching" (p. 7). The authors cite the importance of mentoring from more knowledgeable others and the use of performance and pedagogical tools that can transform thinking. They offer examples of case-based learning experiences that can provide "vicarious encounters" with students and classroom experiences, and suggest that videotaped cases can convey more of the complexity of classroom practice than written cases. For example, the Student Learning Environment (SLE) developed by Lampert and Ball (1998) allowed

pre-service teachers to explore pedagogical problems through multimedia cases. However, Putnam and Borko (2000) believe more research is necessary to investigate how and what pre-service teachers learned from their interactions with these materials.

## Future research

My study provides a sketch of the vast landscape in which teachers work when teaching for ML/T and using disciplined inquiry to support students' meaning-making. More research is needed to examine specific areas of the landscape. For example, research is needed to understand teacher thinking about assessment practices in ML/T classrooms. Since knowing and learning are situated, it is difficult to assess students' historical understanding, for example, using simple forms of assessment (Avery, 1999). Teachers must consider what the student says or does in the context of the learning situation and in terms of what age-appropriate disciplinary practices and understandings might look like. Formative assessment requires "feedback relative to the viability of the knowledge that is constructed" (Doolittle & Hicks, 2003, p. 17). How teachers are able to manage the challenges presented by constructivist assessment practices in which knowledge is viewed as more dynamic and uncertain is an area that requires further investigation. Such research might serve the very practical purpose of developing assessment frameworks and tools that can better support teachers' assessment practices in constructivist and inquiry-oriented classrooms.

Also, since my study looked at teacher learning over a three-year period and considered the confluence of several important factors in teacher learning, it's hard to pinpoint what factors may have had the greatest effect on teachers learning to think more artfully about classroom practice. Especially since scalability and sustainability are such

important questions, it will be important to investigate what influences are most effective in developing "the ideas, the sensibilities, the skills, and the imagination to create work that is well proportioned, skillfully executed, and imaginative" (Eisner, 2002, p. 7).

Similarly, issues of transfer need to be investigated. As Putnam and Borko (2000) note, since situative perspectives redefine learning and knowing, it requires recasting the relationships between what people know and are able to do in different settings. Further work needs to examine how people apply their knowledge in new situations and how those situations transform that knowledge. For example, I didn't examine teacher-made or adapted materials that might provide some insight into how teachers recast and reformulate their understandings to other performances central to teaching.

Since many reform efforts call for an adaptive, responsive style of teaching, the ability to notice and attend to classroom experience is critical. Exploring how teachers can become more adept at noticing what is happening in their classrooms and flexibly interpret and respond to classroom experience has important implications. Investigating how teachers develop these capacities to work in the conceptual space between students and subject matter, and manage key epistemological challenges in this space will be important work for researchers.

As Putnam and Borko (2000) suggest, considering how videotape of classroom practice might support teacher inquiries into teaching and learning or how it might help both pre-service and practicing teachers develop their abilities to notice qualities of classroom experience is an area of research that requires further investigative work. Examining the role of video to support teachers in becoming more aware of their own

perceptual and interpretive lenses and alternative ways to view classroom experience might open up new possibilities for "seeing" and understanding classroom experience.

My study did not examine links between teacher learning, teaching practice, and student learning. Since I focused on teacher thinking and their professional learning experiences, further investigation is necessary to understand the relationships between teachers becoming more artful in their thinking and judgment and how this improves their practice and student learning. Closer attention should be given to the relationships between student learning and teacher learning in the medium of ML/T curriculum, especially since many of the challenges in learning seemed to be central to both students' and teachers' work in the curriculum. For example, developing understandings of the big ideas seemed to require similar processes and practices for both teachers and students. Looking at how big ideas and certain disciplinary tools challenge and support learning for both teachers and students could offer interesting insights.

Suzanne Wilson (2001) notes the challenges of investigating teaching for understanding in disciplinary subject matter and makes the case for research that she calls "applied epistemology." According to Wilson, applied epistemology

> would require a larger leap, in which we shift our cognitive structures, reorienting our concepts, values, questions, and methods. It requires locating ourselves at the intersection of multiple discourses that seldom meet: the discourse of historians and philosophers of history, the discourse of educational researchers, and the discourse of classrooms. It requires developing a colloquy among those discourses, working back and forth between them, using one to understand and conceptualize the other. (p. 540)

My study endeavored to examine these intersections and work back and forth among them, using them to understand and conceptualize the others. I believe that such work is also aesthetic and requires combinatory, integrative, and holistic processes. I also believe my study provides some "explanatory power" (Wilson, 2001) by describing teachers work in the medium of a curriculum and their professional learning experiences that engaged them in these discourses.

It is my hope that I can continue to explore some of the issues I have investigated in this study in my own practice and knowing. For example, soon I will be teaching Asian Studies at the Taipei American School in Taipei, Taiwan and plan to research my teaching practice around the development and implementation of big ideas and tools that support disciplined inquiry, student understanding, and teachers' work in the conceptual space between students and subject matter. For example, such work might explore how students develop subject matter understandings through processes of historical thinking and examine the relationships between the development of literacy or inquiry skills and subject matter understanding. I believe I can provide an insider's view of thinking and practice around big ideas and the use of tools related to disciplinary knowing and developing student understanding. In my teaching, I have the unique opportunity to see how the discourse of historians and philosophers of history, the discourse of educational researchers, and the discourse of classrooms might merge and interact in interesting ways. In many ways, I hope to extend and deepen the work of this study by further considering epistemological and aesthetic issues in my own teaching practice.

## Concluding comments

By emphasizing the aesthetic qualities of teachers' sense making, this dissertation has endeavored to provide useful "re-descriptions" (Rorty, 1986) of teaching and classroom practice. By re-framing teaching as an epistemic activity, and foregrounding the epistemological issues and challenges related to working in the conceptual space between students and subject matter, the emphasis is placed on teaching and learning as activities that are fundamentally about knowing and creating meaning. Re-framing teaching as aesthetic helps us consider art and aesthetics, attentiveness, mindfulness, and creative meaning-making as useful re-descriptions that might change how we think about educational practice. As noted in Chapter 2, paradigm shifts might be seen as changes in language (new vocabularies) to describe phenomena and shift "the way we talk, and thereby chang(e) what we want to do and what we think we are" (Rorty, 1986, p. 20). By suggesting that teaching draw upon the practices of bricolage, collage, and montage, teachers and students are empowered to create meanings that are ultimately more satisfying than those learned "mechanically through conformity to existent teachings" (Bohm, 1980, p. 24). It also makes possible the creation of new meanings that can shift the ways we talk and live our lives.

Knowing and doing are intertwined. New ways of doing things can bring about new ways of thinking and knowing. When teachers work in the medium of curriculum, given the right conditions, curricular innovations can support changes in classroom practice. Changes in practice can lead to changes in thinking and knowing, which contribute to further change and innovation in practice. When teachers believe in a powerful guiding vision that re-frames educational practice, are able to work in contexts

that support innovation and reflection, and are encouraged to creatively manage key challenges and uncertainties, they become artists in the medium of curriculum. According to Wanda May (1993), what makes their teaching artful is "imagining things otherwise and seeing where this can lead" (p. 216). Together we must work to imagine things otherwise and have the courage to see where they might lead. We can expect many uncertainties, tensions and challenges along the way, but these are what make the journey worthwhile and educative.

The diversity and pluralism of meanings that are a part of our times has resulted in a struggle over meanings in educational settings. These struggles are about what knowledge is to be taught, the purposes and uses of knowledge, how it should be organized, how it is to be learned, and how it should be assessed. Although various authoritative bodies (e.g., see Pinar, 1995; Ross, 1997) have tried to define, control, and shape curriculum, teachers and students *enact* curriculum and therefore certainly play an important role in shaping or influencing the meanings that are constructed within classrooms. This study makes a case for teachers as knowledge workers who must participate in making these decisions about curriculum and knowledge in educational settings. They make daily decisions in their classrooms about which meanings are worth pursuing and what knowledge is most satisfying and desirable. This requires an attention to epistemological issues and an aesthetic stance in which teachers become "meaning artists," learning to pay attention to possibilities, play with or experiment with meanings, and explore which meanings have satisfying or beautiful consequences. Seeing teaching and learning as fundamentally about knowing and the creation of meaning empowers

teachers and students to create meaning, imagine possibilities, and create the lives we

wish to live.

APPENDICES

# APPENDIX A

## ML/T Attributes

("Attributes of the ML/T Classroom Environment")

The ML/T Attributes were designed to support curriculum, instruction, student work and the use of technology to support meaningful and enduring learning. The following brief description is provided as part of the Unit Fundamentals for the on-line units:

1) Students are challenged by big ideas, essential questions, enduring controversies, and methods of inquiry that are **central to the disciplinary content** (e.g., in American history, the idea of democratic institutions or the issue of pluralism). As larger conceptual frames that social scientists and historians use for seeing and interpreting the social world, big ideas provide teachers and students with some focus and structure for making sense of complex content and experience.

2) **Learning is intentional**, or goal-driven. Within a standards-based curriculum, teachers have clear learning goals for students. Within this framework, students also articulate their own learning goals, strategies and decisions. They are able to assess their own learning and talk about their learning progress, their knowledge and how it is important to their lives, and next steps for their learning. In other words, they become self-directed in their learning.

3) Students engage in **authentic work**. Students work with multi-faceted challenges and problems encountered outside the classroom, doing tasks that require higher order thinking skills and involve complex solutions of varying quality. They also do the work of historians, for example (or authors or scientists), including using primary sources and connecting past events to real-world issues and current problems. They develop a sense of purpose, of being important to the world.

4) Students **work collaboratively** to achieve their learning goals. They have disciplined conversations about the content with their peers, as well as others beyond the classroom, to examine multiple perspectives, negotiate common meanings, and perform tasks and solve problems together. Through collaborative work using technology, students develop global communications skills, expanding the boundaries of the classroom and connecting them to the world.

5) The process of learning is the **construction of mental models** of the content. Students make sense of new information, connect it to prior knowledge, address dissonance and puzzlements, develop theories, and construct products that represent their understandings and skills (such as historical narratives, letters to legislative representatives, town forum debates, and writing that culminates various kinds of research).

**6) Disciplined inquiry** is the attribute that gives life to the other attributes. Students become deeply engaged in the complex content and authentic, collaborative work as they a) develop their own investigative questions, b) acquire, manipulate, evaluate, and analyze information addressing those questions, c) make interpretations and conclusions supported by historical evidence and reasoning, and d) deliver the products of their thoughtful investigations to audiences that matter to them. The inquiry process is a foundation of critical thinking and information literacy skills.

The Project Inquiry Model



**1: Explore what you know and develop investigative question(s)**

**Description:** We make observations about information we already know to identify a question as the focus of our investigation. This question comes from our prior knowledge & interests in particular problems, issues, & puzzlements.

**Example(s):** Why are so many Mexicans choosing to migrate to the United States?

**2: Gather and evaluate information**

**Description:** We gather information from multiple sources that relate to our question, and we evaluate the information to consider how accurate, reliable and useful it is to our inquiry.

**Example(s):** Analyzing photographs, studying maps, interviewing people who have knowledge to share.

**3: Analyze and interpret the information**

**Description:** We analyze the information & make interpretations about what it means & how important it is. We make inferences & form generalizations that are supported by our information. We may revise our question.

**Example(s):** Putting information together in a graph, diagram or web diagram.

**4: Communicate an interpretive account of your new understanding**

**Description:** Based on our work using this process, we now understand more than we did before. We create products that represent this new understanding, & we have different purposes & audiences for these products. Often, we raise new questions based on this changed understanding and begin the process again.

**Example(s):** Historical narrative, letter to a public official, oral report with Power Point slides

**Process begins again**

**Description:** Often, we raise new questions based on this changed understanding and begin the process again.

**Example(s):** Has our immigration policy for people coming here from Mexico changed since 9/11?

PROFESSIONAL LEARNING DOCUMENT: Disciplined Inquiry

(Disciplined inquiry is seen as the means for engaging students in meaningful learning experiences. Several key features were emphasized during professional learning meetings.) The following were outlined as characteristics of inquiry:

- **Inquiry begins with a significant problem or question.** Inquiry is prompted by a meaningful problem, question, dissonance, or disequilibrium in one's environment or experience. "Meaning making often starts with a problem, a question, a discrepant and inexplicable event, a curiosity, wonderment, puzzlement, a perturbation, expectation violations, cognitive dissonance, or a disequilibrium"(Jonasson, et.al., 1999, p. 5).

- **Students are actively engaged in the inquiry process.** Students are treated as investigators. Students use their prior knowledge and newly gathered data to create their own meaning. Students are expected to pose, investigate, and answer questions. They acquire, interpret, analyze, evaluate, and manipulate information in response to the question or problem.

- **Inquiry requires sustained, disciplined, and in-depth study.** An investigation of significant and important topics in history requires sustained and disciplined study. Disciplined inquiry requires an investigation of sufficient and appropriate data sources, a consideration of multiple perspectives and interpretations, thoughtful consideration of evidence, substantive conversation, and conclusions supported by evidence. The world beyond the textbook is data for use: art, music, architecture, maps, photographs, graphs, charts, primary sources, and secondary sources can be consulted.

- **Inquiry depends upon substantive and constructive conversation.** Importance is placed upon exchanging ideas. There must be substantive conversation and intellectual negotiation that focuses on meaningful questions and "matters of public concern by clarifying issues, considering opposing views, applying democratic values, anticipating consequences, and working toward making decisions"(Michigan Framework for Social Studies Education, 1995).

- **Inquiry allows for multiple ways to develop and share understanding.** Students are given varied opportunities to express or demonstrate their learning. Their learning is shared within a community of inquiry and according to established goals, standards, and procedures of study. "The criteria for evaluation are public, and students are welcome to discuss or to contest them. They have time to reflect on their performances, to practice, to receive help"(Gardner, 1999, p. 131)

- **The teacher facilitates the inquiry process.** "Teachers model seriousness of purpose and a thoughtful approach to inquiry and use instructional strategies designed to elicit and support similar qualities from students"(Levstik and Barton, p. 89). The teacher often moves into the background but still maintains the timing, structure, and sequencing of activities, provides support and scaffolding for inquiry skills and processes, helps students located resources, and gives ongoing assessment.

# APPENDIX C

## The Principled Use of Technology

A key aspect of meaningful learning using technology is the principled use of technology to support student learning and thinking in important subject matter content. Both web-based units are designed to deeply engage students via Internet-connected technology with multiple perspectives, so they develop enduring understandings about subject matter and important big ideas. Each lesson begins with a "Launch Page" that connects students to the technology tools and the on-line learning activities and resources they will use in the lesson.

Both units provide models for the principled use of technology. The ML/T units and the technology tools that support student learning and teaching in the units are designed to:
1. enable students to learn complex ideas while engaged in complex reasoning and problem-solving,
2. deliver meaningful learning experiences through curriculum units that connect lesson activities with complex ideas and enduring understandings
3. enable teachers to inform their teaching practices based on student-generated data, and
4. use technology to manage and deepen this kind of teaching and learning.

The Meaningful Learning Toolbox (MLToolbox) supports student learning and thinking in the Inquiry Unit and Mexico and Migration Unit by providing a set of technology tools that students and teachers use to investigate subject matter, critically work with Internet sources of information, and communicate and reflect upon their learning. These technology tools support students' access to a broad range of information and perspectives, collaborative work in a community of inquiry, and knowledge construction through the inquiry process. When used in these ways, technology is a powerful tool that provides *multiple intentional opportunities to achieve deep and enduring understanding of key content and complex ideas that are central to the discipline and also relevant to students' lives.*

### Meaningful Learning Toolbox

The Meaningful Learning Toolbox is an integrated Web-based set of tools designed to support effective classroom interaction that leads to a deep understanding of content. These tools include iJournal, iMail, Source Explorer, iConnect, the Narration Creation Station, and options that allow the teacher to customize these tools for their classroom:
- *iJournal* supports student reflection on particular questions about the content and how it relates both to their own experience and the big ideas. It provides teachers with a tool to make student thinking and writing visible and public, since it can be used to exhibit students' ideas about a range of topics and issues.
- *iMail* is an internal email program intended to support efficient collaboration and communication among students and with the teacher.

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- *Source Explorer* helps students work with sources of information by framing web sites students decide to use in their investigations and having them consider issues of relevance and credibility, conduct analysis and interpretation, and decide how they will use the source of information. The Source Explorer frame includes guiding questions that students must respond to as they do this analytical, interpretive, and evaluative work with information. Students' entries to these questions can then be stored in the Narration Creation Station for assessment purposes and ongoing inquiries into social studies content.
- The *iConnect* tool helps students look across the information they have gathered to write claims and summaries of evidence to support their claims.
- The *Narration Creation Station* guides students through a four-step process of disciplined inquiry. In response to their own investigative questions, students can individually or in groups (1) find Internet sources related to their questions; (2) make text, image, audio and video clips from these Internet sources; (3) make claims based on the evidence they find; (4) assemble their clips into an interpretive account that is essentially a Web page that they use to tell their story or explain their findings. Using the Inquiry Station, interpretive accounts can then be easily shared within and across classes.
- **Customizing features**: In addition, the MLToolbox provides the ability to post class announcements, select various features to make available to students, develop iJournal and Source Explorer questions, and provide multimedia resources for students to use in their investigations.

The technology tools offered by the MLToolbox software support students' sense-making of important social studies content and the units' big ideas, especially as students select and evaluate web-based information. These technology tools help stimulate student questioning, efficiently provide multiple perspectives about content being investigated, and foster students making connections to the world beyond the classroom.

The MLToolbox also provides many features that support teaching in the model units. Using the MLToolbox, teachers can use a computer connected to a projection device to model and scaffold the kinds of thinking required in disciplined inquiry. In addition to modeling by making their own thinking public--for example, in evaluating web sources for credibility and relevance--teachers can also easily make student thinking visible by sharing iJournal and iMail responses. By using technology in these ways, teachers support student engagement with subject matter content and engage students in inquiry.

Teachers can also view student journal entries, email messages, storage buckets, and in-process interpretive accounts as data that represents students' thinking and work in progress. This information enables teachers to gather a range of data about student learning and understanding that can be used to inform ongoing decisions about instruction to improve student learning

# APPENDIX D

## Professional Learning Block:
### Using Big Ideas to Develop Subject Matter Understanding

(12/30/03)

<u>PLB: Using Big Ideas to Develop Subject Matter Understanding</u>

**Enduring Understanding**: Big Ideas (powerful ideas that serve as disciplinary lenses) help students develop understandings about subject matter and personal experience and make connections between subject matter content and their personal experience in ways that support subject matter understanding.

**Essential Questions**:
* How do the Big Ideas help students develop understandings about subject matter and personal experience? How do we know if students are developing understandings about subject matter and personal experience by using Big Ideas?
* How do the Big Ideas help students make connections between subject matter and their personal experience? How do we know if students are making connections between subject matter and personal experience in ways that support subject matter understanding?

**Outcome**: Teachers investigate **what** they notice in classrooms using Big Ideas to help students develop understandings about subject matter and personal experience. They also consider **how** they recognize and develop connections between subject matter content and students' ideas and personal experience to support student understanding of subject matter.

**Work**: Teachers examine the use of Big Ideas to help students develop understandings about subject matter and their personal experience. They investigate what they notice and pay attention to in classroom experience when students are using Big Ideas and how they know significant understandings about subject matter and personal experience are mediated using Big Ideas.

## Lesson Plan Outline

<u>Resources</u>

In this Professional Learning Block we will have opportunities to use the following resources:

* Video clips of a classroom discussion about the Big Idea, *Space becomes place*, during Lesson 8 in the Mexico and Migration Unit, and a transcript of the discussion; and

- Video clips of a classroom discussion of the Big Idea, *Knowledge is subject to change and interpretation*, during Lesson 7 of the Inquiry Unit.

## Launching this Professional Learning Block

We might begin this Professional Learning Block by considering the following questions:

- How do Big Ideas help students develop understandings of subject matter and/or their personal experience?

- How do we know if (or when) students are developing understanding using the Big Ideas?

## Key Parts of Professional Learning Block

This Professional Learning Block is built around Lesson 8 in the Mexico and Migration Unit and Lesson 7 in the Inquiry Unit in which the Big Ideas of *Space becomes place* and *Knowledge is subject to change and interpretation* are discussed in two different 6th grade classrooms. First, we will view and talk about a video segment in which Big Idea Questions related to *Space becomes Place* are discussed in a social studies class as students worked on Lesson 8 in the Mexico and Migration Unit. Then, we will view an Inquiry Unit discussion of the Big Idea, *Knowledge is subject to change and interpretation*. We will move through these segments sequentially or focus on the areas that most intrigue us. As we examine these artifacts we will explore the following:

1. How 6th graders talk about the Big Idea of *Space becomes place* and how the teacher mediates students' ideas, lived experience and prior knowledge and subject matter understanding;
2. Conceptions of the Big Idea, *Knowledge is subject to change and interpretation*, and uses of Big Ideas in teaching and learning;
3. What we notice about student knowledge and conversation and relationships between students' ideas, understandings about personal experience, and subject matter content in these video segments.

## INTERACTION #1 – Video Segments of a 6th Grade Classroom Discussing the Big Idea, *Space becomes Place*

Summary of clip: This video clip shows a 6th grade class discussion of the Big Idea *Space becomes place*. The class discussion is part of Lesson 8 in the Mexico and Migration Unit and the teacher has asked her students the Big Idea questions associated with *Space becomes place*. (See Big Ideas Questions.) After some discussion of several of the Big Idea questions, students discuss the question, "How do gender, race, social class, and nationality become involved in the ways people claim spaces/places?" Prior to discussing this question, students had talked about how spaces become places, what students do to make certain spaces their places, how groups share spaces, and how people define their identity through their uses of space. Students talked about camp experiences

and having to share cabins with others, their rooms at home, the lunch line, and the school playground and basketball court. A transcript is provided for the discussion about how gender, race, social class, and nationality affect how people claim spaces.

PLAY THE CLIP (length: 10:25)

Guiding questions:
*What?*
- What do you notice about students' ideas and comments about the Big Idea *Space becomes place*?
- What social studies content are students discussing?
- What prior knowledge and/or personal experience do they refer to?
- What do you notice about connections they make between prior knowledge and/or personal experience and social studies subject matter?
    (Be as specific as possible – closely attending to language use is important)

*So what?*
- Is there anything that surprises or intrigues you about students' understandings of the Big Idea, *Space becomes place*, or how they apply this Big Idea?
- How would you characterize students' understandings of the Big Idea, *Space becomes place*, and its relationship to gender, race, social class, and nationality?
- Did the Big Idea advance or deepen student understanding in any way? If so, how?
- How does the teacher mediate student knowing and understanding in this discussion?

## INTERACTION #2 – Video Segments of a 6<sup>th</sup> Grade Classroom Discussing the Big Idea, *Knowledge is subject to change and interpretation*

Summary of clip: In this video clip we will see and hear students discussing the Big Idea, *Knowledge is subject to change and interpretation.* The focus of Lesson 7, "Analyzing an Interpretive Account," in the Inquiry Unit is for students to consider how an interpretive account can help students understand that knowledge is subject to change and interpretation. The teacher in this lesson has asked students to think about why people might have different interpretations of the same data or information. He has projected two optical illusions, a figure of a woman and the "Vase/Faces Illusion," for students to look at carefully and share what they notice and see. After students describe what they see, the teacher asks, "What do you think accounts for the differences that people see with these?" Students talk about why people have different interpretations and what accounts for their different interpretations.

## PLAY THE CLIP (length: 8:50)

Guiding questions:

*What?*
- What do students notice and pay attention to in the illusion?
- What do students say accounts for the different ways the illusion is seen?
	(Be as specific as possible – closely attending to language use is important)

*So what?*
- Is there anything that surprises or intrigues you about what students notice or talk about as they view the illusion?
- How would you characterize students' understandings of the Big Idea, *Knowledge is subject to change and interpretation*?
- How does the Big Idea help students think about what they notice and pay attention to? How does the Big Idea help students think about the different interpretations they have?
- How does the teacher mediate student knowing and understanding in this discussion?

## Wrapping Up this Professional Learning Block

As we wrap up this Professional Learning Block, respond to the following questions:

*Now what?*
- What do you see as the purpose or value of Big Ideas in teaching and learning?
	- How are you thinking about what counts as knowing or understanding?
	- What insights do you have about what we notice in viewing videotape of classroom experience and why we notice what we notice?
	- How does collaborative inquiry and the use of videotape to examine classroom practice support and/or shift what we notice and attend to?

# APPENDIX E

## Follow-up Interview Questions

General:

- During the PLB session, several people mentioned how difficult it is to assess students' understandings of the big ideas. People talked about providing multiple opportunities and varieties of ways for students to demonstrate their understanding. How are you able to know if students have developed understandings of the big ideas, especially since it may look very different across students?
- Do you see the big ideas as ends in themselves, as something they should know (the meanings of), or are they tools that you want students to be able to apply and use to better understand their personal experience and/or subject matter? Or is it both? Is there a difference between these two ways of understanding the big ideas?
- What do you see as the purposes or values of the big ideas? (for teachers, for students) How do they help students develop understanding (about personal experience, about subject matter)?
- One of the challenges that came up in our PLB session was the question of what counts as understanding? How are you able to determine if students have developed adequate understanding of a big idea? How do you get a sense of students' understandings about the big ideas?
- What do you see as the value of using videotape to examine classroom practice? On what or how does it help you focus on classroom practice?
- What are the challenges of using big ideas and an inquiry approach that moves back and forth between students lived experience and subject matter?

For Tim:

- During the PLB session, you mentioned that assessing students' understandings of the big ideas is difficult. How do you assess whether or not students have understandings of the big ideas? (You mentioned that you have to "tune into" students. What do you "tune into'?) What kinds of understandings do you want students to have? How would you want them to be able to articulate their understandings?
- You mentioned that your students are always asking you why they need to learn particular things. What would you say to them if they asked you why they need to learn the big ideas? What do you see as the purposes, value, or uses of the big ideas?
- You mentioned that concepts such as social/economic class or poverty are "sensitive issues." Why do you see them as "sensitive issues" and what does this mean for your teaching? How do you manage these "sensitive issues" in your classroom?
- You mentioned that it's difficult to know when to tell kids there is a "right" or "correct" answer and when they need be aware that there are multiple

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perspectives they need to consider. How do you determine this? How do you help students understand this?
- You mentioned the difficulty of "meshing" conversation to go in the kids' direction that they seem most interested in and connecting with the subject matter and following the curriculum. How do you "mesh" classroom conversation so that it does both (connect with kids' interests/ideas and the curriculum/subject matter)?
- You mentioned that you want students to become more aware of their own perspectives and the stereotypes they may have. How do you help them become more aware of their own perspectives and how they may be limited?

For Lynn:
- During the PLB session, you mentioned that you like to teach the content first so that students can relate the big ideas and their personal experiences to what they have learned about Mexico and migration. Please elaborate on this. Why do you like to teach content first? How do students make connections between the content and their personal experiences? How do the big ideas support them making connections between the content and their personal experiences?
- What do you see as the main purposes of the big ideas?
- You mentioned that concepts such as social/economic class, poverty, or racism are "sensitive issues." Why do you see them as "sensitive issues" and what does this mean for your teaching? How do you manage these "sensitive issues" in your classroom?
- During the conversation about making connections between ("meshing") students' ideas/interests/experiences and curriculum/subject matter and standards/benchmarks, you noted the difficulty in doing this. How do you manage this (following kids' ideas and meeting curriculum/school standards and benchmarks) in your teaching?

For Don:
- During the PLB session, you mentioned that students develop understandings of big ideas by first hearing and making connections with other students' experiences and ideas and that they are then able to make the transition to subject matter content. How are they able to make this transition? (You talked about going up and down a "ladder," from personal experience to others' experiences and to subject matter. What is this "ladder" to you? Describe this movement up and down the ladder. How do students move up and down the ladder to develop understandings of the big ideas?)
- You described a "calliope" of student understanding in the classroom. What did you mean by this? What challenges does this "calliope" pose for you?
- You mentioned that there were a number of different directions the lesson and conversation about social class (the teacher has the "joy stick") could have gone and you had several questions that you wrote down (do you have these) that you might have wanted to pursue with students. How do you decide which directions to take or decide which questions to ask? How do you decide which ones to pursue in depth?

- You noted that there are many variables that might determine which direction to go in the conversation or lesson. What are these variables and how do you use them to help you decide which direction to take the conversation (or allow it to be taken)?
- You mentioned that students have limited views and that they need to understand it's possible to view things from different perspectives. How do you help students become aware of their own limited views and the importance of considering different perspectives? How do you know if students are able to do this?
- You also mentioned that it's important for students to be able to determine the accuracy of different views. How do you help them understand this? How do you know if they're able to do this?
- You mentioned the importance of developing a comfort zone and risk taking conditions among teachers for them to be able to do this kind of work. Why is this important and how is that developed among teachers?

For Susan:
- During the PLB session, you mentioned "open doors" that students offer when they are interested in something and what to talk about something. You said those were the "best moments" in teaching. Explain. What makes them "best moments"?
- You expressed the difficulty of knowing what students understand about subject matter, since you can't see what they're thinking. How do you understand or find out what students have learned or understand?

# APPENDIX F

## ML/T Professional Development (PD) Model

### 1) ML/T PD is teacher-directed.

It is assumed that teachers can be leaders in their own professional development and identify their learning needs in relation to teaching the curriculum. Consistent with the ML/T attributes for learners, teachers ask their own questions and pose problems of practice, conduct investigations and analyses of practice, and evaluate their learning related to their own teaching and contexts.

Key features of implementing this principle include:

- Teachers' identification of key questions/issues/problems related to developing and teaching ML/T units;
- Teachers as individuals and/or with colleagues develop professional learning goals and plans related to their key questions/issues/problems;
- Teachers and PD leaders co-construct agendas for regular professional development sessions.

### 2) ML/T PD is inquiry-oriented.

Because inquiry is viewed as the heart of meaningful learning, professional development engages and supports teachers in inquiry-oriented professional learning that is anchored in teaching for ML/T and resulting student learning. Using an inquiry model, teachers pose their own questions or problems about student learning and their related practice, collect data (classroom artifacts, student work, etc.), analyze and interpret data, and reach tentative conclusions that might shift their practice or contribute to their understandings about teaching for ML/T. Teachers are encouraged to improve their practice by considering teaching strategies and artifacts of their teaching practice as they impact student learning. This approach anchors conversations in the concrete, specific work of teaching, in artifacts of student learning, and in curriculum materials, in order to make explicit teacher thinking about issues of teaching for ML/T.

Key features of implementing this principle include:

- The use of artifacts of practice, such as student work, assessments, videotape of teaching and learning, curriculum materials, and uses of technology, in order to anchor teacher inquiry and conversations.
- A portfolio of practice is a hallmark, providing an opportunity and place to collect and analyze their work and student work---the data needed to improve student learning.
- Examples of practice that offer rich opportunities for professional learning are identified and presented. Video cases of critical moments, teaching strategies,

and student learning experiences (e.g., building community, engaging students in substantive conversation, teaching analytical skills, and assessing student understanding), provide opportunities for inquiring into and developing shared understandings about key features of teaching for ML/T. Video cases offer excellent opportunities to investigate a variety of practices and contexts for ML/T.

### 3) ML/T PD promotes and supports a culture of inquiry and professional learning.

Although teachers identify their own individual learning needs and goals related to teaching for ML/T, problem-solving and improvement of practice are considered collaborative, collegial endeavors. Sustaining ML/T PD that is inquiry-oriented and teacher-directed requires development of a culture of collaborative inquiry and professional learning. This kind of professional development builds upon the knowledge and expertise of each participant. Teachers play an active role in co-planning, co-teaching, and debriefing professional learning sessions. Norms are emphasized that build collegiality, foster collaboration for improving student learning, develop shared understanding and a common language of ML/T practice, and model the culture embedded in the ML/T attributes.

Key features that foster such a culture include:

- Engaging in an electronic learning community (e.g., the Meaningful Learning Classroom Toolbox e-mail group) in which teachers can share questions, problems or concerns, their thinking, strategies, and resources related to teaching for ML/T.
- Professional development sessions include time to develop community and foster collegian inquiry partnerships.
- Colleagues observe and learn from each others' teaching for ML/T.
- Regular fact-to-face professional learning sessions are held in which problems of ML/T practice are addressed and everyone's input respected.

### 4) ML/T PD is embedded in teaching standards-based curriculum characterized by the ML/T attributes.

Professional support will be embedded in or directly related to teaching for meaningful learning using technology in inquiry-oriented curriculum units (co-planning, co-teaching, coaching, debriefing and reflecting on unit lessons, analyzing artifacts of practice, etc.). Disciplinary understandings and learning how to implement the curriculum and engage students in meaningful learning using technology and inquiry will be key areas of professional development. Goals of inquiry include the following: deepening understanding of social studies subject matter and methods of inquiry, and how technology adds to this; student learning and understanding of subject matter, and how technology impacts this; and developing ways of representing learning, especially those ways supported by technology. This approach keeps professional development focused on concrete classroom applications of ideas and strategies central to teaching for ML/T.

Key features include:

- Professional learning is grounded in disciplinary content (e.g., social studies) and questions of effective strategies for teaching the content, especially strategies that are technology-supported. Developing both students' disciplinary understandings as well as teachers' own subject matter knowledge is a focus.
- Artifacts of practice gathered in teaching for ML/T are used as a focus for professional learning.
- Topics and issues for professional learning are iterative and related to the ML/T curriculum. Issues that are central to teaching ML/T units are considered central to professional learning. For example, issues such as how to develop a learning community (community of inquiry), how to develop subject matter understanding, how to engage in inquiry, and ways to effectively use technology for meaningful learning experiences are all issues central to teaching the curriculum and to professional learning.

## 5) ML/T PD is takes into account the contexts of practice.

Professional development activities are structured to support innovation and development of resources for teaching for ML/T. Professional development implementation is linked to student learning and takes into account district and school goals for student learning and student performance. A variety of PD formats and contexts are taken into account, so that teachers' PD plans are individualized to provide maximum support for their learning. Ways that districts and schools can support teachers' professional learning goals and plans are explored. A range of strategies to provide time and space are considered to create opportunities for greater collaboration and inquiry.

Key features of implementing this principle include:

- Consideration of particular school contexts guides professional development planning so that constraints and alternatives in each school are taken into account. Approaches are created and implemented taking into account these organizational factors, such as scheduling, time, and place. A variety of formats and multiple strategies are considered and developed. Strategies and goals depend both on teachers' professional learning needs and on needs in teaching the curriculum;
- Flexible arrangements are made that support inquiry partnerships and individual or team professional development goals and plans. Options might include: release time on a regular basis for observation, co-planning, co-teaching, coaching, or debriefing lessons; adjusting schedules so that colleagues have a common planning period or a planning period that will allow them to visit other classrooms during lessons; "bank" time so they can leave school earlier as a trade-off for time spent in professional development activities; subsidized participation in professional development activities; partnership with schools/districts to support professional learning (need for shared visions, goals, commitments); possibilities for coordinating ML/T professional development goals and plans with school/district professional plans and activities.

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## 6) ML/T PD develops understanding and skill in the "principled use of technology."

Educational uses of technology are often driven more by the technology's capacity than by student learning goals and effective instructional practice. We believe that technology use must first and foremost serve the standards-based goals of learning; this is what we mean by "principled use." Thus, professional development must focus on learning technology use from this perspective. Professional development activities in social studies, for example, are structured for learning to use technology as a powerful pathway for inquiry, gaining multiple perspectives, analyzing and evaluating information, problem posing and problem solving. In the ever-expanding technology arena, strategic elimination streamlines what educators need to know and be able to do. Teachers do not need to be technology experts; however, they do need a portfolio of curriculum-specific technologies at their fingertips. Teachers also need to know what effective use looks like in practice and to feel confident in selecting and managing technologies for effective learning.

Key features of implementing this principle includes:

- Districts allocate time and resources for teachers learning, practice, and classroom use of content-related technology tools (such as the Narration Creation Station and Meaningful Learning Classroom Toolbox).
- Teachers collaborate with their colleagues in locating and assessing the value of curriculum-related technology tools and information via the Internet.
- Uses of technology tools for learning (such as Inspiration and PowerPoint) are embedded in professional development sessions.
- Teachers communicate with each other and with their students on a regular basis using on-line forums such as e-mail and iMail.

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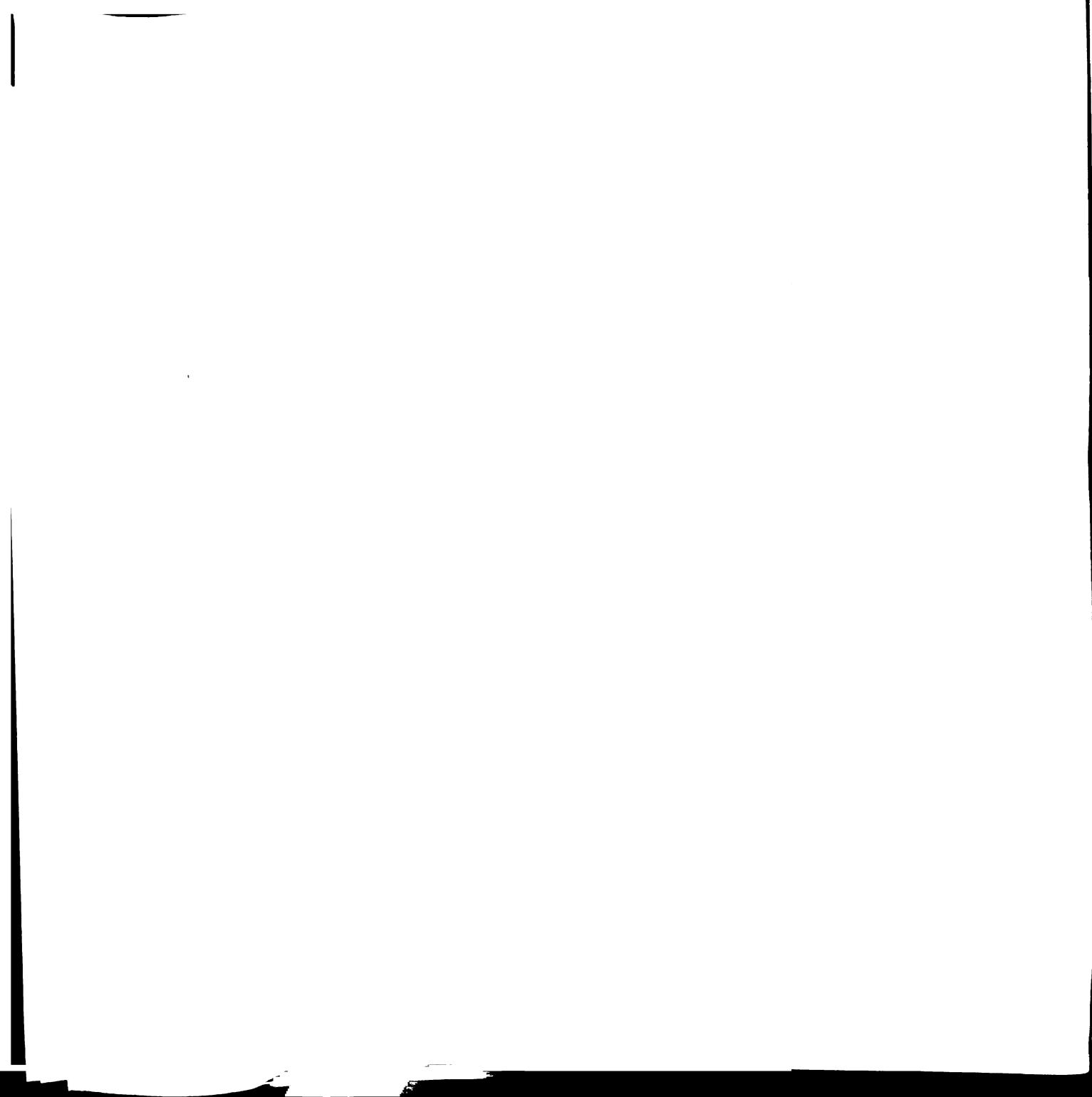
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