

Co-Constructors of Data, Co-constructors of Meaning:
Teacher Professional Development in an Age of Accountability

Leyton Schnellert, Stephanie Higgison, & Deborah L. Butler
University of British Columbia

Paper presented at the 2006 meetings of the Canadian Society for Studies in Education, Toronto, ON. Support for this research was provided by Social Sciences and Humanities Research Council of Canada Standard Research Grant # 410-2001-0591.

Abstract

In this project, teachers and researchers worked as partners in planning learning through reading activities, developing innovative curriculum-based assessments, analyzing assessment data to set instructional goals, revising and enacting instructional strategies, and assessing associated outcomes. In our report, we draw on multiple complementary sources of data to examine how engaging teachers in collaboratively constructing and scoring situated literacy assessments can simultaneously: (1) provide data considered meaningful by teachers in targeting instructional practices; (2) foster teacher professional development through engagement in cycles of self-reflective inquiry (Butler, 2004); and (3) support definitions of “accountability” that are perceived as equally meaningful at classroom, school, district, and provincial levels. Based on case study analyses of teachers’ participation in this project, we conclude that supporting teachers to generate, interpret and act upon formative and summative assessment data should be incorporated into professional development initiatives so that teachers can learn how to assess the specific needs of their students and how to build from assessments to ground the instructional choices they make. We also underline the potential of this approach to develop assessments considered meaningful by individuals adopting differing socio-political perspectives.

Co-Constructors of Data, Co-constructors of Meaning:
Teacher Professional Development in an Age of Accountability

This paper examines the relationship(s) between data sources collaboratively developed, scored and compiled by teachers and researchers and the ways teachers engage with data to define instructional goals, plan for instruction and enact strategies to promote more self-regulated learning by their students. This paper also examines the political and social forces at play within a project focused on literacy assessment as it relates to student learning and the improvement of instruction. Two main objectives drove our research when this project was conceived. These were to: (1) develop high-quality, situated, and formative literacy assessments that would provide data that teachers find useful in shaping practice so as to meet the needs of their students; and (2) investigate how engaging teachers in collaboratively constructing, scoring, and interpreting data might feed into cycles of reflective inquiry, thereby supporting teachers' professional development and meaningful shifts in practice. The core of this research report focuses on what we learned so far in relation to these two research objectives.

But as interest in our project grew at the classroom, department, school, district, and provincial levels, we also recognized the opportunity to transform what could be cast as an imposed, top-down "accountability agenda" into a multi-level collaborative enterprise. Over the past three years, this project has been progressively remolded as it has been subsumed within emerging political and social agendas, particularly the growing expectation that school districts, schools, and teachers should be accountable for outcomes experienced by their students (Borko, 2004; Earl, 1999; Shepherd, 2000). Given that a common goal across policy makers and educators alike is to link assessment to instruction, in our research we added a third focus, which

was to: (3) examine whether collaboratively generating data from situated literacy assessments can simultaneously provide formative assessments useful for guiding instructional practices and summative data useful for monitoring (i.e., accounting for) outcomes at the individual, classroom, department, school, district, and provincial levels.

Thus, the research reported here examines the potential of situated literacy assessments to enhance teacher professional development, inform classroom instruction, and establish accountability in a way that is acceptable and meaningful to individuals adopting differing socio-political perspectives. In upcoming sections, we situate our research in literature that theorizes teacher learning as an impetus for professional development. We then address how our project relates to the broader socio-political tensions created by a quest for “accountability,” with a focus on how calls for accountability are implicitly or explicitly linked to calls for teacher professional development. With these backdrops in mind, we articulate our professional development model, describe how our project unfolded, and specify our research foci. Remaining sections report on our methods, findings, conclusions, and directions for further inquiry.

Reconceptualizing Teacher Learning

Research into teacher learning has shifted significantly as teaching and learning have been reconceptualized over the last 50 years (Burnaford, Fischer, & Hobson, 2001; Cochran-Smith & Lytle, 1993; Dewey, 1963; Eisner, 2002; Schon, 1983; Shulman, 1996, 2000; Wilson, Shulman, & Richert, 1987). For example, when considering the nature of teaching (and what teachers have to “learn”), conceptions have moved from process-product perspectives that focus on teaching as a technical transmission activity (relating teaching and learning in a linear way), to conceptions of teaching as requiring contextualized decision-making. This shift has led to a focus on how teachers’ knowledge and beliefs mediate their behaviour in classrooms (Borko, 2004; Bransford,

Brown, & Cocking, 2000; Cochran-Smith & Fries 2005; Shulman, 1986), and to research focused on teachers' cognition, knowledge use, and beliefs (Cochran-Smith & Fries, 2005).

Research on teachers' professional knowledge and thinking (Schon, 1983) includes studies of the nature of reflective practice and of the types of teacher knowledge that shape instructional decision-making *in situ* (e.g., knowledge about student learning, content knowledge, pedagogical knowledge, curricular knowledge). In terms of the latter, Eisner (2002) has called for change in the way researchers and theorists think about teacher knowledge. Drawing on theories from the disciplines of sociology, anthropology, and psychology, Borko (2004) notes how emerging conceptualizations have positioned teacher learning as encompassing "both individual and sociocultural features, and have characterized the learning process as one of enculturation and construction" (p 4; see also Cobb, 1994; Driver et al., 1994).

In the present study, we build from these emerging conceptions of teaching and learning to investigate teachers' reflective, principle-based, contextualized decision-making as they attempt to make changes in practice. To that end, we investigated the individual and common ways in which participating teachers engaged reflectively in cycles of goal setting, planning, teaching, and monitoring, and how involving them in creating, interpreting and using assessment information impacted their theoretical perspectives about teaching and learning and construction of knowledge (see Figure 1). We examined and analyzed these cycles of thinking and learning using a model of self-regulated learning which describes learning as emerging from reflective engagement in dynamic and recursive cycles of cognitive and metacognitive activity (see Butler, 2005; Butler et al., 2004). We applied a socioconstructivist lens (Gergen, 1985; Harris & Pressley, 1991; Stamps, 1997) to study ways that teachers initiated and constructed knowledge in relation to contextual factors.

Teacher Professional Development and Accountability Agendas

Teachers learn about teaching and learning through formal and informal means. While formalized professional development initiatives have often used a traditional transmission model to foster teacher learning, current research supports development of alternative, collaborative models that engage teachers jointly in inquiry-based, longitudinal, and critical examinations of practice (Carpenter & Fennema, 1996; Englert & Tarrant, 1999; Gersten, 1995; Henry et al., 1999). These emerging initiatives extend professional development activities from formal settings (e.g., workshops) into authentic communities of practice within or across schools wherein individuals work together to situate emerging knowledge and beliefs within practice.

However, communities of practice do not work in isolation from external forces or internal tensions. Recent meta-analyses of research related to teacher learning and professional development have identified two critical lenses that can be applied when considering initiatives and research: one focused on learning processes; the other on the impact of external factors such as governmental programs, educational policies, and accountability frameworks on professional practice (Borko, 2004; Cochran-Smith, 2004, 2005; Darling-Hammond, 1996; Winter, 2000). Most relevant in the context of our project is the groundswell in calls by researchers and policy makers alike for the use of student outcome data to measure the quality of teacher practice and the impact of professional development activities.

These converging trends in research and policy reflect a new emphasis on accountability in education (Cassidy & Cassidy, 2005; Earl, 1999; Taylor & Tubianosa, 2001; Volante, 2004; Wickstrom, 1999). Certainly, educational reform movements are setting ambitious goals for student learning (Borko, 2004). Simultaneously, educational scholars and policy makers are calling for professional development that enhances teacher knowledge and instructional practices

that result in measurable student gains (Borko, 2004; Cochran-Smith, 2004, 2005).

However, Cochran-Smith (2004, 2005) and others (Biesta & Medima, 2002; Britzman, 2000; Eisner, 2002; Winter, 2000) caution that a narrow focus on results, usually reflecting a limited set of academic outcomes as measured by standardized tests, may result in a narrow definition of teacher knowing and may (unintentionally) drive professional development mandates back towards technical rationality. Cochran-Smith (2004) and Borko (2004) have both argued that, although no correlation has been found between teacher learning and results from large scale, standardized measures of student performance, governing bodies are nonetheless directing the quality and scope of professional development initiatives based on these kinds of student achievement results. Our research proposes a novel approach for reconciling relationships between accountability frameworks and professional development, one where the worlds of policy and socioconstructivist conceptions of teacher learning can find a new and meaningful shared space.

Our Professional Development Model

In this research, we adopted a conception of teaching as requiring complex processes that draw upon multiple knowledge bases, skills, and understandings (Borko & Putman, 1996; Schon, 1991) to investigate ways in which teachers use situated data to make contextually-relevant decisions regarding instructional goals and practices. Consistent with calls for situated “assessment for learning” activities designed to guide instruction (Black & Wiliam 1998a; Earl, 1999; Shepard, 2000; Stiggins, 2002), in our project university researchers and classroom teachers engaged collaboratively in non-linear and recursive “instructional change cycles” (see Figure 1), wherein they examined data to set instructional goals, co-constructed strategies for achieving those goals in particular classrooms, enacted strategies, monitored outcomes, and

decided on further courses of action (Butler, Schnellert & Cartier, 2005). In the context of these professional development activities, we examined how engaging teachers in developing, scoring, and interpreting assessment data spurred their engagement in instructional change cycles and development of new knowledge about teaching and learning.

Our professional development model also jointly attends to student and teacher self-regulation, because teachers' goals across a series of projects have been to identify and support students' self-regulation when "learning through reading" in the content areas (Butler & Cartier, 2004; Butler, Cartier, Schnellert, & Gagnon, 2006; Cartier, 2000). Indeed the data collection tools we developed with teachers for this project assess student self-regulation and knowledge construction while engaged in learning through reading activities. Research has identified self-regulation as a key contributor to student learning (e.g., Borkowski, 1992; Butler, 1998; Zimmerman & Schunk, 2001). In our work, we extend research on self-regulation to investigate teacher learning within collaborative inquiry cycles (Butler, Novak Lauscher, Jarvis-Selinger, & Beckingham, 2004; Butler, 2005).

Self-regulation refers to the approaches an individual uses to self-direct goal-oriented activity (e.g. how an individual selects and enacts a strategy to accomplish a given objective). Self-regulating strategies are used by teachers to plan learning approaches and manage resources, monitor the advancement of students, make adjustments to instruction, monitor and manage their own motivation and emotions, and self-evaluate whether they are achieving their personal objectives (e.g. using data from assessments; building students' disciplinary knowledge). For teachers, professional learning experiences that explicitly foster self-regulating processes (e.g., planning, selecting or creating instructional practices, monitoring outcomes, adapting approaches based on review of outcomes) can result in enhanced awareness of links between instructional

practices and student learning, along with improved self-perceptions of competence and control over creation of positive learning experiences for students.

While professional development approaches similar to ours also describe “assess-plan-implement-reflect” cycles (e.g., Borko, 2004; Shepard, 2000), our work extends this prior research by studying how reflective inquiry cycles can support idiosyncratic and situated shifts in knowledge and practice for teachers working collaboratively to achieve common goals (i.e., supporting students’ self-regulated engagement in learning through reading). In our study, we expected teachers to reflect on assessment data to derive implications for their own classrooms, recognizing that some collaborative teams might emphasize similar issues or strategies. But we did not constrain teachers to respond to the data in any predetermined way. Thus, by tracing how individual teachers bridged from data interpretation to instructional revision, we were able to observe teachers in the midst of making sense of data so as to inform contextualized decision-making in practice. In that context, we observed key moments of tension and/or uncertainty that informed understanding about the nature of critical reflective practice.

Curriculum theorist Britzman (1991) calls for learning experiences for teachers that nurture critical discourse and foster inquiry into the multiple perspectives of their students. In our project, we drew on a situative perspective of teacher learning and professional development to encourage teachers to look for both individual and common interpretations of data and courses of action. Participating teachers assisted in generating data from two complementary types of assessments specific to the subject area (e.g., Science, Humanities) and program within which they were teaching (e.g., French Immersion; Regular English Program). Then, in various teams, teachers and researchers deconstructed the results from multiple perspectives. Ultimately, teachers selected individual and/or shared courses of action based on the unique profile(s) of

their class(es), considering assessment results, pedagogical practices, and other context-specific factors (e.g., curricula; inclusion in classes of students with special needs).

The Evolution of a Multi-Layered Project

In our research we are centrally concerned with how teacher and student learning are situated in context. Therefore, we would be remiss if we did not attend to the ways in which contexts impacted the shape of the study itself. The seeds of our project were planted eight years ago when Dr. Deborah Butler (lead researcher) was invited by school district consultants to speak with secondary teachers about strategies for promoting active, strategic learning by students. Across the next five years, a sequence of collaborative projects emerged focused both on promoting student self-regulated learning (e.g., Butler, Novak Lauscher, & Beckingham, 2005) and teacher professional development (e.g., Butler, 2005; Butler et al., 2004).

However, starting in the 6th year of the project, multiple simultaneous events converged to link the research program with larger movements at the district and Ministry levels (see Figure 2). In one event sequence, Butler and her colleague in Montreal, Sylvie Cartier, recognized the need to develop a situated “learning through reading” assessment tool that could inform practice and research. So, their attention turned to the development of a Learning through Reading Questionnaire (LTRQ) that tapped into students’ perceptions about the requirements of learning through reading activities and their engagement within them. Three years of collaborative research ensued to validate the LTRQ (Butler & Cartier, 2005; Cartier & Butler, 2004).

Simultaneously, the provincial government in British Columbia introduced a new accountability framework (Halbert & Kaser, 2002; Rogers, et al., 2006), requiring school boards to generate accountability contracts. Districts could set their own priorities and plans, but needed to document outcomes with data. Thus, the participating district set about defining goals that

were related to district priorities, and for which outcome data were also available. One choice was to continue attention to adolescent literacy, which had already been emerging as an interest across schools in the district. Selecting this goal at the start was supported by the availability of large-scale, provincial assessment data on reading and writing (Rogers et. al, 2006).

As the accountability framework in the district evolved, district-level consultants started to work with teachers towards defining and developing more local, classroom-based literacy measures to complement provincial assessment data. It was here that the opportunity to collaborate emerged. The LTRQ was drawn into the project as part of a situated assessment package, while teachers and researchers also started to work together to develop a complementary performance-based assessment (Brownlie, Feniak, & Schnellert, 2006). While the LTRQ measures students' perceptions and beliefs about their engagement in learning through reading, the performance-based assessment (PBA) offered a measure of students' knowledge about reading strategies and learning derived from text (see Butler, Cartier, Schnellert, & Gagnon, 2006). When coupled, these tools were seen by teachers as useful in tracking outcomes associated with instructional changes they wanted to make. The tools also lent themselves for use as formative (early in the year) and summative (at the end of the year) assessment.

Thus, the confluence of teachers' interest in promoting students' self-regulation and desire for responsive formative and summative assessments with movements at the Ministry and district levels to require goal setting and outcome tracking provided the research team with an invaluable opportunity. In this research, we study how engaging teachers in developing, scoring, compiling, and interpreting situated assessments has the potential to meet multiple complementary agendas simultaneously. The political trend towards accountability occurring in British Columbia and other jurisdictions (Canadian provinces, USA, Britain, Australia) not only propelled this project

forward, but at the same time alerted us to how our investigation into teacher learning was being impacted by some of the external factors “at play.”

Our Research Questions Revisited

In the end, three research questions emerged that guided this study. We sought to understand: (1) whether the situated literacy assessments would provide data that teachers found useful in shaping practice and meeting the needs of students; (2) how engaging teachers in collaboratively constructing, scoring, and interpreting data might feed into cycles of reflective inquiry, thereby supporting teachers’ professional development and meaningful shifts in practice; and (3) how our approach might provide data for monitoring (i.e., accounting for) outcomes that could be aggregated at the individual, classroom, department, school, district, and provincial levels, thereby integrating a robust approach to fostering teacher learning with a situated and instructionally-meaningful approach to establishing accountability at multiple levels.

Methodology

To address these questions, we conducted a case study of the professional development of teachers at one participating school (Merriam, 1998; Pintrich, 2000; Yin, 1994). We examined how engaging six teachers in generating, scoring, and interpreting data was linked to shifts in their knowledge about teaching, classroom practices, and outcomes for their students. We identified patterns for each teacher separately to uncover both unique and converging trends.

Participants

This research was embedded within a larger study investigating students’ self-regulated engagement in learning through reading (see Butler, Schnellert, Cartier, Gagnon, Higginson, Giammarino, & Tang, 2006). Four secondary schools (three grade 8-12 schools, one grade 7-9 school) are participating in this larger project. Across schools, participating teachers are teaching

a variety of subjects (e.g., Science, Humanities, English Language Arts) across grades 7 to 12.

The subset of teachers who participated in this research came from the one school at the grade 7-9 level. The selected school was new, having just opened in September 2003. It was structured as a-school-within-a-school with two main divisions: a Science Academy and a Fine Arts Academy. Students from across the district could elect to enroll in this school, but had to select from between these two academies. We chose this school for study because it had been in the project the longest (having pilot tested data from the LTRQ in the previous year), and thus our relationships with participating teachers were best developed. As a result, we caution against generalizing findings from this one school to patterns that might have emerged from other schools within our project (since those were not examined systematically). However, we would note that our selection did not result in inclusion of only teachers who highly successful at linking assessment to instruction.

All six of the teachers who participated in the larger project agreed to be part of this follow-up study. Figure 3 provides an overview of the years and type of experience and current assignment for each of the participating teachers. Table 1 provides an overview of the students from the larger project who were enrolled in these teachers' classrooms.

Procedures

In collaborative professional development activities, researchers worked with teachers to: (1) situate, administer, and interpret data from the LTRQ, (2) develop, implement, and score the PBAs, (3) reflect on the meaning and implications of assessment data (formative and summative), set goals (immediate and long-term), plan, enact and reflect on instructional strategies, and refine instruction over time. Figure 4 presents an overview of researcher-teacher collaborations as they unfolded over time. Teachers also had opportunities to participate in

professional development workshops at the school and district levels. A professional resource library was also located within the school.

Administration of the LTRQ and PBAs was linked and generally took place within two consecutive class blocks, once at the beginning of the year (formative assessment) and once at the end of the year (summative assessment). Each time, students filled out the LTRQ while referring to the reading task they would be doing as part of the PBA (to situate the assessment in the same task). While completing the LTRQ, students reported on their motivation, emotions, cognitive strategy use, and self-regulation while engaged in the kind of learning through reading activity required by the PBA. Data for PBAs were collected in the next block through student interviews and written responses. More information on these assessment tools is available elsewhere (see Butler, Cartier, Schnellert, & Gagnon., 2006).

Research personnel entered and summarized questionnaire data but asked teachers how they wanted the data to be reported (e.g., at the class, department, grade, and/or school levels). Reports were returned back to teachers that included explanations about the meaning of questionnaire items along with graphical representations (charts) summarizing data at the levels requested. PBAs were collaboratively scored by researchers and teachers based on British Columbia's provincial Performance Standards for Reading Information rubrics (British Columbia Ministry of Education, 2002). Building from both assessment tools, patterns at both the class and grade levels were used by teachers to set individual and/or collective instructional goals (Brownlie et al., 2006; Fisher et al., 2005).

Case Study Data collection

Data sources included teacher interviews, field notes from team and planning meetings, classroom artifacts (e.g., lesson plans), and LTRQ and PBA data for participating students.

Interviews occurred at end of the 2004-05 school year. Interviews were conducted in a conversational format with two researcher team members present (Tuhiwai-Smith, 2001). Six broad questions were used to focus attention on the meaning teachers were making of data, how teachers were approaching goal setting, planning, implementing and reflecting, and how professional development activities were impacting teacher learning (Butler, et al., 2004). Teachers brought data displays and classroom artifacts to the interviews to assist them in telling their assessment to instruction stories (Clandinin & Connelly, 1990). When a teacher referred to these data displays, a classroom artifact, or student work, a researcher would often ask for further clarification about the teacher's goal setting, planning or enactment of related strategies.

Data Analysis and Interpretation

Interview transcripts were used as the primary source of data, while other data sources, such as field notes, sample lesson plans and exemplars of student work, were consulted as sources of confirming or disconfirming evidence. Thus, our main findings are based on a systematic analysis of the interview data (Merriam, 1998). First, interviews were transcribed and line numbers assigned to the transcripts using qualitative research software. Next, two researchers independently read through data to look for emerging themes within and across teacher interviews (Lincoln & Guba, 1985; Merriam, 1998). The two researchers met to share proposed themes, presented the themes to the larger research team for feedback, and finally agreed to a set of codes. They then independently coded each of the interviews. Finally, the two researchers came together to reconcile any possible differences. The application of codes was highly consistent, and the few disagreements were resolved through discussion.

Once the data were coded, tables were constructed that summarized the themes and allowed us to examine the data for emerging patterns (e.g., Table 2). The columns in each table

summarized responses from each teacher interviewed. Rows were constructed for each of the codes assigned. Recorded within each cell was the referent for each piece of data (e.g., line numbers from the interview transcript wherein that issue was discussed). With the interview data displayed in a graphic manner, it was possible to establish the distribution of responses across all six teachers. Conclusions drawn within this paper were based on an in-depth analysis of interview responses associated with each of the themes, as displayed across the data charts (Miles & Huberman, 1994), and by cross-referencing those responses with the other data sources collected for each teacher. It was through this final, deeper analysis that conclusions were generated and warranted (Howe & Eisenhart, 1990).

Results

In upcoming sections, we present our findings in relation to our three research questions, focusing sequentially on: 1) whether the situated literacy assessments we constructed provided data that teachers found useful in shaping practice so as to meet the needs of their students; 2) whether engaging teachers in collaboratively constructing, scoring, and interpreting data fostered professional development by feeding into cycles of reflective inquiry, and 3) whether we successfully co-generated data useful for meeting accountability expectations at multiple levels.

Situated Literacy Assessments as Linked to Teacher Practices

In this section we describe the extent to which teachers were able to make sense of formative assessment data to make effective revisions to practice (see Table 2). To begin, we describe the meaning that teachers derived from the data in terms of identifying student needs. We then examine the goals teachers set in response to the needs they perceived for their students. Next, we focus attention on the instructional strategies teachers defined as appropriate to meeting their goals, along with the extent to which teachers successfully enacted and monitored the

success of those strategies. We conclude by linking qualities of teachers' participation in this reflective inquiry cycle to the gains observed for their students.

Using formative assessment to identify student needs.

Before presenting findings on this topic, we start by briefly reviewing what is assessed by the LTRQ and the PBA. Taken together, these tools provided data to teachers regarding students' (1) motivationally-charged beliefs when engaged in learning through reading (e.g., self-perceptions of competence and control), (2) emotional reactions (e.g., stress or frustration), (3) cognitive strategies for reading and learning (e.g., linking new information to prior knowledge, making connections), (4) self-regulating strategies (e.g., planning, self-monitoring, adjusting approaches in the face of challenges, managing motivation and emotions), and (5) construction of meaning from text (e.g., recognizing important details; identifying main themes; organizing information). Thus, assessment data were varied and rich, cutting across motivation, emotion, cognition, self-regulation, and performance in a "learning through reading" activity. In reports back to teachers, we provided "construct-level" profiles (see Butler et al., 2006) to display patterns in students' responses in each of these areas, including formative assessment results in the Fall, and comparing formative and summative assessment data at the end of the year. Displays represented the percentage of students who indicated that an item reflected their engagement in learning through reading *often* or *almost always* (preview Figures 5 & 6).

It is also important to keep in mind that students were studying in different content areas (e.g., Science, Humanities) within different school programs (the Science Academy or the Fine Arts Academy). While certain expectations can be associated with LTR as an activity whatever the domain under study (e.g., to find and connect across main ideas), as teachers interpreted their

students' LTR profiles, they had to judge the data in light of the expectations relevant to the program, domain, grade level, and classrooms within which students were working.

What did teachers learn about their students' needs based on a review of the LTRQ/PBA data when used as a formative assessment (i.e., in Fall 2004)? We found that all six teachers could discuss at length new insights, often unexpected, about their students' needs based on the formative data (see Table 1, row 1). However, while it was clear that all teachers were able to make sense of the data as situated in their particular contexts, there was considerable variability in term of the patterns emphasized and prioritized by the various teachers.

For example, George (Science 7, Science Academy) was surprised that his students thought one of the best ways to learn from reading was to memorize (a misconception sometimes held about learning in Science, see Butler, Pollock, Nomme, & Nakonechny, in press). He noted that, "if we didn't do this thing in the fall, I would have had no idea that they struggled with this" (lines 186 to 187). He also found that his students had trouble decoding particular words. While George focused on his students' challenges in these two areas, Nancy (Science 7, Fine Arts Academy) described the multiple challenges faced by her class: "If anything, it gave me a clearer picture of how low they really were" (lines 69 to 70). Daphne (Humanities 8, Science Academy) reported that the questionnaire data helped her to "learn about what students think" (line 162). Lisa (Humanities 9, Fine Arts Academy) noted her students' initial overconfidence in their LTR capabilities. She stated, "While they had all this confidence, they had very little skill" (line 34). She also observed that her students struggled to find main ideas and to connect their background knowledge to the topic about which they were reading, and focused very little on planning. Alex (Humanities 8, Fine Arts Academy) found that his students were, when compared to other classes, more highly stressed and disengaged.

In general, we found that the emphases placed by teachers cut across the components of LTR engagement assessed in our tools (i.e., emotions, motivation, cognitive strategies, metacognition, performance quality), and were linked to teachers' perceptions of the needs of their students in particular contexts. As we show in the next sections, the goals and strategies teachers set based on data were linked to these perceptions of students' needs.

Linking student needs to instructional revisions: What goals did teachers set?

Formative assessment data were considered by teachers immediately after scoring, in the case of the PBA, and in a separate lunch meeting, in the case of the LTRQ (see Figure 4). In both cases, data were initially presented to and discussed with the teachers as a group. Emerging from those discussions, the teachers decided to focus on three common areas that reflected challenges experienced by students across programs, domains, and grade levels: drawing inferences, making connections, and self-monitoring while reading. Thus, in addition to setting instructional goals that were unique to their own classrooms, each teacher also set a goal for their students based on these commonly identified areas of need (see Table 1, row 2).

While all teachers identified goals for their students (as is reflected in entries for all teachers in row 2 of Table 1), there was considerable variability in the goals adopted by individual teachers. We illustrate this variety by comparing the goals set by Lisa, George and Alex. In her analysis of her classes' fall assessment data, Lisa (Humanities 9, Fine Arts Academy) recognized gaps for her students in accessing prior knowledge and planning. Thus, she set goals to help her students in these two areas. George (Science 7, Science Academy), set a goal to support his students' deficient word skills and vocabulary development. Alex (Humanities 8, Fine Arts Academy) set a goal to decrease his disengaged students' anxiety. As he explained, "I learned that I needed to focus on getting them excited about what they were

doing and then start showing them the skills” (Table 2, row 1, lines 155 to 156). Thus, our data suggested that all teachers were able to set concrete goals, collectively and individually, based on a review of assessment data.

Strategy enactment and implementation: What did teachers do in their classrooms?

One of the most interesting trends in our data was an observed difference between teachers who could explain in detail how they went about implementing new instructional goals and teachers who, while they had set a goal, could not, even with prompting, explain in any detail how they had changed their practice. While all teachers could talk at length *about* a strategy they wanted to or did implement in their classrooms in response to student data (Table 2, rows 3 & 4), a qualitative analysis of responses revealed that fewer teachers could articulate and demonstrate exactly *how* they actually enacted changes in practice with their students (Table 2, row 4).

Among the six teachers, it was Lisa (Humanities 9, Fine Arts Academy) and Nancy (Science 7, Fine Arts Academy) who were best able to articulate how they shifted their practice in relation to the formative assessment data. Note that these were the two teachers who requested and accessed the most assistance from the teacher consultant-researcher to help them in making practice revisions (e.g., collaboratively planning and implementing lessons or strategies).

For example, formative assessment data for Lisa’s students had shown that they “had a lot of difficulty making connections,” were unfamiliar with the concept of “setting a goal” for reading, and struggled to “make a plan” (see Figures 5a & b). In response to these data, Lisa explained in great detail how she taught her students to make connections. She accomplished this through modelling (thinking aloud as she made connections when reading) and scaffolding her students’ strategy development and use until they were able to demonstrate independence

(i.e. gradual release, Pressley, 2002). To foster goal setting, Lisa began to create regular opportunities for students to articulate a purpose for reading and activate prior knowledge:

They had to have a goal for reading everything they sat down to read. That was not only with literature in English, but also with the text in social studies ...they had to have a reading goal (lines 304 to 308).

Finally, Lisa also began to incorporate dedicated time for students to plan their approach to learning through reading tasks.

Like Lisa, Nancy explained in detail how she worked with students to help them build cognitive strategies based on what she had learned from formative assessment data. Nancy used “graphic organizers...to help the students focus their thinking... to find the main idea versus what they consider to be interesting” (lines 176 to 182). Nancy explained that she “really had to unpack that and do a lot of modeling and talk time of what that looked like” (lines 185 to 187). She described how she monitored the progress of her students and recalibrated her instruction based on what she saw: “It seems like a lot of really strong reading strategies were happening (being taught) all at once and they were” (lines 202 to 204), but she noted that students were not internalizing the strategies she was teaching. So, she refocused her instruction by choosing just one cognitive strategy to target and “we did that slowly just with Science. It made them break apart their thinking rather than just reading the text, and thinking, ‘Oh, yea, this is about blahblahblah.’ But they never really knew what blahblahblah was until they showed their thinking” (lines 215 to 217). Nancy told us that she had made an effort over the school year to spend more time with one strategy so that students had a chance to master and personalize it. She began to revisit a strategy several times over an extended period of time, “I would say three or four times over not just one week, like over 4 weeks. But the chunking was frequent, like I

would say, every day for 3 or 4 weeks to get through...one chapter of science” (lines 243 to 248). Interestingly, while five of the six teachers commented on their emotional responses within the project, Linda and Nancy described the strongest reactions to the summative assessment data, suggesting the significant emotional investment involved in making, and evaluating outcomes associated with, shifts in teaching practices (Table 2, row 5).

In contrast to the detailed articulation of strategies provided by Lisa and Nancy, Wanda and Alex named a number of strategies that they had selected as instructional goals, but either did not ultimately attempt to alter their practice (Alex) or abandoned the innovation if it did not appear to be working (Wanda). George and Daphne offered some general descriptions of changes they made to practice. For example, they described monitoring student performance in order to make instructional decisions, and reported slowing down their instruction to spend more time on a particular strategy. But both had difficulty explaining in detail the changes they had made. George, Daphne, and even Nancy expressed uncertainty about how to scaffold a cognitive (reading comprehension) strategy to better foster metacognition.

Reflection on summative assessment data: What could teachers tell us about post-test results?

At the end of the year, teachers reflected on the results of summative assessments in relation to their classroom practices. Based on a review of the assessment data, all teachers described various levels of improvement for their students. Four teachers, Lisa, Daphne, George, and Nancy, related results specifically to their goals and instructional strategies. For example, Nancy and Daphne attributed increases in self-regulation and metacognition observed in their students to their modeling and explaining task criteria and/or cognitive strategies. Lisa associated specific gains for her students in planning (see Figure 5a) and use of strategies for

finding important ideas and connecting information (see Figure 5b) with the goals she had set at the start of the year and with the instructional changes she had made.

However, patterns also suggested that the three teachers who chose to address one to three targeted reading or learning strategies (Lisa, Wanda, and Daphne) saw the greatest improvements for their students. In contrast, Nancy did not see the gains she was hoping for, even though she was one of the teachers who was best able to describe her instructional strategies. She attributed these results to her trying to tackle too many strategies at once:

I tried the ‘do the everything approach’ [too many goals based on the Fall data]. I need to use the document [questionnaire and PBA data] as my guide, to help me with my assessment...how I’m going to teach. I think it is important for me to say that now because I didn’t use them as well as I should have. When I saw [the data] this spring, that’s when the light bulb came on. I was like, now I feel like I have a better understanding (lines 345-353).

Alex, who targeted his students’ emotional engagement, saw gains in emotion/motivation control and in emotions experienced during learning (see Figures 6a & b). But he did not observe changes for his students in relation to the grade-wide learning or reading strategy goals (i.e., drawing inferences, making connections, and self-monitoring). George, who focused attention on word skills, did not observe hoped for gains there, but could point out how his students’ overconfident assessment of their LTR engagement in the Fall (i.e., on formative assessments) settled to a level that better reflected their actual performance by the end of the year.

In sum, data related to our first research question suggests that working with teachers to develop, score, and interpret situated literacy assessments generated information that was perceived by teachers to be useful in guiding and assessing practice. We observed teachers using

the data to target students' needs, both for cross-class groups of students and within particular classes. We also observed teachers bridging from those assessment data to target goals and instructional revisions, although we noticed between-teacher differences in the number and types of strategies enacted and in their ability to articulate revisions to practice. Finally, it was clear that teachers found summative data useful for evaluating the success of their efforts.

Professional Development as Engaging Teachers in Cycles of Reflective Inquiry

In this section, we report findings related to whether engaging teachers in cycles of reflective inquiry fostered teacher learning and meaningful revisions to practice. We divide this discussion into two parts. In the first, we present data documenting connections between teachers' engagement in inquiry cycles, self-regulation, and shifts in knowledge and beliefs about teaching. In the second, we report on teachers' perceptions related to our collaborative professional development model.

Engaging teachers in inquiry cycles.

As part of the interview process, we asked teachers to articulate the instructional strategies they were enacting based on formative assessment data (see Table 2, rows 3 & 4). As described above, we drew from these data to evaluate connections between formative data, goals teachers set, and what they were doing in classrooms. At the same time, what came through in many teachers' comments were descriptions that spoke to how engaging in data-supported cycles of inquiry were reshaping their thinking about teaching.

For example, Lisa (Humanities 9, Fine Arts Academy) clearly described how she engaged in reflective and collaborative cycles of inquiry as she tried out and revised instructional strategies. When she recognized her students' challenges in setting goals and making plans, Lisa asked for assistance in co-planning lessons from the teacher consultant-researcher (see Figure 4),

and then strategically used the co-planning process to change her planning and teaching practice. When asked, she could explain in detail how she implemented her plans and the various cycles of strategy implementation and revision she underwent to ensure students were finding success (see the number of times and length of the quotes for Lisa in Table 2, row 4). In the end, Lisa correlated her new instructional approaches with better outcomes for students as evident in the summative assessment data (see Figures 5a & b).

What is particularly significant in the present context is that, within her description of her engagement in this recursive and reflective inquiry process, Lisa described how her thinking about teaching had changed. For example, Lisa described how she previously thought of herself as a curricular content-driven teacher. However, after interpreting the formative assessment data and engaging in co-planning, she indicated that metacognition and self-regulation had become the most important instructional goals in their teaching. She also described herself as more consciously strategic. For example, she began to plan her lessons with before, during and after reading phases. She also felt she was better able to build from assessment data to reflect on what she was doing in the classroom.

Other teachers also described gains associated with participating in reflective inquiry cycles. For example, each teacher stated that the situated assessment data made what they had to focus on and target with their students much clearer (see Table 2, row 1). They also drew productively on summative data to reflect back on the year, analyze the progress they had made, and set new pedagogical goals for the coming year (see Table 2, rows 6 and 7). And, like Lisa, most teachers commented positively on the shift they were making from a focus on content instruction alone to including attention to reading and thinking strategies. Like Lisa, Nancy described herself as focusing strongly on metacognition and self-regulation. But teachers were

also challenged in making this substantial shift to practice. For example, Daphne and Wanda puzzled about how long they needed to try a new strategy before experiencing success.

Teachers' Perceptions about our Professional Development Model.

During interviews we asked teachers to identify effective attributes of our professional development activities and where there was room for improvement. All teachers highlighted the benefit of working collaboratively with members of the research team to construct, implement and interpret data and wished they had such opportunities more often. At the same time, teachers identified a number of professional development activities that would optimally foster their learning (see Table 3).

Desire for collaboration. All six teachers identified both a need and a desire to collaborate (Table 3, row 1). For example, Nancy told us that “networking is the way I work, because my thinking is better when I talk with other people” (lines 439 to 441). Lisa valued the emotional support from colleagues and research team members. She explained that it was easy for her to get frustrated or disappointed during the messy process of implementation, and she hoped that we would continue to pay attention to how each participant felt and support the group in honoring emotional responses. Four of the teachers mentioned that they felt more accountable working as a member of a team. Knowing they had publicly set a goal and would be sharing strategies and outcomes increased these teachers' commitment to and enactment of their plans. Three of the teachers specifically mentioned that they wanted more opportunity to meet and share strategies; three were interested in observing one another.

All of the teachers also mentioned how “important” or “powerful” it was to collaboratively score assessments and set goals based on student data, although four teachers spoke about the challenges of coming to consensus while collaboratively scoring the PBA. All found that the

opportunity to sit down for an interview to discuss the year in relation to the assessment data helped them set goals regarding the way in which they organize and deliver programs. Two of the teachers suggested that the team set aside additional time to map out next steps from here.

The interviewees' responses underscored for us the impact that teaching colleagues and researchers had on their decision-making and learning. Several of the teachers referred to the focus and clarity that collaborative data interpretation and planning provided.

Supports, Research Design, and PBA Construction. The teachers identified several other types of supports that they felt would be helpful to them as they attempted to construct revisions to practice based on our situated assessment data (see Table 3, row 2). These supports included: time for reflection, a template for recording results, and assistance in administering the LTRQ. They also had an opportunity to suggest adaptations to the research tools and processes (see Table 3, row 3). They suggested shortening the LTRQ, a quicker turnaround in receiving reports, more time to digest the information in meetings, and the creation of opportunities for them to participate in more conferences with research team members. Other teachers offered suggestions on how to improve the PBA structure and design (see Table 3, row 4).

Teachers' talk about the usefulness of formative and summative assessment shows promise for improving connections between formative assessment and teaching practice. For example, three of the teachers emphasized how critical it is for students to know the purpose of classroom assessments and that results would be used to guide instruction. These teachers found that, when students understood the reasons behind the assessments and were invested in the process, both students and teachers began to engage in increasingly metacognitive conversations about teaching and learning.

In sum, the data we collected to investigate our second research question suggests that engaging teachers in reflective inquiry cycles informed by assessment data did indeed support their professional development and revisions to practice. It appeared that most teachers elaborated content-focused instruction with activities designed to foster effective reading processes. Further, it was clear that teachers valued opportunities to collaborate with one another and with research team members. They also described clearly how the collaborative process involved in developing, scoring, and interpreting data contributed to their professional development efforts.

Situated Assessment Data within Layered Accountability Frameworks

The research described in this paper has focused most centrally on understanding how engaging teachers in developing and building from situated literacy assessments might promote teacher learning and positive changes in practice. At the same time, we remain conscious of the ways in which our project is situated within a broader socio-political context, and we have questioned our project's fit with the accountability frameworks gaining momentum across North America. Earlier in this paper, we described how the evolution of our project resulted in the emergence of a third research question focused on how our situated assessment strategies might serve the goals of "assessment for learning" (Earl, 1999; Stiggins, 2002) so as to advance instructional practice in particular classrooms, while at the same time allowing for monitoring of outcomes at the individual, classroom, department, school, district, and provincial levels. In this section of our research report, we describe what we have learned related to this final question.

First, over the past three years, including the year in which this case study was completed, we have observed cycles of inquiry being enacted in the district at multiple levels. In this paper, we have described how six teachers engaging in cycles of inquiry within and across classrooms

effected changes in practice. But, simultaneously, these and other teachers have been engaged in cycles of inquiry at the school and district levels. Thus, it is not surprising that we have observed blurring of boundaries as our assessment strategies are being pulled into activities at “higher levels.” For example, our situated assessments are being referred to by teachers and administrators within the school when assessing progress towards school goals. Over the course of the school year, all six of our case study participants expressed an awareness of the various uses of our assessment data at the school and district levels. For example, in his interview, George referred to the data as “school data,” suggesting that it was important to collect and compare student data from year to year to track how they were doing as a school (Table 3, row 3, line 713). Similarly, Daphne, the professional development chair at the school, perceived an opportunity to pull the data and sample classroom strategies into a dialogue with the entire school staff related to promising practices for achieving their school literacy goal. These observations suggest that our situated assessment data are proving useful for informing practice and tracking outcomes at the classroom, program, and school levels (see Butler et al., 2006).

Second, prior to the introduction of PBA and the LTRQ, all four schools in our project were accessing provincial assessment data that were collected at the end of each school year, scored off site, and then returned in the following year. Participants in our study perceived these assessments to be decontextualized, because they were not developed by the teachers themselves nor were they fed back for use in the contexts in which the assessments were completed. Thus, interest in our project was keen as the district and schools searched for practical ways to collect data that were classroom based and could be aggregated at different levels. The schools in our larger study have begun to use data from our literacy assessments to address their formal and informal literacy agendas. While they are still making year-to-year comparisons based on

summative data, they are also accessing situated, formative data from Fall assessments to set instructional goals for the students they are teaching. Thus, teachers and schools within our project are finding ways to make the accountability cycle more relevant to daily decisions, and are setting short- and long-term pedagogical goals based on situated information.

Thus, from our perspective, we see the current tension between summative data requirements and calls for “assessments for learning” (Earl, 1999; Stiggins, 2002) as an opportunity to create practices that support diverse points-of-view in a manner that gives teachers agency to shift their practice in meaningful and situated ways. At the same time, we remain sensitive to the diverse uses, interpretations and applications of our data at the classroom, program, school and district levels, and work to ensure that teachers’ efforts are not co-opted to support an externally-imposed agenda if it is incongruent with situated understandings of teacher learning and professional development.

We conclude that our efforts at developing situated assessments for learning have successfully provided a third path, one that provides both formative and summative assessment data that all parties appear to find meaningful (Black & Wiliam, 1998b; Earl, 1999; Shepard, 2000; Stiggins, 2002). Our questionnaire and PBAs are being endorsed as methods that support teachers to make pedagogical decisions and help schools and the district in monitoring outcomes.

Conclusions

A central thesis in our research is that teacher learning and decision-making occur *in situ* and are impacted by multiple factors. Our research suggests that teachers can make situated changes to practice that better meet the needs of students when they: (1) engage in the (co)construction and implementation of formative assessment practices that capture aspects of student self-regulation and metacognition; (2) set, tailor, and monitor context-specific instructional goals for both students and themselves; (3) have opportunities to work within

communities of inquiry so that they may collaboratively problem-solve with others while trying to make shifts in practice; and (4) influence accountability agendas and related processes to ensure that they have access to and use multiple sources of local formative assessment data.

Our findings suggest that the assess-goal set-plan-enact-monitor-assess professional development structure of our project focused teachers on the needs of their students and supported them to make new and responsive instructional decisions. This conclusion is consistent with results reported by others also investigating teacher professional development in relation to instructional change (Black & Wiliam, 1998b; Borko, 2004; Earl, 1999; Stiggins, 2002). However, we extend previous research by examining how professional development can be productively situated, taking into account differences in contexts, student profiles, and the knowledge, beliefs, and experiences individual teachers bring to decision-making in classrooms.

In our study we found that each of the six teachers followed unique, sometimes circuitous or unexpected, paths as they engaged in cycles of inquiry and action. While each of the six teachers could articulate how assessment data had led them to new insights about the learning profile(s) within their class(es), each struggled with different aspects of our professional development cycle, thereby drawing attention to various needs for support and collaborative problem solving. For example, we observed instructional change break down for some teachers when making the transition from identifying a new course of action to actually enacting and monitoring the desired changes. In future research, we will elaborate our understanding of teachers' idiosyncratic engagement in cycles of inquiry by coupling more systematic opportunities for in-class support with more intensive data collection activities, including more frequent "on-line" observations in practice and interviews with teachers.

Most significantly, over the course of this study, our work has taken on an additional, critical perspective as we attend to the impact social, political and ideological forces have on teacher learning and decision-making. We are building an understanding about the ways in which adopting situated assessment strategies can support reconceptualization of accountability agendas. Formative, contextually-derived data can be collected and fed back into classrooms and schools to set instructional goals and monitor outcomes for students across a school year. Further, engaging teachers in assessment processes situates them as agents of change, and has the added benefit of supporting construction of new theoretical perspectives garnered through participation in reflective inquiry cycles grounded in reviews of meaningful data (see Figures 1 & 2). Thus, this work repositions accountability as a site where policy and socioconstructivist conceptions of teacher learning can find a new and meaningful shared space.

Notes

Leyton Schnellert is a doctoral student at UBC and a teacher consultant in the school district where the study takes place. Stephanie Higginson is a Master's student at UBC. Deborah L. Butler is Associate Dean of Graduate Programs and Research in UBC's Faculty of Education.

References

- Biesta, G. J. J., & Miedema, S. (2002). Instruction or pedagogy: The need for a transformative conception of education. *Teaching and Teacher Education, 18*(2), 173-181.
- Black, P., & Wiliam, D. (1998). Assessment and classroom learning. *Assessment in Education, 5*(1), 7-74.
- Black, P., & Wiliam, D. (1998). Inside the black box: Raising standards through classroom assessment. *Phi Delta Kappan, 80*(2), 139-148.
- Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher, 33*(8), 3-15
- Borko, H., & Putnam, R. (1998).. Professional development and reform-based teaching: Introduction to the theme issue. *Teaching and Teacher Education, 14*(1), 1-3.
- Borkowski, J. G. (1992). Metacognitive theory: A framework for teaching literacy, writing, and math skills. *Journal of Learning Disabilities, 25*, 253-257.
- Bransford, J., Brown, A., Cocking, R., (eds.) (2000). *How people learn: Brain, mind, experience, and school*. Washington, D.C. National Academies Press.
- British Columbia Ministry of Education (2002). *British Columbia Performance Standards for Reading*. Province of British Columbia, Victoria, BC: Ministry of Education, Student Assessment and Program Evaluation Branch.
- Britzman, D. (1991). *Practice makes practice: A critical study of learning to teach*. NY, NY: State University of New York Press.
- Britzman, D. (1992). The terrible problem of knowing thyself: Toward a poststructural account of teacher identity. *Journal of Curriculum Theorizing, 9*(3), 23-46.
- Brownlie, F., Feniak, C., & Schnellert, L. *Student diversity* (2nd Edition). Markham, Ontario: Pembroke Publishers.
- Burnafor, G., Fischer, J & Hobson, D. (2001). *Teachers doing research: The power of action through inquiry*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Butler, D. L. (1998). The Strategic Content Learning approach to promoting self-regulated learning: A summary of three studies. *Journal of Educational Psychology, 90*, 682-697.
- Butler, D. L., & Cartier, S. C. (2004, May). Learning in varying activities: An explanatory framework and a new evaluation tool founded on a model of self-regulated learning. Presented at the annual meetings of the Canadian Society for Studies in Education. Winnipeg, MB.

- Butler, D. L., Cartier, S. C., Schnellert, L., & Gagnon, F. (2006). Secondary students' self-regulated engagement in "learning through reading": Findings from an integrative research project. Presented at the annual meetings of the Canadian Society for Studies in Education. Toronto, ON.
- Butler, D. L., Novak Lauscher, H. J., Jarvis-Selinger, S., & Beckingham, B. (2004). Collaboration and self-regulation in teachers' professional development. *Teaching and Teacher Education*, 20, 435-455.
- Butler, D. L., Pollock, C., Nomme, K., & Nakonechny, J. (in press). Promoting authentic inquiry in the sciences: Challenges faced in redefining first-year university students' scientific epistemology. In B. M. Shore, M. W. Aulls & M. A. B. Delcourt (Eds.), *Inquiry in education: Where ideas come from and where they lead*. Mahwah, NJ: Erlbaum.
- Butler, D. L., Schnellert, L., & Cartier, S. C. (2005) Adolescents' engagement in "reading to learn": Bridging from assessment to instruction. *BC Educational Leadership Research*, 2, Retrieved December 2, 2005, from <<http://slc.educ.ubc.ca/eJournal/index.htm>>
- Carpenter, T. P., Fennema, E.T., & Franke, M. L. (1996). Cognitively guided instruction: A knowledge base for reform in primary mathematics instruction. *The Elementary School Journal*, 97, 3-20.
- Cartier, S. (2000). Cadre conceptuel d'analyse de la situation d'apprentissage par la lecture et des difficultés éprouvées par les étudiants. *Res academica*, 18(1 et 2), 91-104.
- Cartier, S. C., & Butler, D. L. (2004, May). Elaboration and validation of the questionnaires and plan for analysis. Paper presented at the annual meetings of the Canadian Society for Studies in Education. Winnipeg, MB.
- Cassidy, J., & Cassidy, D. (2004/2005). What's hot, what's not for 2005. *Reading Today*, 22(3), 1, 8-9. Retrieved April 3, 2006 from [http://www.reading.org/publications/reading_today/samples/RTY-0412-hotnot.html].
- Clandinin, D. J., & Connelly, F. M. (1990). Stories of experience and narrative inquiry. *Educational Researcher*, 19(5), 2-14.
- Cobb, P. (1994) Where is the mind? Constructivist and sociological perspectives on mathematical development. *Educational Researcher*, 23(7), 13-20.
- Cochran-Smith, M. (2004). Defining the outcomes of teacher education: What's social justice got to do with it? *Asia Pacific Journal of Teacher Education*, 32(3) 193-212.
- Cochran-Smith, M., & Fries, K. (2005). Researching teacher education in changing times: Politics and paradigms. In Cochran-Smith, M., & Zeichner, K.'s *Studying teacher*

- education: The report on the AERA panel on research and teacher education* (pp. 69-109). Washington, DC: AERA
- Cochran-Smith, M., & Lytle, S. (1993). *Inside/ outside: Teacher research and knowledge*. New York: Teachers College Press.
- Darling-Hammond, L. (1996). The quiet revolution: Rethinking teacher development. *Educational Leadership*, 53(6), 4-10.
- Dewey, J. (1963). *Education and experience*. New York: Macmillan
- Driver, R., Asoko, H., Leach, J., Mortimer, E., & Scott, P. (1994). Constructing scientific knowledge in the classroom. *Educational Researcher* 23(7), 5-12.
- Earl, L. M. (1999). Assessment and accountability in education: Improvement or surveillance. *Education Canada*, 39(3), 4-6, 47.
- Eisner, E. (2002). From episteme to phronesis to artistry in the study and improvement of teaching. *Teaching and Teacher Education* 18, 375-385.
- Englert, C. S., & Tarrant, K. L. (1995). Creating collaborative cultures for educational change. *Remedial and Special Education*, 16(6), 325-336, 353.
- Fisher, D., Lapp, D., & Flood, J. (2005). Consensus scoring and peer planning: Meeting literacy accountability demands one school at a time. *The Reading Teacher*, 58(7), 656-666.
- Gergen, K. J. (1985). The social constructionist movement in modern psychology. *American Psychologist*, 40, 266-275.
- Gersten, R.(1995). Introduction to the topical issue. *Remediation and Special Education*, 16(6), 323-324.
- Halbert, J. & Kaser, L. (2002) *Improving schools from the classroom out: Using the BC performance standards to increase learner, teacher, and school confidence*. Retrieved from <http://npbs.ca/Articles.htm> April 12, 2006.
- Harris, K. R., & Pressley, M. (1991). The nature of cognitive strategy instruction: Interactive strategy construction. *Exceptional Children*, 57, 392-404.
- Henry S. K., Schott, J. A., Wells, J., Skobel, B., Jones, A., Cross, S., Butler, C, Blackstone, T. (1999). *Teacher Education and Special Education*, 22(4), 251-268.
- Howe, K., & Eisenhart, M. (1990). Standards for qualitative (and quantitative) research: A prolegomenon. *Educational Researcher*, 19(4), 2-9.
- Lincoln, Y.S., & Guba, E.G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.

- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass.
- Miles, M. B., & Humberman, A. M. (1994). *Qualitative Data Analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: Sage.
- Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp.451-502). San Diego, CA: Academic Press.
- Rogers, T., Winters, K., Bryan, G, et al (2006). Developing the IRIS: Toward situated and valid assessment measures in collaborative professional development and school reform in literacy. *The Reading Teacher*.
- Schon, D. (1983). The crisis of confidence in professional knowledge. In D. Schon, *The Reflective Practitioner* (pp. 3-20). NY: Basic Books.
- Schon, D. (1983). From technical rationality to reflection. In D. Schon's *The Reflective Practitioner* (pp. 21-69). NY: Basic Books.
- Schon, D. (1991). *The reflective turn: Case studies in and on educational practice*. NY, NY: Teachers College Press.
- Schulman, L. (1986) Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4-14.
- Shulman, L. (2004) Knowledge and teaching: Foundations of the new reform. In S. Wilson (ed.), *The Wisdom of Practice* (pp. 219-247). San Francisco: Jossey-Bass.
- Shephard, L. (2000). The role of assessment in a learning culture. *Educational Researcher*, 29(7), 4-14.
- Stamps, D. (1997). Communities of practice: Learning is social. Training is irrelevant? *Training*, 34(2), 34-42.
- Stiggins, R.J. (2002). Assessment crisis: The absence of assessment FOR Learning. *Phi Delta Kappan*. Retrieved from: <https://www.pdkintl.org/kappan/k0206sti.htm> on April 13, 2006.
- Taylor, A. R., & Tubianosa, T. (2001). *Student assessment in Canada: Improving the learning environment through effective evaluation*. Kelowna, BC: Society for the Advancement of Excellence in Education.
- Tuhiwai-Smith, L. (2001). *Decolonizing methodologies: Research and indigenous peoples*. London: Zed Books Ltd. and University of Otago Press.

- Volante, L. (2004). Teaching to the test: What every educator and policy-maker should know. *Canadian Journal of Educational Administration and Policy*, 35 (September 25). Retrieved December 15, 2004 from <http://www.umanitoba.ca/publications/cjeap/articles/volante.html>
- Wickstrom, R. A. (1999). Accountability: Toward an appropriate approach. *Education Canada*, 39(3), 16-19.
- Winter, (2000). The state steers by remote control: Standardizing teacher education. *International Studies in Sociology of Education*, 10(2) 153-175.
- Wilson, S., Shulman, L., & Richert, A. (1987). 150 different ways of knowing: Representations of knowledge in teaching. In J. Calderhead (ed.), *Exploring Teachers Thinking* (pp. 104-124). London: Cassel.
- Yin, R. K. (2003). *Case study research: Design and methods*. Thousand Oaks, CA: Sage.
- Zimmerman, B. J., & Schunk, D. H. (2001). Reflections on theories of self-regulated learning and academic achievement. In B.J. Zimmerman & D. H. Schunk (eds.), *Self-regulated learning and academic achievement: Theoretical perspectives* (2nd ed.). Mahwah, N.J.: Lawrence Erlbaum Associates Publishers.

Table 1

Students in the Larger Study who were Enrolled in the Participating Teachers' Classrooms

Grade Level	Subject Area	# of Students	Academy	Teacher(s)
Grade 7	Science	16	Science Academy	George
Grade 7	Science	21	Fine Arts Academy	Nancy
Grade 8	Humanities	26	Science Academy	Daphne
Grade 8	Humanities	39	Fine Arts Academy	Alex
Grade 9	Humanities	23	Science Academy	Wanda
Grade 9	Humanities	25	Fine Arts Academy	Lisa
TOTAL		150		

Table 2

Situated Literacy Assessments as Linked to Teacher Practices

Row #	Themes	Nancy	Wanda	George	Lisa	Daphne	Alex
1	Formative assessment	69-71 77-82 97-101 131-155 335-338 537-539	37-40 82-86 488-491 806-812	172-179 186-192 235-242 279-280 372-382	33-39 90-91 95-97 304-308	54-61 371-374 375-380 444-456 506-513	86-98 155-159
2	Goal setting	112-115 121-123 137-140	428-430	237-248 686-689	90-92 124-125 304-308 363-364 469-477	139-140 471-474 623-630	165-169 338-342
3	Description of strategy enactment/ Changing instructional practices	61-63 78-82 121-123 131-140 161-170 234-237 299-311 345-353 556-562 714-723 725-737 840-844	40-42 232-236 261-262 560-563 608-612	111-114 267-268 571-581 613-621	90-97 124-130 136-142 156-160 197-200 292-293	61-74 95-102 105-112 315-329	144-153 182-197 202-206 276-186 313-328 338-347 359-368 383-387
4	Enactment of Strategy(s)/ Detailed description of implementation	161-170 175-248 254-255 258-286 288-297 299-311 313-318 345-353 616-621 725-731 840-844	241-253 267-281 318-322	111-145 155-170 196-217 396-413 437-444 451-465 469-472 517-542	165-195 206-220 223-245 254-264 270-285 301-308 310-321 327-364 366-385	66-69 444-456 589-598	182-197 199-211 220-225 291-292 313-328 416-417 442-452 457-463

Row #	Themes	Nancy	Wanda	George	Lisa	Daphne	Alex
5	Emotional reaction/response	58-63 66-69 79-82 97-101 136-140 327-334 341-345 528-533 537-539 550-552	33-40 448-449 488-449 488-491 501-506 691-693 713-718	9-12 31-31 206-207 497-504 569-571 588-588	33-34 102-106 115-116 398-403 492-499 503-505	110-113 212-214 216-217 243-244 300-303 329-335 366-369 375-380 444-456 469-471 541-542 548-551 508-509 71-704	
6	Next steps: Pedagogical goals	338-341 161-162 600-602 618-621 679-681	358-376 747-749 815-820	605-611 621-630 686-689	243-245	125-130 329-335 491-494 761-765 318-321	551-559 597-609 624-626
7	Next steps: Future goals for students	148-151 338-341 616-618 672-681		613-621 621-630	243-245	318-321 371-374 640-645 728-740 761-765	242-245 551-559

Table 3

Teachers' Perceptions about our Professional Development Model

Row #	Themes	Nancy	Wanda	George	Lisa	Daphne	Alex
1	Desire for Collaboration	436-450 482-494 516-520 404-421	200-203 765-768 777-783	694-701 705-706	77-80 514-523 482-483 578-581	138-143 690-695 697-709 744-746 619-622 675-678	21-25 536-538 543-551 558-564 580-592 597-609
2	Supports that would be helpful	139-146 345-353 391-396 404-421 482-494 868-874 951-954	188-191 200-203 765-768 777-783	694-701	77-80 68-71 499-503 514-523 578-581	371-374	23-24 580-592 597-605
3	Research design	325-327 372-375 378-396 404-421 436-450 494-509 488-495 516-520 672-681 609-610 868-874	58-77 79-82 82-86 176-184 577-587 698-706	75-90 641-676 683-689 700-715	41-43 63-81 147-152 479-523 527-535 543-545 549-558 560-581	197-207 371-374 619-630 632-640 663-683 690-695 709-723 750-761 192-195 398-405 642-645	43-49 516-520 529-530 634-640
4	PBA construction/design	933-937	698-706		527-538	197-207 728-740 192-195 399-407 680-683 709-716	634-640

Figure 1

Professional Development as Engaging Teachers in Instructional Change Cycles

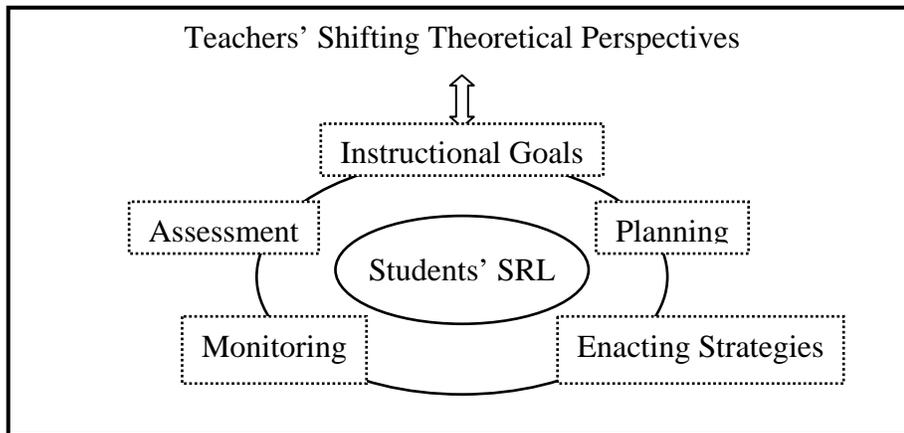


Figure 2

Roles and Relationships in Instructional Change and Establishing Accountability Agendas

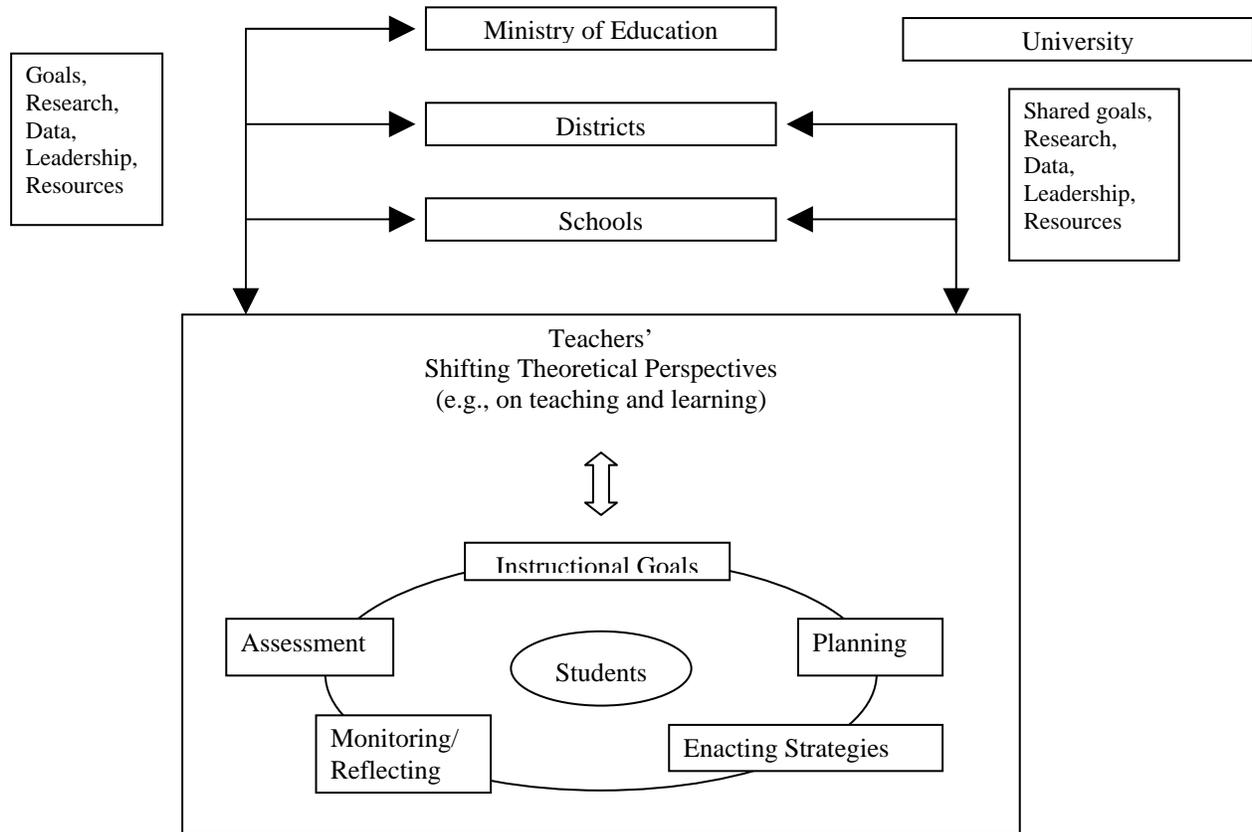


Figure 3

Contextual Information about Teachers and the Contexts in Which They Were Teaching

Teacher 1: "Nancy" Fine Arts Academy

- Teaching 5 years, previously taught intermediate (grades 4-7) and learning support
- Second year at this school and teaching secondary students
- Teaches Social Studies 7, Science 7, Math 7, Language Arts 7 & Learning Support 7/8

Teacher 2: "Wanda" Science Academy

- Teaching 20 years, grades 9-12 background
- Second year at this school
- Teacher Librarian and teaches Humanities 9 and 10

Teacher 3: "George" Science Academy

- Teaching 25+ years, grades 4-7 background
- Second year at school and secondary
- Teaches Science and Math 7/8 and Environmental Science 8

Teacher 4: "Lisa" Fine Arts Academy

- Teaching 20+ years, grades 8-12 background
- Second year at school
- Teaches Drama 7-9 and Humanities 9

Teacher 5: "Diane" Science Academy

- Teaching 10 years, grades 8-12 learning resource and English background
- First year at this school
- Teaches Humanities 8 and 9

Teacher 6: "Alex" Fine Arts Academy

- Teaching 25+ years, grades 8-12
- First year at school
- Teaches Music 7-9 and Humanities 8

Figure 4. An Overview of Project Activities

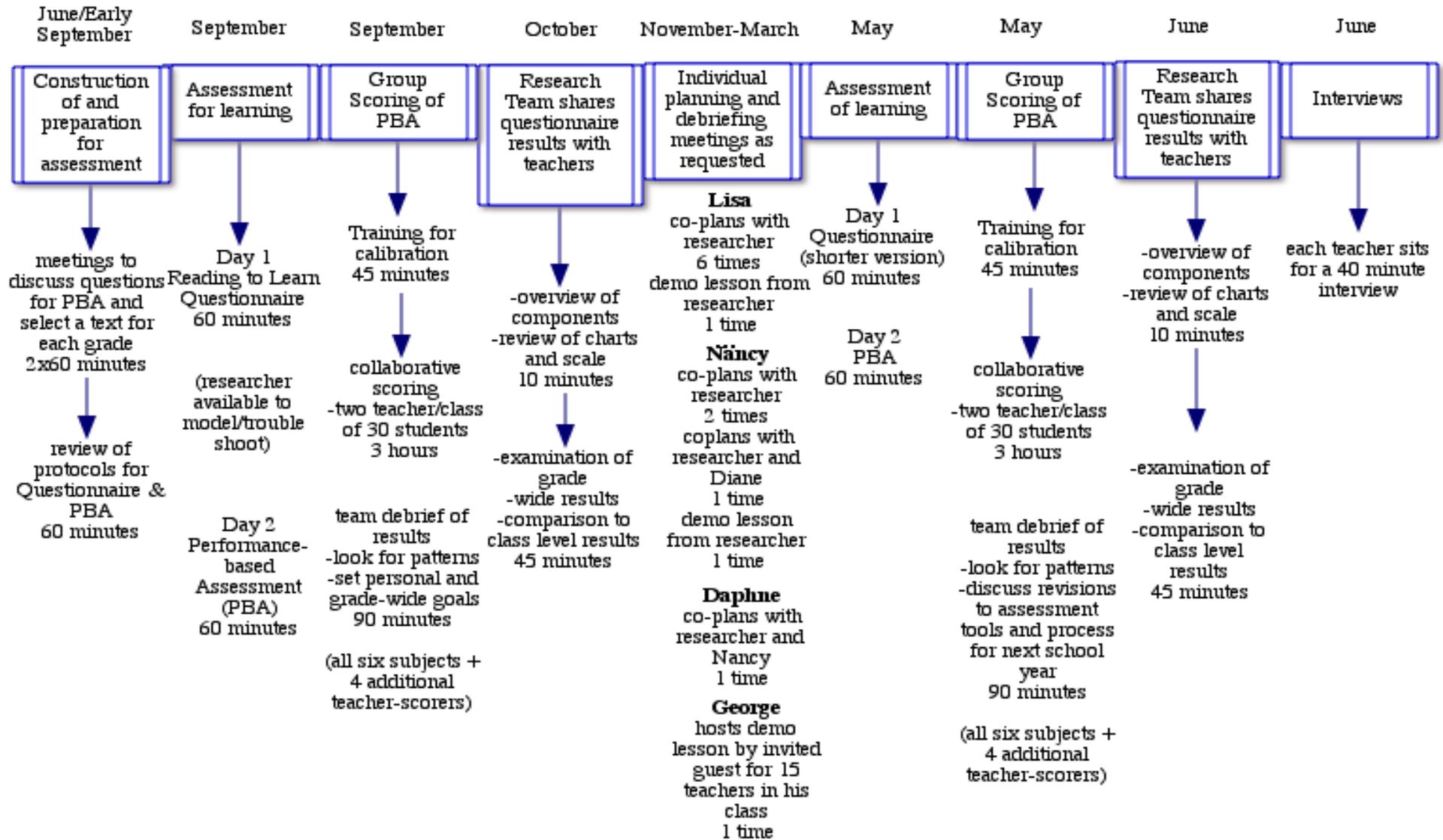
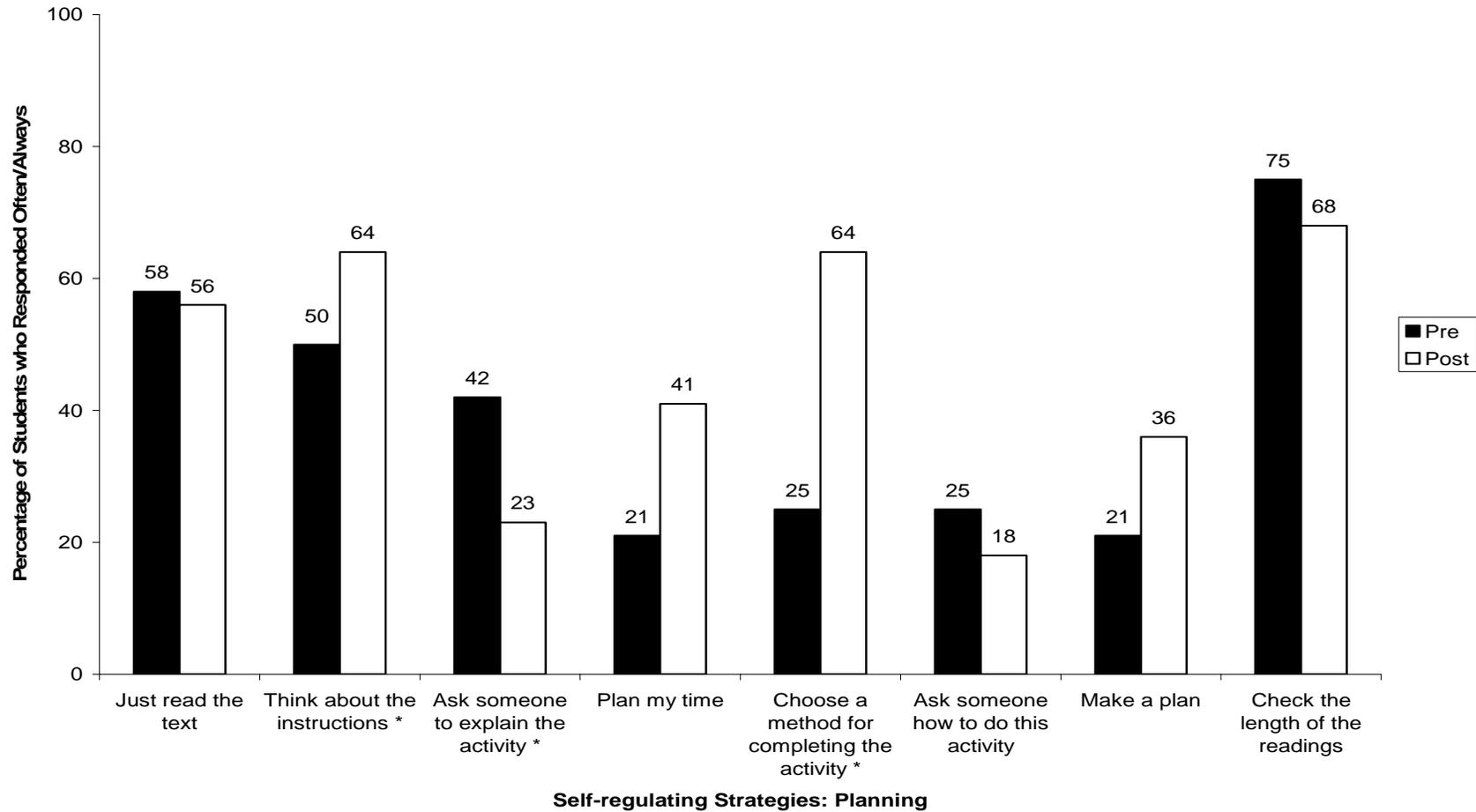
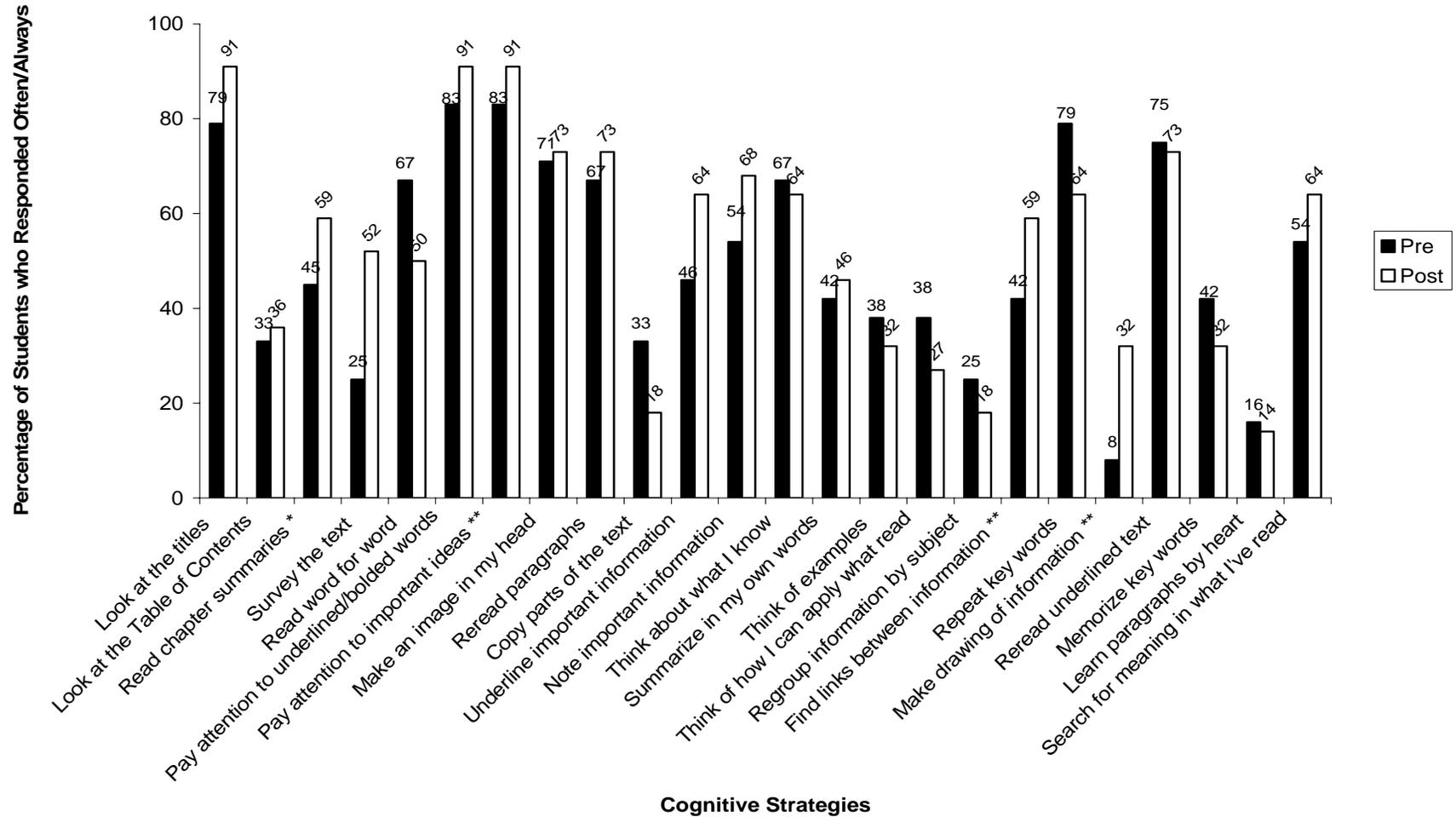


Figure 5-a
 Planning Profiles from Formative and Summative Assessments for Lisa’s Grade 9 Humanities Class



* All p 's < .05 based on ANOVA tests of mean differences; *Think about the instructions*, $F(1, 22) = 6.60$, $\eta^2 = .24$; *Ask someone to explain the activity*, $F(1, 22) = 4.92$, $\eta^2 = .19$; *Choose a method...*, $F(1, 22) = 6.18$, $\eta^2 = .23$.

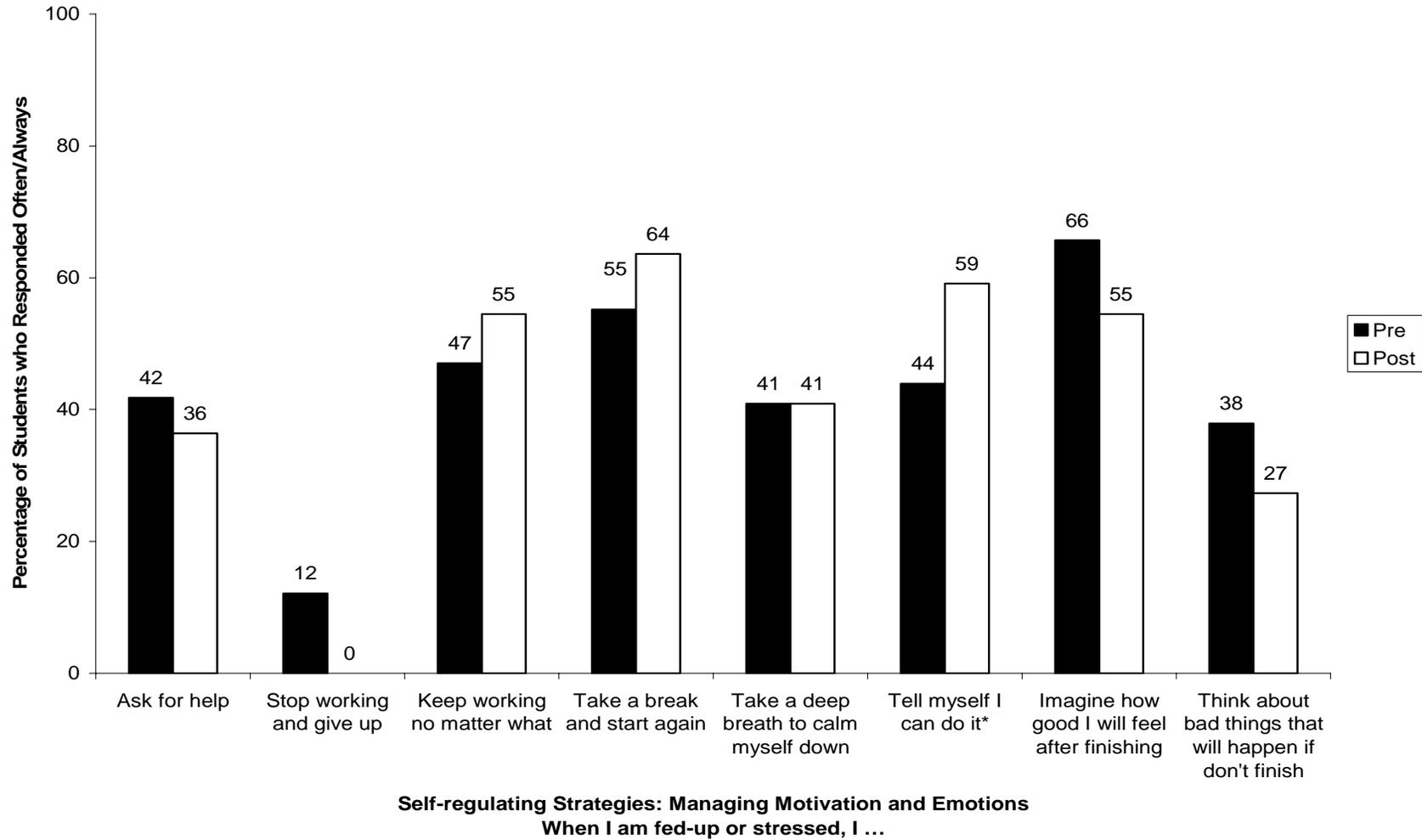
Figure 5-b. Cognitive Strategy Profiles from Formative and Summative Assessments for Lisa’s Grade 9 Humanities Class



Note. * $p < .05$; ** $p < .01$; based on ANOVA tests of mean differences; *Chapter summaries*, $F(1, 22) = 4.91$, $\eta^2 = .19$; *Pay attention ...*, $F(1, 22) = 14.54$, $\eta^2 = .41$; *Find links ...*, $F(1, 22) = 8.56$, $\eta^2 = .29$; *Make a drawing ...*, $F(1, 22) = 10.53$, $\eta^2 = .33$.

Figure 6-a

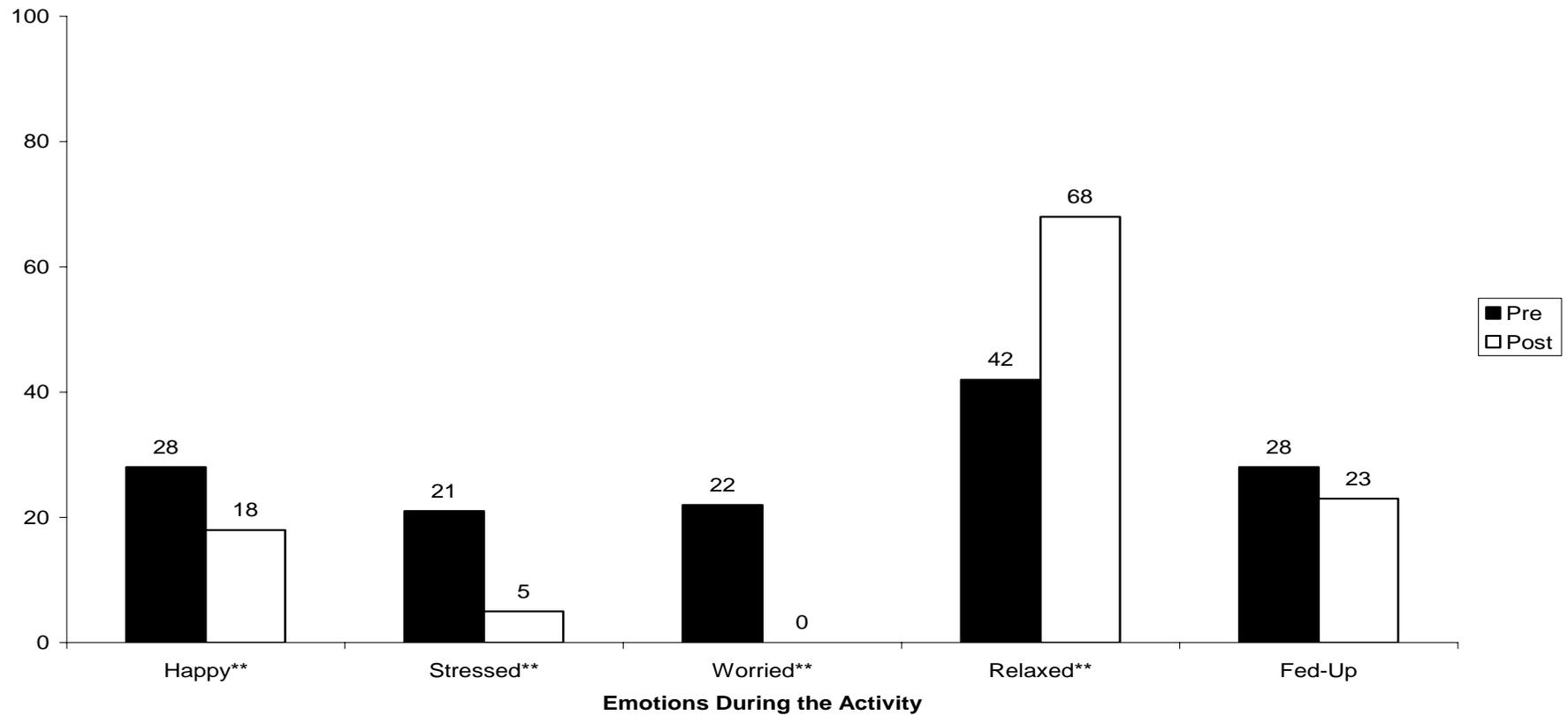
Emotion/Motivation Control Profile from Formative and Summative Assessments for Alex’s Grade 8 Humanities Class



Note. * $p < .06$, based on ANOVA tests of mean differences; *Tell myself I can do it*, $F(1, 21) = , eta = .$

Figure 6-b

Emotions During LTR from Formative and Summative Assessments for Alex's Grade 8 Humanities Class



** All p 's < .01 based on ANOVA tests of mean differences; *Happy*, $F(1, 22) = , \eta^2 = ;$ *Stressed*, $F(1, 22) = , \eta^2 = ;$ *Worried*, $F(1, 22) = , \eta^2 = ;$ *Relaxed*, $F(1, 22) = , \eta^2 = .$