Putting Professional Development into Practice:
A Framework for How Teachers in Expeditionary Learning Schools Implement Professional Development

By Emily J. Klein & Megan Riordan

Introduction

The current small schools reform movement has increased the number of organizations seeking to change education with designs that require educators to

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rethink their understandings of curriculum, teaching, and learning (McDonald, Klein, & Riordan, 2009; Klein, 2008). The key to the success of these schools is how well the teachers can learn and implement the design, laying a heavy burden on the schools, or, the intermediary organization, to provide adequate professional development. Many of these organizations have invested heavily in professional development as a means of ensuring that the teaching in their schools is consistent with the vision of the organization. Although research highlights qualities of effective professional development, there is little research about how it is incorporated in teachers' curriculum and instruction and how organizations use professional development to implement their vision of schooling, while building new knowledge about teaching and learning (McLaughlin

& Talbert, 2006). Many teachers report changes in their practice following professional development but those reports may not be reliable as further investigation demonstrates few deep level changes (Cohen, 1990; Loucks-Horsley, Love, Stiles, Mundry & Hewson, 2003; Weiss & Pasley, 2006).

This article presents findings about how teachers in one such educational organization, Expeditionary Learning Schools Outward Bound (ELS), transformed professional development experiences into learning experiences for their students. We chose ELS because of its emphasis on professional development as a strategy for organizational success and because its professional development program embodies several distinct aspects that can affect teacher practice and student learning: coaching, training, extended time devoted to learning new content and pedagogy, and opportunities for reflection with peers (Killion, 1999). In 1999, the National Staff Development Council (NSDC) rated ELS as the only program to meet all 27 NSDC standards for staff development which made it a logical candidate when looking at professional development implementation (Killion, 1999).

ELS traces its roots back to the ideas of German-born educator, Kurt Hahn, founder of Outward Bound[1] wilderness programs. Hahn believed that moral development should accompany academic learning, and embraced a philosophy of impelling students into experiences that pushed them to discover their capabilities. Building on Hahn's Outward Bound philosophy, ELS promotes "rigorous and engaging curriculum; active, inquiry-based pedagogy; and a school culture that demands and teaches compassion and good citizenship." (Expeditionary Learning Schools Outward Bound, n.d.). ELS targets its professional development to developing teachers' pedagogy and assisting them in implementing community-based learning expeditions.

Significant to the organization's mission of teaching and learning, expeditions are "long-term investigations of important questions and subjects that include individual and group projects, field studies, and performances and presentations of student work" (Expeditionary Learning Schools Outward Bound, n.d.). Expeditions, as described by ELS, are knowledge centered, learner centered, assessment centered, and community centered (Bransford & Darling-Hammond, 2005). We expected that as the core of its curricular design, PD related to expeditions would be an especially salient form of ELS's PD and would help us to see—or not—its reflection in teachers' practice.

We asked the following questions:

1. How do teachers narrate their experiences of ELS professional development?

2. How are ELS teachers' learning experiences reflected in curriculum and instruction via interviews and observable classroom practices?

3. What do these experiences offer us in terms of a framework for professional development implementation?

While policy makers and educators are understandably concerned about the link between professional development and student learning, we sought to examine the intricacies of professional development implementation not merely *for* whether or not we saw a reflection of professional development in teachers' practice but more importantly, *how* we saw it implemented by teachers and the context and quality of that implementation. We believe that this link between professional development and student learning is key for organizations focusing on developing the skills and knowledge of classroom teachers.

Professional Development and Teacher Implementation

Most educators believe that high quality professional development grounds teachers in both pedagogy and content, offers them opportunities to practice those ideas in contexts similar to their classrooms, is sustained over time, offers a community of peers and coaches that provide support and opportunities to collaborate, and is resource rich (Ball & Cohen, 1999; Borko 2004; Elmore, 2002; Hawley & Valli, 1999; Lieberman & Grolnick, 1996; Lieberman & McLaughlin, 1992; Loucks-Horsley et al, 2003; McLaughlin & Talbert, 2001; 2006; Warren Little, 1999; Weiss & Pasley, 2006; Wilson & Berne, 1999). Ball and Cohen (1999) emphasize the developmental nature of professional development, as opposed to the "one shot workshop" model that has dominated the field. They also stress the importance of creating a "pedagogy of investigation" through developing "communities of practice" (p.13).

There is some research showing how professional development aids teachers in implementing new ideas about content and pedagogy (Borko, 2004). In particular, Cohen & Hill's (2001) study detailing a significant shift in California's math policy offers insight into the kind of professional development that supports teacher change. They found that when teachers had "extended opportunities to study and learn the new mathematics curriculum that their students would use, they were more likely to report practices similar to the aims of the state policy" (3). The authors emphasize the importance of particular aspects of the learning opportunities supporting implementation including, "sessions in which teachers would do the mathematics themselves, talk with each other about the content, and observe examples of student work on the materials" (4). Cohen & Hill also found evidence of poor implementation when teachers were not afforded those kinds of opportunities.

As researchers and practitioners we were interested in examining such subtleties and variations of professional development implementation. As suggested by Cohen & Hill's work, we expected that because ELS provided sustained learning opportunities that were grounded in content, pedagogy, and pedagogical content knowledge, we would see more curricular practices aligned with ELS' vision of teaching and learning. However because we knew from Cohen's (2001) work that teachers exposed to new knowledge and skills often "cobble new ideas onto familiar practices" (460),

we also expected to see such hybrid practices. Similarly, Weiss and Pasley's (2006) study of how professional development impacts high quality instruction revealed that, "teachers in the early stages of learning were more likely to use materials mechanically, or to modify them inappropriately"(7). Thus we expected to see implementation of professional development that varied from superficial to meaningful and that possibly demonstrated misunderstandings on the part of the teachers.

Methods

For this study we chose qualitative case study as our methodological approach. Yin (1993, 1994) deems a case study method appropriate particularly when the re-lationship between phenomenon and context are blurred or intersect. The complex, dynamic nature of professional development design, experiences, and implementation make it best understood using these methods. Case studies provide design advantages for the researcher in that they enable the researcher to incorporate a variety of docu-ments into the analysis, including observations, interviews, and writings (Merriam, 1988; Myers, M., 2000; Yin, 1984). Additionally, focused studies offer more detailed understandings of particular phenomenon, contributing to researchers, stakeholders, or organizations knowledge of 'why' or 'how" phenomena occur; such is the case of our ELS research in which we study an organization's professional development so that it may be generalized to other school reform organizations whose designs rely on teachers' implementation of a model.

Setting

ELS has over 140 schools across the country in urban, rural, and suburban set-tings. This study focused on the New York EL Schools. At the time of our study, there were seven EL Schools in New York City, six of which were high schools and one of which is a middle school scaling-up to a high school beginning with a 9th grade class in the Fall of 2008. They are located in Brooklyn, the Bronx, and Manhattan.

Participants

The research team selected eight teacher participants from the New York City EL Schools to study in-depth. We opened recruitment to all teachers from five schools up and running in the winter of 2007, from a possible pool of approximately 80 teachers. Teachers were both male and female and ranged in ages from 23 to 35. Because expeditions are cross-disciplinary and all teachers are offered the same professional development related to expeditions, we recruited teachers of various subject areas including: Math, English, Social Studies, ELL, and music.

Data Collection and Analysis

The following data sources are divided into direct and indirect. Direct sources are those that the researchers take responsibility for generating; indirect are those

that ELS New York City generates for its own management purposes, and to which it grants the research team access (See Figure 1). We collected hard-copy materials, student work, and other artifacts twice over the course of the study. Researchers conducted two to four full-day classroom observations at pre-determined times with participant consent. We asked participants to alert us to times when they were implementing something learned in professional development activities or related to expeditions. We transcribed interviews and logged all interview and field notes into Atlasti, a program used for qualitative research data storage and analysis. Atlasti allows researchers to input and categorize data, pull-out recurring themes, and identify links within multiple data sources. For the researchers, this computer program effectively replaced the hard copy method of pen and paper notes for the purpose of making sense of the data.

The research team engaged in an ongoing and recursive analysis of data, aimed at sharing and testing emerging understandings, clarifying methods and assumptions, identifying findings related to the research questions, arranging for further testing of these findings, revising questions and foci as needed. As data was loaded onto Atlasti, researchers began creating early codes. Both researchers negotiated and defined codes in a code book and then each researcher separately coded all data. After all data was coded, researchers reviewed the codes together and made decisions about how to code where disagreements existed.

The Research Team and Trustworthiness

The research team consists of two principal investigators with distinct roles: Dr. Riordan, an inside staff member at ELS and Dr. Klein, an outside researcher at a nearby university. Riordan works at ELS as a School Designer in New York City, and served as the inside coordinator of research activities and a source of insider perspective. She alerted the other researcher to data-rich collection opportunities;

Figure 1: Data Sources.

Direct	Indirect
Site Visits to professional development and networking activities: 20 days of visits.	Web based documents.
One hour interviews of teachers: Each teacher was interviewed 4x over the course of a year.	PD Materials and descriptions: including agendas and planning materials.
Student test data in literacy and mathematics.	LEO (online expedition and planning tool).
Artifacts collected by teachers related to professional development.	School designer updates.
Student work related to expeditions: writing and project samples, reflections, and other work teachers direct us towards.	Other relevant ELS and school documents, "filtered out" by internal research team member.
Classroom observations: 2-4 per teacher.	

translated ELS lingo and ways of thinking; served as the connector among the schools, ELS, and the researchers; and filtered out from a large collection of documentary data those data that seemed relevant to the research foci and questions. Klein's status as an outsider helped balance the insider perspective, asking different questions, offering alternative perspectives, and asking clarifying questions that make explicit tacit understandings: what Saul (1992) refers to as the "faithful witness."

Both researchers interviewed participants and conducted observations. All participants were alerted to Riordan's involvement in the study in the information letter sent to teachers and before they voluntarily contacted one of the researchers about participating. Participants were advised that they could withdraw any statement or complete participation in the study at any time. Riordan had no contact as a researcher with schools or teachers she works with in the normal course of her job.

Findings

In our findings we first explore the professional development practices at ELS, followed by an analysis of how teachers in our study reported on their implementation of those practices. We include descriptions and analysis of how variations in implementation played out as well as the factors that influenced implementation.

Professional Development
at Expeditionary Learning Schools Outward Bound

Key to understanding professional development within ELS is understanding the organization's origin. As indicated earlier, ELS is grounded in the philosophy of Kurt Hahn and the Outward Bound wilderness experience. "Outward Bound" is the nautical term for the moment when a ship leaves the safety of the harbor, a metaphor suitable to describe the work of teacher professional development and change. This concept is illustrated through the Outward Bound process model (Walsh & Golins, 1976), which depicts the educational, experiential approach of Outward Bound. The model is recursive rather than linear, encouraging participants to continually engage in challenging experiences that nudge them outside of their comfort zones, and then reflect and transfer their learning from those experiences to real life (see Figure 2).

The Outward Bound Process Model serves as a framework for learning—both for students and teachers—within the ELS design. Teacher professional development (and student learning expeditions) is launched with a "mystery piece," in which participants view a picture, listen to an audio tape, visit a site, or read a short text intended to spark curiosity and inquiry into an event. This step corresponds with the "adaptive dissonance" stage of the Process Model. There is uncertainty about the topic, more questions than answers, and lack of deep knowledge. What unfolds next mirrors the next several steps of the Outward Bound Process Model: learners engage in a "Building Background Knowledge" workshop (BBK), in which they read common texts to ground them in particular content. Content is explored

Figure 2. The Outward Bound Process Model.
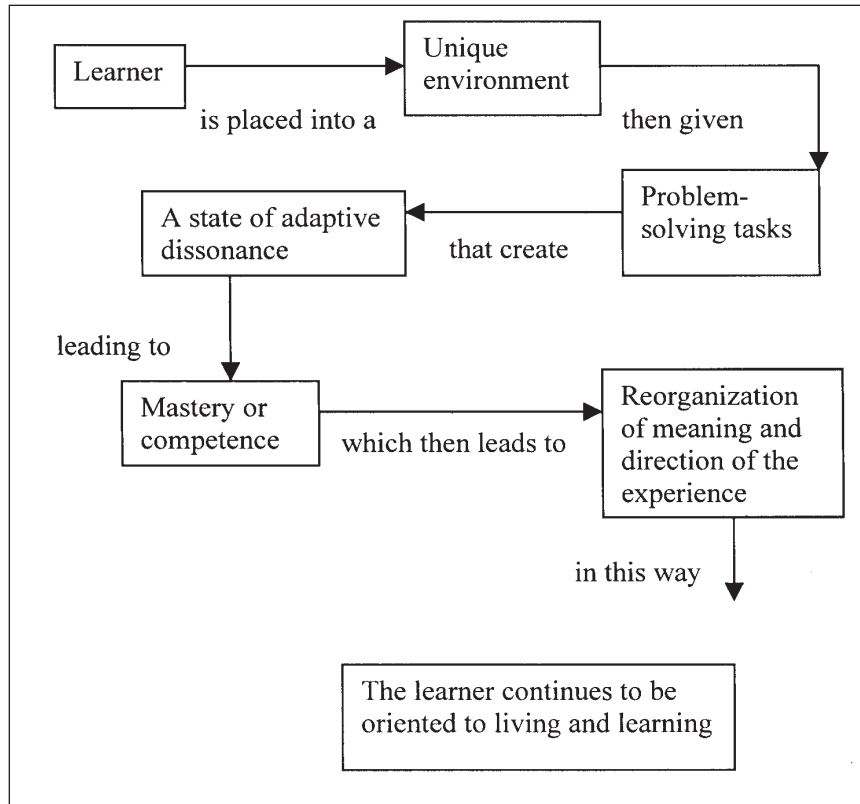
through discussion and writing as well, and participants learn pedagogical strategies and skills through experiencing the workshop. Additional texts, video, site visits, field-work, conversation and/or images provide participants with richer insights into content, thus promoting stronger skills and prompting a reorganization of what teaching and learning can look and feel like. Reflection and debriefing then leads to transfer and application of the learner's experience. This model gives us insight into how ELS conceives of its design for teacher professional development.

Teachers at ELS participate in extensive professional development upon being hired to teach at an ELS school. The cornerstone of the professional development is the summer institute which occurs in one of three locations across the country and involves all new teachers and new support staff. For five days, new ELS teachers come together to take part in this Institute. Teachers participate in a compressed version of an expedition, generally referred to as a "slice." The summer of this research, in Boston, science and math teachers spent the week learning about lobsters. Teachers

were initiated into the institute by being presented a live lobster and asked to draw it (mystery piece). This was followed by a building background knowledge (BBK) workshop about lobsters lives and habits. Later in the week teachers visited the local aquarium to engage in fieldwork in order to acquire information about lobsters from local expert. Finally, teachers created skits that represented their learning about lobsters. Teachers in the humanities slice explored the trial of Sacco and Vanzetti in parallel types of activities. Sacco and Vanzetti, two Italian immigrants accused of murder in the course of a robbery, allowed teachers to explore issues related to immigration, anti-anarchist and anti-communist sentiment in the inter war period. Mornings at the summer institute are spent in workshops learning about other areas of ELS design including: assessment, learning targets, crew, and LEO—the on line expedition planner. Afternoons focus particularly on the content and fieldwork of the expeditions. Such content for the humanities teachers included transcripts from the trial of Sacco and Vanzetti, maps related to the crimes they were accused of, histories of Italian immigrants living in the North End of Boston, pictures from the trials and the neighborhoods the defendants came from, a trip to the rare books section of a Boston library to examine newspaper accounts as well as letters from the defendants to their families, as well as novels such as *Ragtime* that portrayed the complex social issues of the time period.

New teachers also participate in week long summer workshops in reading and writing, regardless of their content area background. NYC teachers in the ELS network also engage in a one week expedition planning institute. There are some opportunities for content specific professional development in math as well as an advanced reading/writing workshop. During the academic year teachers can participate in regional professional development in assessment**,** grading and reporting**,** targeted leadership institutes for principals, and content area institutes in science and math. School based professional development is spearheaded by Instructional Guides [IGs] who act as on-site school coaches.

A Continuum
for Professional Development Implementation

In this section we focus on how teachers implemented professional development, both through the description of their experiences in the professional development activities as well as how their learning experiences were reflected in curriculum and instruction via observable classroom practices, interviews, and student work. ELS provided teachers with professional development that was high quality as defined by the literature. By this we mean that teachers had opportunities in different contexts to build content and pedagogical content knowledge. They worked collaboratively, focused on issues of curriculum and instruction and had ongoing support through School Designers and Instructional Guides. Yet once back in the classroom, how teachers made use of the professional development experiences differed. In fact,

teachers' practices fell on a "continuum of implementation," ranging from no implementation/rejection to full adaptation (See Figure 3). We needed a frame for making sense of what teachers did with the professional development. Literature, referenced in our theoretical framework, offered us some ideas for creating that frame and we expand on these ideas here.
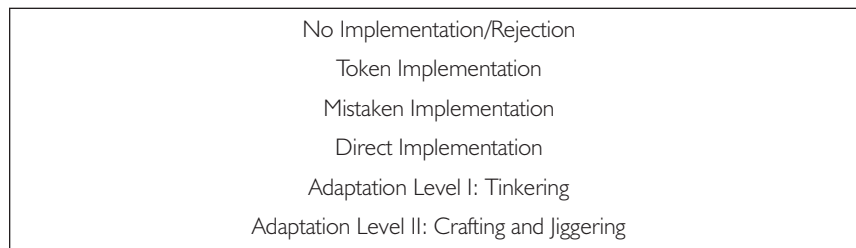
We developed this continuum from our observations of teachers practice and examination of curriculum, as well as through our interviews. The continuum is neither hierarchical nor linear; teachers did not necessarily begin at one end and wind up at the other through time and experience. The literature suggested that teachers at early stages of learning might find themselves implementing professional development in superficial ways. Rather, we found teachers seem to move back and forth between points along this continuum, and it was often difficult to tease apart why. Many spoke eloquently about their understanding of the EL philosophy and of their faith in its effectiveness for student engagement and learning yet still chose to make instructional decisions that were inconsistent with this philosophy. In the following section we explicate the continuum, illustrating it with examples from our data, and in the final section we explore the factors that influence teachers' locations on it.

No Implementation/Rejection

At this stage the teacher consciously rejects a particular professional development practice and in the following section of this article we highlight the reasons teachers articulated for their rejection. For most teachers the decision not to implement professional development revealed some conflict for participants—although they generally believed in the major principles of ELS and theoretically understood why a practice was promoted, they rationalized that their context was unique and not conducive to applying the ELS strategy.

For one of our participants, Amy, conflicting beliefs about her students' abilities and ideas about motivation influenced her decision about how to implement expeditions. Originally excited about expedition based learning, she later decided not to implement them in her classes. Her decision not to implement this fundamental piece of ELS design was based on her belief that her students' skill levels were not sufficiently advanced enough although she acknowledged that she might be able to

Figure 3: Continuum of Implementation

No Implementation/Rejection
Token Implementation
Mistaken Implementation
Direct Implementation
Adaptation Level I: Tinkering
Adaptation Level II: Crafting and Jiggering

both build skills and implement expeditions simultaneously: "And ideally, I would be able to do that in the context of an expedition. There's nothing to say that I couldn't do that with whatever expedition we were doing…" When pushed to articulate the compatibility of the two she later suggested that perhaps skill building *did* need to happen first: "I think if we don't have those skills then it doesn't matter how interesting the projects are. The kids will not be able to read the material that's in front of them and they will fail tests, and they're going to keep failing tests. And it becomes really difficult for them to work independently." Amy's doubts about her students' abilities to build skills while also engaging in in-depth expeditions as well as a policy environment that emphasizes standardized test scores are at the heart of her decision to reject a primary piece of the ELS design and professional development.

This may speak to Guskey's (1989) theory that engaging teachers in successful instructional practices changes beliefs. Elmore (2002) writes that "An important implication of Guskey's theory is that instruction itself is probably the most potent form of professional development available to schools" (19). Similarly, research on teacher change "indicates that changes in beliefs often come later when teachers use a new practice and see the benefits to their students" (Loucks-Horsley et al., 2003, p. 48). An implication of this for ELS is that the organization may need to provide more structured opportunities to practice new skills learned in professional development. Adding "teacher hat" time may have some impact on how teachers negotiate their concerns but this teacher hat time should specifically bring teachers as close to actual practice as possible.

Token Implementation

The second type of implementation we saw was what we call *token implementation*. Here the teacher uses "ELS speak," suggesting an understanding of ELS philosophy and ideas, but the speech and the teachers' actions do not align. She may speak about *active pedagogy* as an important ELS principle but show no evidence of implementing this principle into her practice.

Melissa, an English teacher who had been with ELS for three years, evidenced token implementation in describing her spring expedition. When asked what elements of ELS professional development she used in her curriculum and instruction she spoke about an expedition she developed with a Social Studies teacher about England in the time of King Arthur. She initiated the expedition with a BBK workshop but when asked about what that entailed she admitted that she had simply shown a movie version of *The Sword and the Stone.* As the students watched the film they checked off characters as they appeared, checked off vocabulary as they heard it, and answered some plot based questions. When telling me about the class she made quotation marks with her fingers when she called this activity a "BBK." Building Background Knowledge workshops are intended to spark student curiosity (and some initial adaptive dissonance) about a topic while then building the necessary background knowledge needed for the expedition. In this case Melissa used ELS

terminology but signaled through her quotation marks that she realized this really did not constitute a BBK as ELS intended it to be. Originally when we saw examples of this we wondered if they were examples of misunderstandings but in fact many times the teachers understood that they were using ELS terminology incorrectly.

ELS emphasizes "EL speak" in its professional development as a means of initiating teachers into discourse communities. Teachers feel some pressure to show evidence of ELS design elements in their practice and using EL speak even when their practice does not truly align with the model allows them to signal membership to the community. Obviously indications of implementation must be examined closely and should be handled differently than the true misunderstandings we describe next.

Mistaken Implementation

Mistaken implementation draws specifically on Cohen's work (1990). By mistaken implementation we refer to fusions of old and new practices in ways that are less effective than the conventional practice. Here teachers make attempts at implementation that at first glance appear to be adaptations but actually distort the design.

One school designer reported an instance of *mistaken implementation* while observing a writer's workshop in a teacher's class. This teacher misunderstood a crucial piece of information about the writer's workshop—that students need to apply the technique learned to their own writing. Without that step, what the students were experiencing was a guided mini-lesson with practice—not a complete writer's workshop. Other misunderstandings occurred when teachers attempted to implement expeditions with adaptations they felt were necessary to meet the needs of their students. However, these adaptations often meant that a fundamental element of the expedition was missing. Teachers created expeditions that lacked essential components such as one that asked students to create their own city-states for a unit on Greece. Although the teachers involved in creating the expedition used active pedagogy, there was no field work or use of experts. Neither did students engage in creating products for audiences beyond the classroom. Unlike teachers demonstrating *token implementation*, teachers here genuinely thought they were implementing ELS design elements faithfully. They failed to see how or where their work missed the mark.

To some degree these adaptations reflected ambiguity on the part of the organization, not only in articulating what constitutes an expedition, but about how much adaptation can occur without demonstrating a misunderstanding on the part of the teacher. One teacher who conducted two Math-based investigations into algebraic concepts while teaching students about encryption and decryption, wrote in an email to us, "For example, when I talk about my Secrets from the Crypt expedition, some people think that it's not an expedition because there was no authentic presentation of the work, no field work, and no service—while others think that it is a math expedition." Feeling this ambiguity, ELS in New York City has begun to clarify expectations in their partnerships with schools—by clearly articulating that expedition components include three in-depth investigations, fieldwork and experts,

and by establishing an expectations and accountability document for schools. In articulating what constitutes an expedition with partners on multiple levels they may help to circumvent some mistaken implementation. This accountability is tricky for professional development on a few levels. For instance, how, exactly, are schools or leadership teams held accountable for implementation of the ELS design? How much time are a school and staff given to demonstrate progress towards implementation or to illustrate full implementation? As the organization continues to scale-up its design, such questions—and their corresponding answers—take on greater potency.

Direct Implementation/Replication

Direct implementation describes professional development implementation where the teacher transfers an activity and materials exactly as experienced to her classroom. While most teachers in our study showed evidence of numerous forms of implementation in their practice, *direct implementation* was often a starting point for teachers implementing professional development.

One first-year ELS teacher used a workshop from the summer literacy institute about the Triangle Shirtwaist Factory Fire in her classroom. With minor variations to the materials she and a fellow teacher used identical activities from the institute to engage students in learning about immigration and working conditions. While professional development must help teachers move beyond this kind of exact replication in classrooms it often seems to scaffold teachers' learning, in many ways serving as another form of professional development a la Guskey. Loucks-Horsley et al. (2003) write that, "Fundamental beliefs are formed through active engagement with ideas, understandings, and real-life experiences" (p. 49). Here teachers explicitly transfer what they have learned and get to try on the ideas using materials that they know are effective. It allows them to build confidence in the strategies and begin to explore how they might adapt them to their own classroom. This inadvertent script provides positive reinforcement and thus makes it more likely that teachers will continue to use the professional development.

Adaptation Level I: Tinkering

At this level of adaptation teachers begin to make some adaptations to professional development activities they have experienced, generally in terms of materials and based on particular curricular needs. Teachers here may practice variations on a professional development activity; however, the variations tend to be ones that they have experienced in different professional development sessions.

For example, ELS uses multiple variations on the BBK in its professional development and most teachers in our study described using one or more variation in their classrooms simply making changes to the materials based on curricular needs. The BBK involves sparking students' curiosity by starting with a *mystery piece*. In ELS professional development, this might be a *gallery walk* where participants look at pictures and jot down compelling noticings and wonderings. Many teachers adapted

their classroom-based BBK activities by varying the *mystery piece*, and using a text, short video clip, or audio file to peak students' interest. One teacher told us, "I try to adapt as much of the humanities/science material as I can for math by tweaking products, applying literacy strategies to word problem decoding, and logical reasoning sequencing. One specific example is a note-catcher that I adapted from a 4 corner box chart to help students solve word problems." Similarly, others might tinker with an assessment practice making superficial changes to a rubric to accommodate student ability. This tinkering may seem like replication but the variations may also mark an important experiment in helping teachers internalize professional development. For some organizations this kind of adaptation might represent the best way to ensure fidelity to the design. However, the danger in such fidelity may lie in accommodating the needs of individual students and local contexts. If teachers continually make *only* minor adjustments to professional development activities in translating them to their classroom out of anxiety about how to use those activities, they may not be meeting differentiated needs of their students**.**

Adaptation Level II: Crafting and Jiggering

The final form of professional development implementation we describe is *jiggering* or *crafting*. Jiggering is defined as the operation of bringing a shaped tool into contact with the plastic clay of a piece under construction in order to enhance its design, and we believe the metaphor suits the kind of implementation we saw at this level. We found evidence that teachers adapting in this way did so based on the needs of their students and often made adaptations they had not witnessed in professional development. They created expeditions that involved many of the elements of the ELS model but included adaptations relevant to their particular teaching context.

One teacher in our study wanted to engage her students in an exploration of an old aqueduct located nearby the school. She worked with the science and English teachers to create a unit around the focusing question: "Why is clean water essential to human life?" Field work included visits to: the New York Historical Society, High Bridge Park, Old Croton Aqueduct, Central Park Reservoir, the Museum of the City of New York, the New York Historical Society, the New York City Water Treatment Plant, and the Kensico Reservoir. They also had visits from Riverkeepers, the Department of Environmental Protection specialists, Columbia University specialists, and Friends of the Old Croton Aqueduct. Students completed a number of assessments in different subject areas including a concept map of New York City's drinking water infrastructure, an essay on the history of New York City's drinking water supply, an expedition journal, and a power-point presentation given at an in-school town hall meeting. During a visit to the classroom by one of the researchers, students made connections between their study of Rome and the Roman aqueducts with their learning about the Croton aqueduct and New York's water supply. Students explained how water moved from the mountains to Rome—a concept they understood because they had acted it out in class using tubing and blue Gatorade.

Many professional development organizations may see this level of implementation as their goal for teachers. Our assumption when we saw this level of implementation was that these teachers had a deep understanding of ELS professional development. Yet they were just as likely the following semester to show evidence of other points on the continuum. We asked ourselves was this a regression to more conventional teaching practices—a back-sliding of sorts? Was there only so much experimentation a teacher was willing or able to engage in during the semester? For some it seemed exhausting—the amount of work and creativity required to implement full scale expeditions was overwhelming and other priorities continued to present themselves. On the other hand, some teachers seem to identify some practices as more beneficial than others and move those to the forefront of their practice while others moved to the background. For instance, we noticed teachers emphasizing student-friendly Learning Targets based on standards, BBKs, literacy practices, and using peer-critiques while at the same time fieldwork and student reflection faded into the backdrop.

Factors Influencing Implementation

We examined how teachers narrated their experiences in ELS professional development and what the factors they highlighted as significant implementation influences. We sought to understand how the same teacher ended up on different places on the continuum seemingly dependent on the day. The following are what the teachers identified as the five most significant influences on how they implemented professional development. We believe that teachers take a complex view of ELS' philosophy. What may seem from an organizational perspective to be a tightly interconnected package of beliefs about teaching and learning, were not so to teachers. Like Cohen & Hill (2001) we found teachers to be "internally divided, too, agreeing and disagreeing with themselves—and sitting on their own fences—sometimes with regard to the same ideas" (70).

Engagement

A teacher's level of engagement and excitement about the professional development experiences largely had a positive implication for how much he or she adopted or adapted the model in his or her own practice. Most teachers spoke about the summer secondary school institute as the most significant professional development experience with ELS. One math teacher who participated in the math/science part of the institute told me she reported thinking,

> Why am I so into this thing with the lobsters, because I am?! Everybody in this group is crazy about lobsters! When we did our show…we were behind this thing and had these paper lobsters and did the music and I was like…literally, it was one of the most fun things I did all summer. I really liked the people I was with…And I think that we were just engaged. And so every time I was really engaged and then I thought about what made me engaged, those were the things that I want to do [with my students].

Other participants in our sample spoke of the high level of interest that the secondary school institute engendered and similarly spoke of wanting their students to have such experiences.

Much of the motivation for doing long term expeditions seems related to their own level of engagement at institutes or other ELS professional development. The experience of passion seems to be a valuable one even when it's outside of a teacher's content area as it was for one of the math teachers in our study. Still, we found that passion and motivation are most useful if they are immediately connected to curriculum development. Four months into a semester the excitement a teacher felt from a summer institute may not sustain them through the pull of his or her particular school and classroom context. The energy created by powerful professional development experiences must be deftly managed beyond that time if teachers are to transfer it to deeper learning experiences for students.

Content Area Beliefs and Knowledge

In choosing ELS as the organization for this study, we expected that teachers who had opted to teach at an ELS school would find the philosophy and central tenets of the design appealing. However, we still found that teachers' beliefs about their content area seemed to have direct implications for how much they implemented. This was specifically true in the case of mathematics. Of the three math teachers in the study, teachers with similar state, policy, and student contexts, we found that different beliefs in the nature of math impacted how teachers viewed their subject in relation to ELS philosophy and curriculum design. One teacher viewed math as something that did not allow for long term, interdisciplinary investigations that characterize ELS' school design.

Another teacher saw math as conducive to case study-based learning and believed that math could serve as the basis for rich cross-curricular explorations of mathematical concepts. This teacher offered a varying view, explaining: "There are tons of ways to tie Math into other disciplines, especially Science. Math could make Science more explicit—make connections more visible, like using graphs and scatter-plots." The third teacher sided with the second, stating, "I do believe in the ELS curricular model—there are great structures to use content in context…I feel like 75% of the skills I teach can be taught within content; it's something I work for." All teachers spoke about how their content area limits or encourages adaptation of certain pieces of the model. Teachers' beliefs about their content area also seemed to be influenced by the policy context—both in terms of testing and curriculum. Their notion of what their subject area would allow was related to their feelings about whether or not they had the ability to implement expeditions.

The role of professional development in changing teachers' practice is complex. As it scales up, the ELS organization is looking to devise math professional development that supports the implementation of learning expeditions and inquiry-based in-depth investigations that tie to standards. However, its current math specific

professional development support is limited, leaving teachers to navigate their own ways of teaching and learning and implementing mathematical knowledge. One Math teacher indicated, "In terms of the kind of professional development and support I'd like to see happen, since there are 7 schools in New York City; it would be wonderful to have one day a month or one day every two months to meet and share, talk about struggles, or offer ideas about how to do ELS in Math."

The role of content knowledge was also important in how teachers used the instructional guides (IGs) or school coaches. When the IGs shared content area background with their teachers, the latter seemed to be more likely to use IGs in planning and implementing expeditions. Teachers wanted their IGs to have particular expertise in their content area. One teacher explained, "I have nobody to go to for math (content)." Lacking the mentor support she wanted, this teacher created an on-line Google group to support regional efforts to implement math expeditions. While this attempt is admirable it is too early to see if it will be effective in supporting these teachers. This suggests that the organization might want to consider rotating instructional guides who might provide content area expertise to teachers in different schools, particularly if it wants to have more control over how these teachers implement professional development in their content areas.

A second implication from this finding is that teachers need time in content area cohorts to discuss not only the implementation of professional development but their underlying beliefs and understandings about how their subject area relates to ELS curriculum design. Yet we return again to the idea that practice changes beliefs as well. We think this has important implications for the area of materials for teachers particularly in the areas of mathematics. Cohen & Hill (2001) found that teachers exposed to math materials that provided "concrete guidance" about student thinking and how to tie abstract principles into practice were more likely "to report ideas about mathematics teaching and learning that accorded with the frameworks" (111). Materials may be an important link in helping organizations manage the content area beliefs that limit the degree of implementation.

Assessment

Just as beliefs about content influence implementation, knowledge about policy related assessment and how it works in the New York City school system impacts implementation of ELS practices. Most teachers felt that the ELS model was at odds with the New York City grading system they contend with and spoke of the pressures state assessments placed on them in regards to meeting the needs of their students. All argued that whether or not they thought the tests were valuable they had an ethical obligation to prepare their students to succeed in them. Thus they were often torn between what ELS believes about assessment and their responsibilities to their students. For instance, one teacher explained, "I like that ELS assesses using varied methods, like rubrics, and demonstration of mastery, but I still have to do some concentrated test prep with students that's not 'EL.'" This is

consistent with research suggesting that the context of students is the most important one for teachers in thinking about what they do in their classrooms (Olson & Kirtman, 2002). It also may help explain why the same teacher might demonstrate *Adaptation Level I* on one day and *Token Implementation* on another—competing and conflicting loyalties result in varying levels of implementation.

The implications for ELS are significant if it wants to recognize these conflicting pulls for teachers and help them manage the assessment dilemma. For instance, one teacher attending a New York City based Assessment Institute commented that her "grade-book was not conducive to compiling anecdotal evidence on students' learning because it only provides small boxes for checkmarks or letter grades." She recognized that the kind of data she needed to collect was beyond the parameters of the small spaces she had grown accustomed to using. ELS' professional development has begun to respond to teachers' needs for enhanced assessment models and strategies by developing a three-part Assessment Institute series: Learning Targets, Creating Assessment Plans, and Grading and Reporting. We noted that often teachers were balancing work on expeditions with work geared towards state assessment—rarely integrating the two. Many suggested a need for more professional development geared towards helping them integrate. In particular the need for materials as a kind of professional development that help teachers visualize how to think about non-traditional forms of assessment are important.

Differentiation

Many of the teachers in our study came to ELS with professional development experiences in their content areas already. Also, several of the teachers in this study had more than one or two years of teaching experience. One important concern professional developers must contend with is how to differentiate professional development for teachers in different career stages. Despite our knowledge that students require differentiated instruction, teachers almost always attend the same workshops, and there are often few opportunities for teachers at more advanced stages of their careers to be challenged in new ways. One major critique of professional development from teachers in our study was been that there is not enough opportunity for differentiated professional development. Much of how organizations have dealt with this is to turn more experienced teachers into professional development leaders (Klein, 2008). While making the learner the leader is always an effective way of promoting learning, there should also be opportunities for those leaders to participate as learners. Like all learners, teachers felt most engaged when they were learning in their zone of proximal development. (Vygotsky, 1978) and had opportunities for differentiation and self-direction (Knowles, 1975).

Recently ELS has attempted to implement some differentiated professional development with positive results. In the summer of 2007, the organization rolled out Assessment II, Assessment III, and Reading/Writing II for teachers who had been through the earlier institutes and were looking to expand their knowledge in

these areas. There might be other ways for the organization to think about differentiation as well. A number of participants pointed to examples of other organizations or professional development opportunities that would be relevant to ELS teachers. Given the challenges more and more educational organizations face in meeting the diverse needs of teachers for professional development, it might be useful to see where the organization can effectively farm out different pieces of professional development to those with greater expertise in those areas. ELS signaled a move in this direction by creating a series of four sessions for the School Designers and IGs led by National School Reform Faculty and urge teachers to attend "Facing History" and Heidi Hayes Jacobs curriculum mapping workshops.

Implications

We offer insights about ELS professional development for those engaged in school reform that relies on successful professional development and information about the relationship between professional development and teacher practice. In particular our study illustrates how the content and pedagogy teachers learn outside of schools transfers to their work with students inside of the classroom. We examine the subtle differences of *how* teachers implement professional development design and suggest a framework for the kinds of implementation those engaged in teacher professional development are likely to see. We offer some ideas about why that variation occurs and the implications of these differences for professional development.

The continuum we propose for understanding teacher implementation is significant for the following reasons: First, too often those engaged in professional development—researchers, policy makers, administrators, and teachers—believe teachers either embrace or reject professional development. In order to make connections between professional development and student learning it is essential to understand the subtleties of *how* it is implemented. Our research suggests it is not as clear as "implemented" or "not implemented" but that implementation happens in a variety of ways and that these ways are not linear.

Second, in order for professional development facilitators and mentors to understand how their work is being used by teachers they need frameworks that help articulate what they are seeing in classrooms. All, especially teachers, should be involved in the conversation about how professional development implementation happens. By naming implementation points we can help everyone reflect on how it occurs and how to support teachers in richer and more consistent implementation.

Third, for organizations to design relevant and deep professional development that meets the needs of teachers as adult learners, acknowledges their prior experiences, differentiates, and allows for opportunities for continued professional growth, they should be guided by principles of adult learning (Knowles, 1984), structuring opportunities for teachers to connect to their own classroom content and practice new pedagogical strategies.

Finally, for organizations to assess how their philosophy is being expressed in schools they too need frameworks that help them see what is and is not happening in order to make sense of the effectiveness of their design. We see our framework as moving towards a theory of professional development implementation that can be useful for both researchers and practitioners in the field.

Note

[1] Outward Bound was founded in Wales in 1941 by Kurt Hahn. Hahn believed that placing people in challenging outdoor situations helped them to gain confidence, redefine their perceptions of their abilities, demonstrate compassion, and develop a spirit of camaraderie with their peers. Hahn spread his ideas of experiential education throughout Europe, and in the 1950s, Josh Miner, an American, began the process of bringing Outward Bound to the United States.

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