Deep Impact: How a Job-Embedded Formative Assessment Professional Development Model Affected Teacher Practice

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Abstract

This study supports the work of Black and Wiliam (1998), who demonstrated that when teachers effectively utilize formative assessment strategies, student learning increases significantly. However, the researchers also found a "poverty of practice" among teachers, in that few fully understood how to implement classroom formative assessment. This qualitative case study examined a series of voluntary workshops offered at one middle school designed to address this poverty of practice. Data were gathered via semi-structured interviews. These research questions framed the study: (1) What role did a professional learning community structure play in shaping workshop participants' perceived effectiveness of a voluntary formative assessment initiative? (2) How did this initiative affect workshop participants' perceptions of their knowledge of formative assessment and differentiation strategies? (3) How did it affect workshop participants' perceptions of their abilities to teach others about formative assessment and differentiated instruction? (4) How did it affect school-wide use of classroom-level strategies?

Results indicated that teacher workshop participants experienced a growth in their capacity to use and teach others various formative assessment strategies, and even non-participating teachers reported greater use of formative assessment in their own instruction. Workshop participants and non-participating teachers perceived little growth in the area of differentiation of instruction, which contradicted some administrator perceptions.

Modern school administrators live in an age of choice. Educational consultants and test companies offer principals and superintendents potential solutions to their possible and imagined problems. Presented with an overabundance of programmatic options for implementing instructional initiatives, school administrators should carefully discern their cognitive value and predicted effectiveness. However, when these options are combined with imposed senses of urgency from state departments of education and local boards of education, leaders sometimes neglect the reflection necessary for making sound decisions.

School leaders are not entirely to blame for craving quick fixes to deep issues. High-stakes accountability systems and the No Child Left Behind Act of 2001 (NCLB) ushered in a form of public data reporting that, when misinterpreted, cost some schools and educators reputations and jobs. Rather than seek their problems' root causes, administrators and teachers hastily scrambled to "fix" their test scores. When they did, they often broadened their schools' program bases, purchasing off-the-shelf, packaged curricula, instead of simply focusing on good classroom instruction.

Schools needed teachers who clearly understood the curricular standards for which they were responsible, and who could communicate those standards in ways their students understood. Teachers needed to be able to assess their students' progress toward standards. Teachers then needed to be able to take logical next steps informed by assessment-derived data. These next steps would lead to differentiated instruction – helping students meet the standards, or enhancing the students' learning who had already met them. Schools did not need more test-taking strategies. Schools needed to equip their teachers with an instructional process proven to increase student achievement by clearly communicating progress toward an objective and aiding, through intervention and descriptive feedback, progress toward meeting that objective. Schools needed *formative assessment*.

This single-case study examines one collegial group's experiences with the formative assessment concept and process. Fourteen educators (12 teachers, one school curriculum leader, and one principal) volunteered to participate in a job-embedded *Formative Assessment Academy* designed and led by the authors. This study explores the six-month long process of implementing the Academy and evaluating its effectiveness.

Background

Formative Assessment and Kentucky's Core Academic Standards

In 2009, the State of Kentucky's newly drafted Senate Bill 1, or *SB1*, (S. Bill 1, 2009) included a definition of *formative assessment*, the first time the term was ensconced in state law. The Kentucky Association for School Councils (2010) described formative assessment as, "a process used by teachers and students during instruction to adjust ongoing teaching and learning to improve students' achievement of intended instructional outcomes" (p. 7). The definition implied more than the traditional means of assessment *of* learning (Assessment Reform Group, 1999).   Formative assessment was different than testing students at the end of units of study and then assigning grades for performance. Formative assessment was an ungraded process, resulting in descriptive feedback indicating levels of progress or denoting next steps for instructional and learning strategies (Popham, 2011b). Traditional assessment was only part of the entire formative assessment process.

Simultaneously, in 2010 Kentucky became the first state to adopt the *Common Core State Standards* (Common Core State Standards Initiative, 2010) in English/language arts and math before final drafts were even completed. Kentucky educators started working with the new standards in a series of network meetings beginning summer 2010. In addition to guiding familiarity with the new standards, and promising fewer but deeper standards, facilitators from the Kentucky Department of Education versed network participants in the language of Professional Learning Community (PLC) models and, implicitly, communication and organizational change theories. Teachers and administrators also practiced methods for recognizing effective classroom-level formative assessment, a centerpiece of this state-mandated "balanced assessment" approach, at these initial network meetings.

Most teachers acknowledged the formative assessment process as a best instructional practice before it was enacted into law; however, most also had merely a nebulous understanding of the whole process and how to overcome its logistical challenges (Popham, 2011a). Others, though, formatively assessed their students instinctively, particularly in elementary grades where standards-based reporting and anecdotal record keeping were

more commonplace. A primary reason for this informal, unintentional implementation of formative assessment was that classroom teachers had not been given ample opportunities to study the research supporting it or to adequately practice and reflect on teaching strategies to foster it (Chappuis, Commodore, & Stiggins, 2010).

Even though many currently practicing teachers lacked necessary skills to effectively implement the formative assessment process, the terms *formative* and *summative* were current buzzwords in education 44 years after Scriven (1967) first publicized them when writing about evaluation purposes. But, like other common educational terms (e.g., the acronym PLC for Professional Learning Community), they were also becoming distorted in their overuse and misinterpretations for individual purposes. Cauley and McMillan (2010) clarified:

> One way to think about formative assessment is to contrast it with summative assessment. Although formative assessment can be performed after a test, effective teachers use formative assessment during instruction to identify specific student misunderstandings, provide feedback to students to help them correct their errors, and identify and implement instructional correctives. (p. 1)

Teachers had long used summative assessment measures as standard-markers of student achievement. Likewise, states measured school effectiveness using summative procedures. Formative assessment, though (with its sibling, interim, or *interim-benchmark*, assessment) only recently garnered the attention previously afforded summative assessment.

Taken together, formative, interim and summative assessments comprised what became commonly known in school districts as components of a *balanced assessment system* (Chappuis et al., 2010). Chappuis et al. (2010) contended that of the three assessment possibilities, daily classroom-level assessment for learning (or formative assessment) was most integral to student improvement and success. They stated that teacher and administrator assessment literacy was a prerequisite for successful formative assessment implementation. These authors also placed the onus of responsibility for teaching assessment literacy and effective use of formative assessment squarely on the shoulders of school administrators and higher-education authorities. Ironically, they wrote that even though

research had proven formative assessment's effectiveness, "historically, (classroom-level formative assessment) has been almost completely ignored as a school improvement tool" (p. 16). Schools needed formative assessment, but school leaders had not proven that they could support a formative assessment initiative that would translate to meaningful change.

One of our initial tasks, then, was to foster new ways of thinking about formative assessment practices. The foundational *Black Box* study (Black & Wiliam, 1998) provided a logical starting point. Black and Wiliam (1998) explored these questions: "Is there evidence that improving formative assessment raises standards? Is there evidence that there is room for improvement? Is there evidence about how to improve formative assessment?" (p. 140). Educators who read and reflected upon this study discovered its findings could inform their own practice, and that formative assessment positively affected student achievement, particularly "low achievers more than other students and so reduces the range of achievement while raising achievement overall" (p. 141). Reflecting on the seminal study, Black, Harrison, Lee, Marshall, and Wiliam (2004) later wrote, "We were convinced that enhanced formative assessment would produce gains in student achievement, even when measured in such narrow terms as scores on state-mandated tests" (p. 11). Other researchers explored and confirmed additional components of effective formative assessment. Researchers such as Cauley and McMillan (2010) and others (Chappuis, 2009; Sadler, 1989), for example, noted the power of student self-assessment and descriptive feedback as integral components of a balanced assessment system generally, and of effective formative assessment specifically, targeting not only student achievement but also student motivation. Chappuis et al. (2010) argued that student motivation was a necessary precursor to student achievement.

The formative assessment process, then, could increase student achievement as measured by various methods, including those that resulted in NCLB public reporting. Formative assessment initiatives needed sound structures to ensure their intentional implementations, though. Similar instructional initiatives utilized the Professional Learning Community structure. Some leaders found that this familiar structure might also support the implementation of a formative assessment initiative.

Professional Learning Communities

It was important that schools focus on a few things at a time and implement those few things correctly and to fidelity (Schmoker, 2011). The structure by which schools did this work was equally important. Recognizing this need, a handful of innovative educators devised Professional Learning Communities (PLCs) to give schools focus and consistency in their improvement efforts.

Teachers and school administrators once worked in isolation. Administrators proceeded with the minutiae of running schools while teachers closed their individual doors and went about their own business. Those were days when a solitary method of working was status quo; those were also days of curricular chaos combined with comparatively minimal school accountability. However, with school reform, organized curriculum maps that were informed by state standards replaced the former chaos. High-stakes accountability systems that measured student learning, but also teacher and administrator effectiveness, replaced minimal accountability. Additionally, this method of accountability resulted in sanctions and improvement plans for schools and districts that did not meet a prescribed standard. Most disquieting to some, work that necessitated opening classroom doors, administrator visibility, and collegial cooperation replaced isolation.

The culture shift from isolation to inclusion was difficult for some teachers who were accustomed to, and preferred, separation. Holdouts from the era of isolation encountered difficulty in the forms of parent complaints and corrective action plans. Administrators were also challenged to shift from roles of school managers to those of instructional leaders. However difficult the transition, a modern school whose faculty members do not currently operate under some auspice of a Professional Learning Community is rare.

Components of Professional Learning Communities were long evident not only in schools but also in other societal sectors. Social Identity Theory (Tajfel, 1970, 1972, 1978, 1981; Tajfel, Billig, Bundy, & Flamant, 1971; Tajfel & Turner, 1979), implicit in the structure of PLCs, helps explain why they work. Generally, the theory stated that group members followed the expected rules and behaviors set forth by their other colleagues within the same group. The theory also stated that group members identified with

other members of their group even when the individuals had little in common other than the group's work. Social Identity Theory explains why PLCs, intentional in their processes, *unintentionally* and informally function as they do. All social groups instinctively operate that way. However, the intentional, formal aspects of real Professional Learning Communities explained why meaningful ones worked, and, in contrast, why some groups were "PLCs" in name only.

DuFour and Eaker (1998) built upon small group communication components of Social Identity Theory (Tajfel, 1982) and organizational change theory (Kotter, 1995; 1996) to make the PLC structure marketable. Professional Learning Communities would distinguish themselves from other school-based group meetings. True PLCs would be job-embedded, collegial groups of teachers and administrators who worked together for positive change in curriculum, instruction, or assessment. The authors and others in their *Professional Learning Communities at Work* organization offered numerous resources (DuFour & Eaker, 1998; DuFour, DuFour, Eaker, & Karhanek, 2004; DuFour, DuFour, & Eaker, 2006; Eaker, DuFour, & DuFour, 2002; Eaker, DuFour, & DuFour, 2007; Graham & Ferriter, 2009; DuFour, DuFour, Eaker, & Karhanek, 2009; Campbell, 2011) and professional development opportunities. Unlike some of their contemporaries, though, DuFour and Eaker (1998) were clear that PLCs were not a NCLB magic bullet. DuFour and Eaker emphasized the need for shared group norms and a focus on the important issues of running a school (e.g., curriculum, instruction, assessment). Only PLCs maintaining this kind of focus deserved the title "PLC."

A group of unique individuals with distinct personality types could only achieve a common purpose, vision, and mission using a structure of meaningful Professional Learning Communities (PLCs) that remained true to their original focus on curriculum, instruction, or assessment. Higher-functioning PLCs collaboratively developed group norms to guide their work (DuFour & Eaker, 1998). PLCs were not for advancing group members' individual agenda items; PLCs operated ultimately for transforming curriculum, instruction, and assessment for the good of the student (DuFour & Eaker, 1998). Eaker et al. (2002) confirmed the following:

> Schools that function as professional learning communities are *always* characterized by a collaborative culture. Teacher isolation is replaced with collaborative processes that are deeply embedded into the daily life of the school. Members of a PLC are not 'invited' to work with colleagues: they are called upon to be contributing members of a collective effort to improve the school's capacity to help all students learn at high levels. (p. 5)

PLC implementation could not happen overnight. PLCs could not provide quick fixes to change issues requiring deep thought, planning, and reflection. According to Eaker et al. (2002),

> While embracing the abstract idea of the PLC model, (some school and district leaders and teachers) lack confidence in their ability to move from abstraction to implementation, from promise to reality in their own settings. Thus, it is common for participants in our workshops to seek the step-by-step recipe they can follow to create a PLC in their own school. The bad news, of course, is that no such recipe exists. (p. 2)

Additionally, following its inception, the term "PLC" became such a buzz phrase in the education community that thoughtful school leaders invested time educating their teachers about the differences between a true PLC (which might focus on deep curricular change) and a traditional faculty meeting (which might focus on upcoming school events or other such "business" items). When implemented with fidelity, PLCs provided the logistical and structural basis for implementing change focused on elements of a school's or district's instructional program.

School leaders could support a meaningful Professional Learning Community in order to implement a formative assessment initiative. To do so, they would also have to embrace the organizational change theory that was integral to both.

Application of Change Theory for Deep Implementation

Even supported by the structure of a high-functioning Professional Learning Community, a formative assessment initiative required deep institutional change, not only in instructional practice but also in culture.

Change theories helped illustrate why such initiatives requiring deep, and initially overwhelming, change could still be successful. DuFour and Eaker (1998) cited Kotter's (1996) principles of successful change for PLC work to be lasting and effective because much of the work on which these collegial learning communities centered was that of impending, or occurring, change in a school or district.

Kotter (1995) broke change phases into eight distinct steps. Kotter identified the following: creating a sense of urgency, forming a powerful coalition, creating a vision, communicating the vision, removing barriers, creating short-term wins, building on change, and anchoring the change in the organization's culture. Considering these steps, we drew parallels to Kotter's change theory and the implementation of a formative assessment initiative known as *The Formative Assessment Academy*.

The Formative Assessment Academy

When formative assessment became a component of legislation, the authors and their school district colleagues had just undergone a curriculum revision process during which teachers in the district deconstructed state curriculum standards and rewrote them as student-friendly learning targets. Some teachers and administrators quickly grew eager for the next step. We were a small school district, but even schools within small districts operate at their own readiness and knowledge levels. One school, whose teachers and administrators deeply engaged in the curricular revision process, and who regularly revisited it in high-functioning Professional Learning Communities, was ready for the next instructional step before the others. When the principal approached the authors about moving forward, we were initially apprehensive about taking the formative assessment leap before we felt they were ready, but we agreed to test the waters.

We presented a summary of, and rationale for, all the work we had done with curricular standards and learning targets to this school's entire staff. Then we offered a vision of where this work was leading us. In essence, we restated what most of those teachers and administrators already knew: the learning targets we had spent the previous year writing and revising meant very little as stand-alone statements. Yes, communicating standards in student-friendly terms was already exponentially more effective than simply presenting a standard to learners verbatim from the state's

curriculum document. We knew these teachers sensed there was another purpose, though. That purpose was for the means of better formatively assessing their students. More effective formative assessment processes would translate to increased student learning and achievement.

We demonstrated how the formative assessment process fit within the greater instructional program of the school and district. In this demonstration, we created the model shown in Figure 1 to illustrate the components of a high-functioning school district's instructional program. A PLC structure supported all initiatives that were currently in place. These initiatives informed and were informed by the others; none could effectively survive in sequestration.
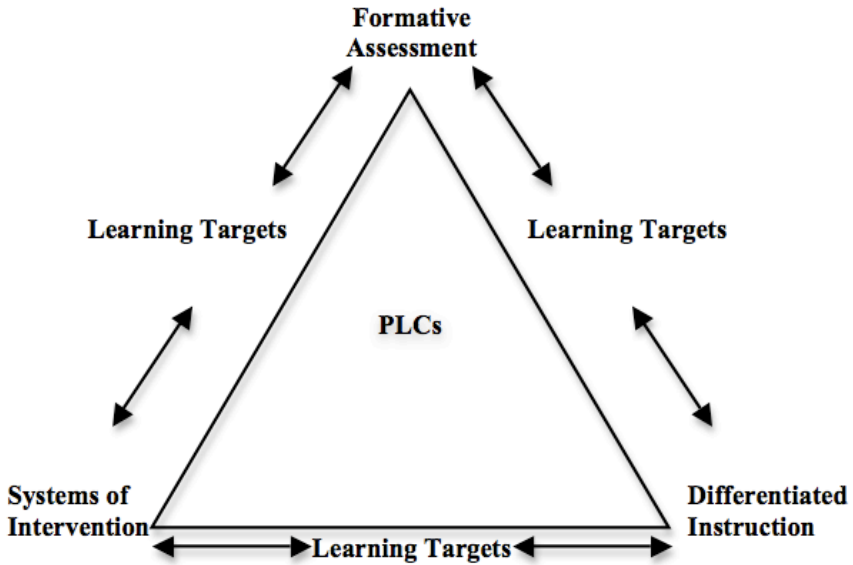

Figure 1. A graphic representation of a high-functioning school district's instructional program demonstrates the interdependent relationships of all necessary components (e.g., formative assessment, systems of intervention, differentiated instruction, and learning targets) supported by collegial learning communities.

We explained in general terms the formative assessment process and how teachers might implement and manage it in their classrooms. Teachers viewed examples of some formative assessment strategies and reflected on what they were already doing that could be considered components of the greater formative assessment process. Then we offered what their principal claimed they had been asking for.

Beginning the next month, we would meet after school in a Professional Learning Community to collegially study the formative assessment process. During the meetings we would remain focused strictly on curriculum, instruction, and assessment decisions made for the improvement of student learning. And we would collegially help each other internalize and implement the content so that we operated in a safe, contemplative environment. These teachers knew how real PLCs operated, as opposed to faculty or committee meetings masquerading as Professional Learning Communities. Because of this, they maintained high expectations for each other's commitment and active participation.

We would not offer professional development credit for the meetings. Enhanced professional learning was the only enticement. The authors did not promise to make the participants formative assessment and differentiation experts; however, we did promise to collegially explore issues surrounding these topics. We would study research, look at strategies, discuss practices, and help each other become better practitioners. And it would be strictly voluntary. If teachers wanted to participate, then they would be expected to *fully* participate (e.g., in discussion, in practice). By the end of the final session, participants would also be prepared and expected to share their knowledge with others. If they felt that they were not ready for this step, then there would be no retribution for non-participation. The authors combined learning community philosophy (DuFour & Eaker, 1998; DuFour et al., 2006) with the contemplative leadership concept (Merton, 1961, 2004; Steindl-Rast, 1999; Palmer, 2000) to create a unique, special community where being wrong was okay and where being vulnerable was accepted.

This first incarnation of the Formative Assessment Academy met monthly over a period of the following six months. Sixteen educators at Worthe Valley Middle School (WVMS) in the Worthe Valley School District, Worthe Valley, Kentucky, USA (pseudonyms of places and research study participant names used throughout the study) initially

volunteered to participate in the Academy during which they would read and discuss relevant research, apply that research to practice, learn new classroom strategies, and collegially debrief strategies implemented after the previous meeting. By the onset of the first session, the number was 15, and finally, after concluding the first session, settled at 14 after one teacher opted out of workshop participation.

Purpose of the Study

The Formative Assessment Academy's ultimate goal was to enhance classroom practice. The authors attempted to achieve this goal by: (a) equipping teachers with foundational knowledge of classroom-level strategies, along with tools and increased levels of confidence in their own abilities to disseminate the pedagogy to their teaching-team colleagues; and (b) providing school leaders who were seeking to build capacity among their teachers and who were seeking to meet the letter of the law, but in a meaningful way, an implementation process to follow.

Research Questions

Four research questions framed this study:

1. What role did a professional learning community structure play in shaping workshop participants' perceived effectiveness of a voluntary formative assessment initiative?

2. How did this initiative affect workshop participants' perceptions of their knowledge of formative assessment and differentiation strategies?

3. How did it affect workshop participants' perceptions of their abilities to teach others about formative assessment and differentiated instruction?

4. How did it affect school-wide use of classroom-level formative assessment strategies?

Conceptual Framework for the Study

Leaders must consider adult learning needs for effective, lasting implementation of any professional learning experience (Drago-Severson, 2008). Additionally, whole group, one-day professional development sessions are not as effective as the same learning in a collegial group over

time (Chappuis, Chappuis, & Stiggins, 2009). These collegial groups form a cohesive structure, in part because of their subconscious observance of Social Identity Theory (Tajfel & Turner, 1979; Lave & Wenger, 1991; Wenger, 2007) principles. An ongoing, effective, job-embedded Professional Learning Community structure (DuFour & Eaker, 1998) could support meaningful classroom formative assessment implementation (Black et al., 2004).

The literature reviewed for this study formed a conceptual framework for the *Formative Assessment Academy* conducted in the case study school district (see Figure 2). Schools and districts seeking a structure to support meaningful and lasting change may use this research-informed model to effect meaningful change in classroom practice and in student learning.
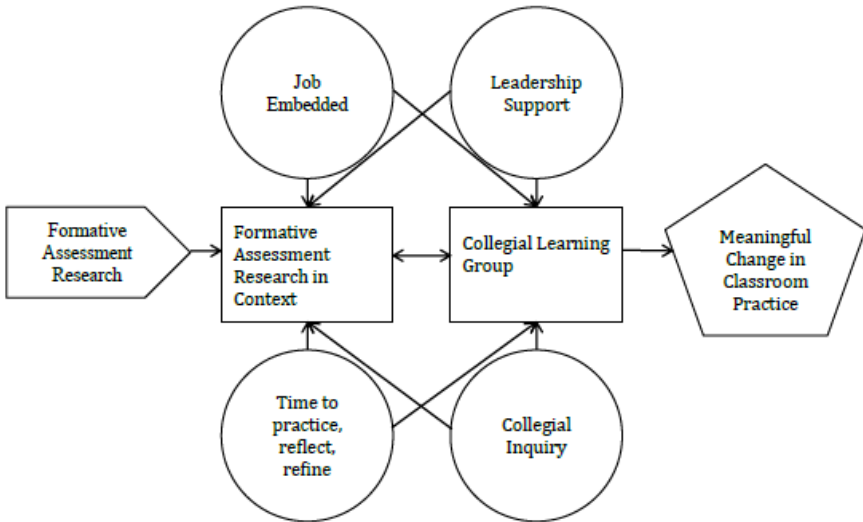

Figure 2. The Formative Assessment Academy conceptual framework demonstrates the relationships between and among research, adult learning principles and lasting instructional change.

Methodology

Design

This study utilized a qualitative single-case study approach. Patton (2002) stated, " a single case study is likely to be made up of many smaller cases – the stories of individuals, families, organizational units, and other groups" (p. 297). Patton's point is reflected in this study's design. The authors interviewed not only Formative Assessment Academy participants, but also their colleagues who did not participate, and school- and district-level administrators who supervise their instruction.

While a case study approach best suits this particular study, Wolcott (2009) warned that if a case, or narrative, approach was utilized then more-than-ample detail regarding the specific methods of collecting data was necessitated. The authors' narrative of thick, rich description (Geertz, 1973; Lincoln & Guba, 1985; Strauss & Corbin, 1990) provides this level of individual and contextual detail. Vivid description allows the reader to compare information from one case to others (Lincoln & Guba, 1985).

Data Collection

The authors approached data collection as a form of historic artifact collection (Busha & Harter, 1980). We collected and recorded perception data as participants articulated them. Data collection consisted of semi-structured interviews with teacher workshop participants, teacher participants' colleagues, and administration. Administration in this context is defined as former school principal, school assistant principal, former school curriculum leader, and school district superintendent. Table 1 shows relevant demographic information for all research study participants (using pseudonyms for all names). It should be noted that every teacher workshop participant did not participate in the resulting research study.

We constructed three sets of interview questions that addressed each research question for use with the three stakeholder groups: the teacher workshop participants (TWP), colleagues of the teacher workshop participants (C), and administrators who either participated in the workshop or who supervised the teacher workshop participants and their colleagues (A).

Table 1.
Demographic information for all research study participants. Identifiers denote teacher workshop participants (TWP), colleagues of the teacher workshop participants (C), and participating or supervising administrators (A).

_____

Name (pseudonym)	Identifier	Subject Area or Administrative Role
Sheryl Banta	C	Special Education
Violet Benedetto	A	Curriculum Leader
Jennifer Brewer	A	Principal
Hugh Brown	C	Social Studies
Max Chaffins	C	Social Studies
Debra Darden	TWP	Science
Naomi Davison	TWP	Math
Eric Deegan	TWP	Science
Sharon Farrante	TWP	Math
Lonnie Hollin	C	Math
Tyrone Ketcher	A	Assistant Principal
Sabrina Leverett	TWP	Science
Kimberly McCoy	C	English/Language Arts
Harriet Petty	C	Social Studies
Cody Rossow	TWP	Social Studies
Clinton Schull	A	Superintendent of Schools
Kay Smyth	TWP	Math
Michelle Sutphin	TWP	Math
Mattie Wesley	TWP	Music

Participant Interview Questions

Research Question 1

(TWP, C, and A) 1. What is your definition of a *professional learning community* at this school? Probe: How did you arrive at that definition?

Research Question 2

(TWP) 1. How confident are you in assessing your students *for* learning this year? Probe: What evidence supports that?

(TWP) 2. How confident are you in differentiating instruction for your students this year? Probe: What evidence supports that?

(TWP) 3. Do your responses to either question 2 or question 3 indicate changes from last year? Probe: To what do you attribute those changes?

(C) 1. Have your colleagues shared (or, to your knowledge, have they been given opportunities to share) classroom-level formative assessment strategies? Strategies for differentiating your instruction? What were the results of this sharing?

(A) 1. How confident are the formative assessment academy participants in assessing their students *for* learning this year? Probe: What evidence supports that?

(A) 2. How confident are the formative assessment academy participants in differentiating instruction for their students this year? Probe: What evidence supports that?

Research Question 3

(TWP) 1. Have you shared (or have you been given opportunities to share) your knowledge about classroom-level formative assessment? About differentiation of instruction? Probe: If so, what have been the results of this sharing? Probe: If not, are there plans in place to allow sharing, or has informal sharing already taken place? What were the results of this sharing?

(C) 1. Have your colleagues shared (or, to your knowledge, have they been given opportunities to share) classroom-level formative assessment strategies? Strategies for differentiating your instruction? What were the results of this sharing?

(A) 1. Have the original formative assessment academy participants shared (or have they been given opportunities to share) their knowledge about classroom-level formative assessment? About differentiation of instruction? Probe: If so, what have been the results of this sharing? Probe: If not, are there plans in place to allow sharing, or do you perceive that informal sharing has already taken place? Probe: What evidence supports that?

Research Question 4

(TWP) 1. Have you used more formative assessment strategies in your classroom this year?

(TWP) 2. Are your colleagues using more formative assessment strategies in their classrooms this year? Probe: To what do you attribute the increase?

(C) 1. Are you using more formative assessment strategies in your classroom this year? Probe: To what would you attribute the increase?

(A) 1. Have you measured an increased use of classroom-level formative assessment strategies in this school this year? Probe: By whom? Probe: What evidence supports that?

The authors chronicled participants' responses with a digital audio recorder supplemented by written notes.

Data Analysis

Thematic patterns emerged from transcribed interview responses. The authors utilized *naturalistic inquiry* (Lincoln & Guba, 1985), and followed an interview protocol. The results of the protocol, while predicted, were not guaranteed. The authors' primary goal was to allow the data to speak first for itself. We then detected emerging data patterns.

Interview data were coded using constant comparative analysis (Glaser & Strauss, 1967). We first examined and categorized each interview response. However, the process was recursive. Previous categories were reviewed each time a datum was coded and categorized. This procedure allowed us to be cognizant of emerging patterns in the data not at first evident. The authors also used tables and data displays to convey results in order to aid reader accessibility (Miles & Huberman, 1994).

Trustworthiness of Data

In qualitative research, trustworthiness is the researcher's method of getting the reader to pay attention to results, and to believe that the results matter (Lincoln & Guba, 1985). Lincoln and Guba (1985) identified "truth value, applicability, consistency, and neutrality" (p. 290) as elements of a study's

trustworthiness. Three principal methods helped ensure the trustworthiness of this study: member checks (Lincoln & Guba, 1985), thick, rich description (Geertz, 1973), and triangulation (Denzin & Lincoln, 2008).

Summary, Implications, and Conclusions

Summary of Results

Research Question 1

The Professional Learning Community structure played an important role in the conception and sustainability of the Formative Assessment Academy professional development model. Research Question 1 examines the structure's effectiveness. The authors' findings suggest connections between participants' perceptions of the PLC's effectiveness, adult learning theory, and previous literature. If participants responded affirmatively to the Academy's effectiveness, we asked participants to what they attributed its success. Consistently, participants explicitly referenced the Professional Learning Community structure, implicitly noted principles of high-functioning PLCs (e.g., collaboration), or both.

Principal Jennifer Brewer explicitly connected the *implicitly* collegial nature of the Formative Assessment Academy PLC to increased student achievement at Worthe Valley Middle School:

> Grades have improved. You walk into the classrooms and the learning environment has been adjusted to match teaching and learning styles. The collegial talk you hear – the discussions – they [WVMS teachers] feel like the students have been more successful. And they feel as if they have helped *all* students, and not just those who come to their classrooms eager to learn. (JB, 5/20)

Ms. Brewer's comments echoed previous researchers' and authors' findings on true PLCs (Black et al, 2004; DuFour & Eaker, 1998; Jackson & Street, 2005) and principles of more effective adult learning (Drago-Severson, 2008).

Ms. Brewer also cited the PLC-based Academy's power of building teacher leadership when talking about teacher participants' growth: "They

are certainly sharing their knowledge. And that speaks to their confidence levels – they're willing to get up in front of their peers and talk about their practice to help others improve" (JB, 5/20). Similarly, Assistant Principal Tyrone Ketcher noted other areas of teacher instructional planning involvement, stating, "I really feel like teachers have enjoyed the opportunities to *get in and do* those types of things" (TK, 5/27). And Superintendent Clinton Schull noted that all PLC participants, including teacher participants, collaborated to "solve problems of practice" to help their schools meet instructional goals (CS, 5/26).

Teacher participant colleagues Kimberly McCoy and Hugh Brown discussed the power of the Professional Learning Community structure in receiving the participants' formative assessment knowledge. Mr. Brown noted that the PLC structure allowed an "opportunity for some experienced teachers to educate or give knowledge they've gained … to [other] teachers here to help them be better in classrooms" (HB, 5/27). Primarily, though, the teacher workshop participants expressed their own ownership and growth.

Participant Naomi Davison stated that she had grown more comfortable assessing her students *for* learning this year because she had learned to be more intentional about the process and "because we were having those PLC meetings. Every so often I had to make sure I had what I needed. It was a *priority*. And then it became a *habit*" (ND, 5/27). She further explained how a commitment to her PLC colleagues contributed to her own professional growth:

> I was thinking, 'I've got to do this or I'm not going to have anything to talk about and share.' I knew I wasn't going to get in trouble, but at the same time I wanted to be able to help everybody grow. Why do something if it's not going to be meaningful? (ND, 5/27)

Ms. Davison added that her colleagues' support was an important component of her own learning: "It's not 'sit and get,' but it's more, 'Sit, and let's learn together – and *do*" (ND, 5/27).

Participant Mattie Wesley also focused on the collegial, supportive power of the PLC structure:

> What I like [about PLC structures] is that they're positive. [We focus on] what we can do to make things better. I like it because it's open and it's very collegial. We share ideas and nobody's are shot down as too big or too out of the ordinary. We get lots of good ideas just hearing people talk and share. (MW, 5/26)

Participants Cody Rossow and Kay Smith responded similarly, but more succinctly. Ms. Smith stated about the Academy's structure, "I think it's all just [collaborative] experience – from the Professional Learning Community – discussing with other teachers what they're doing and what needs to be done" (KS, 5/26). When asked why he felt his practice had changed, Mr. Rossow replied, "I really would attribute those changes in practice to the Academy" (CR, 5/27).

Research Question 2

Teacher workshop participants reported increased uses of classroom-level formative assessment strategies. These teachers also primarily attributed the increased uses to their participation in the Formative Assessment Academy. Naomi Davison stated, "I'm much more confident. Before the Academy I knew formative assessment was good. I got background in [an educational cooperative's initiative] but I still didn't know how to use it" (ND, 5/27). Mattie Wesley agreed, "Nobody ever told us what to do with it before – I gained an understanding of what to do with the information and how you move on" (MW, 5/26).

However, all teacher participants agreed that differentiation of instruction remained an area for continued professional growth. One administrator, Superintendent Clinton Schull, agreed that teachers needed more training to effectively differentiate instruction. Former curriculum leader Violet Benedetto felt teachers' differentiation abilities went "across a continuum," or *varied* (VB, 5/20). In contrast, two administrators, Jennifer Brewer and Tyrone Ketcher, felt that teacher participants grew more in the area of differentiation of instruction than the teachers realized or would admit. Tyrone Ketcher stated, "I think they do a lot more than they give themselves credit for, but I would say they would tell you they're not confident at all" (TK, 5/27). Additionally, Jennifer Brewer explained, "I'll be honest: I think they're a lot more confident, but again, they're

comparatively more confident. They're coming from a level of not really doing it that often" (JB, 5/20).

Alternately, one administrator agreed with teacher participants. According to Superintendent Clinton Schull, "I think there are *efforts* to differentiate. You know, I see from time to time center-based activities, but typically all the kids in class do all those things. I still believe we are trying to figure it out" (CS, 5/26).

Participants consistently used qualifying language to articulate their hesitancy to claim any differentiation of instruction expertise. Michelle Sutphin stated, "I feel like I could do it. I just don't feel confident in doing it very well" (MS, 5/26). Cody Rossow said, "I'm still getting my feet wet" (CR, 5/27). Naomi Davison agreed, "Well, I know how to differentiate instruction. I think I could always get better" (ND, 5/27). Two teacher participants, Eric Deegan and Michelle Sutphin, reported that they would feel more confident differentiating instruction if effective logistical models existed from which they could pattern their own differentiated classrooms. However, teacher participant Naomi Davison pointed out that new state curricular standard implementation would make differentiation a necessity:

> When we implement the new standards, we're going to see [learning] gaps and we are all going to have to differentiate. Those standards are going to force us to get better at differentiation in order to accomplish what we need to do. (ND, 5/27)

Data for this research question also revealed some teacher participants' perceptions about their abilities to differentiate for all levels of student readiness in their classrooms. Kay Smyth stated, "I feel like I do a better job differentiating for my lower level students this year. But I don't feel very confident differentiating for accelerated students" (KS, 5/26). Sabrina Leverett agreed, "I don't feel as if I do a good job pushing students who need to be accelerated" (SL, 5/26).

The authors designed the Formative Assessment Academy to change classroom practice. Formative assessment strategy use increased. Participants and colleagues developed new and growing understandings of formative assessment as a *process*. However, we did not *observe* the formative assessment process. Additionally, participants and colleagues still did not feel confident enough to effectively differentiate their instruction.

While the Formative Assessment Academy included a differentiated instruction component, the authors spent comparatively less time on the differentiation component than on the formative assessment strategy and process components. Some teacher participants and administrators recognized that learning and growth remained in the area of differentiated instruction.

Research Question 3

Results of data analysis for Research Question 3 revealed levels of sharing formative assessment strategies and differentiation methods, which then implied participants' confidence levels and *willingness* to share their new knowledge. The authors asked workshop participants, participants' teaching colleagues, and administrators about opportunities for sharing strategies and methods since a secondary, if unwritten, goal of the Formative Assessment Academy was collegial dissemination of pedagogy to teacher non-participants. All stakeholder group members proclaimed the benefits of teacher participants' sharing formative assessment strategies in professional development workshops or during the school district's *New Teacher Institute*, a three-day required workshop before the beginning of the school year for all teachers new to the district. Again, stakeholder groups noted differentiation of instruction as an area for more work. Assistant Principal Tyrone Ketcher stated, "Teacher participants have not done a lot of sharing [methods for differentiating instruction], but I have already decided that will be the focus of one of our professional development days this summer" to begin to respond to this growth area (TK, 5/27).

While analyzed data from this research question *implied* a response about teacher participants' willingness to share knowledge, the data did not *explicitly* respond. In future studies, the authors would revise the interview protocol to elicit explicit responses.

Research Question 4

Finally, an analysis of data for Research Question 4 revealed perceptions of the school-wide use of classroom-level formative assessment strategies. Consistently, teacher participants and administrators agreed that participation in the Formative Assessment Academy resulted in increases of

strategy use in their classrooms. Also, all but one non-participant colleague said that their own classroom-level formative assessment strategy use increased because of the Academy participants' sharing.

All teacher workshop participants reported increases in their own formative assessment strategy practice. Most of the participants simply affirmatively responded. Others were more enthusiastic. Debra Darden replied, "Oh, yeah. Definitely. More than double [the use of formative assessment strategies] this year. This year I have *mindfully* integrated a lot more" (DD, 5/27). Naomi Davison agreed, "Definitely. I try to include formative assessment in *every* section or unit I teach now" (ND, 5/27). And according to Eric Deegan, "I would say *absolutely*" (ED, 7/14). Research subjects offered primarily anecdotal evidence; however, some teachers mentioned classroom data, and some administrators noted formal and informal classroom observation evidence of Academy participants and their non-participant colleagues.

Implications for Stakeholders and Future Researchers

Suggestions for Schools and School Districts

Principals and central office administrators should evaluate recent professional development offerings' effectiveness and consider implementing learning opportunities modeled from the Formative Assessment Academy approach. School and district leaders should support implementing more collegial inquiry groups, or Professional Learning Communities, as structures for meaningful teacher professional growth. Schools and school districts should also continue to address the need for assessment literacy (Stiggins, 2004). Central office administrators should offer mandatory and ongoing formative assessment learning for cadres of new teachers, while principals and curriculum leaders should offer voluntary Formative Assessment Academy sessions to groups of volunteers within their schools. If schools such as Worthe Valley Middle School do not offer continuous school wide Professional Learning Community training to their incoming staff members, then formative assessment training should be mandatory for all new teachers and administrators. However, once staff members become part of the school's culture, a voluntary, train-the-trainer model could be favorable. When adult learners

volunteer to participate in professional development initiatives, rather than have their participation forced, deeper learning takes place (Knowles, Holton, & Swanson, 1998). Leaders should also offer Advanced Formative Assessment Academies for participants to deeply explore data use to inform instruction, student self-reflection, and grading implications. Advanced Formative Assessment Academies should focus less on classroom strategies and more on formative assessment as a *process* (Popham, 2008).

Additionally, school districts should offer leadership academies for school and central office administrators, to include a contemplative leadership component. Informed by the work of The Merton Institute for Contemplative Living (2010) the authors described leading contemplatively as leading with a combination of boldness and compassion. Too often school administrators do not show their compassionate sides for fear of being deemed ineffective or "weak." We contend that compassion, not to be confused with weakness or naiveté, is another integral adult learning principle. Contemplative leadership informed all elements of our work as school district supervisors of instruction, including facilitating the Formative Assessment Academy. Formative Assessment Academy participants noted administrative leadership support and follow-up as reasons for their own buy-in. We utilized adult learning principles (Knowles, 1968; Drago-Severson, 2008) and contemplative leadership principles (Merton, 1961, 2004) to effectively support teacher workshop participants. Principals and central office administrators should study and reflect on formative assessment, meaningful adult learning principles, communication styles, and contemplative leadership. After their study, if the capacity to support meaningful collegial inquiry groups still does not exist because of a lack of administrative leadership engagement in or support of adult learning principles and contemplative leadership, then district leaders should seek assistance from outside consultants.

Finally, schools and districts should continue formative assessment work, but also begin similar levels of work in differentiated instruction. Differentiation of instruction was only a secondary focus of the Formative Assessment Academy. School leaders should create Differentiated Instruction Academies modeled on the Formative Assessment Academy structure, during which differentiation of instruction would be the primary focus. School and district leaders could research, create, pilot test, and then share logistical models of effective differentiated classroom instruction.

Leaders should address teacher perceptions of students who need differentiated instruction. Some study participants commented on their abilities to differentiate for "lower level" students, but lamented their abilities to accelerate their "gifted students"; however, all students need differentiated instruction because of students' levels of readiness toward a given curricular standard (Tomlinson, 1999; 2001).

Suggestions for Teacher Leader and Principal Preparation Programs

Houchens (2008) suggested the need for increased university recruitment of principal candidates with tendencies toward self-reflection. Data from the current study suggested a PLC-based initiative, such as the Formative Assessment Academy, could foster self-reflection by allowing opportunities for meaningful collegial inquiry. University teacher leader and principal preparation programs should review their course offering requirements for foci on formative assessment, differentiated instruction, and adult learning principles. Both principal preparation and teacher leader preparation programs should continue to foster reflection in their course offerings. Higher education authorities should offer courses on effective leadership and communication styles in order to foster meaningful collegial inquiry groups resulting in true school reform. Teacher leader preparation programs should include adult learning research components, and should regularly reinforce effective professional development principles. Finally, university teacher leader and principal preparation programs should consider embedding contemplative leadership principles in their course offerings.

Suggestions for Future Researchers

While this study contributes to literature on effective formative assessment, adult learning principles, and Professional Learning Communities, its results offer suggestions to future researchers. The Formative Assessment Academy model has since been utilized in three other Worthe Valley schools. In two of the schools, participation was mandatory instead of voluntary. This study's single-case study research design could be expanded to a multi-case study to examine the comparative results of mandatory participation in the Formative Assessment Academy. The

authors perceived a greater willingness among volunteer participants to practice new strategies, as well as more opportunities for collegial inquiry among volunteer cadres than in cadres with mandated participation. Also, within those opportunities for collegial inquiry, volunteer participants displayed a greater willingness to be *vulnerable* and ask for their colleagues' and their supervising administrators' assistance to overcome obstacles.

Additionally, two neighboring school districts have implemented our Formative Assessment Academy model with district-wide cadres of volunteers. Researchers could examine the effects of district-wide voluntary participation compared to school-wide voluntary participation in the Formative Assessment Academy. Researchers could study the effectiveness of school-wide dissemination of new knowledge in both scenarios.

Also, veteran Worthe Valley teachers and administrators articulated an intentional process of developing Professional Learning Communities, while newer staff members conceptualized PLCs through informal collaboration and observation. Future research should be done to measure this PLC-immersion method's long-term impact on school culture. Researchers should examine the effectiveness and sustainability of PLC-based initiatives in schools that no longer intentionally train new staff members on PLC principles.

Finally, the authors strived for trustworthiness of data; however, our professional relationship with research subjects limited the study. Additionally, our interview protocol limited subjects' responses. Future researchers could replicate this study in other schools utilizing revised interview protocols to elicit specific examples of strategy use and willingness to share new knowledge, as well as to glean more explicit links between the initiative's effectiveness and its PLC structure.

Conclusions

This study contributes to literature supporting formative assessment's positive instructional implications. However, this study also contributes to literature that suggests adult learners have different and varying needs. High-functioning Professional Learning Communities that allow adults job embedded opportunities to collegially practice and reflect upon new concepts are effective structures to support learning.

Meaningful collegial inquiry and professional growth take place when school leaders and district administrators are reflective enough to support true Professional Learning Communities. As suggested by Worthe Valley Middle School's Formative Assessment Academy experience, this sort of reflective practice can result in a positive, deep impact on leadership, teaching, and learning.

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