

How Teachers Change:

A Study of Professional Development in Adult Education

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**NCSALL Reports #25
November 2003**



National Center for the Study of Adult Learning and Literacy

Harvard Graduate School of Education
101 Nichols House, Appian Way
Cambridge, MA 02138

NCSALL Reports are funded by the Educational Research and Development Centers program, Award Number R309B60002, as administered by the Office of Educational Research and Improvement, U.S. Department of Education, through contract to Harvard University. The content of NCSALL Reports does not necessarily represent the positions or policies of the Office of Educational Research and Improvement, or the U.S. Department of Education, and you should not assume endorsement by the Federal Government.

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- "The Working Conditions of Adult Literacy Teachers" (Smith, Hofer, & Gillespie, 2001) (Volume 4, Issue D). To download, click "Publications," scroll down to "*Focus on Basics*" and click "By title."

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ACKNOWLEDGMENTS

We would like to acknowledge the help of the following people in conducting this study:

Our research analysis team consisted of Cristine Smith, Judy Hofer, Marla Solomon, and Marilyn Gillespie. Judy Hofer coordinated the qualitative data analysis. Karen Rowe and Cristine Smith coordinated the statistical analysis of quantitative data. The research design team included Cassandra Drennon, Marta Mangan, Alison Simmons, Marla Solomon, Michele Sacerdote, Judy Titzel, Cristine Smith, and Judy Hofer. Gretchen Rossman and Stephen Sireci at the University of Massachusetts also provided advice.

The 15 professional development groups were facilitated by Michelle Sedor, Martha Merson, Tricia Donovan, Deborah Schwartz, Donna Curry, Sara Douglas, Bob Aubrey, Sally Riconscente, Velmar Byrd, Dianne Grenier, and Judy Titzel. Local professional development assistants, who audiotaped each professional development session and took notes, included Alicia Albert, Sharon Klufts, Madeleine Costa, Dona Ditrio, Denise Doherty, Michael Haines, Janice Armstrong, Myra Love, Sandra Mawford, Maryanne Pascone, Patricia Richards, Sharon Ultsch, and Jane Noll. Selina Welborn assisted with data collection in Connecticut. We had assistance from state professional development staff within Connecticut, Maine, and Massachusetts, including: Ajit Gopalakrishnan, Evelyn Beaulieu, and SABES staff (Sally Waldron, Bill Arcand, Diane McMullen, Margaret Farrey, Marcia Hohn, and Maria Gonzalez). Michele Sacerdote and Peter Tamas assisted ably with the analysis of the audiotapes of the groups and our rating of group quality. Jane Noll provided administrative support to the study.

Most of all, we would like to thank the teachers and program directors who participated in the study.

EXECUTIVE SUMMARY

The NCSALL Professional Development Study investigated how adult education* teachers changed after participating in one of three different models of professional development (multisession workshop, mentor teacher group, or practitioner research group), all on the same topic of learner persistence. The study also investigated the most important individual, professional development, program, and system factors that influenced the type and amount of teacher change. This study was conducted primarily to help professional development decision-makers plan and deliver effective professional development, and to understand the factors that influence how teachers change as a result of professional development.

The research question that guided our inquiry was:

How do practitioners change as a result of participating in one of three different models of professional development, and what are the most important factors that influence (support or hinder) this change?

The study design was based on the overall hypothesis that teachers change in different ways and amounts as a result of participating in professional development, and that multiple factors influence the type and amount of change practitioners experience as a result of professional development, including:

- Individual factors—their experience, background, and motivation as they come into the professional development
- Professional development factors—the quality and amount of professional development attended
- Program and system factors—the structure of and support offered by the program, adult education system, and professional development system in which they work, including teachers' working conditions

Methods

The sample consisted of 106 women and men from three New England states (Maine, Massachusetts, and Connecticut). One hundred of these teachers participated in up to 18 hours of professional development in either a multisession workshop, a mentor teacher group, or a practitioner research group; the other six people were nonparticipant teachers

* In this report, “adult education” refers to the broad range of basic and literacy education services for adults, including adult basic education, adult secondary education, and English for speakers of other languages.

who served as a comparison group. Representing a traditional professional development activity, the workshops were organized in multiple sessions and included experiential, active learning activities. Mentor teacher groups and practitioner research groups are considered “reform” types of professional development. As conducted for our study, the mentor teacher groups blended together features of study circles and peer coaching and observation. Practitioner research groups allowed teachers to investigate their own classroom practice by collecting and analyzing data to answer a question of concern to them. As noted previously, in all three models and across all three states, the topic was the same: learner motivation, retention, and persistence. From the 100 participants, 18 teachers were randomly selected (six from each model) to serve as a subsample. Participants were listed as completers if they attended at least two thirds (12 of the 18 hours) of the professional development required. If they completed less than 12 hours, they were considered dropouts. Total dropouts equaled 16 out of 100. Participants provided data to researchers through questionnaires and interviews before, after, and one year after participating in the professional development.

Our goal was to develop high-quality professional development in three different models appropriate for adult educators. The research team designed all three professional development models, using the best methods and accepted principles of adult learning and effective professional development. Experienced teachers or professional development leaders in each state, recruited and trained by the research staff, facilitated the professional development.

Findings

We had two measures of change (our dependent variables): 1) Overall amount of change (thinking and acting on and off the topic of the professional development—learner persistence), and 2) Type of change (thinking and acting on the topic of learner persistence).

How much did teachers change? Most teachers, even dropouts, changed at least minimally through gains in knowledge or actions in their classrooms; relatively few experienced no change at all. Almost all (90% of the whole sample, 95% of completers) gained some knowledge on the topic, but for many it consisted of only one or two concepts. The majority (78% of the whole sample, 87% of completers) took some action, on or off the topic, but for many it was very minimal.

In what role did teachers change? Changes were most often seen in teachers’ roles as classroom teachers (53%), rather than their roles as program members (20%), learners (7%), or members of the field (1%).

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In what ways did teachers change? The research identified four types of change: 1) no to minimal change, 2) thinking change (changes in thinking were greater relative to changes in acting), 3) acting change (changes in acting were greater relative to changes in thinking), and 4) integrated change. The four types of change represent the direction of “preferred change”: from “no or minimal change” at one end of the spectrum to “significant integrated” change at the other. However, we made no qualitative distinction between “thinking change” and “acting change”; both are preferable to “no change,” but less preferable than “integrated change.”

Therefore, we combined these four types of change into a three-category spectrum of change: (1) no change, (2) nonintegrated change (thinking or acting changes), and (3) integrated change. The majority (72%) of the 83 completers demonstrated change, most of which was nonintegrated change reflected in their thinking. Teachers who fell into the “integrated change” type (24%) also demonstrated a higher overall amount of change. They showed more sustained change, and in more arenas (classroom, program, and field).

What factors influenced teacher change? Multiple factors interacted to influence teacher change as a result of participating in professional development. The most important individual factors that related to change in our study included teachers’ motivation to attend the professional development, years of experience in the field of adult education, venue of first teaching experience, and level of formal education. To a somewhat lesser extent, teachers’ level of commitment to the field played a negative role in change.

The most important professional development factors included hours of professional development attended, and the quality of the professional development (both as rated by researchers and as perceived by teachers). Model of professional development in which the teacher participated was not a significant factor, although there were differences in patterns of change among the models. Whether teachers participated in professional development with other teachers from their program was another somewhat important factor that affected change.

The most important program and system factors included teachers’ access to benefits and prep time through their adult education job, and program’s history in addressing learner persistence coupled with teachers’ access to decision-making in the program. To a lesser but still important extent, other factors influencing teacher change included teachers’ access to paid professional development release time, collegiality, number of working hours, and freedom to make changes to the curriculum used.

Recommendations

While there are limitations to the generalizability of these findings outside of the New England area, professional developers should consider these findings and advocate for teachers to spend a greater number of hours participating in well-designed professional development. Program directors should consider how to: provide access to professional development, allow teachers greater say in decision-making, provide more opportunities for teacher sharing, and create well-supported jobs for their teachers.

Specifically, we propose the following recommendations, for policymakers in programs and states, for professional developers, and for teachers themselves.

For program directors and states:

- Improve teachers' working conditions, including access to decision-making in the program.
- Pay teachers to attend professional development.
- Increase access to colleagues and directors during and after professional development.
- Establish expectations at the state and the program level that all teachers must continue to learn.

For professional developers:

- Ensure that professional development is of high quality.
- Offer a variety of professional development models for teachers to attend, including program-based professional development.
- Help teachers acquire skills to build theories of good teaching and student success.
- Add activities to each professional development session to help teachers strategize how to deal with the forces that affect their ability to take action.

For teachers:

- Expect high-quality professional development.
- Recognize the need to develop a philosophy and theory of good teaching and student success.
- Work to increase opportunities for collegiality and teacher decision-making in their programs.

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- Advocate for paid prep time, professional development release time, and benefits as part of their adult education jobs.

This study is important to the field of adult education because, unlike K–12 research on professional development, it provides information about factors unique to adult education, such as program and working conditions, that influence teacher changes in thinking and acting after participating in professional development. Professional development is necessary but not sufficient by itself to help teachers learn about and adopt new practices that promise to improve the quality of service, and policymakers at the federal, state, and program level will need to understand and address these factors in an era of accountability that stresses improved student outcomes.

CHAPTER ONE: OVERVIEW OF THE PROFESSIONAL DEVELOPMENT STUDY

Introduction

This study was one of many sponsored by the National Center for the Study of Adult Learning and Literacy (NCSALL) during its first five-year phase (1996–2001). The goal of NCSALL is to improve the quality of practice in adult basic education, English for speakers of other languages, and adult secondary education programs through basic and applied research.

The NCSALL Professional Development Study was conducted with 106 adult education¹ teachers in three New England states (Connecticut, Maine, and Massachusetts) between 1998 and 2000. Teachers participated in one of three 18-hour professional development activities (either multisession workshop, mentor teacher group, or practitioner research group), and they provided data to researchers through questionnaires and interviews before, after, and one year after participating in the professional development.

The research question that guided the NCSALL Professional Development Study was:

How do practitioners change as a result of participating in one of three different models of professional development, and what are the most important factors that influence (support or hinder) this change?

This study was conducted primarily to help professional development decision-makers—adult education administrators and professional developers at the program and state level—plan and deliver effective professional development, and understand the factors that influence how teachers change as a result of professional development. This full research report details the study and its findings and is written primarily for researchers. Other articles and reports of interest from this study, tailored for nonresearchers, include:²

- *The Working Conditions of Adult Literacy Teachers* (Smith, Hofer, & Gillespie, 2001)³

¹ In this report, “adult education” refers to the broad range of basic and literacy education services for adults, including instruction for adult basic education, adult secondary education, and English for speakers of other languages students.

² All articles and reports on the NCSALL Professional Development Study are available for downloading from NCSALL’s Web site (<http://ncsall.gse.harvard.edu>).

³ *Focus on Basics*, Volume 4, Issue D. (April 2001). National Center for the Study of Adult Learning and Literacy.

- *Pathways to Change: A Summary of Findings from NCSALL's Staff Development Study* (Smith and Hofer, 2002)⁴
- *The Characteristics and Concerns of Adult Education Teachers* (Smith & Hofer, 2003)⁵

The study design was based on the overall hypothesis that teachers change in different ways and amounts as a result of participating in professional development, and that multiple factors influence the type and amount of change practitioners experience as a result of professional development, including:

- **Individual factors**—their experience, knowledge, and attitudes about teaching as they come into the professional development
- **Professional development factors**—the quality and amount of professional development attended
- **Program and system factors**—the structure of and support offered by the program, adult education system, and professional development system in which they work, including teachers' working conditions, which we define as their access to resources, professional development and information, colleagues and directors, decision-making, and well-supported jobs⁶

The main activities of the study were:

1. Developing and testing three models of professional development activities appropriate for adult education.
2. Gauging the change (differences in thinking and acting) for teachers who participated in one of these professional development activities.
3. Identifying the most important factors that influenced whether and how teachers changed.

Structure of this Report

In this first chapter, we discuss the focus and foundation of the research, including its guiding question and a review of the relevant professional development literature that provides the rationale for this study. We then describe the study design: the sample, research context and implementation, and data collection and analysis. Finally, we

⁴ *Focus on Basics*, Volume 5, Issue D. (June 2002). National Center for the Study of Adult Learning and Literacy.

⁵ NCSALL Reports # 26. (November 2003). National Center for the Study of Adult Learning and Literacy.

⁶ We define "well-supported jobs" as full time, relatively well-paid and stable jobs that include benefits (medical coverage, paid vacation and sick time, pension plans, etc.), paid preparation time, and paid professional development release time.

outline the limitations of the study. In the second chapter, we present the findings of the study, beginning with the results of how and why teachers participated, followed by how they changed as a result. We then outline the factors that influenced and explain such change. The final chapter makes recommendations based on these findings for policymakers, program directors, professional developers, and teachers themselves.

Rationale and Literature Review

Our earliest conception of this study's design included the goal of discovering the relative effectiveness of different models of professional development. Since very little research on professional development for adult education teachers has been conducted, we needed to first determine what information about approaches to professional development exist in the K–12 literature. However, while there are principles of effective professional development derived from research and theory in K–12 professional development (American Federation of Teachers, 1995) that can be useful to adult education professional developers, K–12 research is limited in its usefulness to adult education professional development for two reasons, and both are related to the differences in context between K–12 and adult education.

First, the research in K–12 has, by and large, studied professional development models that are not replicable in adult education because of differences between the two systems in funding and teacher status. Much of the research on K–12 professional development is related to evaluations of professional development that have been done in connection to large-scale adoption of specific curricular interventions or to ensure compliance with preferred routines or methods of operation. Often, the professional development in these studies is designed as intensive, multiyear professional development with small numbers of teachers receiving hundreds of hours of professional development. Holderness (1993) and Swafford, Jones, Thornton, Stump, and Miller (1999) are examples of projects where small groups of teachers received intensive professional development (up to 15 full days) over extended periods of time (several weeks to several years) on the same topic using multiple models or design features (training plus technical assistance plus peer coaching, etc.). Such professional development models are probably not replicable on a wide scale even in K–12 with greater resources, and school districts will have to choose between providing average-quality professional development for all teachers, or high-quality professional development for fewer teachers (Porter, Garet, Desimone, Yoon, & Berman, 2000). The problem in adult education is even more acute because many teachers do not receive preservice preparation in teaching adults and the turnover rate seems to be at least as high as in K–12⁷ and possibly higher. Therefore, in adult education, those who fund and plan

⁷ The most recent national survey of K–12 teachers indicates a turnover rate of 14.3% per year, but half of these are “migrators” who move to another K–12 school; the other half are retirees and those who leave the field of teaching entirely (Ingersoll, 2001).

professional development need to choose from realistic and doable models (less than 20 hours) of professional development. They need information about which models are most effective in promoting teacher change, and which models can be used to reach the largest number of teachers in the least amount of time. In most cases, neither teachers nor programs nor states can afford much more.

The second reason that K–12 professional development research is limited in its usefulness to adult education decision-makers is that K–12 and adult education operate in vastly different contexts and structures. The factors that may influence the effectiveness of professional development are different in adult education, where teachers are mostly part time and teach without prep time, paid professional development release time, or benefits in multisite programs with limited resources. Because so little research on professional development has been done specifically related to the effectiveness of professional development in this context, those who make decisions about professional development in our field also need to know who adult education practitioners are and the conditions under which they work, because these factors may influence the outcomes of different models of professional development on teacher change.

The effectiveness of different professional development approaches is an issue of much debate in the literature on professional development. Professional development decision-makers need to decide between competing models of professional development—traditional and “reform”—based on new philosophies about the purpose of professional development: helping teachers acquire a “change orientation” rather than just adopt new techniques (Richardson, 1998). Traditional activities, such as workshops, are very common in the adult education field because they are usually shorter in duration, making it easier for part-time adult education teachers to attend. Reform activities, such as study circles, practitioner inquiry, and mentoring, are less common but they may also be appropriate for adult education because they can be based in the program, making it more convenient for teachers with limited time for travel and participation. However, we do not know whether reform activities are more effective than traditional activities (workshops) within our field, and even in K–12, “there is a clear need for new, systematic research on the effectiveness of alternative strategies for professional development” (Garet, Porter, Desimone, Birman, & Yoon, 2001).

Key stakeholders in the adult education field supported our idea of designing this study as a comparison of appropriate models of professional development. At the beginning of our design phase, we organized a one-day meeting of 22 professional development experts and providers, teachers, and policymakers in Washington, DC in February 1997, cosponsored with Pelavin Research Institute. We asked the participants to discuss and prioritize the key needs for information and research about professional development in the field of adult education. The results indicated four main questions for research around professional development:

1. What impact can we expect from professional development?
2. How can impact be measured?
3. Which approaches to professional development are most effective in achieving this impact?
4. Which professional development systems best support effective professional development?

The synthesis of responses from this group of experts confirmed our intention for the study to compare different models (or approaches) of professional development. Although we did not feel we had the resources to measure student achievement as a result of professional development, we were able to investigate the impact on teacher change. Therefore, we felt that the immediate and most important research question for our field concerned the design of professional development and the factors that influence its effectiveness. The research question that drove the NCSALL Professional Development Study is:

How do practitioners change as a result of participating in one of three different models of professional development, and what are the most important factors—individual, professional development, and program/system factors—that influence (support or hinder) this change?

After further discussion with stakeholders in the field, we decided to test three models of professional development⁸ appropriate to adult education:

1. **Multisession workshops**—a traditional professional development activity, but organized in multiple sessions and including experiential, active learning activities
2. **Mentor teacher groups**—a “reform” type of professional development activity, blending features of study circles with features of peer coaching and observation
3. **Practitioner research groups**—a “reform” type of professional development activity where teachers investigate their own classroom practice by collecting and analyzing data to answer a question of concern to them

To aid us in designing the highest quality professional development to test, and to help us understand the type of data we should collect about the individual, professional development, program and system factors that might influence the effectiveness of the different models, we conducted a literature review of the existing research on professional development in both K–12 and adult education.

⁸ For more information about the design and development of the three models investigated in this study, please see Appendix A.

A Review of the K–12 Research on Teacher Change and Professional Development

With this rationale and research design in mind, we began a review of the research literature. We wanted to know what research existed about the effectiveness of professional development in helping teachers change in preferred and substantial ways, whether these changes are lasting, and whether they make a difference in student achievement. We also wanted to learn more about how professional development “works” and under what circumstances. Our review of the knowledge base about professional development and teacher change necessarily focused largely on the K–12 research, since there has been little research specifically related to the adult education field. We learned that, over the past 30 years, the research has focused on discovering different perspectives on what drives good instruction and determining how to design effective professional development for teachers.

The existing research shows that philosophy about professional development has evolved from a focus on training teachers to adopt particular, expert-recommended behaviors in the classroom to a focus on helping teachers adopt a critically reflective stance that allows them to determine for themselves what is effective. In the 1960s and 1970s, for example, the primary focus of teacher education and professional development research was on **teacher behavior** and how professional development could help teachers to change their behaviors and adopt innovations (particularly new interventions developed through research and development); such research focused on the “transfer” of training back to the classroom. In the 1980s, the focus shifted toward **school improvement** and the role of professional development in supporting school reform or restructuring. In the early 1990s, the focus shifted toward **student achievement** and the role of professional development in improving student learning, perhaps because of increased emphasis on educational accountability (Elmore, 2002). Finally, in the late 1990s, the focus shifted to **teacher quality** (defined variously as teachers’ years of experience, level of education/certification, and knowledge of subject matter), its importance as a key predictor of student achievement, and the role of professional development in helping teachers develop into high-quality teachers (Wenglinsky, 2000). Although individual research studies based on these different foci still continue to appear, the trends are clearly visible when looking at the evolution of professional development and teacher education philosophies over the years.

Models for Professional Development

One of our purposes for reviewing the K–12 literature was to better understand recent trends regarding the most effective models for professional development. Researchers have categorized and studied a range of approaches. Sparks and Loucks-Horsley (1987) list five models: individual/self-directed, observation/assessment, school improvement, training, and inquiry. Pelavin Research Institute (1996) lists four approaches:

workshop/presentation, observation/feedback, inquiry-research, product/program development. Feiman-Nemser (2001) argues that different types of professional development should be offered on a “continuum” over the teacher’s career, starting with formal education (courses offered by the college), then induction (pairing with a master teacher or mentor when beginning to teach, offered by the school), then ongoing inquiry activities while teaching (practitioner research or study circles, organized by the school), supported by a learning environment in the school, and opportunities for professional development (workshops, institutes offered by the district). Coaching (whether peer or mentor) has strong advocates within the K–12 professional development field (Joyce, 1983; Joyce & Showers, 1995).

Through our review of the literature we learned that professional development could be successful *if* it took place over time (not one session only), was integrated with the school context, and focused on helping teachers not just acquire new behaviors but change their assumptions and ways of thinking (reflectiveness) as well. The difficulties of trying to meet all these demands through one-shot, traditional professional development such as workshops prompted professional development experts to recommend “alternative” or “reform” types of professional development, such as study circles, mentoring, collaborative problem-solving groups, practitioner inquiry, and so on, that can be organized as part of teachers’ daily work to help them acquire a reflective stance as much as to acquire new knowledge of content and practices (Ball & Cohen, 1999; Guskey, 1999; Richardson, 1998). Professional development, these experts contended, should have as its goal increased reflectiveness and an inquiry stance among teachers, rather than simply adoption of new practices. Adoption of new practices, they believed, would come about as teachers reflected and systematically tested “what works” in their own context (Richardson & Anders, 1994).

By the 1990s, much of the writing on professional development emphasized this paradigm shift, as Sparks (1994) termed it, in thinking about professional development: away from an emphasis on teachers adding new skills or fixing “bad” practice and toward an emphasis on teacher reflectiveness and problem solving as a result of professional development (Arlin, 1999; Olson, Butler, & Olson, 1991; Rueda, 1997). Richardson and Placier (2001) describe this shift as a move from the “empirical-rational” model of change (where academic researchers study and decide on most effective practices and then teachers are trained to understand and implement these practices) to a “normative-reeducative” model of change (where teachers and administrators build their capacity to solve problems by looking at their own beliefs and practices, and through dialogue and collaboration with other practitioners). Teachers should adopt a “change orientation,” seeing themselves not as teachers who master and then replicate instructional tasks dictated from outside but as *learners* who must constantly grow from their own practice, through experimentation, problem solving, and reflection on their work (Richardson, 1998). Professional development models that focus on teacher knowledge and inquiry are preferred to those that deliver expert knowledge and expect teachers to adopt specific practices (Lytle, Belzer, & Reumann, 1992a, 1992b).

In addition to teacher reflectiveness, this new vision of professional development emphasized professional development that was “results-driven” (focused on students learning rather than teachers teaching), “systems-related” (focused on organizational rather than individual change), and “constructivist” (focused on professional development embedded in practice and driven by teachers, rather than knowledge and skills transferred from expert to teacher) (Guskey, 1997; Sparks, 1994, 1995). Since the goal of improving student outcomes is the central objective (Elmore, 2002), other researchers (Ball & Cohen, 1999; Darling-Hammond & Ball, 1997) advocate making student work the center of professional development, promoting strong content-based and practice-based professional development models, where groups of teachers use an inquiry process to look at “artifacts” of teaching—samples of student work or samples of other teachers’ teaching—to analyze what this “data” tells them about how to solve problems of practice. Helping teachers to look at how students think and reason generates teachers’ knowledge and self-sustaining ability to learn (Carpenter & Franke, 1998).

Educators promoting the new paradigm of professional development advocate for schools to be organized as learning communities for teachers and school leaders, with opportunities for teachers’ continuous learning and reflection built into their jobs and into the structure and culture of the school (Langer, 2000; Stein, Smith, & Silver, 1999; Valli, 1997). When universities partner with local school districts to support such learning communities, the result is a “professional development school,” where professional development linked with ongoing research projects is integrated into the work, culture, and structure of teaching and the school. Simultaneously, researchers began to use the term “professional development” (rather than “staff development”), since “professionals” are developed through the self-sustaining process of learning from one’s own practice, whereas “staff” are developed through training processes aimed at school improvement and adoption of new innovations.⁹

Based on the research in K–12, we decided that our study would investigate the relative contribution of one traditional (workshop) and two “reform” models (mentoring and practitioner research) for professional development. Understanding whether one model was superior to another in promoting teacher change would be helpful to a field (adult education) that has historically relied on traditional professional development models. We next needed to understand theories of teacher change, so that we could base outcomes for our study on what has been learned previously about the connection between professional development and teacher change.

⁹ Over the course of this five-year study, we as researchers have used both of these terms and have decided to use the term “professional development” based on our field’s use of the term (even though the original title of the study included the term “staff development”) and based on our investigation of individual teacher development and change rather than changes in “staff” of particular programs.

Research on Teacher Change

In reviewing the broad and varied research on teacher change, we needed a frame within which to describe the relevant knowledge base. We chose to use, for this review, the three types of research on teachers identified by Stein and Wang (1988); that is, research on:

- **Teaching and teaching effectiveness**—to determine what types of teacher background and preparation lead to student improvement
- **School change**—to determine the factors that support school improvement and teacher change, such as leadership and school culture)
- **The social-psychology of teachers**—to determine factors that influence teacher change, such as teachers' motivation, self-efficacy, and attitudes

The first category covers much of the research on the connection among professional development, teacher change, and teacher effectiveness; the second two categories cover much of what is known about the contextual (school) and individual teacher factors that influence how effective professional development can be.

- *Professional Development and Teacher Effectiveness*

When considering the topic of teacher change, it is important first to understand the literature related to teacher effectiveness. Ultimately, the measure of teaching effectiveness is whether students learn better. If students achieve, then teachers are assumed to be effective. The idea that teachers themselves (rather than class size, specific curriculum, or student socioeconomic background) are important to student achievement has recently been supported by a landmark study on teacher quality in Tennessee. Sanders and Rivers (1996) used achievement data for all teachers in one school in a given year to determine who the “effective” teachers were, then tested and followed students over several years. They found that students who performed equally well in second grade, but had different teachers over the next three years, performed unequally by year five. Fifth graders who had “effective” teachers in third, fourth, and fifth grades scored in the 83rd percentile in grade five, but those students who were studied in the third, fourth, and fifth grades under the “ineffective” teachers scored much lower (the 29th percentile, a 54-point difference) by the end of fifth grade. Similarly, Sanders and Rivers found that the most effective teachers could boost the scores in one year of low-achieving students an average of 39 percentile points more than similar low-achieving students with ineffective teachers. This study is often cited to illustrate the proposition that teacher quality is the single best predictor of student success.

The link between teacher effectiveness and teacher preparation is being established using large, aggregate state and national databases. Researchers such as Darling-Hammond, 2000, Darling-Hammond & Youngs, 2002) have matched indicators

of teacher preparation and background—such as certification, level of formal education, degree in the subject in which the teacher is teaching (i.e., a degree in math rather than a degree in education), and teachers’ verbal ability—with student test scores. Such research consistently has found that the formal preparation of the teacher (specifically, certification and subject matter degree) predicts higher student achievement. Teachers’ general intelligence and knowledge of subject matter are not as important to student achievement as teacher completion of a formal degree in subject matter and knowledge of teaching and learning.

If teacher preservice preparation predicts higher student achievement, then it follows that professional development may also have similarly positive effects. Since virtually all K–12 teachers receive some form of ongoing professional development annually,¹⁰ the exact contribution of ongoing professional development to student achievement, while considered important, is less well known. Demonstrating that participation in professional development is the direct cause of better student achievement is difficult (Adey, 1995), because teachers don’t all change the same way as a result of professional development. However, a recent large-scale survey (Wenglinsky, 2000) attempted to look specifically at the various contributions of teacher background, classroom practice, and professional development on student achievement (math and science test scores of over 7,000 eighth-graders). Students of teachers who received professional development in higher-order thinking skills, in working with special populations, or in laboratory skills significantly outperformed their peers. Wenglinsky concluded that professional development can change teaching practices, and that if teaching practices focus on higher-order thinking skills, hands-on learning activities, and monitoring tests, student performance will improve.

- *Professional Development and Teacher Change*

Despite Wenglinsky’s promising finding, a variety of quantitative and qualitative studies over the years indicate that change, at least as promoted by an “external” factor such as professional development, is a complicated process.

Change is slow. Even when professional development extends over several years, with multiple opportunities for learning (Short & Echevarria, 1999), change is a process occurring over time that requires support (Imel, 2000; Joyce, 1983).

¹⁰ Ninety-nine percent of K–12 teachers participated in some staff development over the past year, according to a recent national survey (Lewis et al., 1999). In another national survey, 85% reported having attended some staff development in the past year (National Education Goals Panel Report, 1999); however, another study reported that 50% of teachers in one national survey attended less than two days of staff development per year (Wenglinsky, 2000).

Change requires support. Change requires much more intensive learning support than teachers generally receive in the type of professional development they usually experience: “mandated district-sponsored staff development, consisting of a menu of training options (workshops, special courses, or in-service days) designed to transmit a specific set of ideas, techniques, or materials to teachers” (Stein et al., 1999, p. 239).

Change is not always linear. Fullan (1990) argues that there is an “implementation dip” as teachers try new actions, before they have fully integrated the new idea, and this is a period of stress and anxiety for teachers.

Change is not easy. Bridges (1991) sees it as a three-step psychological transition process with an ending (for old ways), neutral zone (rethinking stage), and beginning (with a purpose and plan). Change comes about through reflection, and the heart of reflection is first challenging one’s assumptions (Garmston, 1997; Lewis, 1992)—a difficult task. Change can also be threatening to the larger institution: if teachers, through professional development, learn to be “change oriented” and reflective, their autonomy will increase, which may cause problems within the program or school as students move from teacher to teacher (Richardson, 1998). Therefore, individual teacher change sometimes leads to new challenges unless teachers and administrators work together to discuss consistency of goals and curriculum across the program.

Change is not always direct or guaranteed. Practice may not change just because something new was learned. In one study, teachers attending a three-day training on “effective teaching” implemented only 3 out of 18 concepts and strategies, and were more likely to just “bolt on” new strategies to existing practices (“horizontal” integration of new ideas), rather than to really change their existing beliefs and practices (“vertical” integration) (Gardner, 1996). Joyce, Wolf, and Calhoun (1995) found that only 10% of practices were adopted, even after 10–15 days of training, unless followed by coaching or action research, and Meyer (1988) found only 15% implementation of new practices after a one-shot training. Even then, implementation of new practices can drop off over the long term if teacher excitement and momentum is not maintained (Stallings & Krasavage, 1986). One recent longitudinal study of professional development (Porter et al., 2000), using self-reports of change among 287 teachers, found “little change in overall teaching practice” after three years: “teachers changed little in terms of the content they teach, the pedagogy they use to teach it, and their emphasis on performance goals for students,” even though individual teachers did sometimes show moderate change. Porter et al. felt that their findings “add support to the concept that both teaching and professional development are typically individual experiences” (p. ES-10). Even though teachers may have learned about or even espouse a new theory or practice, they may not, for other reasons, adopt it. Teachers make judgments about whether or not to actually implement a practice based on **instrumentality** (how well the new practice was described and presented), **congruence** (how well new practices

conform to teachers' current philosophy and practice), and **cost** (how much benefit there might be in using the new practice, weighed against the time and energy required to enact it) (Doyle & Ponder, 1977). Lortie (1975) proposed that there is a culture of school teaching, directed by three norms, that makes it harder for teachers and schools to change: the norm of conservatism (teachers teach as they themselves were taught in school), the norm of presentism (teachers focus on the short term, uncertain of the future), and the norm individualism (reliance on self for knowledge and skills, practice driven by trial and error and personality).

Elmore (1996) provides a good summary of the change process:

Changing teaching practice even for committed teachers takes a long time, and several cycles of trial and error; teachers have to feel that there is some compelling reason for them to practice differently, with the best direct evidence being that students learn better; and teachers need feedback from sources they trust about whether students are actually learning what they are taught. (Elmore, 1996, p. 24)

However, another perspective on teacher change is that teachers change all the time (Richardson & Anders, 1994); they are just more resistant to externally driven change (as opposed to change that they initiate on their own) or change that goes against their existing beliefs and values. We may not always be able to see the change if it is masked by the difference between a teacher's espoused theory and actual practice. Most research on teacher change relies on teachers' self-reports of change, and the attitudes, beliefs, and knowledge that teachers express are not always played out in what they actually do in the classroom (Magnusson, Borko, & Krajcik, 1994).

Some current research has also looked at whether the model of professional development makes a difference in teacher change. Porter et al. (2000) found that when change happened, it was more often the result of reform type (nontraditional) professional development that was longer in duration and included "collective participation" (several teachers from the same school), active learning, and "coherence" with teachers' goals and district standards. A recent large-scale survey (Garet et al., 2001) lends support to the idea that *model* of professional development is not as important to teacher learning and change as are the *features* of the professional development. This survey randomly sampled 1,027 teachers who had participated in a range of activities sponsored under the Eisenhower program of funding for math and science professional development. Outcomes were self-reports of changes in knowledge and practices. Researchers specifically looked at three "structural features" promoted in the literature as features of quality professional development (Loucks-Horsley, Hewson, Love, & Stiles, 1998): the *form* of the activity (reform or traditional), the *duration* of the activity (contact hours and span), and degree of *collective participation* (how much it involved teachers from the same school or grade). Other independent variables included "core features" of the professional development activity: the *content* of the activity (how

much it focused on content knowledge in math and science), how much the activity included *active learning*, and how much the activity was in *coherence* with other activities the teachers had participated in, or with state or district standards. School (percent of minority enrollment, percent of students eligible for free lunch) and teacher characteristics (gender, subject [math or science], grade level, certification, and years of teaching experience) were also considered. Researchers found that three fourths of all Eisenhower professional development activities were traditional, and half of all activities (traditional and reform) focused strongly on content. Reform-type activities were more likely to have active learning and coherence, but some traditional activities had active learning and coherence, and some reform activities did not. “Many staff development activities do not have features of high quality, whether they are structured as reform or traditional” (p. 935). Reform activities (study groups, mentoring) were of longer duration and span: longer activities were related to positive effect on knowledge, to content, to active learning, and to coherence. Teachers reporting knowledge gain were also more likely to report changing practice. Coherence exerted a strong influence. However, type of professional development was important only indirectly, in that reform activities had more of the structural and core features, and these factors influenced knowledge and practice outcomes. Researchers found that the most important of these features of professional development (for increasing knowledge and practice) were a focus on content; opportunities for hands-on, active learning; and greater coherence of the professional development to school and district standards. The authors conclude: “to improve professional development, it is more important to focus on the duration, collective participation, and the core features (i.e., content, active learning, and coherence) than type” (Garet et al., p. 936).

Overall, researchers seem to agree that, for teacher change to happen, professional development should:

- **Be of longer duration.** Professional development is more effective in changing teachers’ practice (at least as self-reported) when it is of longer duration (Porter et al., 2000). Longer-term professional development permits more time for teachers to learn about their own practice, especially if it includes follow-up (Joyce & Showers, 1995; Stein et al., 1999).
- **Make a strong connection between what is learned in the professional development and the teacher’s own work context.** This is especially relevant if the professional development is organized outside of the school (as the majority is). Fingeret and Cockley (1992) found that the effectiveness of any given professional development activity depended upon how well a teacher could tie what they learned in professional development back to their own work situation. Professional development needs to help teachers plan for application and to identify and strategize barriers to application that they will face once back in their programs (Ottoson, 1997): “devoting no time or little time for synthesis, integration, and planning beyond the

(professional development) program is inadequate preparation for application. Helping participants anticipate and plan for barriers may facilitate practice changes” (p. 105).

- **Include a strong emphasis on analysis and reflection, rather than just demonstrating techniques.** Asking teachers to explain and defend what they currently think and do contributes to reflectiveness and change in teaching practice (Bollough, Koachak, Crow, Hobbs, and Stoke, 1997). Arlin (1999) argues that professional development cannot, in and of itself, help teachers become “wise,” unless it has a focus not just on “external” knowledge (new practices and techniques) but on helping teachers acquire the “internal” knowledge of a wise teacher: (1) factual knowledge of teaching and their subject matter, (2) procedural knowledge of teaching strategies and when to use them, (3) a sense of context for instruction, (4) an awareness of relative values of and priorities of their peers and students, and (5) an uncertainty about teaching decisions and a willingness to take risks when participating with students. Arlin claims that the final three of these are what differentiate the “wise” teacher from the “expert” teacher, and that a sense of context, relativism, and uncertainty is evidence of “mature, adult thought.” Joyce (1983) maintains that teachers need “executive control” over a new approach: knowing *when* and *why* to use a strategy, not just *how* to use it. Guskey (1997, 1999) and Sparks (1994, 1995) advocate professional development that focuses on learning rather than on teaching; on problem-solving and reflectiveness rather than on acquiring new techniques; and on embedding change within the program rather than on individual change.
- **Focus on helping teachers to study their students’ thinking,** not just try new techniques or even listen more to their students. One study found that change was sustained over longer periods of time when math teachers were trained and supported to really understand what their students were thinking, and teachers had a base from which to generalize practices to other situations and continue learning (Carpenter & Franke, 1998). In another study, teacher inquiry about student learning, student work, and the conditions that support better performance was a powerful tool for changing teacher practice and ultimately changing school structure (Anness, 2000).
- **Include a variety of activities,** such as theory, demonstration, practice, feedback, and classroom application (Joyce & Showers, 1995; Joyce et al., 1995; Mazzarella, 1980). If professional development is short-term or one-shot, it needs to be followed by assistance to help teachers implement (Stein & Wang, 1988), because “teachers are more likely to learn from direct observation of practice and trial and error in their own classrooms than they are from abstract descriptions of teaching” (Elmore, 1996, p. 24). Professional development should also follow principles of adult learning: establish a supportive environment, acknowledge teachers’ prior experience, , help teachers consider how new learning applies to their specific teaching situation, and encourage teachers to make their implicit knowledge about teaching (their “craft knowledge”) explicit (Gardner, 1996; Tibbetts, Kutner, Hemphill, and Jones, 1991).

- **Encourage teachers from the same workplace to participate together.**
“Professional development is more effective when teachers participate with others from their school, grade, or department” (Porter et al., 2000, p. ES-9).

The research on teacher effectiveness and teacher change provided important background information to help us understand teacher change for our study. We saw that we needed to gauge teachers’ thinking and acting over time, not just before and after the professional development, since change can be slow. In our study, we decided to define teacher change as differences (before and after professional development and over time) in teachers’ thinking and action, so as to allow the broadest possible range for what “counts” as change.

We also became aware that we needed to plan a professional development intervention that, regardless of the model of professional development in which teachers would participate, included effective features, as indicated by the research. The professional development activity should: be of longer duration (not one session), focus on a variety of active learning activities, help teachers to be reflective about their practice, help teachers focus on students’ needs, and involve teachers in thinking about how they could apply what they learned once back in their classrooms.

Factors That Contribute to Teacher Change

Another area of interest for our research team was school and individual teacher factors that play a role in influencing the effectiveness of professional development on teacher change. If teacher change is not an automatic outcome of even the highest-quality professional development, what is known about the factors that mediate between professional development and teacher change?

Evaluating the effectiveness of professional development requires researchers to collect data not just about the teacher but also about the teacher’s context. This is especially true if researchers want to understand the connection between professional development and student learning because, while the teacher is always the link between professional development and student achievement, teacher practice is only one of many factors affecting student learning. Researchers call this the “dilution” effect of professional development: the actual impact of the professional development is diluted by all of the other factors that support or hinder teachers from making change. The dilution effect is the primary criticism behind arguments against judging professional development according to “process-product” research (i.e., the process of professional development does not always result in the product of student achievement) (Adey, 1995).

Several researchers have come up with categories of factors that mediate the influence of professional development. Gusky and Sparks (1996) discuss three categories of factors:¹¹

1. **Content characteristics**—"what" the professional development covers; the credibility and scope of the practice or concept being conveyed
2. **Process variables**—the "how" of professional development, the models and type of follow-up
3. **Context characteristics**—the "who," "when," "where," and "why" of the professional development; the organizational or system culture; and expectations and incentives for using new practices

Ottoson (1997) names five factors that affect "application" of what is learned in training:

1. **Educational**—the characteristics of the professional development, including quality of facilitation, organization, and methods
2. **Innovation**—the ideas, practices, and strategies taught or suggested to teachers during the professional development
3. **Predisposing**—the characteristics of the teacher, including their motivation for attending, background knowledge, and pre-existing attitudes
4. **Enabling**—the teacher's skill in applying the new strategy; factors in the context of the teacher's program, including resources, authority, and opportunity to apply
5. **Reinforcing**—the factors in the context of the teacher's program that support the teacher in applying knowledge, such as help from colleagues, the director, and students

For our study, we found it useful to separate the factors that influence the effectiveness of professional development into individual factors and contextual factors. In the section below, we first review the research on individual factors: who teachers are and what they bring to the professional development. We then discuss the research on school factors that support change after professional development.

¹¹ Gusky and Sparks also consider administrator knowledge and practices, plus parent knowledge and practices, which are important factors mediating teacher change and student learning, because parents and administrators affect curriculum policies that dictate the types of changes teachers can make.

- *Individual Factors*

A significant body of research exists on the social psychology of teachers, some of which is relevant to the question of whether teachers' experience, dispositions, and motivations support or prevent them from learning and changing.

Teachers' motivation to attend professional development is a key factor in change. Stout (1996) poses four motivations teachers have for participating in professional development: salary enhancement, certificate maintenance, career mobility (building their resume to move up the ladder into administration or pursue other careers), and gaining new skills/knowledge. Livneh and Livneh (1999) surveyed 256 K–12 educators in Oregon to gauge their motivation to learn, background characteristics, and the amount of professional continuing education they had attended in the previous year. They identified three factors that predicted participation: (1) high internal motivation to learn, (2) high external motivation to learn (wanted career advancement or to network with others), and (3) lower levels of formal education. The researchers argue that this finding:

...lends support to the notion that people with comparatively lower educational levels in professional fields often recognize the need to upgrade their educational skills and abilities. They may also be beginning their professional career, a time when they recognize the need for additional information and skill building.
(Livneh & Livneh, 1999, p.100)

Strong motivation may mitigate other factors that are not supportive of change. Ottoson's research (1997) with 27 participants in a health education program indicates that strong predisposition (motivation to attend, background knowledge, and attitudes) may be especially important: "strong predisposition has the potential to overcome some of the rough terrain of context and can compensate for the relative absence of enabling and reinforcing factors...reinforcement with predisposition supported application but reinforcement without predisposition was not likely to lead to application" (p. 104). In other words, teachers strongly motivated to take action on the topic may be able to overcome a school or program situation that doesn't encourage them to do so. Based on the belief that motivation is key to the effectiveness of professional development, Jones and Lowe (1985) argue that teachers need individual plans for ongoing professional development, built on self-evaluation of their own needs (including reflection questions, case studies of learners, and input from peers).

Joyce (1983) studied teachers' motivation to participate in professional development and categorized teachers as learners and consumers of professional development. Based on teachers' participation in (a) formal systems (courses, workshops, coaching/supervision), (b) informal systems (exchanges with other teachers and professionals), and (c) personal activities (reading, leisure activities), Joyce proposes five categories to describe teachers' states as learners:

1. **Omnivores** are teachers who “actively use every available aspect of the formal and informal systems available to them” (p.163).
2. **Active consumers** are teachers who keep busy in one or more of the domains or systems.
3. **Passive consumers** are teachers who go along with professional development opportunities that arise but don’t seek them out.
4. **Entrenched** teachers are suspicious of change and take courses only in areas where they already feel successful; they may actively or surreptitiously oppose new ideas.
5. **Withdrawn** teachers are actively opposed to engaging in one or all three domains.

Joyce claims that omnivores generate energy for the system in which they are engaged, while entrenched and withdrawn teachers consume energy from the system. An entrenched or withdrawn teacher with influence within the school—even informal power—can act as a “gatekeeper,” preventing any type of collective action, change, or improvement from occurring. Even the best professional development will not have an impact if there is a poor culture in the school, one in which there is a poor fit between teachers’ states of growth and the culture that could support growth and new ideas from professional development.

Another thread in the literature relates to what Fuller and Bown (1975) call teachers’ “concerns.” They propose that teachers have three types of concerns: (1) **self-survival** (controlling classes, having adequate knowledge, finding one’s place in the school, satisfying others’ expectations of them); (2) **task** (planning instruction and handling the administrative work), and (3) **impact** (meeting students’ individual needs and increasing students’ motivation). Ghaith and Shaaban (1999) argue that these concerns change over time; new teachers are more concerned about classroom tasks and experienced teachers are more concerned about impact. Kagan (1992) supports the idea that beginning teachers are more concerned about self-survival. Hord, Rutherford, Huling-Austin, and Hall (1987) expanded on this theory to explain that as teachers change by adopting new attitudes and practices, they have different types of concerns: personal concerns about how change will affect them, task concerns about how to manage new practices, and impact concerns about how new practice will affect students. Differing concerns may dictate what types and subjects of professional development teachers will participate in. A 1999 NCES survey on K–12 teacher participation in professional development found that experienced teachers are less likely to participate in professional development on topics of classroom management and new teaching methods; newer teachers are more likely to participate in mentoring than more experienced teachers (Lewis et al., 1999). Other researchers challenge the notion that new teachers are only interested in classroom management and techniques, claiming that new teachers are concerned with content and teaching ethics as well as with classroom management (Grossman, 1992).

Another individual factor well studied in relation to teacher change is teachers' level of self-efficacy, a concept first outlined by Bandura (1995). Bandura defined self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to manage prospective situations" (p. 2). Stronger self-efficacy among teachers has been related to student achievement (Goddard, Hoy, & Hoy, 2000; Tschannen-Moran, Hoy, & Hoy, 1998). Professional development researchers then tested hypotheses about whether teachers' level of self-efficacy was related to how much they changed. Overall, they found that:

- **Self-efficacy is related to individual factors.** Ross (1994) found that new teachers had high levels of general self-efficacy¹² but low levels of personal self-efficacy (i.e., a strong belief in the power of education but a weak belief about whether they personally could be successful as teachers), whereas experienced teachers felt just the opposite (i.e., a strong belief in their own competence as teachers but a weak belief in education's power to reach all students; that success is "limited by factors beyond school control," p. 382). Ross feels that this research confirms that teachers' sense of self-efficacy is more stable among more experienced teachers and that "to change it in a material way (would) likely take something more substantial (e.g., a dramatic shift in teaching assignment that often comes with a change of school or an involuntary alteration of curriculum) than a routine in-service program" (p. 391).
- **Stronger self-efficacy going into professional development affected teacher change.** Smylie (1988) found that teachers were more likely to change as a result of professional development if they had high personal self-efficacy. Guskey (1988) found that teachers with high levels of self-efficacy were more likely to adopt new practices, but that high self-efficacy was also associated with effectiveness (although how "effectiveness" was measured is not defined), and so teachers with high self-efficacy least *needed* to adopt new practices. Tschannen-Moran et al. (1998) concluded that teachers with strong self-efficacy may be less motivated to learn and try new things.
- **Professional development in turn affected self-efficacy.** Stein and Wang (1988) found that those who implemented a new practice showed an increase in self-efficacy; Ross (1998) found that teachers who did try new strategies initially showed a drop in self-efficacy but that self-efficacy increased again when they saw that the new strategy worked. Roberts, Henson, Tharp, and Moreno (2000) found that teachers who entered professional development with high levels of self-efficacy didn't change their feelings of self-efficacy much, no matter how long the professional development was, but that teachers who entered professional development with low levels of self-efficacy increased their sense of self-efficacy, proportional to the length of the professional development.

¹² "General" self-efficacy is the belief that education itself can be successful with all students, regardless of background and abilities. "Personal" self-efficacy is the belief that teachers themselves are "instrumental to the learning of their students" (Smylie, 1988, p. 23). "Collective" self-efficacy is the common belief held by groups of teachers that together they are successful.

Other characteristics of teachers as individuals that researchers believe relate to teacher change include cognitive “style.” Joughin (1992) proposes that some teachers have an analytic ability to understand a strategy and how to use it, whereas other teachers lack this ability and need more structure to grasp and then apply a new strategy. Similarly, developmental theory (Helsing et al., 2001) holds that all adults have “ways of knowing” that they bring to a learning task; specifically, a learner with an **instrumental** way of knowing would tend to see the trainer as an expert and look for the “right” answer; a learner with a **socializing** way of knowing would learn from others and see the trainer as a mentor; and a learner with a **self-authoring** way of knowing would want to bring their own knowledge to the learning process and understand that there may be no one right answer. Theories of cognitive style or development have implications for the fit between individual teachers’ ways of knowing and the style of the professional development in which they participate; for example, teachers with an instrumental way of knowing may feel more comfortable in workshops lead by experts, whereas teachers with a self-authoring way of knowing may feel more comfortable in professional development activities (such as practitioner research) that allows or asks them to generate knowledge of their own.

Perhaps one of the largest subareas of investigation in the professional development and teacher education literature concerns teachers’ reflectiveness. Schon (1983) began the discussion of how to help teachers develop a “stance” of looking at their own practice (reflection-in-practice, reflection-on-practice), by analyzing, adapting, and always challenging their assumptions, in a self-sustaining cycle of reflecting on their own theory and practice. Ferry and Ross-Gordon (1998) found that a reflective stance was not automatically related to years of teaching experience; some new teachers demonstrated a cyclical approach to problem solving, learning from one problem to inform the next, while some very experienced teachers used a sequential (noncyclical) approach to problem solving: when faced with a problem, they summon up their existing knowledge and choose the “best fit” solution from what they already know.

Based on what we learned from research on individual factors, we determined that we would ask questions about teachers’ background (demographics, educational background, years of teaching in K–12 and adult education), their motivation for attending the NCSALL Professional Development, and their level of professional development “consumption.” While we felt we could reliably obtain that information through questionnaire from all participants and analyze the data quantitatively, we knew it would not provide us with a full picture of teachers’ motivations, dispositions, and reflectiveness as learners, teachers, program members, and members of the field. Therefore, we decided that more qualitative data, collected through extensive interviews with a subsample of the teachers in the study, might allow us to gain greater insight into how the teachers perceived themselves as learners and teachers.

- *School Factors*

In addition to individual teacher factors, the literature on K–12 contains research on school factors that may also influence teacher change. Factors identified by researchers as mediating (hindering or supporting) teacher change include:

- **Leadership.** The school leadership has a role in readying teachers for change by creating a positive culture that lets teachers' attitudes change naturally when they see how and whether a new practice helps students' learning (Sparks, 1995). Principals that were too controlling and principal turnover negatively affected teacher education programs (Bollough et al., 1997).
- **Coherence.** Coherence is defined as the match between school adoption of particular reforms and individual professional development of teachers in that school; i.e., the school is working to improve the same problem or issue addressed by the professional development. The match can either be required (by the district) or voluntary (the school or teachers sought professional development related to the school-improvement issue). Recent research by Garet et al. (2001) indicates that teachers gain more knowledge and change practices when there is a match between school or district standards and goals. When change is voluntary (i.e., there is no concurrent reform effort at the school level), then leadership or supportive school factors (such as teachers' access to decision-making) were not as important in promoting change as the teachers' own beliefs (Smylie, 1988).
- **Collegiality within the school.** The movement for teacher professional communities within schools grew from the belief that one can't take individual teachers out of their environment, train and change them, then put them back into the same environment and expect them to change that environment; rather, teachers need a community of teachers within the school, so they can learn together about their work as they apply that learning (Calderón, 1999; Grossman, Wineburg, & Woolworth, 2000). Most professional development researchers view collegiality as a necessary organizational support to professional development (Sparks & Loucks-Horsley, 1990). In a review of previous research about the relationship between school culture and the effectiveness of professional development, Olson et al. (1991) found that collegiality emerged as a key indicator. Interactions with colleagues seem to help teachers develop a "body of technical knowledge about what teaching practices are likely to be effective" (p. 23) and a sense of their own competence (Smylie, 1988). Other research suggests that more collaboration within a school increases teachers' commitment to teaching (Rosenholtz, 1986), which may in turn support openness to new knowledge and practices. When teachers don't have opportunity to talk to colleagues about strategies learned during professional development, they are less likely to implement them (Gardner, 1996; Huberman & Miles, 1984); the greater the communication, the more likely teachers were to adopt the new practice (Adey,

1995). By contrast, Joyce (1983) found that professional development was less effective when there was an entrenched teacher who acted as gatekeeper to spoil/prevent other teachers from adopting new strategies. In short:

Teaching practice is unlikely to change as a result of exposure to training, unless that training also brings with it some kind of external normative structure, a network of social relationships that personalize that structure, and supports interaction around problems of practice. (Elmore, 1996, p. 21)

Our review of the K–12 research on individual and school factors that mediate between professional development and teacher change provided valuable insights for the development of our study. We recognized that, if we wanted to understand whether a particular professional development intervention was effective, we could not collect information only about the quality of and teacher's participation in the professional development. We would also need to collect information about individual teacher and adult education program factors that research has indicated will help or hinder teachers from making change. Specifically, we needed to collect information about individual factors such as teachers' educational background, length and type of teaching experience, and motivation to attend the NCSALL Professional Development. We also needed to collect information about teachers' program situation: size and type of program, leadership within the program, amount of collegiality within the program, whether other teachers from the same adult education program also attended the professional development, and whether the adult education program where they worked was also simultaneously addressing (through program reforms) the same topic as covered by the professional development.

Before concluding our review of the research on teacher change and professional development, we needed to review any specific literature related to adult education teachers. Our review is presented below.

A Review of the Adult Education Literature on Professional Development and Teacher Change in Adult Education

A search for primary research in adult education on professional development and teacher change is a short one. We found a few surveys and evaluations of professional development activities and systems, and several technical reports related to evaluating the state of adult education overall. Much of this information focuses on the characteristics of adult education teachers and the programs and situations within which they work, rather than on the effectiveness of professional development for teacher change. This review, however, helped us to identify some of the factors specific to the adult education context that may influence teachers' abilities to change.

Professional Development in Adult Education

Professional development in the adult education field is organized primarily through statewide professional development systems, rather than through school districts as it is in K–12 (Belzer, Drennan, & Smith, 2001; Tolbert, 2001). Beginning with the passage of the National Literacy Act in 1992, and the establishment of State Literacy Resource Centers, more states attempted to build comprehensive statewide systems, rather than rely on programs to offer what professional development they could. At least one researcher, however, has claimed that such a delivery system itself reduces the likelihood that professional development will affect teacher change: because most states do not have a common curriculum for adult education programs to use, statewide professional development by necessity must focus on broad teaching and adult learning topics, leaving individual teachers to attempt the difficult task of adapting such general information to their specific classroom situation (Leahy, 1986). It is also more difficult to create “coherence” between program improvement efforts and professional development activities when the majority of activities are delivered at the state level; a recent evaluation of adult basic education (ABE) professional development found a continuing division between professional development and program development (RMC Research Corporation, 1996). Also, one of the realities of the adult education field is that professional development receives far less funding than K–12 professional development.¹³

Perhaps because of the predominance of statewide systems for planning and conducting adult education professional development, much of the professional development attended by adult education practitioners is offered at centrally organized workshops and conferences rather than in the teachers’ own program (Wilson & Corbett, 2001). The predominant form of professional development in ABE is short-term training and single-session workshops (Crocker, 1987; Kutner, Herman, Stephenson, and Webb, 1991; Tibbetts et al., 1991). Even with the advent of alternative forms of professional development, this reliance on one model of professional development persists: the most recent national evaluation (RMC Research Corporation, 1996), which surveyed all states’ use of federal monies for professional development, by conducting interviews with state administrators, trainers, and more than 1,000 adult educators, found that single-session

¹³ The federal government spent \$619 million on K–12 professional development in 1993, and additional “state investments in professional development probably range from less than 1 percent to over 3 percent of total state spending on public education” (p. 3, Center for Policy and Research in Education Policy Brief, 1995, available at <http://www.ed.gov/pubs/CPRE/t61/t61c.html>). It is interesting to note that more federal dollars were allocated in 1993 for professional development of K–12 teachers than were allocated in 2002 by the federal government for the entire adult education budget, which was approximately \$500 million. Stout (1996) estimated staff development spending in K–12 at an average of \$1,700 per teacher per year in 1994 dollars. According to the Department of Education Adult Education Human Investment Impact report 1994–1998, combined federal and state funding divided by total enrollment for 1996 calculated out to an adult education per *pupil* spending of approximately \$249 per adult student (<http://www.ed.gov/offices/OVAE/9499hinvest.html>). We could not find figures for per teacher spending on adult education professional development.

workshops accounted for 38% of all professional development activities, followed by institutes or courses (24%), and statewide or regional conferences (11%). Twenty-seven percent of activities were less structured, or “reform,” activities (study groups, technical assistance, independent study). Conferences accounted for 40% of the money spent, even though they accounted for only 11% of the activities. Eighty percent of practitioners surveyed attended at least some professional development the year prior to the survey (1994); of these, 57% attended a conference. There was no difference in participation between full-time and part-time practitioners, but those 20% who received no training were more likely to be younger, have fewer academic degrees, and be less experienced. When polled, almost half of teachers surveyed listed an activity that had an impact on their work, but 30% said no activities they attended had an impact on them and 18% didn’t respond.

In recent years, some states and projects have begun to promote “reform” types of professional development, such as practitioner research, mentoring, and study circles. Experimentation with practitioner research has happened at the state level (Virginia), the university level (University of Pennsylvania PALPIN project), and the project level (Georgia/Literacy South, System for Adult Basic Education Support Math Team, NCSALL’s Practitioner Dissemination and Research Network) level, with groups of teachers from different programs working together to do research, either individually or collectively. At least one national organization has made an attempt to document the findings of these practitioners so that others can learn from them (Sherman, Green, Taylor, and Greenberg, 1997). However, the predominant form of professional development remains workshops (Tolbert, 2001).

In a recent survey of 423 adult education teachers (Sabatini et al., 2000), which was aimed primarily at more full-time, “professionalized” adult education teachers, teachers reported that their primary purpose for professional development was learning techniques they could use immediately. Effective instructional techniques for teaching reading and writing were a top content priority. Their top two priorities for participating in professional development were to “add to my instructional skills” and “add to my knowledge of teaching adults.” Researchers found that teachers with five or fewer years of experience more often wanted knowledge about how to teach adults than did more experienced teachers. The survey also found that teachers who participated in collaborative working groups were more satisfied with that type of professional development than with workshops.

Although individual states and projects have evaluated their professional development efforts (Drennon, 1994; Fingeret & Cockley, 1992; Foucar-Szocki et al., 1997; Kuhne, Weirauch, & Doyle, 1997; Lytle et al., 1992b) and a framework for evaluating the effectiveness of adult education professional development has been proposed (Kutner & Tibbetts, 1997) and is being adopted in some states (e.g.,

Pennsylvania), no larger-scale or longitudinal studies of the outcomes of professional development for adult education teachers existed at the time we began our study.

Teachers in Adult Education

Young, Fleischman, Fitzgerald, and Morgan (1995), through the National Evaluation of Adult Education programs (more than 2,600 local programs), found that:

- Adult education program staff are heavily part time: 36% of programs do not have any full-time staff (teaching or administration); 59% do not have even one full-time instructional staff member; and the ratio of part-time to full-time teachers is 4 to 1.
- Forty percent of full-time and 33% of part-time instructors have master's degrees or higher.
- Eighty percent of full-time and just under half of part-time instructors have taught in adult education for more than three years (meaning a little more than half of all part-time instructors have taught for less than three years).
- More than 55% of teachers teach more than one instructional component (ABE, preGED, GED, ESOL,¹⁴ etc.), rather than specializing in one, making the need for more professional development on a broader range of topics desirable.

The difficulty of providing high-quality professional development in adult education is exacerbated by the structure of the system itself. Teachers in adult education are hindered by factors that make it hard for them to simply know what professional development opportunities are available, and then to participate (Burt & Keenan, 1998). Wilson & Corbett (2001), after interviewing 60 adult education “decision-makers” and practitioners from 10 states, categorize these hindering factors as:

- **Distance**—professional development is not offered locally through the program but at state-organized, centrally located venues, which requires practitioners to travel
- **Time constraints**—working part time, as the majority of adult education teachers do, makes it hard for them to participate, and they are generally not paid to do so

¹⁴ ABE stands for adult basic education; these adult learners are typically defined by their grade level reading equivalency of 0–5. GED stands for General Educational Development; these adult learners are typically defined by their grade level reading equivalency of 8–12 and by their stated goal of passing the GED test. PreGED stands for pre-General Educational Development; these adult learners are typically defined by their grade level reading equivalency of 5–8. ESOL stands for English for speakers of other languages; these adult learners are typically defined by their limited oral English skills, which may or may not be related to their reading and writing English skills.

- **Information gaps**—infrequent contact with other practitioners in and out of the program means that program directors and other supervisors serve as “gatekeepers” through which new information must pass
- **Goal mismatch**—the mismatch between the programs’ goals and individual practitioners’ professional interests, particularly evident where the program’s goal is for students to pass the GED and practitioners are interested in preparing students for lifelong learning
- **Lack of face-to-face interaction**—teachers rarely have a chance to meet and talk, resulting in a “disjunction” between how they would like to learn and the opportunities for learning open to them

Wilson and Corbett conclude:

Currently, the conditions of the ABE occupation are such that those in the field will never be able to participate systematically in the very activities they see as necessary to doing their jobs well. Educators claim the desire for professional development is present; readily accessible opportunities to fulfill that desire are most notably not. (Wilson & Corbett, 2001, p. 26)

Turnover of adult education teachers may exacerbate the challenge of professional development, with new teachers coming into the field regularly. The exact rate of turnover, however, is not well documented. Darkenwald (1986) reports on one study of retention (Boggs and Travis, 1982) of 145 adult education teachers; after 7 years, 45 (31%) of 145 remained, most having left for full-time K–12 jobs or having left education entirely. The Sabatini et al. (2000) survey of 423 adult education teachers¹⁵ indicated that about 40% had taught in the field less than five years, from a sample that consisted of almost 60% full-time teachers; in their sample, 43% of part-time teachers (which constitute the bulk of the national population of adult education teachers¹⁶) had been in the field less than five years.

This same survey found that the majority of adult education teachers in their sample were at one time K–12 teachers and they typically have K–12 certification (Sabatini et al., 2000). However, adult education teachers also need professional development focused on teaching adults. One survey of states (Tolbert, 2001) found that

¹⁵ This was a self-response survey study, which specifically attempted to target “professional” teachers; sampling was done by mailing surveys to state-identified “quality” programs in large states with greater numbers of full-time teachers, making the self-selected sample deliberately skewed toward more full-time teachers. The final sample was 59% full time, 41% part time (Sabatini et al., 2000), a full-time/part-time ratio substantially different from the U.S. Department of Education estimates (see footnote 16).

¹⁶ 1998 DOE data on numbers of part-time and full-time adult education personnel: 13% of state-administered adult education program personnel (including administrators) are full time, so the percentage of full-time teachers is probably considerably less than 13%. Thirty-nine percent of personnel were part time, 48% were volunteer (see www.ed.gov/offices/OVAE/98personnel.html).

only nine states require adult education teachers to get preservice training specifically related to teaching adults. The 1995 National Evaluation of Adult Education programs (Young et al., 1995) found that only 18% of full-time staff and 8% of part-time staff were specifically certified in adult education.

The review of adult education literature related to teachers and professional development underscored for the research design team the fact that the adult education field, and perhaps the teachers who work within it, has some unique structural features that may mediate (support or hinder) teacher change. Together with our experience as adult education teachers, professional developers, and administrators, we hypothesized that these factors might influence how teachers change as a result of professional development:

Individual factors:

- **Type of teaching** (ABE/GED/preGED/ESOL) teacher does. In addition to any differences in teachers' perspectives as a result of teaching these different learner populations, many adult education teachers teach multiple populations.
- **Whether teacher ever taught in K–12.** Some adult education teachers may never have taught before they began working in adult education (and some of these teachers may not be certified or have a bachelor's degree, unlike K–12 teachers).
- **Full-time/part-time status.** The majority of adult education instructors are part time, unlike K–12 instructors.

Program factors:

- **Enrollment policies.** Unlike K–12, adult education programs often allow adults to enter at any time during the semester or year, which may affect how teachers deliver instruction.
- **Access to prep time.** Many adult education teachers are paid by the hour and do not, unlike their colleagues in K–12, receive paid prep time.
- **Access to benefits.** Since most adult education instructors are part time, many do not receive benefits (paid sick time, vacation, pension, medical insurance) as part of their adult education job.
- **Paid professional development release time.** Part-time instructors, particularly, may not receive paid time to attend professional development.
- **Required use of curriculum.** Unlike K–12, where states and school districts often require teachers to follow a specific curriculum or framework (usually geared to test requirements), adult education is much more varied; programs may have a required curriculum, and some GED teachers teach only to the GED test, but other teachers are free to develop their own curriculum for their own classes.

- **Teaching situation (class vs. individualized).** Many adult education classes are organized as “individualized group instruction,” where adult learners “drop-in” to learning centers, instruction is organized via workbooks, and students work individually while sitting among other adult students also working on their workbooks; the teacher rotates among students providing one-on-one assistance or checking answers. Other adult educators (more so in ESOL instructional settings) teach within a traditional class structure.

Results of the Literature Review

Overall, this review of the literature on professional development in both K–12 and adult education provided us with a rationale for the design of the study (testing multiple models of professional development that could be appropriate for the field of adult education), and the elements of professional development that make it most effective for teacher growth. It also informed our understanding of what is already known about how teachers change and about the factors that have been shown to affect change, and the review confirmed the factors related to adult education context that should be investigated in our study. We then used the knowledge gained from our review to design the study methodology: the professional development models, the list of expected and preferred outcomes, and the data collection protocols that would allow us to gauge such outcomes among the teachers who participated. The methodology of the study is presented in the next section.

Methodology

Research Context

We conducted the study in Massachusetts, Connecticut, and Maine in order to make data collection cost effective yet allow us to achieve a sample size of 100 teachers, large enough for quantitative analysis of data. Locating the study across three states also provided the advantage of including a wider range of program and system factors. All three states offered the full range of services to adult basic education, ESOL, and GED learners, and in all states the administrative home of the adult education system was the state education agency. Key differences among states include type of program (Maine and Connecticut programs were primarily school-based local educational agencies, or LEAs, whereas Massachusetts has a mix of LEAs and community-based organizations, or CBOs) and type of curriculum (Connecticut is a CASAS¹⁷ state; curriculum in Massachusetts is program-driven but influenced by state curriculum frameworks; curriculum in Maine is program-driven but influenced by the Equipped for the Future standards¹⁸).

¹⁷ Comprehensive Assessment System for Adult Students.

¹⁸ Equipped for the Future (EFF) is a system reform initiative of the National Institute for Literacy, designed to provide learner content standards.

Sample

The sample consisted of a total of 106 women and men from these three New England states. One hundred of these teachers participated in up to 18 hours of professional development in one of three models of professional development (multisession workshop, mentor teacher group, or practitioner research group); the other six people were nonparticipant teachers who served as a comparison group.¹⁹ From the 100 participants, 18 teachers were randomly selected (six from each model) to serve as a subsample.

In each state, there were five different professional development groups (one multisession workshop, two mentor teacher groups, two practitioner research groups), so that a total of 15 different professional development groups across three models and three states were conducted between July 1998 and June 1999. The number of participants who enrolled in and completed each activity, by state, is included in Table 1 below.

Table 1: Number of Participants in Professional Development, by State and Group

NUMBER OF PARTICIPANTS, BY MODEL	CONNECTICUT		MAINE		MASSACHUSETTS		TOTAL	
	Enroll	Complete	Enroll	Complete	Enroll	Complete	Enroll	Complete
MULTISESSION WORKSHOP	15	15	11	11	9	9	35	35
MENTOR TEACHER GROUP	9	8	10	8	9	8	28	24
PRACTITIONER RESEARCH GROUP	12	6	12	9	13	10	37	25
TOTALS	36	29	33	28	31	27	100	84 ²⁰

Participants were listed as completers if they attended at least two thirds (12 of the 18 hours) of the professional development required. If they completed less than 12 hours, they were considered dropouts. Total dropouts equaled 16 out of 100.

To be eligible to participate in the NCSALL Professional Development, participants had to be an adult basic education teacher, adult English for speakers of other languages teacher, or adult secondary education teacher who taught at least one class or tutored at least one student. Each state recruited participants as they would for any other professional development activity. Interested teachers were not assigned to a particular

¹⁹ These were teachers who had originally registered for one of the professional development activities but then either did not show up or confirm their registration, thus constituting a very small “comparison group” for this study.

²⁰ Even though 84 teachers completed the study, we only have final and complete data from 83 teachers; one teacher who completed the workshops never returned the second and third questionnaires.

model; they were free to participate in any model they wanted to attend. In most cases, because of geography, teachers participated in the model offered closest to them. We paid participating teachers a stipend for their participation,²¹ which was less than what they would have been paid hourly for the same number of teaching hours but adequate for the time they spent providing us data.

We collected data from participants at three points in time: (1) Wave One, before the professional development started; (2) Wave Two, immediately after the professional development was finished; and (3) Wave Three, one year after the professional development was finished. Of the 106 individuals for whom we collected data in Wave One, we were able to collect usable follow-up data in Wave Three from 99 individuals.²²

Individual Characteristics of Teachers in the Sample

Table 2 provides information on the basic individual characteristics of respondents in the sample.

²¹ Each participant who completed more than 12 hours of professional development *and* completed three questionnaires received \$200. The 18 subsample teachers received an additional \$150 for allowing us to interview them three times and visit their classroom. Practitioner research group participants who submitted a final write-up of their practitioner research project received an additional \$125, to compensate for this extra time.

²² Out of 104 individuals who gave us such data, 13 individuals reported they had left the field sometime between Wave One and Wave Three. Of the 91 still in the field, 82 reported that they were still teaching in a program and the remaining 9 were still working in an adult education program or in an adult education-related organization but not teaching. This equals a teacher turnover rate of 21% over approximately 18 months.

Table 2: Individual Characteristics of Teachers in the Sample

CHARACTERISTICS	<i>n</i>	PERCENTAGE
<i>Gender (n=106)</i>		
Female	88	83%
Male	18	17%
<i>Race (n=106)</i>		
White	97	91.5%
Black	4	3.8%
Hispanic	5	4.7%
<i>Age (n=99)</i>		
26–30 years	6	6.1%
31–40 years	17	17.2%
41–50 years	32	32.3%
51–60 years	34	34.3%
61+ years	10	10.1%
<i>Formal Education (level completed) (n=106)</i>		
< B.A.	8	7.5%
= B.A.	46	43.4%
> B.A.	52	49.1%
<i>Teaching Role (n=102)</i>		
ABE (0–4)	14	13.7%
PreGED (5–8)	4	3.9%
ESOL	26	25.5%
Combination (ABE/preGED/GED)	23	22.5%
GED/Adult Secondary	28	27.5%
Other (e.g., vocational ed)	7	6.9%

As the table shows, the overwhelming majority of participants were white females. The age groups ranged from 26–30 to more than 60 years old. About two thirds of the teachers (67%) were in the 41–60 age groups. The composition of teachers, by role, was approximately even among teachers of ABE/preGED students (lower literacy levels), ESOL students, GED students, and those who taught multiple types of students (ABE/preGED/GED).

Approximately half of the teachers had completed formal education higher than a bachelor's degree (either a master's or doctoral degree) and less than 8% had either an associate's degree or a high school diploma or GED. More than half of the sample (53%) reported that they had not completed any *formal* coursework in adult education

(undergraduate- or graduate-level courses in adult education, adult basic education, adult literacy, or English for speakers of other languages). More than 80% of the respondents in this study had participated in minimal coursework (up to three formal courses) in the field of adult education.²³

Sixty-five percent reported that they had, at some point, taught in the K–12 school system, while 30% of respondents indicated that adult education was their first teaching experience.²⁴ Of the 62 teachers in the sample who had experience teaching in the K–12 system, the median years teaching in K–12 was four. At the time of Wave One data collection, 10% of the teachers reported that they were still involved in teaching in the K–12 system. Massachusetts teachers were the least likely to have ever taught in the K–12 school system (47%), compared to three quarters of the teachers from Maine (74%) and Connecticut (73%) who had taught in K–12; differences among states was statistically significant ($\chi^2=6.5$, $df=2$, $p<.05$).

Combining their experiences in K–12 and adult education, teachers in this study ranged from teaching less than one year to teaching for 34 years. We asked participants to tell us in Wave One how long they had been *teaching* in the field of adult education. The mean number of years teaching in adult education was 6.83; one third (32.4%) of the teachers reported they had taught in adult education for two years or less. The median number of years teaching in the field was five. Differences by state were not significant. Age correlated with both years teaching in adult education and in K–12. Those who participated in the practitioner research group model had been teaching in the field significantly longer on average ($M=11$ years, $SD = 6.9$) than individuals in the workshop ($M=8.5$ years, $SD = 6.3$) or mentor teacher group ($M=7$ years, $SD=6$) ($F=3.38$, $df=2$, $p<.05$) models. Since we subsequently found that some of the participants had worked in the field (as administrators or counselors) for perhaps longer than they had been teaching, we asked in Wave Three how many years they had *worked* in the field of adult education. The mean number of years working in adult education was 8.8 ($SD=6.4$), and the median number of years was seven.

Eighty-five percent of the respondents reported that teaching was their primary role. The remaining 15% reported their primary role as administrator (9%), counselor (2%), professional developer (1%), or equal part teacher and counselor or teacher and director (3%).

Twenty-four percent of the sample was full time (full time being defined as working across all adult education jobs 35 hours or more a week). The mean number of hours *worked* per week across the sample was 23.5 (in Wave One, the mean was 23

²³ Massachusetts teachers on average reported having taken more courses ($M=2.8$) than either Connecticut ($M=2.0$) or Maine ($M=1.1$) residents; however, these differences were not statistically significant.

²⁴ We assume that the other 5% of the sample gained initial teaching experience outside these two arenas (e.g., church, overseas programs).

hours, $SD=11.5$; in Wave Three, the mean was 24, $SD=12.6$). The mean number of hours they *taught* was 16.5 hours ($M=17$, $SD=9.9$, Wave One; $M=16$, $SD=10.9$, Wave Three). Age was negatively correlated with hours worked ($r=-.20$, $p<.05$); the older the teacher, the fewer hours she or he worked.

The majority of the teachers (80%) reported that their primary teaching situation was a classroom setting while 17% of the sample reported teaching individual students. Forty-eight percent of the teachers still working in the field by Wave Three received benefits as part of their adult education job, and 54% received paid prep time. Twenty-three percent of the sample reported receiving no paid professional development release time during the previous year; about three quarters of the sample (73%) reported that they received fewer than three days a year to participate in professional development activities. On average, individuals from Massachusetts reported receiving more hours of professional development release time ($M=28$, $SD=21$) than either Maine ($M=15.6$, $SD=16.7$) or Connecticut ($M=10.8$, $SD=14$), a statistically significant difference ($F=8.83$, $df=2$, $p<.001$).

There were no significant differences among teachers participating in the three professional development models in: venue of their first teaching experience (adult education or K–12); access to paid prep time; opportunities for collegiality; age; number of annual hours of paid professional development release time; access to benefits as part of their adult education job; teaching situation (ABE, GED, ESOL, etc.); or program type. The only significant difference among teachers by model was in number of hours per week working in adult education (mentor teacher group participants worked significantly fewer hours in adult education on average than did teachers in the other models) and number of years working in the field of adult education (practitioner research group participants had been working in adult education for longer, on average, than teachers in the other models).²⁵

Program Characteristics of Teachers in the Sample

Table 3 on the following page provides a few of the general characteristics of the programs in which teachers in this study worked.

²⁵ Teachers who participated in mentor teacher groups worked an average of 15 hours a week in adult education ($n=27$, $SD=9.4$), compared to 26.6 hours per week for workshop participants ($n=34$, $SD=10.86$) and 23.6 hours per week for practitioner research group participants ($n=36$, $SD=10.71$), and this difference was significant (ANOVA $F=9.10$, $df=2$, $p<.001$). Teachers who participated in practitioner research had been working in adult education an average of 11 years ($n=31$, $SD=6.94$), compared to 7 years for mentor teacher group participants ($n=28$, $SD=6.0$) and 8.5 years for workshop participants ($n=34$, $SD=6.25$), and this difference was significant (ANOVA $F=3.4$, $df=2$, $p<.05$).

Table 3: General Program Characteristics of Teachers in the Sample

PROGRAM CHARACTERISTICS	PERCENTAGE OF SAMPLE
<i>Location</i>	
Urban	52%
Suburban	27%
Rural	19%
<i>Category</i>	
Local Education Agency	53%
Community-based Organization	27%
Corrections (jails or prisons)	7%
Workplace	4%
Library	3%
Homeless Shelter	2%
Community College	2%
Other	3%
<i>Size</i>	
Fewer than 5 paid staff	11%
5–20 staff	60%
21–30 staff	9%
30+ staff	19%

Overall, about half of the programs were urban, half were based in school district settings (local education agency), and more than half had between five and twenty staff members.

Designing the NCSALL Professional Development

The topic of the NCSALL Professional Development—learner motivation, retention, and persistence²⁶—was the same across all models and across all states. After much discussion with professional development leaders in the three states about a range of possible professional development topics for the study, they decided that the topic of learner persistence—how to help learners persist in reaching their educational goals—would be most likely to interest a large number of adult education teachers in each state.

²⁶ Sometimes referred to in this report as LMRP: learner motivation, retention, and persistence. We define “learner motivation” as learners being engaged in learning while in class. “Retention” refers to learners attending class regularly and staying enrolled in the program until they reach their goals. We define “persistence” as learners seeing themselves as successful, lifelong learners, even if they “stop out” or drop out at any given point.

Our goal was to develop high-quality professional development in three different models appropriate for adult educators. The research team designed all three professional development models, using the best methods and accepted principles of adult learning and effective professional development. Experienced teachers or professional development leaders in each state, recruited and trained by the research staff, facilitated the professional development. The common and unique elements of the professional development models tested in this study are included in Table 4.

Table 4: Common and Unique Elements of the Three Professional Development Models

(See Appendix A for more information about our Professional Development models.)

COMMON ELEMENTS (EACH MODEL INCLUDED)	UNIQUE ELEMENTS
	Different numbers of participants in each model • <i>Multisession workshop</i>: up to 16 teachers • <i>Mentor teacher group</i>: up to 5 teachers • <i>Practitioner research group</i>: up to 7 teachers
Same 3 objectives Participants would: • increase knowledge of the topic (learner motivation, retention, and persistence) • critically reflect on their learning and make plans for taking action • take action to increase learner persistence	Additional objectives specific to the following groups: • <i>Practitioner research group</i>: learn basic principles of research, conduct practitioner research, help one another with research, draw conclusions about practitioner research as a professional development model • <i>Mentor teacher group</i>: learn about the process of peer coaching, get feedback from observation by mentor, draw conclusions about mentoring as a professional development model
All models designed for 18 contact hours, over multiple sessions	Different time spans for each model • <i>Multisession workshop</i>: three full-day sessions over 1–3 month span • <i>Mentor teacher groups</i>: four 2–3 hour sessions, plus two individual 4-hour mentor observation sessions, over 4-6 month span • <i>Practitioner research group</i>: six 3-hour group sessions over 6–9 month span
Common activities to build collegiality among participants Examples include: sharing experiences, trouble-shooting, group brainstorming for action plans Expectation that practitioners would try things out in classroom/program between sessions	Different activities and amount of time studying the topic • <i>Multisession workshop</i>: approximately equal time in activities for learning about the topic, activities for gathering information, and activities presenting strategies for addressing learner motivation/persistence • <i>Mentor teacher group</i>: learning about topic through brief activities and discussion of readings; time for learning about peer coaching; more than one third of time devoted to individual mentor observation sessions • <i>Practitioner research group</i>: learning about topic exclusively through discussion of readings; most of time devoted to learning about, designing, and conducting own classroom research project on topic

How Teachers Change: A Study of Professional Development in Adult Education

COMMON ELEMENTS (EACH MODEL INCLUDED)	UNIQUE ELEMENTS
Trained facilitators deliver the highest-quality professional development	Type and role of facilitator varied by model • <i>Multisession workshop</i>: run by former adult education teacher who was also a qualified trainer/professional developer; “facilitated” learning through activities and discussion among participants • <i>Mentor teacher group</i>: carried by current adult education teachers trained and supported by research staff; facilitated group learning but also mentored or coached each participant individually, providing specific feedback based on classroom observations • <i>Practitioner research group</i>: conducted by previous or current teachers with professional development experience and experience conducting and/or facilitating practitioner research; guided teachers through the research process, and facilitated the group to learn from their own and each other’s research rather than from activities
All participants received the same readings and handouts	Amount of exposure to reading and discussing literature on topic varied. • <i>Multisession workshop</i>: devoted least time to reading and discussing the literature; much of the learning about the topic was done through workshop activities • <i>Mentor teacher group</i>: devoted a moderate amount of time to discussing readings on the topic, along with one or two workshop-type activities • <i>Practitioner research group</i>: spent most of the time discussing readings, with a full hour of discussion of readings in sessions 2-6
Used an inquiry approach/cycle for studying the topic. Participants would: • learn about topic and strategies for addressing the problem • gather information about the specific supports and barriers to persistence experienced by the learners in their own classrooms • think about the implications of this information or data for choosing a specific strategy for addressing the problem • take action (implement strategy) • think about how the strategy worked and repeat the inquiry cycle	The origin of knowledge is different, philosophically, in each model. • <i>Multisession workshop</i>: knowledge primarily from research on the topic or from published accounts of teachers’ experiences related to the topic; learning from activities that demonstrate strategies and allow teachers to practice and discuss • <i>Mentor teacher group</i>: knowledge partly from the literature or published accounts of teachers’ experiences, partly from mentor as more experienced colleague, and partly from experiences of other teachers in group; learning from interaction between mentor and participant, via observation and feedback • <i>Practitioner research group</i>: knowledge somewhat from research and the facilitator (through discussion of readings) but most knowledge generated by teachers themselves through their own classroom research; learning from analyzing one’s own data and experience in classroom and hearing about the research of other teachers in the group

Defining and Measuring Teacher Change

In order to gauge change as a result of professional development, we had to define “change.” We defined “change” as differences in thinking and acting, on and off the topic. Change “on the topic” included increased knowledge about the topic and reported action taken to address learner persistence in the classroom, in the program, or in the field. Change “off the topic” included increased awareness of the field of adult education, increased confidence in teaching, decreased feelings of isolation, or use of a new teaching technique. In order to differentiate levels of change and to acknowledge that change, in itself, may not always be change for the better, we defined the “preferred direction” of change as: thinking integrated with acting in multiple arenas (in one’s own learning, in the classroom, in the program, and/or in the field).

To gauge such changes, we developed a set of outcomes (differences in thinking and acting) on and off the topic that we expected to see in teachers as a result of participating in these three models of professional development. In other words, any of these outcomes, based on the objectives and design of the professional development, would “count” as change,²⁷ as presented in Table 5:

Table 5: Outcomes That “Counted” as Change

	CHANGES ON THE TOPIC	CHANGES OFF THE TOPIC
Thinking Changes	Learning about the topic and learning strategies for addressing learner motivation, retention, and persistence (LMRP)	• Gaining general teaching knowledge • Learning strategies (tools) for research • Expressing importance of collegiality in program or in field • Becoming more aware of and/or critically analyzing the weaknesses or strengths of: ▪ The community within which they or learners live ▪ Their program ▪ The field of adult basic education ▪ How they best learn
Acting Changes	Taking action to: • Find out about forces affecting the motivation and persistence of the learners with whom they worked • Address LMRP in the classroom • Address LMRP in the program • Address LMRP in the field	Making a general change, without intention to affect LMRP: • In class, using a new teaching technique • In the program, initiating a policy change • In the field of adult education, contribution to field or community

²⁷ By looking at the range of outcomes emerging from preliminary analysis of the second wave of data, we confirmed and organized the set of outcomes shown here.

Data Collection

Our goal was to collect data that would help us see the change (differences in thinking and acting) for each participant, on and off the topic, in their roles as learners, teachers, program members, and members of the field, as a result of their participation in the professional development. To do this, we needed to collect a range of data related to their thinking and acting, both before and after they participated in the professional development. We collected data through questionnaires from the whole sample (106) and through questionnaires and interviews from the subsample (18 teachers from across the three models and three states).

All data are self-reports from the teachers; however, we didn't just ask: "did you take any action?" We asked for specific examples of action they had taken (before and after participating in the professional development) related and unrelated to the topic, what exactly they did, for how long, and what the outcome of their action was. To measure whether they changed their thinking on the topic we asked them to state specific strategies that could be used to address the issue of learner motivation, and specific concepts related to the topic that they remembered from the professional development. To see if, over the course of the professional development, they changed the way they thought they learned best, we asked them (in each wave) to tell us how they best learn to improve their teaching and why. Although self-reports in no way substitute for multiple and repeated observations and documentation of teachers' behavior change (which would have been beyond the resource scope of our study, given the sample size), we do feel we were able to gauge changes in thinking and acting by looking at the details of their self-reports over time (before, after, and one year after).

The data we collected to gauge change included:

- **Questions about their thinking and acting on the topic.** What helps or hinders learners to persist, what strategies are effective for increasing persistence, what is the main concept on the topic you got out of the professional development, what have you done to address learner persistence (with individual learners, in the class, in the program, in the field)?
- **Questions about thinking and action off the topic.** Besides the topic, what is the main concept you walked away with and what did you do with this?

For the whole sample, then, we had two measures of change (our dependent variables):

1. Overall amount of change (thinking and acting on and off the topic)
2. Type of change (thinking and acting on the topic of learner persistence)

To collect data about factors influencing teacher change as a result of professional development, we created a set of hypotheses from the literature, and built questions into both the questionnaire and interviews to collect data about these factors for each teacher. There were three categories of factors for which we collected data: (1) individual factors, (2) professional development factors, and (3) program and system factors, including working conditions of teachers. Table 6 provides an overview of the kinds of data we collected from teachers about themselves and their programs:

Table 6: Overview of Data Collected from Teachers and Programs

	WHOLE SAMPLE	SUBSAMPLE
Number of Teachers	106 in whole sample	18 out of the 106 in the sample
Method	Three questionnaires (one at each wave, ranging from 20-38 pages per questionnaire)	Three 2-3 hour interviews with teacher (one at each wave), one 1-hour interview with program director, one class and program visit
Timing of Data Collection	Wave One: Before participating in PD ²⁸ Wave Two: After completing PD Wave Three: One year after completing PD	Wave One: Before participating in PD Wave Two: After completing PD Wave Three: One year after completing PD
Focus of Data	▪ Teachers' backgrounds (gender, race, level of formal education, years teaching in adult education, type and amount of teaching currently being done, their reasons for working in adult education, etc.) ▪ Program information (location, size, staffing, curriculum and attendance requirements, preparation time allowed, professional development release time allowed, etc.) ▪ Amount and type of other PD attended before and after NCSALL PD ▪ Views about teaching ▪ Thinking about the topic ▪ Self-reports (detailed examples) of action on and off the topic ▪ Opinions about the professional development	▪ How they became an adult education teacher ▪ Experiences as a <i>learner</i> (professional development activities, learning style), <i>teacher</i> (goals of teaching, roles of teachers, and views about learners), <i>program member</i> (participation in program decisions and change), and <i>member of the field</i> (promoting adult literacy or advocating for students' needs) ▪ Self-reports of action on and off the topic ▪ Opinions about the professional development
Types of Questions	Closed-ended and open-ended	Open-ended questions (delivered in structured interview)

²⁸ PD=professional development

We conducted class observations, but only to understand the teacher's teaching situation and program context, rather than to collect data about teacher performance. Similarly, the purpose of the interview with the program director or coordinator was to get a better understanding of the program context, not to ask the program director to comment on the individual teacher.

In addition to the data collected from participants, we audiotaped each of the 15 different professional development group sessions, with a note taker in attendance; we also kept attendance records, audiotaped conversations between facilitators and note takers after each session was over, and took notes during a reunion of facilitators a few months after the professional development concluded. Using this data, the research team developed a rating of group quality based on the quality of the group dynamics, quality of facilitation, and the integrity of the model (the extent to which the professional development was conducted as designed). For a more complete description of how the quality of the groups was rated, please see Appendix C.

Data Analysis Strategy

We analyzed the data from the whole sample quantitatively, and the additional data collected from the subsample was analyzed qualitatively. The analysis plan called for using the data from the whole sample (quantitative) and the data from the subsample (qualitative) iteratively to understand the types and amount of change among participants. For example, after Wave Two, we began analyzing the data qualitatively, looking for patterns and types of change. This informed our quantitative coding scheme. Once all data had been collected, we analyzed the quantitative data, and then used the results of the quantitative data to test against the qualitative data for important factors that emerged in both types of data.

Analysis of the data included the following steps and timing:

Examining the quantitative data:

- We entered all data from the closed-ended questions in the questionnaire from all three waves using SPSS, a statistical software program (after each wave of data was collected).
- We compiled all data from the open-ended questions in the questionnaire in an Excel table, one for each teacher (after Wave Three), and then coded and tabulated change (see Table 5 on page 38 for what “counted” as change, and see “Criteria for Change” in Appendix B for a full description of how we coded this data). We used the “types of change” that evolved from the qualitative analysis to assign type of change to each teacher in the whole sample (after the qualitative analysis had produced the four types of change; see below).

- We ran frequency tests to gauge change for the whole sample, and performed statistical tests to test our hypotheses about factors that could influence the amount and type of change among teachers (after Wave Three). Specifically:
 - *One-way ANOVA tests* were used when one variable was categorical (such as the level of formal education) and one variable was continuous (such as amount of overall change).
 - *Bivariate correlation tests* were used when both variables were continuous (such as years of experience working in the field and amount of overall change).
 - *Chi-square tests* were used when both variables were categorical (such as model of professional development and type of change).
 - *Multivariate analysis* was done with each dependent variable (amount and type of change) and those factors that emerged from the statistical tests cited above as most influencing amount and type of change.

Examining the qualitative data:

- Three members of the research team independently read through all of the data for each of the 18 subsample teachers—from the interviews with teachers and program directors, class observation, and program visit—and created a “summary profile”²⁹ of all the salient outcomes and factors as a *learner*, as a *teacher*, as a *program member* and as a *member of the field* for each subsample teacher (after Wave Two, with additional information added after Wave Three).
- We used the profiles of each subsample teacher to create a matrix of all change and factors across the subsample (after Wave Three).
- We then analyzed the matrix for patterns in change and factors (“pattern coding”), from which our four types of change emerged (described in the “Findings” chapter).
- We then used these four types of change to code the data from open-ended questions from the rest of the sample (after Wave Three).

Combining the quantitative and qualitative data:

- Using the results from the quantitative analysis, we then returned to the summary profiles to create short case studies of teachers representing the four types of change and verify how the factors that were important in the whole sample were or were not also important among the subsample teachers (after all quantitative and qualitative analysis was completed).

²⁹ What Miles and Huberman (1994) call *interim case summaries*: “a provisional product of varying length (10–25 pages) that provides a synthesis of what the researchers know about the case and also indicates what may remain to be found out...The summary is the first attempt to derive a coherent, overall account of the case” (p. 79).

Producing results:

- Using the information both from the whole sample and the subsample teachers (quantitative and qualitative), we developed a final list of the most important individual factors that influenced teacher change.³⁰

To ensure rigor in our analysis, two or more members of the research team looked independently at the data when coding, summarizing, or rating. Whenever a question of interpretation or a difference in ratings among coders arose, we returned to the raw data for verification. Finally, we held two-day analysis meetings among researchers at each stage of completed reduction/display.

Limitations

Two (sometimes competing) priorities influenced the design of this study: one, the need for a rigorous and high-quality research design, and, two, the need for the professional development we offered to be as realistic as possible. In order for the findings to be valid, we felt that the professional development should be offered through the existing professional development systems in our test states so that findings would be most relevant to the actual contexts in which adult education professional development is offered. In most cases, the “research” and “reality” priorities did not conflict; however, there were instances when decisions made to uphold research or data collection rigor may have affected the quality of the professional development, or when decisions made in order to offer the most realistic professional development may have affected the research design.

For example, for the sake of fair sampling across the models, we chose to keep recruitment uniform for all three models: all potential participants received the same type of flyer announcing the professional development activity. However, since mentor teacher groups and practitioner research are less familiar formats for professional development than are workshops, teachers may not have had as much information about what to expect from the practitioner research group, for example, than we now know they

³⁰ In general, we identified as the most important those factors that emerged as strong in *both* the quantitative and qualitative analysis. However, we also identified several factors that were especially strong in one type of analysis (either the quantitative or qualitative) but for which we have no corresponding data, or the data was not as strong, in the other type. For example, there is one factor (access to benefits) that emerged from the quantitative analysis as important in influencing change, but this did not emerge in the qualitative (interviews, observations) analysis. Similarly, one factor (participating in professional development where all members of the group are from one program) was especially strong in the qualitative analysis but the numbers are too small and data not clear enough in the quantitative analysis to support that in the whole sample. However, we still identify these factors as important and worthy of future research because they were particularly strong in one type of analysis.

need before participating in this type of professional development. On the other hand, the uniform recruitment may have reduced selection bias into the three models, and thus permitted us to learn lessons about recruitment.

Another example of the need to balance research design with professional development principles—an example where research was favored over realistic professional development—is our request to facilitators to be faithful to the model as designed, and to follow the guide, with some flexibility, so that there was less variation among groups within a particular model. Some facilitators felt constrained to stick to the guide, knowing that they were in a research study and comparability of professional development experiences within the same model across states was important. In some cases, this constraint may have prevented the facilitators from adapting the professional development activities to the specific needs or interests of the practitioners in their group, as they may have done had they not been involved in a research project.

Another design limitation was that the data used to determine change is all based on teachers' self-reports. Although most K–12 professional development research also relies on self-reporting, researchers understand its limitations. In this study, we do feel that the repeated collection of data over time, plus—for the subsample teachers—the classroom observation and triangulation of the data (through program director interviews and tapes of professional development activities) allowed us to make realistic judgments about the differences between espoused theory and actions, and, to a lesser extent, about the accuracy of these self-reports.

A third design limitation is that, because of the desire for quantitative data to support the qualitative data and to provide a broader view of professional development outcomes, we decided to recruit larger numbers of teachers to participate in professional development on the same topic than would ordinarily be expected in naturally-occurring professional development within a state or region. In some cases, this meant that either program directors or state literacy resource center staff encouraged teachers to participate, when they ordinarily might not have either self-selected or had access to such professional development. Also, because all completing teachers were given a stipend for their participation to compensate for their time in providing us with data, some of the participants in the study who would not have ordinarily participated in professional development of this length felt they could because the stipend partially compensated them for their time. How this affected the sample of teachers in our study is unknown, but receiving payment may have played a role in the composition of the sample.

The size of the sample limits generalizability of quantitative results. While large from a qualitative point of view, it is small from a quantitative point of view. On some data points, cell sizes were too small to run statistical tests comparing practitioners across models.

Another limitation is that all of the research was conducted in New England, and, although the three participating states have different adult education and professional development systems, there may be similarities in the learner and teacher populations within this region that would not be applicable in other regions of the country. Care should be taken before generalizing these findings to practitioners in other systems, states, and regions.

Another design limitation, although common enough in how teachers usually choose professional development, is that not all participants had the choice, because of geography, to participate in a particular professional development model. Although technically any practitioner could have registered to participate in any of the models in their state, realistically, most practitioners registered for the model that was offered closest to their home or program.

We believe that the tape recording and observation of professional development sessions may, for some participants, have influenced the level of openness in their discussions about program conditions or other barriers that would prevent them from making changes based on what they learned in the professional development. Although some subsample teachers reported forgetting that the tape recorder was running, others did say that they were conscious of it and that it may have influenced what they shared during the professional development sessions. Obviously, practitioners in the study, some more than others, were aware that they were participating in a research study and this may have affected responses about the quality of the professional development and the amount of change they said they experienced as a result.

Finally, the research design team and research director/coordinator primarily come from a background as teachers and professional developers in adult education. As such, we each have formed beliefs about the purposes of literacy, the best approaches to instruction in adult education, and the quality of some types of professional development activities over others. While there were minor differences in viewpoints about how the professional development research and activities should be designed, based on these belief systems, the researchers shared a common view of the value of learner-centered professional development and adult education instruction. We recognize that this view may not be common throughout the field of adult basic education. Our views may have biased us toward designing professional development activities and interpreting findings that are consistent with a learner-centered approach to education, as we define it.

CHAPTER TWO: FINDINGS

In this chapter, we present our findings in response to the research question: How do practitioners change as a result of participating in one of three different models of professional development, and what are the most important factors that influence (support or hinder) this change? We first present information about who participated in the professional development, why, and for how long. The rest of the chapter is divided into two main sections: how teachers changed, and what factors influenced that change. In each section, we first discuss the amount or type of change experienced by the teachers, and then we provide some snapshots from the subsample participants to demonstrate, beyond the numbers, what change looked like for them.

Participation in the Professional Development Activities

The hours of participation among the sample of 100 participants ranged from 2.5 to 18. The average number of hours that teachers participated in the professional development activities was 15 (median number of hours equaled 17.25) and that was consistent across the three states. However, teachers in the practitioner research group model participated fewer hours on average (mean [M]=13.7, standard deviation [SD]=5.6) than teachers in either the workshops (M =16.4, SD =2.7) or the mentor teacher groups (M =14.6, SD =4.4). Statistical tests indicate that the differences in number of hours attended across the professional development models were statistically significant (ANOVA, F =3.4, p <.05).

Sixteen out of the original 100 participants left the NCSALL Professional Development before completing two thirds (12) of the required hours. Chi-square tests show a significant difference among the three models in dropouts (χ^2 =14.2, df =2, p <.001): 12 out of 37 (38%) participants dropped out of practitioner research groups; 4 out of 28 (14%) dropped out of mentor teacher groups; and 0 out of 35 dropped out of the multisession workshops. Dropouts were evenly distributed across the states, with no significant differences: Maine had 5 dropouts out of 33; Massachusetts had 4 dropouts out of 31; and Connecticut had 7 dropouts out of 36. We asked dropouts (in the Wave Three questionnaire) the reason they left the professional development before completing the full 18 hours; 11 of the 16 dropouts responded to this question. Five dropouts indicated “lack of time, other commitments” as the primary reason; three reported health problems; two indicated a change of job; and one reported not liking the professional development as the primary reason for dropping out.

Another factor related to attendance in our professional development was hours of paid professional development release time a teacher received annually, which was positively correlated with number of hours attending (r =.299, p <.01, n =100). Hours attended was also significantly related to the rated quality of the professional development groups (as rated by the researchers) (r =.345, p <.001, n =100), but not to

perceived quality (how the teachers rated the professional development after they had participated in it). In other words, if the professional development was of low quality (according to our rating), they attended for fewer hours, but how many hours they attended was not related to teachers' perception of its quality afterward. (Please see Appendix C for more information about the criteria used by researchers to rate group quality.) Finally, number of working hours was related to completing the professional development: all dropouts were part time, with a mean number of hours worked per week of 16.79 ($n=14$, $SD=10.3$), compared to completers as a whole, who averaged 23.28 hours worked per week ($n=83$, $SD=11.2$). In other words, teachers who worked part time were more likely to drop out than teachers who worked full time. This is statistically significant ($\chi^2=6.8$, $df=2$, $p<.05$, $n=97$).

Another factor affecting attendance was the level of priority the teacher assigned to this particular topic (LMRP), compared to other topics on which she or he could seek professional development, but interestingly, it was negatively correlated ($r=-.21$, $p<.05$, $n=100$). The less of a priority it was, the more hours the teacher attended the NCSALL Professional Development; we can't explain why that would be significant.

Discussion of Participation

Our qualitative data offer three reasons for the higher number of dropouts from the practitioner research groups. Although most of the dropouts reported relatively benign reasons (health, lack of time, change of job), their reports may have been colored by their desire not to express negative opinions of the professional development to us. From other data (interviews with subsample practitioner research group participants, feedback from facilitators, and the notes/tapes from the professional development activities) we believe there may have been other reasons for dropping out, beyond what teachers gave as their primary reason, and these reasons are related to (a) recruitment information, (b) teachers' developmental level, and (c) quality of the group (facilitation, group dynamics, flexible adherence to the model).

Recruitment was the same for all three models. We did not advertise the practitioner research groups differently from the way we advertised the workshops or mentor teacher groups (feeling it might somehow affect the results of the study by skewing the uniformity of the recruitment process). However, we now feel, based on the feedback from participants and facilitators, and based on the data, that teachers should have been given a better description of what they were signing up for before they participated in the practitioner research group—a model that was new to many practitioners. The concept of “practitioner research” is still less familiar in general than the other forms or models of professional development in the field. Clearer expectations beforehand about the type and amount of work involved may have influenced the dropout rate from this model. One teacher who participated in a practitioner research group recommended:

More clarity when describing the research project so people don't think that they're just going to sit there (in the professional development) and listen. Explain to them that we expect X, Y, and Z from you. Are you willing to...?

—Beth,³¹ Wave Three interview

Practitioner research may also interact with a teacher's particular learning style or developmental level, perhaps negatively. Participation in a research study requires teachers to play a more active role, with more self-initiative, than merely attending a workshop. Although each of the models asked teachers to read or conduct activities in the time between one session and the next, more “homework” was certainly required of practitioner research group participants. In addition, the style of the practitioner research group is substantially different: the facilitator doesn't give “the answer”; rather, the “answer” comes from teachers' own investigation into what is going on in their classrooms. We heard from facilitators that dropouts tended to be the teachers who often asked, during the course of the practitioner research group, “what's the right thing to do?” or “what exactly am I supposed to be doing here?” While some of that confusion could undoubtedly have come from poor facilitation, completing practitioners seemed more able to grapple with a professional development design where they had to form their own question and design their own research project. Further research should investigate how teachers at different developmental levels (different ways of knowing) respond to various types of professional development that call on them to play roles beyond that of just listening to or being exposed to new teaching techniques.

A final reason for the greater dropout rate from the practitioner research groups may have been the quality of these specific practitioner research groups: three of the six practitioner research groups were rated by the researchers as low in quality, compared to two out of six low-quality mentor teacher groups, and no low-quality workshops. Information from facilitators' notes and interviews with participants and facilitators indicated a reciprocal relationship between dropouts and quality: the lower the quality initially, the greater the dropouts; the greater the dropouts, the worse the group dynamics and thus the lower the quality.

How Teachers Changed

In this section, we present the findings about how much teachers changed, and in what ways and roles. As discussed in Chapter One, what “counted” as change included changes in thinking and acting on and off the topic. We used two indicators of change:

1. **Amount of change**—a measure of overall level of change in thinking and acting, on and off the topic.
2. **Type of change**—a measure of the kind of change in thinking and acting on the topic.

³¹ In this report, the names of all teachers have been changed to protect their confidentiality.

We looked at change in four roles: as a learner, as a teacher, as a program member, and as a member of the field. We judged change within the context of what the professional development covered and recommended for knowledge and action, specifically:

- Teachers' *thinking changes* (on and off the topic of learner motivation, retention, and persistence), including learning about the topic of LMRP and strategies for addressing LMRP; gaining general teaching knowledge; learning strategies for research; expressing importance of collegiality in program or in field; becoming more aware of and/or critically analyzing weaknesses or strengths of communities, programs, field of adult basic education; or how they best learn.
- Teachers' *acting changes* (on and off the topic), including taking action to find out about forces affecting the persistence of learners; addressing LMRP in the classroom, program, or field; or making a general teaching change such as using a new teaching technique, initiating a policy change, or taking action in the community or field.

For more information about what was covered in the professional development and how we judged change, please see Appendix A and Appendix B.

How Much Did Teachers Change?

When coding teachers' open-ended answers on the questionnaires, we assigned scores for amount of change for each teacher, according to the different outcomes (thinking and acting, on and off the topic). This gave us an overall amount of change³² for each teacher, plus some indication of whether change occurred mostly in thinking or in acting, on or off the topic. (For more information about coding of the data, please see Appendix B.) Overall, we found that:

- Most teachers, even dropouts, changed at least minimally through gains in knowledge or actions in their classrooms; relatively few experienced no change at all.
- Almost all (90% of the whole sample, 95% of completers) gained some knowledge on the topic, but for many it was only one or two concepts.
- The majority (78% of the whole sample, 87% of completers) took some action, on or off the topic, but for many it was very minimal.

³² Total possible change score was 51. For overall amount of change, scores ranged from 0–30 out of a possible 51. The total possible score for thinking changes was 30, for acting changes was 21; total possible score for change on topic 15, and for change off topic 36. For someone to score the maximum, they would have had to demonstrate significant change in thinking and acting both on and off the topic.

Among the whole sample (completers, dropouts, and comparison group), the amount of overall change was a mean of 7.5, on the lower end of the 51-point scale. Only 8 out of the 101 in the whole sample and only 2 of the 83 completers demonstrated no change at all, either on or off the topic.

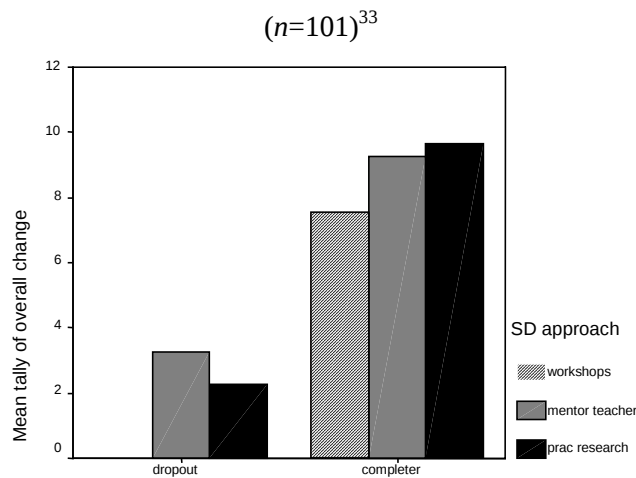
Table 7 below breaks down the means for all variables of change, by level of participation:

Table 7: Change by Level of Participation

(*n*=101)

	OVERALL AMOUNT OF CHANGE (RANGE 0-51) MEAN (SD)	CHANGE IN THINKING OR ACTING		CHANGE ON OR OFF TOPIC	
		THINKING RANGE (0-30) MEAN (SD)	ACTING RANGE (0-21) MEAN (SD)	ON TOPIC RANGE (0-15) MEAN (SD)	OFF TOPIC RANGE (0-36) MEAN (SD)
Comparison (<i>n</i> =6)	1.33 (1.63)	.67 (.82)	.67 (.82)	.00 (.00)	1.33 (1.63)
Dropouts (<i>n</i> =12)	2.58 (1.98)	2.00 (1.48)	.58 (.99)	1.67 (1.37)	.92 (.99)
Completers (<i>n</i> =83)	8.65 (5.93)	5.59 (3.93)	3.06 (2.49)	4.76 (3.88)	3.87 (2.80)
<i>Totals</i>	7.50 (5.97)	4.87 (3.93)	2.62 (2.48)	4.11 (3.83)	3.37 (2.80)

Figure 1 below shows amount of overall change by professional development model in the dropout and completer groups.

Figure 1: Amount of Change by Professional Development Model

Dropouts, overall, made significantly less change than did completers. Mentor teacher group dropouts ($n=4$) demonstrated more change than practitioner research group dropouts ($n=12$) but these numbers are too small to test for any statistical differences among the groups. The difference in amount of change by model of professional development among completers was not statistically significant. (This finding will be discussed in more depth later in the chapter under “Factors Influencing Teachers’ Change.”)

Changes in Thinking

Only 10 (9.9%) out of the 101 completers, dropouts, and comparison group members for whom we have complete data demonstrated no change in thinking, either on or off the topic. Among the 83 completers for whom we have data, only 4 (4.8%) demonstrated no change in thinking.

Table 8 provides information about the percentage demonstrating changes in thinking on topic (one measure) and off topic (eight measures). For a more detailed description of these measures, see Appendix B.

³³ This number includes completers, dropouts, and comparison group members for whom we have complete data. There was a teacher who attended all workshops but provided us with no data, so we dropped him completely from the sample; therefore, no dropouts from the workshop model appear.

Table 8: Changes in Thinking, On and Off the Topic

(*n*=101, *indicates missing data for one respondent)

	ON/OFF TOPIC	PERCENT CHANGED	DEMONSTRATED CHANGE	NO CHANGE	TOO VAGUE TO JUDGE ³⁴
Learned about the topic	On	82%	83	14	4
Increased general teaching knowledge*	Off	38%	38	54	1
Increased awareness of:	Off				
▪ the field of adult education		44%	44	53	4
▪ how best they learn to teach		34%	34	57	10
▪ program strengths and/or weaknesses		25%	25	76	0
▪ own or learners' community		5%	5	95	1
Expressed importance of:	Off				
▪ field collegiality		49%	49	51	1
▪ program collegiality		24%	24	77	0
Learned research tools and strategies	Off	18%	18	81	2

Table 8 above shows that, not surprisingly, the most common change was learning on the topic; most teachers in the study gained some knowledge about learner motivation, retention, and persistence. Eleven of these 83 gained significant knowledge, and 20 gained moderate knowledge; the remaining 52 demonstrated minimal knowledge gain. Most seemed to have gained (or at least retained) a concept or two including, for example, the ideas that some students “stop out” rather than “drop out,” or that persistence is affected by “turbulence” (students coming and going in the classroom, new students entering at any time, etc.).

If a teacher demonstrated some change in learning about the topic, we coded specific types of learning (see below); teachers often expressed or demonstrated knowledge in multiple ways (which is why numbers below add up to more than 83). Out of the 83 who learned about the topic:

- 74 expressed broader understanding of the topic and/or learners, including knowledge of the forces that affect learners’ motivation and persistence, and strategies for addressing LMRP.
- 35 expressed the need to get to know learners better (which we recommended as a step in the process of addressing learner motivation, retention, and persistence).

³⁴ These were cases where the information provided by the respondent was too confusing and insubstantial to merit a clear judgment about whether a change in thinking in this area had occurred.

- 25 expressed a change in their thinking about sphere of influence as a teacher (a feeling that they could have some effect on learners' motivation), while 6 expressed a negative sphere of influence³⁵ (the feeling that it was beyond their control because learner retention is based solely on the problems learners face in their lives).
- 23 expressed the need to broaden their instruction based on learners' needs or forces that affect learners' retention.
- 8 expressed an understanding that learners' motivation and teachers' motivation are connected (e.g., if there is teacher turnover, there will be learner turnover).

Interestingly, the next two highest areas of thinking change (after changes in thinking about the topic) relate to the field of adult basic education: the importance of collegiality in the field and an increased awareness of the field. These are changes that one would expect to occur when teachers have time to share experiences during discussions that are part of the professional development activity. It is an indication that teachers experience changes in thinking about issues unrelated to the topic of the professional development itself. Of the 44 who expressed an increased awareness of the field:

- 30 became more aware of the field in general (e.g., expressing the idea that they didn't know other programs and teachers also faced the same issues, or an awareness that research, publications, and other professional development activities existed when they thought there was none).
- 16 expressed a critical awareness of the professional development or adult education system's strengths or weaknesses (e.g., expressing the realization that funding was too limited to offer learners the support services they needed, or that the nature of the field contributed to teachers' lack of training and isolation).
- 5 expressed a change in their own identity as a member of the field (i.e., they realized this was the field within which they wanted—or didn't want—to continue to work).

Thirty-four teachers demonstrated changes in how they feel they best learn to improve their practice. Most of these changes (20) were minimal, and a larger proportion of mentor teacher group participants (14 out of 25) and practitioner research group participants (11 out of 27), as compared to workshop participants (9 out of 33) changed

³⁵ A positive sphere of influence is characterized in the following comment: *"It made me realize that unless there are major problems at home that would stop my student from continuing, the responsibility for his continuing lies with me."* Negative sphere of influence is characterized by these types of comments: *"All adult educators are faced with absenteeism and it should not be internalized. There are an overwhelming number of student reasons for lack of retention."* *"Is there really anything I can do to improve retention, or should I just accept the reality of a max of 50% who finish?"* *"We can't fault them for not attending class because of sick kids, working overtime, no transportation, etc., or resolve these issues for them—or blame ourselves."* *"Why do we spend so much time worrying about the early dropouts?"*

how they feel they learn best, but differences among models were not statistically significant ($\chi^2 = 8.95$, $df=6$, $p>.05$, $n=85$). Typically, mentor teacher group participants talked about the benefits of being observed, while practitioner research group participants talked about the value of conducting and reading research.

Of the 25 people who expressed a critical awareness of program strengths and weaknesses:

- 18 expressed the realization that their program was weak (e.g., the program would not take action to address LMRP as they hoped it would, or it did not provide enough opportunities for teachers to meet and share).
- 8 expressed a new awareness that teachers and/or learners should be involved in program decision-making.
- 5 expressed the realization that the program was fine (i.e., that the program was “on the right track” about how to address the problem of learner retention).

Changes in Acting

The professional development encouraged teachers first to ask learners about the forces supporting and hindering their persistence, and then to take action in their classroom, program, or in the field based on what learners told them. We collected information from teachers to help us gauge how much and what type of action they took. We also collected information about actions teachers may have taken not related to the topic of the professional development (learner persistence), such as trying out a new teaching technique or initiating change in the program unrelated to learner persistence.

Of the sample for which we have data on this question ($n=101$), 78% took some action on or off the topic. Out of the group who completed the professional development ($n=83$), 87% took action.

Table 9 provides information about the percentage of teachers that demonstrated changes in acting on topic (four measures) and off topic (three measures). For a more detailed description of these measures, see Appendix B.

Table 9: Change in Acting, On and Off the Topic

(n=101, *indicates missing data for one or more respondents)

	ON/ OFF TOPIC	PERCENT CHANGED	DEMONSTRATED CHANGE	NO CHANGE	TOO VAGUE TO JUDGE
Took action to: ▪ find out forces related to LMRP with learners* ▪ address LMRP in class* ▪ address LMRP in program ▪ address LMRP in field	On	42% 57% 43% 6%	42 57 43 6	55 36 49 95	3 7 9 0
Took general action in: ▪ class, teaching technique* ▪ program, initiate policy change* ▪ field, contribution to field or community*	Off	26% 7% 7%	24 7 7	67 90 87	2 1 1

The table shows that the three top actions were related to taking action on the topic, but that, in general, fewer teachers took action than made changes in their thinking (see Table 8): while 83 demonstrated increased knowledge on the topic, only 57 took any action and 34 of these were coded as having taken “minimal” action, usually making one or two changes in their classroom that were not sustained over time, such as calling an absent learner once or twice or trying a technique once and then abandoning it.

Of the 57 teachers who took some action in their class to address the issue of LMRP, most (34) took minimal action; 17 took moderate action and 6 took significant action (multiple types of action):

- 37 made a formal change (used a specific technique or activity) in their class to address learner motivation, retention, and persistence (e.g., goal-setting activities, evaluation of class, project-based learning to address one of the forces identified by learners as hindering their persistence).
- 24 made an informal change in their class (i.e., not adopting a formal activity but changing a facet of the classroom atmosphere, such as “lightening up” to allow students time during class to talk to one another or the teacher about aspects of their daily life that affect their persistence).
- 14 made an informal change outside of the classroom (e.g., calling learners who had been absent to urge them to return to class, talking with individual learners about their goals).

Of the 43 teachers who took action within their programs to address LMRP, most (28) took minimal action, while 9 took moderate and 6 took significant action:

- 38 took action to improve the overall program (e.g., setting up meetings to discuss LMRP or share techniques/activities learned during the training with other teachers, initiating changes in intake process to better identify learner goals).
- 12 took action in the program to improve their own classrooms (e.g., changing the way intake was done for their own classes, asking the director for resources to do different activities in their class).

Of the 42 teachers who took action to find out about the forces that affect the learners with whom they work, most (31) took minimal action, 8 took moderate action, and 3 took significant (often multiple) actions:

- 29 took a formal action (used a technique or activity) to learn about the forces affecting learners (e.g., initiated a class discussion, used a “force-field analysis,”³⁶ had learners interview each other, conducted an activity where learners could write about the forces that affect their motivation, retention, and persistence).
- 16 took an informal action in the classroom to uncover forces (this almost always involved an unstructured discussion with learners during a break in the work to simply ask them what supported them or hindered them from attending class).
- 4 made an informal change outside of class (e.g., talked with individual students before or after class to discover forces affecting them).

It is interesting to note that 42 teachers took action to learn about forces affecting learners, and 57 teachers took action to address learner persistence. This means that 15 fewer teachers took action to find out about the forces affecting learners than teachers who addressed the problem, indicating either that these teachers underreported “finding out” activities or that they took action without first talking to the learners with whom they work. These are examples where teachers did not undertake the whole process for addressing the topic (which asked teachers first to determine the specific forces affecting the learners in their own classes and programs); instead, it is likely that these teachers took action based on their assumptions about what forces affected learners.

Most (18) of the 24 teachers who made a general change in practice in the classroom made a minimal change, and this was usually the addition of a new technique or activity learned during the professional development (e.g., force-field analysis, discussion activity) that they used to teach other content in their class. For example, one

³⁶ A force-field analysis is a strategizing technique where people first list factors that prevent them from reaching a particular goal (in this case, persisting in their education), then list the factors that help them reach the goal, then strategize how to reduce the hindering factors and increase the helping factors.

activity conducted at the end of each workshop had teachers make a paper “quilt” about their plans to take action to address learner persistence; several teachers mentioned in Wave Two and Wave Three questionnaires that they had used this technique with learners as an activity in the class, but on another topic (such as health). The 24 teachers who made a change in their general teaching practice were almost evenly spread across models, but the 2 teachers who made significant change in this area were practitioner research group participants.

Action taken within the program off the topic usually involved an effort by the teacher to initiate more opportunities for collegiality in the program, through teacher-sharing meetings. We did not see much reported change in the type or amount of interactions with colleagues within the program as a result of this professional development, although some practitioners in the sample did talk about how they shared the information from the professional development with colleagues during their regular interactions.

Action taken within the field on the topic usually entailed providing professional development in other programs or at a conference about what changes teachers or their program had made to address learner persistence, or action within the local community to support the needs of learners (such as seeking funding support for new facilities). Action taken within the field off the topic, for the few teachers who undertook such action, was usually related to seeking more contact with colleagues or providing professional development for other teachers on a topic other than learner persistence. Regardless of whether the actions taken by teachers were on or off the topic of learner persistence, the teachers who reported them attributed them to their participation in the professional development.

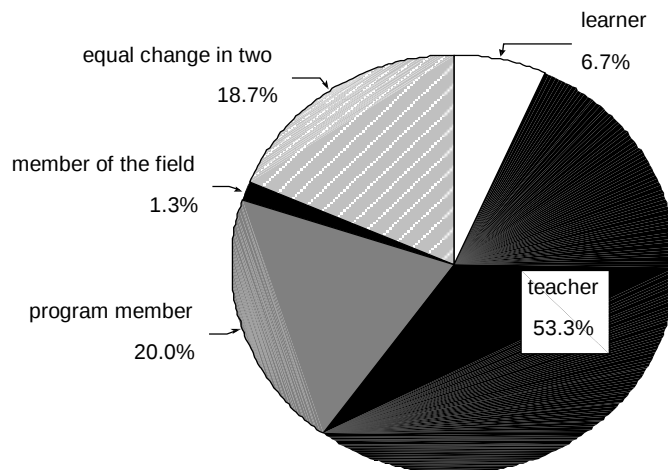
In What Roles Did Teachers Change?

For each respondent, two researchers independently made a judgment about the primary arena of change (as a learner, as a teacher, as a program member, or as a member of the field), based on the arena of thinking and action where most change occurred. In some cases, the change seemed equally distributed between two of these arenas, usually as a teacher and a program member. The data indicate that:

Changes were most often seen in teachers’ roles as classroom teachers (rather than their roles as learners, program members, or members of the field).
--

Figure 2 shows the percentages of teachers ($n=101$) by primary arena of change.

Figure 2: Primary Arena of Change



In What Ways Did Teachers Change?

Using the categories developed by looking at patterns in the qualitative data, and then coding the whole sample, we found that:

- Change fell into four types:
 - Integrated
 - Acting
 - Thinking
 - No or minimal
- The most common type of change was thinking change.
- The percentage of *completing* teachers ($n=83$) in each type was:
 1. Integrated Change: 24%
 2. Acting Change: 13%
 3. Thinking Change: 35%
 4. No or Minimal Change: 28%

The characteristics that emerged for these four types of change are presented in Table 10 on the following page:

Table 10: Characteristics of Types of Change

TYPE OF CHANGE	CHARACTERISTICS
Integrated	• Demonstrated thinking <i>and</i> acting changes, which were balanced and integrated: actions tied to new thinking, expressed theories and critical reflection related to topic and to existing theories. • Made changes: - that were not haphazard or random: thoughts and actions linked and integrated into teachers' understanding of the topic and theories of good teaching and student success. - that were sustained over time. - on one of two levels: (1) minimal-to-moderate integrated and (2) significant integrated. - that were limited overall and that usually occurred in one arena (i.e., as a teacher), if they showed minimal-to-moderate change. - that were "transformational": significant overall and occurred in multiple arenas (i.e., as a learner, teacher, program member), if they showed significant integrated change. • Most often used an inquiry approach³⁷ and achieved all three objectives of the professional development.³⁸
Acting	• Demonstrated change (at least minimally) in thinking and acting, but acting changes outweighed thinking changes. • Scored minimally in a few thinking categories but scored minimally or moderately across more acting categories. • Took actions that didn't have significant link to thinking change: limited rationale for action, actions not tied to thinking on topic or theories of teaching. • Took actions (trying new techniques or implementing different strategies) that appeared random in nature, and did not appear to lead in any particular direction (either to a next step or another insight). • Took actions that were typically not sustained over longer periods of time.
Thinking	• Demonstrated change (at least minimally) in thinking and acting, but thinking changes outweighed acting changes. • Scored minimally or not at all in acting categories but scored minimally or moderately across more thinking categories. • Took actions not linked significantly with changes in thinking; any actions small or short-lived. • May have demonstrated a clear idea about an inquiry approach to addressing the topic but took little or no action either to find out about forces affecting their own learners or to choose a strategy for addressing the problem.
No or minimal	• Demonstrated little change in thinking or action. • Scored minimally in a very few categories (on or off the topic). • Showed little breadth or depth of thinking or acting change over time: gained a concept or two, tried out an activity when directed to as part of the professional development, but little indication that any of three objectives of the professional development achieved. • Showed no connection between even minimal thinking and acting changes; any changes not sustained.

³⁷ Inquiry approach/cycle: (a) learn about topic and strategies for addressing the problem, and (b) gather information from learners about the specific supports and barriers to persistence experienced in the learners' classrooms; (c) think about the implications of this information for choosing a specific strategy for addressing the problem; (d) take action (implement strategy); (e) think about how the strategy worked and repeat the inquiry cycle.

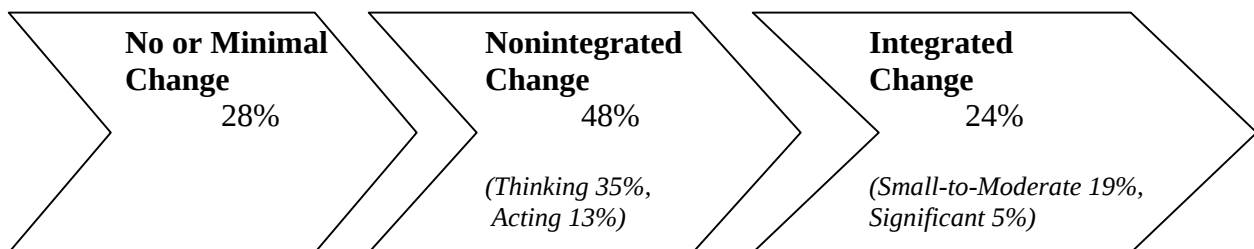
³⁸ (1) Increase knowledge of the topic (learner motivation, retention, and persistence); (2) critically reflect on their learning and make plans for taking action; and (3) take action to increase learner persistence.

The four types of change described above represent the direction of “preferred change”:³⁹ from “no or minimal change” at one end of the spectrum to “significant integrated” change at the other. We made no qualitative distinction between “thinking change” and “acting change”; both are preferable to “no change,” but less preferable than “integrated change.” However, there is a natural dividing line between the types, based on the key factor of whether or not demonstrated changes in thinking and acting were integrated: that participants—regardless of the amount of change—reached all three objectives of the professional development in an integrated way and/or used the inquiry process/cycle.

Therefore, we combined these four types of change into a three-category spectrum of change: (1) no change, (2) nonintegrated change, and (3) integrated change. This allowed us to use larger cell sizes for further quantitative data analysis to test hypotheses about factors influencing type of change. This spectrum of change, including the percentage of *completing* teachers in the sample who demonstrated change in each type, is presented in Figure 3 below:

Figure 3: Spectrum of Change by Type (Among Completers)

(*n*=83, completing teachers)



The majority (72%) of the 83 completers demonstrated change, most of which was nonintegrated (thinking or acting) change. Teachers who fell into the “integrated change” type also demonstrated a higher overall amount of change; amount of overall change is significantly related to type of change (ANOVA, $F=33.42$, $df=4$, $p<.001$, $n=83$), as shown in Table 11. Those who demonstrated integrated change also demonstrated change in more arenas (classroom, program, and field), more sustained change, and change off the topic.

³⁹ “Preferred change” is defined as thinking integrated with acting in multiple arenas (in one’s own learning, in the classroom, in the program, and/or in the field).

Table 11: Amount of Overall Change by Type of Change(Completers, $n=83$)

TYPE OF CHANGE	<i>n</i>	MEAN OVERALL CHANGE	<i>SD</i>
No or minimal	23	3.04	1.97
Acting	11	8.64	2.50
Thinking	29	8.17	3.10
Minimal-to-moderate integrated	16	14.88	5.14
Significant integrated	4	19.50	9.15
<i>Totals</i>	83	8.65	5.93

Participation in the professional development was a factor in type of change. Most of the dropouts and comparison group members demonstrated “no change.” Two of the 18 dropout/comparison group members for whom we have data demonstrated what could be called “integrated” change, and three demonstrated nonintegrated change. This may be a result of their participation in other professional development; the numbers are too small, however, to make any judgment about contributing factors.

The next section describes the change demonstrated by teachers in our subsample, according to the type of change they experienced.

Integrated Change

In our study, the category of teachers who showed the most change were those we described as “integrated change” teachers. These teachers changed both their thinking and their acting and were able, to a greater or lesser degree, to integrate these two kinds of changes. “Thinking” changes are differences in knowledge and attitudes; for integrated change teachers, we saw evidence of their ability to reflect critically on what they were learning in the professional development, their existing theories about what good teaching is like, and what it means for students to be successful. “Acting” changes have to do with applying new knowledge or ideas, by using a new technique, for example. The teachers in this category were able to make significant, concrete changes in their classrooms or programs based on the changes in their thinking. Moreover, these changes appeared not to be haphazard or random changes, and in most cases, they were sustained over time.

The language of persistence and motivation and retention is much more in the center of my mind when I think about these steps that I take. It helps to be thinking about these actual aspects of learners’ lives when I’m taking the steps because that makes it more of a forefront issue: it’s something new that I’m doing for a reason. I can articulate that with students.

— Erica, Wave Three interview

There were five teachers in our subsample who demonstrated “integrated change.” These five teachers all understood and used an inquiry approach/cycle for studying the topic outlined in the professional development: they gained knowledge about the topic, connected this knowledge to action in order to find out about learners’ needs and the forces that affect learner motivation, and then took action in line with the theories and learners’ needs. In their interviews, each teacher expressed growth in their conceptual understanding about the topic. They chose strategies to address the issue of learner persistence based on what learners told them, and took action to implement those strategies. Those with minimal change demonstrated limited integrated change in one arena (learner, teacher, program member, member of the field), whereas those with significant integrated change demonstrated more change within multiple arenas.

Only two of these teachers—Esther and Meg—experienced changes in their thinking and acting as a result of their participation in the NCSALL Professional Development that we characterized as “significant.” Both had thinking and acting changes in multiple arenas (as learners, as teachers, and as program members). Both teachers also made a strong connection between learner retention and teacher retention; both expressed the opinion that a critical strategy for enhancing learner persistence was for programs to provide teachers with more support to alleviate teacher turnover. The other three of the five “integrated change” teachers had thinking and acting changes mostly limited to one arena (the classroom).

All five teachers also had an outcome related to a broadened and more critical understanding of their own program’s strength or weakness: four realized that their programs were weak, and the other received confirmation that her program was indeed on the right track with respect to LMRP. To varying degrees, all five teachers also had an increased critical awareness of the field, having entered the professional development with a fairly limited awareness of the field beyond their own local area. Finally, four of the five teachers increased their confidence as teachers, some through a better understanding of learner dropout they could and could not control and some based on the feedback from the mentors with whom they worked. The specific outcomes for each teacher are presented below; teachers are ordered from least amount of integrated change to most significant integrated change.

Erica: Erica, a first-year adult education teacher, worked full time as a one-on-one teacher in a rural family literacy program, and she attended the first 12 hours of the workshops (but missed the final 8 hours). Erica demonstrated minimal-to-moderate integrated change. Like the other teachers of this type, Erica changed her thinking, expanding the depth and breadth of her understanding of the issue. She also learned the terminology for the kinds of forces and barriers learners faced that affect retention. Erica gained a deeper understanding of the factors she could and could not control, recognizing that there might be instances of learner dropout that were beyond her control but others where either she or the program could have an effect. Rather than rejecting the issue (as

some of the “no or minimal” change teachers did), this new understanding helped her to depersonalize discussions she had with learners about dropping out and increased her overall confidence as a teacher.

The actions she took derived directly from this more complex understanding of why learners drop out: after first trying out a technique to help learners identify forces that affect their persistence (which she learned in the workshops), she continued over the next year to ask students directly, in each class session, about forces affecting their participation. She also discussed with another staff member in her program how to change the intake process so that intake included collecting information from learners about forces.

Her other program-level changes were simply “getting on board” and getting involved in activities to increase persistence—open houses for learners, coffee hours for learner sharing—that her program was already doing. Even though potentially she would have been supported to take other actions, she did not do so, perhaps because another outcome for Erica was her realization that, relative to others, her program was already doing a good job with LMRP. Similar to Pamela and Debbie, discussed below, she also increased her awareness of the broader field of adult literacy education and her role within it.

Debbie: Debbie, a part-time (14 hours a week) ESOL teacher who had taught for three years, divided her time between two urban programs; she participated in all 18 hours of a multisession workshop. Like Erica, Debbie demonstrated minimal-to-moderate integrated change. She also became more aware of social and contextual factors that affect learners and, to her relief, better understood what was and was not within her control as a teacher. Her first action was to use several techniques she learned in the workshops (force-field analysis, class discussions) to find out what barriers learners faced. She learned that many of them would be able to attend class more frequently if it were held on Saturdays. She then took action by proposing this to her program director, but her proposal was rejected.

Based on her discussions with learners and the discussions in the workshops, she began to shift her thinking from an exclusive skills-based focus:

My focus had always been, “How do I teach the language skills?” It [the professional development] started getting me to look in a more holistic way towards teaching, shifting the focus to “How do I improve the lives and the situations of the learners?” ... I’ve got this real intrigue now for project-based learning. Things that are a little bit more relevant for a natural approach to teaching as opposed to what our program involves, which is teach to the curriculum using these books and these binders.

—Debbie, Wave Three interview

This thinking shift included generating ideas for improving learner support and involvement in the program, such as establishing a student welcoming committee and creating a student buddy system. However, she reluctantly forfeited the idea of taking action in these areas because of the response she got from the director about her proposal for Saturday classes.

When Debbie found herself blocked from making program-level changes, she focused more on the classroom level. The workshops had presented, as a strategy for addressing persistence, the idea that learners need a good idea of the scope and sequence of what will be learned in the class, so she began to present the various content components as units, reviewing at the end of each class what they had covered that day and what they would cover on that same unit in the next classes. Based on the theory of increased learner support through strong class community, she took action to “lighten up” the tight lesson plans she had; she allowed time for the class to chat with her about what was going on in their lives.

Debbie also broadened her awareness of the field of adult literacy education. She learned about the kinds of supports teachers with more ideal working conditions enjoyed, as well as about the limited avenues for professional growth within the field. Within this context she became more cognizant of the lack of support her own program provided, both to her as a teacher and to her students. By the last interview Debbie had decided to leave the field, partially attributing this to her own lack of interest in teaching and partially to frustrations with the system, which, in her state, required testing and a required curriculum; such a structure limited, in Debbie’s new perspective, the possibility of meeting learners’ overall needs rather than just their language-skill needs.

Pamela: Pamela, a part-time ESOL teacher who had been teaching for 14 years, taught in a community-based program and participated in a mentor teacher group, missing the last two-hour session. She demonstrated minimal-to-moderate integrated change. Pamela’s changes also began with a focus, in thinking and acting, on increasing her understanding of learners’ needs, then changing the curriculum based on those needs.

Intrigued by the idea of goal-setting discussed in the professional development, she conducted activities in her classes to involve learners in goal-setting. Instead of just giving students a goal-setting form to fill out, she created a case study and scripted dialogue to model the goal-setting process for her learners. This activity helped her discover forces that hindered and helped them; she came to understand that discussing learner needs was not peripheral to the learning process, but an integral part of it.

We talked about what their goals are, we talked about whether or not our program was meeting those goals, and what their expectations are, and their evaluation of it. ... We talked about what’s preventing you from coming here?

What makes it easy for you to come here? I changed the whole format. We have a questionnaire that we give students, and the way I did it this time was to break them into groups. I made it several steps rather than a one-shot deal. ... It gave them a springboard and that's what we had been missing before.

—Pamela, Wave Three interview

She then began to add other classroom activities to bring learners' daily lives into the lessons. She asked them to bring in problems they had in everyday life and then she wrote scripted dialogues about how they could deal with such problems (e.g., having a conversation with the landlord about faulty heat) that the students practiced orally with each other in the classroom and that they could take home to practice.

I learned a lot about dialogue this year, to tell you the truth, how important this is. ... I've done a continuous stream of writing my dialogues, because I did it for our thing [being observed as part of the mentor teacher group]. It worked well and I got input from them that it's one of the best things they can have.

—Pamela, Wave Three interview

Through this activity, she slowly began to learn more about students' lives and about other ways to bridge the gap between classroom and community. For example, when the learners talked about not fully understanding the way their children's schools worked, she and the learners together planned a field trip to the local elementary school.

The changes in her thinking and her actions in the classroom increased her desire to discuss curriculum with other teachers in her program; she proposed sharing one of the case study stories she had written but there was no venue for teacher sharing in her program. Her commitment to the field of adult education deepened, though, as she thought about ways for teachers to work together more collaboratively. She felt that the positive experience of the professional development increased her motivation to stay in the field and, although she was still testing the waters in terms of her role as more than just a teacher, she began to think about how she could work to increase the opportunities for teachers to learn from one another.

Esther: Esther, a second-year ABE and ESOL part-time teacher (18 hours per week), taught in a rural LEA; she participated in 18 hours of the mentor teacher group. She demonstrated significant integrated change. Through her participation in the professional development, Esther increased her self-confidence as a teacher and became a respected member of her team. The discussions with her mentor and with other teachers in her group (all of whom were from her program) reassured her that she was on the "right track" and that her colleagues valued her opinion. Esther's thinking broadened on the topic; she was particularly intrigued by the definitions of the three terms (motivation,

retention, and persistence).⁴⁰ She also realized the importance of sharing theories of learner persistence with students, so that students can think proactively about the issue. She sought to find out about the forces affecting the learners in her classes by asking them to interview one another, but she didn't feel that this gave either her or the students the information she wanted about what might prevent students from staying in the program. So she tried another activity presented in the professional development: she and the learners all told the stories of their schooling experiences. This worked very well, and the students expressed their desire to share their stories with others in the community in order to encourage other learners to attend classes. Esther then adapted her curriculum; she and the class decided to approach the local media (television and newspaper) to broadcast and publish their stories. During class, Esther helped learners write and rehearse the script that then aired on a local television program, and she invited and made class time available for a newspaper reporter to come into the classroom to interview learners. She specifically connected these actions to two of the strategies—"creating safety" and "building community"—suggested by the professional development for addressing learner persistence.

I think it affected motivation. I think the students have been very motivated this semester. The biggest thing they got out of this was that they actually can take control and what they want to do can happen.

—Esther, Wave Two interview

Reflecting on this process, Esther felt that she became more aware than she had been prior to the professional development of the importance of listening to students, and she changed her lesson plans to add time for hearing about and responding to students' needs. As she did this, she learned of other needs expressed by the students: the desire to learn more about nutrition and the desire to get extra help with their difficulties/disabilities in reading.

In response to these student desires, she added a nutrition component to her curriculum. She sought and received permission from the director for the class to schedule a special lunch in the cafeteria, together with other classes, where students could talk about nutrition concepts. She requested and received permission from the director to attend an Orton-Gillingham learning disabilities training, so that she would know more about how to help students with learning disabilities. Even though Esther's actions were abruptly interrupted when she moved to Oregon with her family, she continued to think about the topic. One year after the professional development, she was still pondering the connection between learner motivation and assessment, feeling that assessing student progress should also involve assessing their motivation and persistence.

⁴⁰ We define "learner motivation" as learners being engaged in learning while in class. "Retention" refers to learners attending class regularly and staying enrolled in the program until they reach their goals. We define "persistence" as learners seeing themselves as successful, lifelong learners, even if they "stop out" or drop out at any given point.

Meg: Meg, a veteran teacher in her sixth year of teaching, worked full time as a family literacy and ESOL teacher in a rural LEA; she completed all 18 hours of the mentor teacher group. Meg was the teacher in our subsample who demonstrated the most significant change. This professional development was truly transformative for her, in that it challenged and changed both her assumptions and her practice. Overall, she became very active in responding more to learners' needs through curriculum and program improvement, and advocating for better working conditions within programs. These outcomes were sustained; one year after the professional development, she was still pondering the issues and taking new actions following the trail she started in the professional development.

Meg used the inquiry process/cycle for addressing learner persistence. She first conducted a force field analysis with learners and was surprised to learn that the class wanted to meet more often. Based on learners' requests, she changed her own class schedule to add an extra class each week. The process of talking to students about the forces that affected their persistence led her to realize that she was not as learner-centered as she had thought, and she became more strongly convinced that teachers and programs should listen more in order to better address learners' needs. She wanted to hear, on a regular basis, learners' ideas for improving the class, so she added an evaluation journal and reflection time to the end of each class. She herself also began to regularly keep a journal about the class and began to view classroom situations more objectively, thereby decreasing her tendency to personalize issues and blame herself for lags in learner motivation, retention, and persistence. In response to learners' desire to have a more interactive curriculum and move beyond the workbooks she had been utilizing, she ordered and used a new curriculum, Crossroads Café. To make the class more interactive, she conducted two project-based learning activities. The first was a class project to create a student newsletter; the second was a project to create a new recruitment flyer. Changing the classroom structure and curriculum produced new questions about her practice; she pondered how much students' personal lives should affect classroom instruction and how much students were learning the skills they had wanted to acquire as she implemented project-based learning. At the program level, she began a support group for learners. She became an advocate for the students, twice supporting them to take their concerns about scheduling and poor classroom space to the director and helping them see the importance of advocating for program change as a group.

I think my teaching has shifted to this point [of taking learners' needs more into account] because of that professional development. If I hadn't asked the students what they wanted to learn, I would have continued doing it more [in a] teacher-directed [fashion].

—Meg, Wave Three interview

The second major change in Meg's thinking and acting stemmed from her realization of the connection between teachers' retention and learners' retention. She felt that teacher turnover, stemming from poor working conditions, would increase learner dropout. She found that other participants in the mentor teacher group, all of whom were teachers in her program, also shared this perception, and she acted to advocate within her program for pay increases, teacher access to budgetary information, and increased resources in their classrooms. Her desire for collegiality also increased, and she and the other teachers advocated with the program director for regular teacher meetings (which they got). She also encouraged her colleagues to advocate as a group for program improvements, but she learned that teachers fear losing their jobs as a result of speaking up. Her belief that teachers needed to have a strong voice in program decision-making was strengthened. Based on her new thinking about teachers' poor working conditions, she took action in the field by informally surveying other teachers, administrators, and/or professional developers in the state when meeting them at workshops and conferences. She asked them about teachers' working conditions and talked with them about common concerns, especially regarding teachers' low salaries. She came to believe that programs are in large part responsible for the marginalized conditions of teachers and students.

... [I]f the teacher's not motivated, then learners will not be. [Teacher] retention is also a problem, teacher persistence. As ... teacher[s], we are always looking toward making sure that learners' needs are met. I can't do that if my needs are not met. If I'm going to teach students to voice their opinions and to make changes, I need to do it also.

—Meg, Wave Three interview

During our last conversation with Meg, one year after the professional development, she was still taking new actions and developing her thinking based on the changes she had already made as a result of the professional development. For her, more than any other teacher in our subsample, her thinking and practice had been transformed.

Acting Change

Acting change involves applying techniques and ideas learned in the professional development to the classroom. These changes can consist of actions made both on the topic studied in the professional development (LMRP), or they can be general (off topic) changes—using a new teaching technique, attempting to improve programs, or making contributions to the field of adult education.

I'm a copycat...I'm the kind of person that if you tell me it might help, then I'm going to try this...if it doesn't work, it doesn't work, but I have to try it.

—Emmanuela (native language literacy teacher)

There were four teachers in our subsample who demonstrated “acting change.” The “acting change” teachers demonstrated more change related to the topic of the professional development (learner persistence) than did “thinking change” teachers, but also exhibited a number of action outcomes that went beyond the topic: three of the four added techniques from the professional development to their repertoire, using them off the topic. In other words, they took a technique they had seen in the professional development and used it in their classroom to address other content (such as health).

The use of the term “acting change” does not imply that the teachers’ actions were not informed by thought; in fact, they were, and oftentimes by new ideas learned from the professional development. The teachers in this category experimented or tinkered with some ideas, but typically without active reflection and consideration for how these new ideas and actions contributed to or challenged their existing ideas about teaching or about the topic. Rather, these teachers’ new actions appeared random in nature, or fairly inconsequential to the mainstay of their practice, and the changes typically were not sustained. Many of those who tried a technique to uncover forces affecting learners’ persistence did not use this information to select a strategy for addressing the problem. Brenda, who will be discussed below, provides a good example of this. She used several techniques she acquired in the professional development to elicit information from her students, but did not follow up on the things she had learned.

Emmanuella: Emmanuella was a full-time native language literacy teacher in her first year of teaching, working in a uniquely community-centered program and, like a number of staff there, she was a former learner. She attended and completed the 18-hour multisession workshop. The main change she made was to try three techniques she learned in the professional development: she tried the force-field technique with students around their motivation to be in school, but found that it did not work, as the barriers students mentioned far outweighed the supports, leading students to become discouraged; she later used the technique in a health lesson. She used a form to help students break up long-term goals into a series of weekly goals. Emmanuella talked to the director and counselor about adding life-skills assessments to their intake process.

Emmanuella did learn about LMRP as a result of participating in the professional development, particularly about students’ need for internal motivation. However, she did not tie this realization to any of the actions she took in the classroom; she did not express any theoretical reason for using these techniques, other than that she heard about them in the workshops. Outside of the program, she shared information that she gained from the workshops with other community service providers. She also, for the first time at any professional development, advocated for her own language needs during the workshop; since English was her second language, she explained to the facilitator and the other participants that she would appreciate some consideration of her need to ask for definitions or to have something repeated.

Emmanuella made one main thinking change, which was a dawning realization about the realities of teaching: teachers are not magical and cannot do everything for learners. In short, she took a good deal of action, but we found little critical reflection about the connection between her theories of persistence or student success and her actions.

Monica: Monica, a full-time adult education and pre-GED teacher with less than one year of experience, taught in a small urban library program; she participated in a multi-session workshop for the full 18 hours. She demonstrated “thinking changes” on several, unconnected fronts: the realization that her program was on the “right track” in its struggle with attendance problems; increased confidence in her teaching; and an awareness of the lack of options and career paths for teachers in the field, leading her to doubt that she would stay in the field. Her primary action was to “lighten up” in class, allowing more informal student-to-student interaction, although she couldn’t say whether this action was prompted by the professional development. Her other actions took place on a program level. Monica persuaded her initially resistant fellow teachers to try a technique from the professional development that asked students to talk about their learning histories. Monica also advocated for a more stringent program-wide attendance policy; however, the idea was one that she held prior to the professional development and the program had already been discussing the new policy. None of these actions, however, was connected with an expressed theory that students needed to bond or that negative learning histories were a cause of dropout.

Brenda: Brenda, a new, part-time teacher, worked in two different programs: an ABE class in a site-based volunteer program where she was one of the few paid teachers, and a GED class in another program, both located in an urban area. She participated for the full 18 hours in a multisession workshop.

Brenda did exhibit a thinking change—a realization that there are many ways to teach.

If I learned nothing else, I learned that every teacher teaches differently. ... It helped me a lot to be working with other professionals ... we kept moving around in these different groups and trying different techniques. ... I think that some of that stayed with me, the differing teaching styles, different people...

—Brenda, Wave Three interview

Brenda’s acting changes involved experimenting with several techniques she had seen in the professional development, such as varying her instruction format. She tried using small group and individualized instruction, and adding demonstrations to her standard straight large-group lecture format. She took at least three actions to find out more about learners: she tried a force-field activity asking students to list the “positives” of coming to class versus not coming to class; she asked learners to keep logs at the end

of class explaining what worked and did not work for them; and she allocated a very limited portion of class time, at least once, for students to discuss “the negative things” interfering with the classroom.

You have to get them talking a little bit about some of these negative things. You can't let it overwhelm the class, but you need to let them have some outlet to talk a little bit.

—Brenda, Wave Two interview

However, Brenda did not understand what to do with the information elicited; she viewed these activities as peripheral to instruction, detached from any next step or direction. In addition, her use of the activities was short-lived: by the third interview, she no longer asked students about their lives, restricting any “dialogue” to their academic needs.

I wouldn't necessarily want to know personal information, whether they have four kids and they're divorced ... you can waste too much time getting into talking about personal problems. I would want to talk more about learning strategies, what works for them or [does] not work for them.

—Brenda, Wave Three interview

She glimpsed the importance of goal-setting but did not take action to find out about students' goals. She did ask her program director for pretest information on students, which he never provided. When she suggested that he institute course evaluations for each class, he recommended that she do it herself in her own class. In short, while Brenda took actions to vary her teaching, she expressed little to no theoretical understanding of why she took each action or how they fit together to improve student persistence or achievement.

David: David, an experienced, part-time (15 hours per week) GED instructor who worked in an urban multisite program, participated for the full 18 hours in a practitioner research group with teachers, all from his own program. He took action, through his practitioner research project, to persuade administration to change intake procedures: for one semester in his own classes, he rescheduled intakes to the beginning of class, redesigned the intake to find out students' postGED goals, followed up with the “supportive other” in learners' lives if they failed to attend class, proved that this process increased learner retention, and took this evidence to the director to make his case. When the idea of applying it to the whole program was rejected, he stopped doing it in his own classroom.

There was no evidence that David had added to a cohesive theory of what adults need to succeed; in fact, he came into the professional development with one idea, used it for one purpose, then abandoned it even though it was successful with his own learners.

In his thinking, all changes were off the topic: he professed a preference for practitioner research and an interest in reading field-based publications such as *Focus on Basics*. He presented, when encouraged, for the first time at a state conference. We almost rated David as “no or minimal change,” given that all of his changes were short-term, but because he took a significant though unsustained action, we placed him in this group.

Thinking Change

Thinking changes involve the acquisition of new ideas. Participants learned not only about the topic presented in the professional development, but many also increased their general teaching knowledge. Others gained increased awareness of issues in the field of adult education or in their learners’ lives. They also gained insights into how they best learn and into the strengths and weaknesses of their programs.

Rather than changing techniques, it [the professional development] has changed attitudes. It didn’t change the way that I taught as much as it changed the way I supported or tried to support students.

—Lucy, Wave Two interview

There were four teachers in our subsample who demonstrated “thinking change.” Each of these teachers demonstrated a range of different types of thinking change, while action was limited. All four teachers gained knowledge of learners and LMRP but, for three of the four, their major outcome was a thinking change *off* the topic. They felt that what they gained most from the professional development was support from other practitioners, support that would help them deal with difficult program situations, ones in which they felt marginalized and powerless or isolated and burned out. For some in this type, the thinking shift was profound and may have an important impact on the teachers’ long-term change trajectories, but they took very little or no related action during the course of our study.

Lucy: Lucy, a full-time experienced EDP,⁴¹ ESOL, and college-prep teacher who taught in an urban union-funded workplace-based educational program, participated in practitioner research and attended all the sessions. Her attitude and role as a program member changed as a result of participating in the professional development. Lucy felt she got support from other participants in the practitioner research group to influence program management that she felt was creating a negative atmosphere in the program. She was intrigued by the concept of increasing student involvement in the program, and she was interested in initiating activities such as having current students act as recruiters of new students, having students do the orientation for new students, and having students serve as classroom aides. Lucy felt she gained a new awareness of the causes of LMRP,

⁴¹ External Diploma Program, a type of adult secondary education program where high school dropouts complete specific course requirements and are then entitled to a standard high school diploma, rather than a GED.

especially the “stopping out” phenomenon, and she applied this understanding to one of her students: Lucy realized that she was mistaken in thinking this student had dropped out. She also became interested in practitioner research and applied the analytical framework used in the professional development to her reading of other adult education articles. However, her actions were minimal compared to her ideas; she did take steps to improve program atmosphere by being as encouraging as possible to the learners in her own classes.

Caroline: Caroline, a part-time GED teacher who had been teaching for two years in a large multisite program before she participated in a mentor teacher group for the full 18 hours, changed her view about her program as a result of the professional development. She realized that the program’s treatment of her was not acceptable and that her current situation was untenable. She was not teaching a class of her own, but instead had been assigned as a coteacher, based on her program’s assessment of her as a poor teacher. When she realized that she couldn’t continue to work that way, she persuaded her coteacher to let her conduct a class activity that would respond to learners’ desires. Her confidence in her own teaching ability was buoyed as a result. Caroline realized that mutual support among staff was critical, and she began to think about the importance of teachers’ involvement in the program. She felt the professional development also made her think about the importance of knowing more about learners and their personal lives and about how that knowledge might fit in with teaching GED. Despite these new realizations, she did not (or could not) take much action to address the issue of learner persistence.

Gail: Gail was a full-time job skills teacher who had been teaching preemployment training and vocational skills for three years in a large urban multisite adult education program; she participated in the workshops and attended for 16.5 hours (she attended one of the workshop sessions in a neighboring state, because she couldn’t attend that workshop on the date it was offered in her own state for 4 of these hours). She felt she reconnected to the field of adult education and to teachers in her own and another state as a result. Her main change was reflected in how she thought about herself, her work, and the field.

I really think it’s given me a bigger awareness, more so than everything else, and [I identify] myself more as an adult education instructor.

—Gail, Wave Three interview

Gail resolved to continue working in the field, and she set up a “support group” of similar adult education teachers in her region to provide an avenue for sharing (and venting).

We all work for adult education, we seem to all be in the same boat. One person referred to us as the lone rangers, which kind of feels that way, but we have more of a support system that we've developed, we feel better about it. That there's somebody we can call if we're frustrated or have an idea of sharing different things.

—Gail, Wave Three interview

Realizing that teaching and LMRP are more complex than she'd previously thought, Gail felt she listened more to learners after the professional development, but this had no real effect on her teaching practice aside from trying, randomly, a few new techniques she learned in the professional development.

Andrea: Andrea was an experienced full-time GED teacher with a background in vocational education who taught in an urban program. She participated in all 18 hours of a practitioner research group. She felt she learned about the topic of learners' motivation, and she started to consider the connection between brain research, learning math, and learner motivation. By the time of the last interview, she indicated that she would like to apply this knowledge to the classroom but had not yet done so; according to her, her classroom practice had changed little.

I did learn some things. I've just put them into my being and then gone on and lost the labels for them somewhere. ... Right now I'm still doing it the way I've [always] done it. I know there are some things that are different, but I couldn't tell you where or when or why.

—Andrea, Wave Three interview

Andrea thought about shrinking topics to smaller units that would fit within one class session, in response to students' irregular attendance. One action she did take—presenting with other practitioners at a conference on her practitioner research—was discounted by her as insignificant. She stated that she became more aware of how program structures and issues affected LMRP but hadn't taken any action to influence such structures.

I became aware of the systemic problems that could come up because, as someone who just stayed in my classroom and minded my business, I wasn't aware of some of these other problems and how they can interfere with retention and students' progress.

—Andrea, Wave Three interview

She also increased her awareness of and interest in professional journals in the adult education field, and felt she was reading slightly more learning theory.

No or Minimal Change

At the other end of the spectrum from those who exhibited integrated change are those who made no or minimal change. These participants demonstrated little change in thinking or action. While they may have tried a few techniques learned in the professional development, there was no evidence of any sustained change. Overall, there was little indication that any of the three objectives of the professional development were achieved.

I don't think my thoughts about the subject of learner motivation have changed a lot. There were some specifics that I remember...that students don't necessarily drop out, they stop out. I feel that, as a result of this professional development, if I lose students, it's not my fault; it's to be expected.

—Beth, Wave Two interview

Four out of 17 participants in our subsample exhibited “no or minimal change.” Although these teachers acquired a new concept or two, there were no real changes in thinking or acting on or off the topic.

Penny and Elizabeth: Two of the four teachers in this group could be characterized as “rejecters.” Penny, a part-time (five hours a week), experienced GED teacher who teaches in a 12-week GED-prep course, where all instruction is individualized and workbook-based, participated in and completed the mentor teacher group development. Elizabeth, a part-time (22 hours per week), experienced ESOL teacher, participated in the mentor teacher group, missing one session and one observation. These two teachers came away from the professional development believing that it was the learners’ chaotic lives (rather than something that could be changed within the classroom or program) that accounted for lack of persistence; the professional development seemed to confirm their belief that there is nothing practitioners can do to influence learner persistence, and teachers should neither blame themselves nor spend time working on or worrying about it as an issue.

[The retention problem comes from students'] lack of interest, present job demands, present family demands, peer pressure—(our students are younger than some), inability to do the work, [and] present economy [which] allows people to be hired despite lack of education. I am still not sure if the data [information in the professional development] we've discussed has any significant import since we can't change previous problems and upbringing of so many. I really feel that nothing's going to keep some of these people.

—Penny, Wave Three questionnaire

Now we can put labels on it (dropping out) and we can look at things we've read, and maybe categorize them, you know, this one's leaving because of such-and-such. ... I have come to the conclusion (and probably because of this study group)

that you will never motivate some people. You just can't interest them. ... some people who are just overwhelmed with life that they can't handle ... you're always hearing excuses, with kids, with this and that, my job...

—Penny, Wave Two interview

Deirdre: Deirdre, a part-time (about 20+ hours a week), experienced ESOL teacher, participated in a practitioner research group, but dropped out after nine hours, only attending the first, second, and fourth sessions. She strongly disliked the professional development, feeling the facilitation was poor and the purpose of the practitioner research unclear. She did change her thinking off the topic related to her negative experiences in the professional development; she reflected on her expectations for well-designed professional development, and began to define the elements of good facilitation. Recognizing that clear structure is important in professional development, she thought about the implications both for the professional development she facilitates and for her classes, but she admitted that she gained little from the professional development itself, walking away with no new strategies and implementing none:

I understood how important a really good facilitator is to the process and progress of the group, how important it is to have some structure for the work that's supposed to be done. Those are the kinds of things you can keep in mind for yourself because they related to being a teacher, too ...

—Deirdre, Wave Three interview

Beth: Beth, a part-time (16 hours per week), experienced ESOL teacher who participated in a practitioner research group and completed it, also demonstrated change off the topic: from visiting a learner's home as part of the practitioner research project she conceived, she came away with a feeling that she would like to work in family literacy, and she successfully negotiated with her director for a new position in the family literacy component of the program. Although it may seem that clarifying one's vision as a professional would be a big change, Beth demonstrated no change in any other way; her thinking on the topic did not change, and she demonstrated no acting change relevant to her role as a teacher, program member, or member of the field.

I am convinced that we, as educators, can do our very best and still not be able to affect learner motivation. So many factors cannot be changed.

—Beth, Wave Three interview

Discussion of How Teachers Changed

The majority of teachers who completed the professional development (attending at least 12 of the 18 hours) did report some change; relatively few experienced no change at all. For most, however, the primary change was thinking change (learning more about the

topic). About a quarter of those who finished the professional development demonstrated integrated thinking and acting change, but only a few of these teachers experienced major or transformational change.

We identified four types of change resulting from participation in the professional development: (1) no or minimal change, (2) thinking change, (3) acting change, and (4) integrated change. According to the objectives of the professional development, we “preferred” to see change where thinking was integrated with acting, where teachers achieved all three objectives (learn more about topic, critically reflect on your work and plan for action, take action to address the topic) and where teachers utilized an inquiry approach/cycle to addressing the topic (learn about the issue, hear from learners about forces affecting them, select a strategy based on forces heard from learners, take action to implement strategy, reflect on results of the action).

The evidence indicates that, with only 25% demonstrating integrated change, it was difficult for teachers to integrate thinking and acting change. Those teachers who did demonstrate integrated change also changed more overall, even in thinking and acting not related to the topic of the professional development. While some teachers in the sample may have actually changed more than they indicated through their questionnaires, or may have had changes in thinking and acting later than one year after the professional development was completed, it still appears that there were teachers who participated in the professional development who did not make as much immediate change as we would have hoped.

The largest percentage of teachers changed within their role as teachers. Many teachers also made changes in thinking and acting off the topic of learner persistence, such as improved self-confidence as a teacher, increased appreciation of importance of collegiality, greater awareness of the field and of program and system strength and weaknesses, and increased understanding of research.

Overall, far fewer teachers changed in ways that we would have preferred, even when they attended up to 18 hours of professional development, but almost all gained at least some knowledge on the topic. It is possible that teachers who took limited action may put their new knowledge into play many months or years later, perhaps after attending future professional development that triggers some motivation to act. However, it is also possible that teachers who changed little experienced some combination of individual, program, and system factors that prevented them from changing more. We next investigate the factors influencing (supporting or hindering) the amount and type of change demonstrated by the teachers in our sample. Identifying the most important factors (from both whole sample and subsample data) will, we hope, allow us to understand why some teachers didn’t change more as a result of participating in professional development.

Factors Influencing Teachers' Change

In this section, we answer the second part of our research question: “What are the most important factors (individual, program, system) that influence (support or hinder) teacher change as a result of professional development?” First, we outline the factors that we hypothesized would influence teacher change. Then, we present data and findings from the whole sample and from the subsample that indicate which of these factors are most important in influencing change.

We developed a set of hypotheses, gleaned from the professional development literature and from our experience in the field of adult basic education, about the individual, professional development, and program or system factors that were most likely to support or hinder teacher change:

1. Individual factors:
 - Motivation to attend the professional development
 - Level of formal education
 - Years of experience in adult education
 - Level of professional development consumption
 - Level of commitment to working in adult education
 - Belief in purpose of literacy instruction
 - Venue of first teaching experience (K–12 or ABE)
 - Type of teaching (ABE, ESOL, GED)
 - Teaching situation (one-on-one, small class, large class)
 - Teaching experience in K–12
 - Age of teacher
 - Belief that knowledge about the learner is important
2. Professional development factors:
 - Model of professional development
 - Amount (hours) of participation in professional development
 - Quality of professional development group (as rated by researchers)
 - Quality of professional development (as perceived by participants)
 - “Coparticipation” in professional development with other teachers from same program
3. Program or system factors:
 - Enrollment policy
 - Program concurrently working on same issue (learner persistence)
 - State in which participant worked

- Required use of curriculum
- Access to prep time
- Access to resources
- Number of hours teacher works each week in adult education
- Access to benefits
- Program type
- Teachers' perception of leadership in the program
- Opportunities for collegiality among teachers
- Perceived freedom to decide what and how to teach
- Amount of paid professional development release time
- Program situation (decision-making in the program)

We characterized factors as important when there was evidence in both the whole sample (quantitative) data and the subsample (qualitative) data to support their connection to either amount or type of change, or when the evidence for the factor was particularly strong in either the quantitative or qualitative. Table 12 below outlines all the factors we examined in this study by their *level of importance*. **Most important** factors are those for which we have strong evidence, either through statistical significance found in that variable in the whole sample (quantitative data) or through clear, consistent findings in the subsample (qualitative data). Factors that are **somewhat important** are those for which there are trends but no strong statistical confirmation in the whole sample or those for which there are emerging but not conclusive trends in the subsample. **Not important** factors are those for which there is no statistically significant relationship with change and no clear trend in the qualitative data.

Table 12: Factors That Influence Teacher Change, by Level of Importance

FACTOR TYPE	MOST IMPORTANT	SOMEWHAT IMPORTANT	NOT IMPORTANT
Individual (out of 12 factors)	• Motivation to attend the professional development • Years of experience in adult education • Venue of first teaching experience • Level of formal education	• Level of commitment to working in adult education	• Level of professional development consumption • Belief in purpose of literacy instruction • Type of teaching (ABE, ESOL, GED) • Teaching situation (one-one-one, small class, large class) • Teaching experience in K–12 • Age • Belief that knowledge about the learner is important
Professional Development (out of 5 factors)	• Hours of NCSALL PD attended • Quality of PD (as rated by researchers) • Perceived quality of PD (as rated by teachers)	• Type (model) of professional development • “Coparticipation” in professional development (with teachers from the same program)	
Program or System (out of 14 factors)	• Access to prep time • Program situation⁴² • Access to benefits	• No required curriculum • Number of working hours • Amount of paid professional development release time • Opportunities for collegiality among teachers	• Student enrollment policy • State in which participant worked • Access to resources • Program working on the same issue • Teachers’ perception of leadership in the program • Perceived freedom to decide what and how to teach • Program type

⁴² “Program situation” refers here specifically to how much programs were already addressing problems of learners’ persistence *and* how much voice teachers had in decision-making in their program.

In other words, teachers who gained the most from the NCSALL Professional Development were those who:

- Had a strong motivation to learn about the topic or about theories of good teaching and wanted to integrate new learning with their actions.
- Began their teaching in the field of adult education, had fewer years of experience in the field, and did not have a post-graduate degree.
- Participated in high-quality professional development (as rated by the researchers), for more hours, and perceived it to be of high quality.
- Worked in programs where they had a voice in decision-making *and* where strategies suggested in the professional development had not yet been implemented.
- Received benefits as part of their adult education jobs and had access to prep time.

To a lesser extent, teachers tended toward more change when they were not required to use a particular curriculum, worked more hours in adult education, had more paid professional development release time, expressed a weaker level of commitment to staying in the field of adult education, participated in professional development groups where all participants were from the same program, and had access to opportunities to share ideas with colleagues during and after participating in the professional development. Model of professional development was not one of the most important factors, although there were different patterns of change related to model.

In the sections below, we explain our hypotheses and present the evidence related to each of the important individual, professional development, and program or system factors investigated in our study. Since we already know that the level of participation in the professional development activities is significant (the more a teacher participated, the more she or he was likely to demonstrate change), the findings presented here are for the completers only. (We note the few variables in the analyses where it made more sense to examine the whole sample.)

How Much Did Individual Factors Matter?

We found that the *most important individual* factors influencing change among the teachers in our sample included:

- **Motivation to attend the professional development.** Those teachers with a strong need to learn, either on the topic or about good teaching and student success, changed more.
- **Years of experience in adult education.** Those teachers with fewer years of experience changed more.
- **Venue of first teaching experience.** Those teachers who began their teaching career in adult education (not K–12) changed more.
- **Level of education.** Teachers with a bachelor's degree or less changed more.

Among the *most important* individual factors were the following:

Motivation to attend the professional development. Our hypothesis was that teachers without a strong motivation to learn would change less, based on theories of adult learning, and we concluded that this hypothesis was supported. Teachers in this sample who responded to a question about their primary reason for attending the professional development ($n=87$) reported a variety of reasons for attending the professional development:

- 30% to learn more about the topic.
- 22% to participate in a particular model of professional development.
- 20% to learn more about teaching in general.
- 8% because their director asked them to attend.
- 5% because they wanted to be part of the research study.
- The rest because they wanted Continuing Education Units (CEUs), thought the facilitator would be good, a colleague was attending, or wanted to meet other teachers.

The qualitative data also supports the finding that teachers had a variety of motivations for attending the professional development, and that an interest in the topic (although it was the most-cited reason) was not the primary reason for the majority of teachers who participated.

In Wave One, we asked teachers to rate, on a scale of 1–6, to what extent they considered learner motivation, retention, and persistence to be a priority topic, compared to other topics on which they have sought or would seek professional development. The

mean score for the completers ($n=83$) was 5.07 ($SD = .93$), which indicates a strong interest; on the other hand, it was not a score of six across the board, indicating that some of the teachers in our sample had other topics of equivalent or greater importance to them. Statistically, a teacher's higher rating on this question of LMRP as a priority topic was not associated with either measure of change.

However, we had much richer information from the subsample teachers on the question of motivation to attend the professional development, and within the subsample we saw a definite pattern: teachers who had reasons for wanting to attend *other than* to learn about the topic or about teaching (i.e., their director urged them to attend, the professional development was convenient in time and location, they wanted continuing educational units or credits, or they were interested in a particular professional development model) more often demonstrated limited or nonintegrated change. The teachers who demonstrated integrated change expressed strong motivations, coming into the professional development, to solve the problem of learner dropout or to learn more about teaching. The connection between motivation and change was strong enough in the subsample that we identify it as an important factor influencing change.

Years of experience in adult education. Our hypothesis was that teachers who have been teaching in this field longer would change less (perhaps because they feel they have greater knowledge about teaching and, consequently, weaker motivation to learn on any given topic). For completers of the professional development, we found that the hypothesis was supported, for both amount of change ($r=-.245$, $p<.05$, $n=81$) and for type of change, as seen in Table 13 below:

Table 13: Type of Change by Years of Experience in Adult Education

(Completers only, $n=81$)

TYPE OF CHANGE	<i>n</i>	MEAN YEARS OF EXPERIENCE	<i>SD</i>
No or minimal	21	13.19	6.10
Nonintegrated	40	7.65	6.96
Integrated	20	8.35	5.87
Totals	81	9.26	6.83

$F=5.270$, $p<.01$

In our subsample, the pattern was also supported: all of the “no or minimal” change teachers had more than three years of experience in the field of adult education, whereas three of the five integrated change teachers were relatively new teachers. Although the sample size is small, we concluded that teachers who had been teaching for more years in the field were less likely to demonstrate greater overall change and change in a preferred direction.

Venue of first teaching experience. We were not surprised to find that most teachers (69%) in our sample began their teaching career in a non-adult-education venue. We hypothesized that a teacher who first started teaching in the adult education field, rather than in K-12, would be more likely to change as a result of participating in professional development, because they would be eager for ideas and confirmation that they were in fact doing a good job as a teacher. This hypothesis was supported.

In our sample, teachers whose first teaching experience was in adult education were more likely to change. This factor was significantly related to both overall amount and type of change. For completers ($n=81$) whose first teaching experience was in adult education, the mean score for overall amount of change was higher ($M=10.92$, $SD=7.82$) than those whose first teaching experience was K-12 or other ($M=7.89$, $SD=4.62$), a statistically significant difference (ANOVA $F=4.85$, $p<.05$). Also, those whose first teaching experience was in adult education were more likely to show integrated change. Among those who completed the professional development, 11 of the 25 (44%) whose first teaching experience was in adult education demonstrated integrated change, compared to 9 of the 56 (16%) whose first teaching was in K-12, also a significant difference ($\chi^2 = 7.3$, $df=2$, $p<.05$, $n=81$). This finding was supported among subsample teachers, where three of the four “no or minimal change” teachers started teaching in K-12 but three of the five “integrated” change teachers began their teaching in adult education.

The multiple regression analysis also highlighted the importance of this factor. One of the two variables that most predicted change in a preferred direction (integrated change) in our study was whether teachers’ first teaching experience was in adult education.⁴³ Those teachers who reported that their first teaching experience was in adult education, rather than in K-12, were more likely to demonstrate both overall change and change in a preferred direction as a result of participating in this professional development.

Level of formal education. Based on the belief that teachers with more formal education have better-developed philosophies of education and theoretical schema upon which to “hang” new learning, we hypothesized that more formal education overall would correspond to more change. Our hypothesis was *not* supported: those participants who had more than a B.A. (master’s or doctorate) were *less likely* to demonstrate both overall change and change in a preferred direction.

In our questionnaire, we asked teachers to list their highest level of formal education completed; we did not, however, ask them in what field they held a degree. Among the completers ($n=83$), those with a bachelor’s degree *or less* had a higher mean

⁴³ The other factor that predicted change in a preferred direction (integrated, as opposed to thinking or acting, change) was teachers’ access to benefits as part of their adult education job.

score for amount of overall change of 10.69 ($SD=6.5$), compared to those with a master's degree or higher ($M=6.24$, $SD=4.1$). Thus, those with less formal education were significantly more likely to change (ANOVA $F=13.37$, $p<.001$). Level of formal education completed was also significantly related to the type of change teachers made: of the 20 completers who demonstrated integrated change, 14 of them (70%) had a bachelor's degree or less. The subsample supported the rejection of our hypothesis that more education would be associated with more change, since all of the four teachers who fell into the "no or minimal" change category had master's degrees, but three of the five teachers who demonstrated "integrated change" did not have a master's or a teaching certificate.

Level of education also emerged from multiple regression analyses as one of the strongest predictors of two types of change: (1) overall amount of change, and (2) any change at all (as opposed to no change). Out of nine variables run in an analysis of factors related to amount of overall change, education was the strongest predictor of change; those teachers with a bachelor's degree or less were more likely to demonstrate higher amounts of change than those teachers with a master's or doctoral degree. Out of ten variables tested to determine their relation to demonstration of any change at all, only the education variable was significant: those with a bachelor's degree or less were 11 times more likely to change than those with a master's or doctoral degree. No other variables were significantly associated with whether a teacher demonstrated any change (as opposed to no or minimal change). Education was not a predictor of whether teachers made more "preferred" change (integrated change, as opposed to thinking or acting change).

To ensure that change among those with higher levels of formal education was not restricted by the fact that these teachers entered the professional development with more knowledge about learner motivation, retention, and persistence (although few teachers in our sample had participated in any formal courses specifically related to adult education, so they were not likely to have acquired specific information on the topic by virtue of a master's degree), we reviewed their level of knowledge about the topic in Wave One. There was no relation *before* participating in the professional development between higher levels of education and more knowledge or acting change on the topic: many teachers with master's degrees reported little knowledge of strategies for addressing LMRP and no previous action taken to address the issue, and other teachers without master's degrees sometimes demonstrated some knowledge and previous action prior to with the professional development. Therefore, we feel confident that amount of change was not a function of more or less knowledge and action before the professional development began, but rather a function of differences in thinking and acting as a result of the professional development.

One individual factor emerged as somewhat important in influencing teacher change. Level of commitment to working in adult education was a factor that emerged as important in the quantitative but not the qualitative analysis. We do not have good data

from the subsample on this variable, as we did not probe in depth about a teacher's commitment to working in the field of adult education. We did, however, ask several questions about commitment on the questionnaire, but it is unclear whether these questions are an accurate gauge of commitment and we are not sure how to interpret the results. Our hypothesis was that teacher change as a result of participating in professional development would be related to their level of commitment to working in the field of adult education: the stronger the commitment, the more change. We hypothesized that teachers who felt more strongly that adult education was their long-term career would be more likely to take in and use new knowledge, but this hypothesis was *not* supported.

In the Wave Three questionnaire, we asked teachers to what extent (using a scale of 1–6) they considered the field of adult education to be their long-term career; to what extent they desired to be teaching/working in the field of adult basic education one year from now; and to what extent they desired to be working in the field five years from now. We then created a composite score for each participant who answered all three questions, which averaged their ratings on all three questions. While means for commitment by type of change were not significantly different, there was a negative and significant correlation ($r = -.33$, $p < .01$, $n = 70$) between commitment and overall amount of change for those who completed the professional development.⁴⁴ In the multiple regression analysis of overall amount of change, level of commitment to working in adult education emerged from nine variables tested (along with level of education and number of hours attending the NCSALL Professional Development) as a significant predictor of overall amount of change. (Level of commitment was not a significant factor in multiple regression analyses of whether teachers demonstrated any change at all or more preferred [integrated] change.) Thus, the higher their commitment to the field, the lower the overall amount of change; commitment level was not related to type of change.

However, since we did not explore level of commitment during interviews with teachers in the subsample, it is difficult to say how reliably these three questions gauge actual commitment to the field. There were strong positive correlations among age, more experience in the field, and strength of commitment, such that older teachers tended to have been in the field longer, and teachers with more years in the field expressed a stronger desire to stay in the field and see it as their career. Perhaps it is the case that teachers with more years of experience are more settled in the field and more confident in their teaching, and thus have less motivation to change. Since we do not have good information from subsample participants to back up this finding from the whole sample, we see it as a “somewhat important” variable worthy of further research, if researchers can determine a reliable measure.

⁴⁴ Correlations between each individual question and change are as follows: The correlation between seeing adult education as their long-term career and overall change was $-.243$ ($p < .05$, $n = 70$). The correlation between “working in the field one year from now” and overall change was $-.328$ ($p < .01$, $n = 70$), and the correlation between “working in the field five years from now” and overall change was $-.341$ ($p < .01$, $n = 70$).

Individual factors that were *not important* (not related) to type or amount of change for those teachers who completed the professional development included:

Level of professional development “consumption.” We collected information from participants about both the amount of professional development, on any topic, attended in the year before participating in our study and the amount of professional development attended on the topic (whether and how much other professional development on the topic of learner motivation they attended before, during, or after participating in the NCSALL Professional Development). Neither of these was related to amount or type of teacher change.

Belief in purpose of literacy instruction. As the professional development endeavored to help teachers act on issues important to students’ lives, we hypothesized that teachers who believed the purpose of literacy is social change, rather than improvement of basic skills, would change more. We measured whether teachers believed the purpose of literacy instruction was primarily the acquisition of basic skills or social change. Their beliefs on the purpose were not related to whether they demonstrated change or not.

Type of teaching (ABE, ESOL, GED). We asked teachers to identify their primary type of teaching, and there were roughly equal numbers of teachers who taught ABE (0-8), GED, ESOL, and an equal combination of ABE/GED or other (vocational, family literacy) in our sample. However, primary type of teaching was not related to either amount or type of change among those who completed the professional development.

Teaching situation. We asked whether teachers taught learners in a one-on-one situation, a small class, or a large class setting; teaching situation did not appear to be related to teacher change.

Teaching experience in K–12. Sixty percent of respondents in our study had taught in the K–12 system. Teachers who taught in K–12 at one point in their career were less likely to have demonstrated change compared to teachers who had not taught in K–12; however, the difference was not statistically significant.

Age. Age was not a factor directly influencing change.⁴⁵

Belief that knowledge about the learner is important. Since the professional development asked teachers to find out about the forces affecting learners’ persistence, and some of these forces related to learners’ lives, we asked teachers how important they

⁴⁵ Age, however, was positively correlated with number of years teachers had worked in the field of adult education. The more years in the field, the less likely a teacher was to demonstrate change.

felt it was for adult education teachers to know about their learners' lives and backgrounds. A stronger belief in knowing who learners are was not related to change.

For a further explanation of the hypotheses underlying these factors, and the findings of these analyses, please see Appendix D: Additional Information on Factors.

How Much Did Type, Amount, and Quality of Professional Development Matter?

We found that the *most important professional development* factors that influenced change among the teachers in our sample included:

- **Hours of NCSALL Professional Development attended.** Those teachers who participated for more hours demonstrated more change.
- **Rated quality of professional development groups (as rated by researchers).** Teachers who participated in professional development groups of higher quality demonstrated more change. (Higher quality groups had good facilitation, good group dynamics, and a good model with flexibility to adapt to the needs of the group.)
- **Perceived quality of professional development (as rated by teachers).** Those teachers who gave the professional development activity a higher rating demonstrated more change.

Among the *most important* professional development factors were the following:

Hours of participation in NCSALL Professional Development. The first hypothesis related to professional development factors was that attending the professional development for more hours would lead to more change. Across the whole sample, this hypothesis was supported, with more hours of participation (from 0-18 hours) positively and significantly associated with both overall amount of change ($r=.25$, $p<.05$, $n=95$) and type of change, as shown in Table 14:

Table 14: Type of Change by Mean Hours of Participation

TYPE OF CHANGE (<i>N</i> =95)	<i>n</i>	MEAN HOURS OF PARTICIPATION	<i>SD</i>
No or minimal	32	13.64	5.54
Nonintegrated	42	16.33	2.73
Integrated	21	15.67	3.26
Totals	95	15.28	4.13

$$F=4.252, p<.05^{46}$$

Teachers who completed at least two thirds of the professional development experienced more change than dropouts or those who did not participate at all; for those who attended at least 12 of the 18 hours, the number of hours above 12 was not significant to amount or type of change.

Additional support for the importance of attending more hours of the professional development came from the multiple regression analysis of factors related to overall amount of change. Attending more hours emerged as one of three (out of nine) significant factors predicting change.⁴⁷

Rated quality of professional development group (as rated by researchers). Of the 15 groups, researchers rated 6 as high quality, 4 as medium quality, and 5 as low quality.⁴⁸ For completers (*n*=83), the mean score for amount of overall change went up as the rated quality of the group went up: mean for low-quality groups was 5.6 (*SD*=4.6), mean for medium-quality groups was 9.0 (*SD* = 6.3), and mean for high-quality groups was 9.6 (*SD*= 6.3). While this difference was not significant, the trend is clear, and we feel with a larger sample size these differences would be statistically significant.⁴⁹

The rated quality of the groups was, however, significantly associated with the type of change. Of the 20 completers who demonstrated integrated change, 12 of them (60%) were in the high-quality group, compared to 6 (30%) in the medium-quality group, and only 2 (10%) in the low-quality group. Even with the small sample size (*n*=83), this

⁴⁶ The significant difference between groups was between the “no change” group and the “nonintegrated change” group ($p<.05$). Differences between the “integrated change” group and either “no change” or “nonintegrated change” were not significant.

⁴⁷ The other two factors predicting overall amount of change were level of education and level of commitment to working in adult education. See Appendix D for a full description of the multiple regression analyses.

⁴⁸ Please see Appendix C for a complete description of the process of rating the professional development groups.

⁴⁹ Post hoc analyses show that the difference in the mean score of the low-quality group as compared to the high-quality group at the 95% confidence interval is approaching significance ($p>.05$).

difference was statistically significant ($\chi^2=12.6$, $df=4$, $p<.05$). These findings indicate that better quality of facilitation, better group dynamics, and flexible adherence to the professional development model⁵⁰ were associated with more change in a preferred direction.

Perceived quality of the NCSALL Professional Development (as rated by the participants). The third hypothesis in this category was that the higher the participants rated the professional development quality, the more likely they would be to make changes. To test this hypothesis, we asked participants a series of questions, using Likert scales (1=weak or low quality, 6=strong or high quality) about how they would rate the overall quality of the NCSALL Professional Development in which they participated. We also asked them to rate particular elements of the professional development, such as facilitator/presentation, group dynamics, length of the activity, session organization, and readings/materials. (See Appendix C for data tables of participants' ratings of key aspects of the NCSALL Professional Development and of how they feel it affected them.)

We averaged the individual responses to the 13 questions we asked about the quality of the professional development. We then used this combined average (a number between 1 and 6) as a measure of each subject's perception of the quality of the professional development. Teachers' perception of the quality of the professional development was positively and significantly correlated with overall amount of change ($r=.246$, $p<.05$, $n=81$). Their perception of quality was also positively and significantly associated with the type of change they demonstrated, as shown in Table 15 below:

Table 15: Type of Change by Teachers' Perception of Professional Development Quality

(Completers, $n=81$)

TYPE OF CHANGE	<i>n</i>	MEAN COMBINED QUALITY SCORE	<i>SD</i>
No or minimal	21	3.90	.710
Nonintegrated	40	4.57	.625
Integrated	20	4.44	.533
Totals	81	4.37	.681

$F=8.047$, $p<.01$

⁵⁰ Flexible adherence means that the facilitator neither omitted significant activities planned in the professional development design, nor stuck to the design like a script; rather, high-quality groups were characterized by completion of all of the activities in the design but with discussions adapted to the needs and questions of the participants.

Interestingly, there was not a significant relationship between the rated quality of the group (as rated by the researchers) and perceived quality of the group (as rated by the teacher participants). Teachers in the lowest-quality groups ($n=21$) gave their professional development a mean rating of 4.23 (out of 6); teachers in medium-quality groups ($n=29$) gave their professional development a mean rating of 4.51; and teachers in the highest-quality groups ($n=42$) gave their professional development a mean rating of 4.33. Since both rated quality and perceived quality were associated with type and amount of change, but not with each other, it is an indication that teachers in our study experienced professional development differently from one another⁵¹ and, in some cases, differently than how we as researchers rated it.

Professional development factors that were *somewhat important* to type or amount of change included:

Type (model) of professional development. Although all three models were designed to be high quality, and all three offered sustained exposure to concepts (18 hours over 3–6 different sessions), with encouragement to try activities and take action between sessions, the mentor teacher group and practitioner research group models offered slightly more one-on-one support for making direct changes in teachers' classrooms and programs. Therefore, we hypothesized that teachers participating in the mentor teacher groups and practitioner research groups would demonstrate more change overall and more change in a preferred direction (toward more integrated change) than would teachers in workshops. (Please see Table 4: Common and Unique Elements of the Three Professional Development Models in Chapter One or Appendix A: Professional Development Models and Objectives for more information about the three different professional development models.) However, the model of professional development—whether the teacher participated in a multisession workshop, a mentor teacher group, or a practitioner research group—was not significantly related to type of change. We did, however, identify different patterns of change among the models, and a larger sample size might have produced significant differences.

Teachers who participated in and completed practitioner research groups and mentor teacher groups demonstrated slightly more change overall than did workshop participants. Practitioner research group completers had a mean amount of change of 9.67 ($n=24$, $SD=7.66$), and mentor teacher group completers had a mean amount of change of 9.25 ($n=24$, $SD=6.71$), while workshop completers had a mean amount of change of 7.52 ($n=35$, $SD=3.53$). Although this difference was not statistically significant, practitioner research group and mentor teacher group completers demonstrated more awareness of the field, a greater appreciation for learning with other teachers, and increased knowledge of research.

⁵¹ Correlations also show that years working in adult education field ($r=-.23$, $p<.05$) and years teaching adult education ($r=-.22$, $p<.05$) were both significantly and negatively correlated with the teachers' perception of the quality of the professional development, indicating that the longer the participant had been working and teaching in the field, the less she or he liked the professional development.

A slightly higher percentage of teachers who participated in the mentor teacher group model demonstrated integrated change; the three subsample teachers who demonstrated the most significant integrated change all attended mentor teacher groups. Overall, percentages of teachers demonstrating integrated change were higher in the two “reform” models of professional development: 29% of mentor teacher group completers ($n=24$), and 25% of practitioner research group completers ($n=24$), as compared to 20% of workshop participants ($n=35$), demonstrated integrated change. However, this difference was not statistically significant, as shown in Table 16 below.

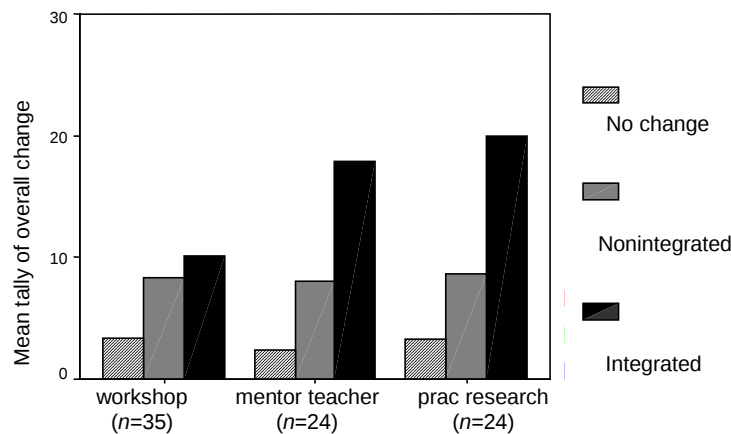
Table 16: Type of Change by Professional Development Model

(Completers only; $n=83$)

PROFESSIONAL DEVELOPMENT MODEL	<i>n</i>	TYPE OF CHANGE			TOTALS
		NO CHANGE	NON- INTEGRATED	INTEGRATED	
Workshop	35	8	20	7	35
Mentor teacher group	24	7	10	7	24
Practitioner research group	24	8	10	6	24
Totals	83	23	40	20	83

$\chi^2=2.1$, $df=4$, $p>.72$, not significant

When looking at amount of overall change by type of change, the model of professional development comes into play only for those teachers demonstrating integrated change (the most preferred direction of change). Figure 4 shows that teachers in mentor teacher groups and practitioner research groups who demonstrated integrated change also demonstrated relatively higher overall amounts of change, as compared with workshop participants who demonstrated integrated change.

Figure 4: Type and Amount of Change by Professional Development Model(Completers only; $n=83$)

In fact, no workshop participant had an “overall amount of change” score over 15 (in a range of 0–30), whereas four mentor teacher group participants and five practitioner research group participants had scores between 16 and 30.

We also asked participants what their first choice for type of professional development model would have been; participating in a model preferred by the teacher was not associated with type or amount of change.⁵²

Being in professional development with others from the same program (“coparticipation”). In adult basic education, where most professional development is offered through a state system, teachers often participate in centrally located workshops or training where the other participants are teachers from different programs. On occasion, however, more than one teacher from a program participates in the same professional development activity. When the program itself organizes the professional development, all of the participants would be teachers from that program. In these instances, teachers would have a colleague or colleagues from their program as a “coparticipant” in the professional development, and these teachers might be able to share ideas between and after professional development sessions about what they learned and how they might take action. If this were the case, would teachers change more?

This factor emerged from the qualitative analysis by accident. We did not pose a hypothesis about this before the professional development, because teachers from each of the states self-selected to participate; we did not control who would join each

⁵² In other words, teachers who participated in a mentor teacher group and said their first choice would have been a mentor teacher group were not more likely to change than teachers whose first choice was mentor teacher group but actually participated in a workshop or practitioner research group.

professional development group. Therefore, we did not think to collect data from the whole sample about multiple participants from the same program participating in the same professional development group. However, it happened that there were teachers in our subsample for whom one of these three types of “coparticipation” applied:

1. Another teacher or teachers from the subsample teacher’s program were participating in *other NCSALL Professional Development groups* studying learner motivation, retention, and persistence.
2. Another teacher from the subsample teacher’s program was participating in the *same professional development group* (i.e., same workshop, same mentor teacher group) as the subsample teacher.
3. All of the teachers (including the subsample teacher) in the professional development group were from the same program.

The incidence of this “coparticipation” in professional development among the subsample teachers is presented in Table 17, where we present information about the type of professional development, the type of “coparticipation,” the quality of the professional development group, the relative amount of ongoing teacher sharing in the program, and the type of change the subsample teacher demonstrated.

Table 17: Extent of Coparticipation in NCSALL Professional Development Among Teachers in the Subsample

SUB-SAMPLE TEACHER	MODEL OF PROFESSIONAL DEVELOPMENT	TYPE OF COPARTICIPATION	QUALITY OF PD GROUP	LEVEL OF IN-PROGRAM TEACHER SHARING	TYPE OF CHANGE
Meg	Mentor teacher group	All other teachers in group were from her program	High	Moderate	Significant integrated
Esther	Mentor teacher group	All other teachers in group were from her program	Medium	Moderate	Significant integrated
Erica	Workshop	Another teacher from program in same group	High	High	Minimal-to-moderate integrated
Debbie	Workshop	Another teacher from program in same group	High	Low	Minimal-to-moderate integrated
Monica	Workshop	Another teacher from program also in same group	High	High	Acting
David	Practitioner research group	All other teachers in group were from his program	High	Low	Acting
Brenda	Workshop	Another teacher from program in practitioner research group, third teacher in program in mentor teacher group	High	Low	Acting
Penny	Mentor teacher group	Another teacher from program also in same group	Low	Moderate	No or minimal
Beth	Practitioner research group	Another teacher from program also in same group	Low	Low	No or minimal

Overall, coparticipation was varied as a factor supporting change, but the pattern suggests that, when it is combined with higher-quality professional development and moderate-to-high levels of opportunities for teacher sharing, it can support change. Some teachers (Monica, Penny) did not attribute much importance to it or even downplayed it as a contributing factor when asked. Other teachers (Meg, Esther) stressed how critical it was to have another teacher interested in the topic whom they could talk to when they thought about trying out new activities; these two teachers demonstrated the most significant change and participated in mentor teacher groups where all of the other participants were from their program.

This was so new to us, we were able to talk as a group. Otherwise, we would have felt lonely. It was so exciting to be together and be able to voice our issues: “This is what I’m going through and what should I do?” ... That really brought a positive into the program.

—Meg, Wave Three interview

The change in these two teachers was strong enough that we propose a hypothesis for further research: coparticipation, coupled with more opportunities for teachers to share ideas between and after professional development sessions, supports change. Although this did not emerge as one of the most important factors, it lends support to the idea of program-based professional development in cases where the program can also provide real opportunities for participating teachers to have ongoing discussions about what they are learning and applying from the professional development.

How Much Did Program or System Factors Matter?

We found that the *most important program and system* factors that influenced change among the teachers in our sample included:

- **Access to prep time.** Those who received prep time were more likely to change.
- **Program situation.** Teachers who worked in programs that were not already taking action to address learner persistence *and* where teachers had a voice in decision-making were more likely to change.
- **Access to benefits.** Those teachers who received one or more benefits from their adult education job (health or dental insurance, vacation, etc.) were more likely to change.

Access to prep time. Whether a teacher had paid time to prepare for classes was another in the constellation of working condition factors we investigated, the hypothesis being that teachers with prep time would be better supported to make changes in thinking and acting. In Wave Two, we asked those teachers who were still teaching ($n=78$) if they received paid preparation time. Of these 78 teachers, 38 (54%) reported that they had received paid preparation time in the past year. Of the 18 completers who made integrated change, 13 (72%) of them had received paid preparation time. Those who received paid preparation time were more likely to make integrated change and this difference was statistically significant ($\chi^2=6.66$, $df=2$, $p<.05$, $n=78$). Mean overall amount of change was also higher (9.0 out of 30) for those with prep time ($n=38$, $SD=5.78$) than for those without prep time, who had a mean of 7.9 out of 30 ($n=40$, $SD=5.11$), but this difference was not statistically significant.

Program situation. We hypothesized that teachers working in programs that proactively encouraged their actions in addressing learner persistence would demonstrate more change after participating in professional development. On the questionnaire, we asked several questions to determine (using a scale from 1 to 6) how strongly teachers felt supported by their directors, believed they had a voice in program decisions, and felt that their voice was used in program decision-making. None of these factors was related to type or amount of change. On the hypothesis that teachers would make more change if their programs were simultaneously working on addressing the same issue they were learning about in the professional development (in this case, learner motivation, retention, and persistence), we asked each teacher if their program chose to try to improve one issue each year and, if so, what issue had been chosen that year. Of the 106 teachers in our sample, 60 teachers indicated that their program chooses a program improvement issue each year; of those 60, 11 teachers indicated that the issue was learner persistence. However, there was no pattern of change associated with programs' decisions to focus improvement on LMRP.

However, the information gleaned from the subsample interviews painted a very different picture. Teachers talked long and eloquently about the support they did and didn't receive from the director and leadership in their program, on this and on other topics. Through the stories of the changes in their thinking and acting, we deciphered a clear connection between program structure and teacher change in particular circumstances: where the program was not already working on this topic *and* where the teacher had a voice in program decision-making, teachers made more change inside and outside of their classrooms, related to the topic. However, if either one of these circumstances did not obtain (program already addressing the topic, teacher did not have a voice in decision-making), change was less. For example, in cases where the program had already taken action to address learner motivation, retention, and persistence, teachers made less change. In cases where the teacher had no access to decision-making in the program, the teacher made less change. But where work was needed in the program related to the topic *AND* the teacher had the ability to make suggestions about how to do that work, more change happened.

When teachers didn't have a voice in decision-making in the program, they often made thinking changes, recognizing strategies and developing ideas for addressing the issue, but since they did not feel that they had the ability to influence the director, they initiated far fewer actions. Teachers felt they had learned new knowledge and strategies but did not feel they could or should initiate change when there were either real barriers (director rejected an idea presented by the teacher) or perceived barriers (teacher didn't know how to influence the director or felt it was hopeless to try). The profiles of subsample teachers in the "Support from Subsample Data about Important Factors" section provide examples of this factor. We conclude, therefore, that program situation was an important factor, in that the program was a supportive influence for change when

the program had been inactive on this topic *and* when the program had mechanisms for and an environment conducive to teachers' having a voice in decision-making.

Access to benefits. We hypothesized that teachers working under good conditions and in well-supported jobs would be in a better position to take action. The configuration of working condition factors included access to paid prep time, paid professional development release time, more working hours, benefits, and stability on the job.⁵³ (We did not ask about salary.) We discovered that access to benefits was related to type of change, but not to overall amount of change. Although the mean amount of overall change was higher for those with benefits than for those without, the difference was not statistically significant. However, access to benefits seemed to be an important factor supporting more integrated change. Of the 18 completers who demonstrated integrated change, 14 of them (78%) reported that they received benefits as part of their adult education job, while only 4 (22%) of those who demonstrated integrated change did not receive benefits, and this difference was statistically significant, as shown in Table 18.

Table 18: Type of Change by Benefits

(Completers for whom we have data; $n=69$)

ACCESS TO BENEFITS	TYPE OF CHANGE			TOTALS
	NO CHANGE	NON-INTEGRATED	INTEGRATED	
Yes	8	13	14	35
No	10	20	4	34
Totals	18	33	18	69

$$\chi^2=7.3, df=2, p<.05$$

On the multiple regression analysis of factors related to type of change (integrated change as opposed to thinking or acting change), benefits emerged as one of two factors that predicted more "preferred" (integrated) change.⁵⁴ Those who received benefits as part of their adult education job were five times more likely to demonstrate integrated change than to demonstrate thinking or acting change.

⁵³ Benefits were strongly correlated with type of program (those who work in CBOs were more likely to receive benefits as part of their adult education job), but program type itself was not a direct predictor of change.

⁵⁴ The other factor predicting integrated as opposed to thinking or acting change was venue of first teaching experience (whether the teacher first taught in adult education rather than K-12).

Program or system factors that were somewhat important to type or amount of change included:

Required use of curriculum. In some programs, teachers were required to use a specific curriculum, one that was developed by the program or by the state. In other programs, teachers developed their own curriculum. Our hypothesis was that teachers who had the ability to develop their own curriculum would make more changes than teachers who were required to use an established curriculum. We collected information to test this hypothesis by asking teachers whether or not they were required to use a curriculum. Fifty-six (about 58%) of the teachers were not required to use a curriculum by their program or state. Those participants who *were* required by their program or state to use a curriculum were less likely to change in a preferred direction. Of the 18 completers who showed integrated change, those who could choose their own curriculum were twice as likely to show integrated change (12 of 18, or 67%) compared to those who were required to use a curriculum. However, this finding was not statistically significant, and use of a required curriculum was not significantly related to overall amount of change. However, when analyzing this factor among subsample teachers, we concluded that GED teachers who taught in programs designed to “teach to the test” demonstrated less change than did teachers who had more flexibility to develop their own curriculum.

Number of working hours. Our hypothesis for this factor was that teachers who work more hours or work full time in the field of adult education would be more motivated to make change and have more time and support to take action based on what they learned from the professional development. We collected information from the participants about the number of hours they worked (across all adult education jobs) each week, and we found that 24 participants worked more than 35 hours a week (which we designated as full time); this equals roughly one quarter of the participants.

Number of working hours was not a significant factor in either overall amount of change or type of change. However, teachers with more working hours were more likely to demonstrate integrated change: teachers demonstrating integrated change worked an average of 26.27 hours per week ($n=22$, $SD=11.71$), while teachers who demonstrated nonintegrated (thinking or acting) change worked 22.27 hours ($n=41$, $SD=10.91$) and teachers who demonstrated no change worked an average of 21.83 hours a week ($n=36$, $SD=12.00$). Of the 24 full-time (more than 35 hours per week) practitioners who participated in the professional development (and for whom we have data), an equal number fell into each of the three types of change. Since there were fewer teachers overall who demonstrated integrated change, the proportion of teachers within the integrated change type who were full time is higher (36%) than the proportion of full-time teachers within the nonintegrated (20%) or the no change type (22%).

Although the quantitative data did not show a significant relationship between more hours of work in adult education and change, the qualitative data indicated a much stronger trend. Among our subsample, all four teachers who made no or minimal change

worked part time. Not having enough time was a common theme in interviews with the 10 subsample teachers who were part time,⁵⁵ and it was frequently cited by participants in their questionnaires as a barrier to change.

Amount of paid professional development release time. The final factor we examined is the number of hours annually a teacher is paid to attend adult-literacy-related professional development. In our sample, which may not be representative of the field as a whole since it is made up of teachers who chose to come to professional development, the mean paid professional development release time was 18.6 hours ($n=98$, $SD=22.639$) per year. Almost one quarter of the teachers in the sample report that they received no paid professional development release time. The amount of paid professional development release time was not directly a significant factor in either amount or type of change, although the trend was that those completing teachers who demonstrated more preferred (integrated) change had an average of 24 hours of paid time per year ($n=19$, $SD=20.5$), whereas teachers demonstrating thinking or acting (nonintegrated) change had an average of 16.3 hours ($n=39$, $SD=16.9$) and teachers demonstrating no change had an average of 20.2 hours ($n=22$, $SD=22.5$).⁵⁶ Similarly, when asked how they would rate (on a scale of 1–6) their access to professional development, there was no significant relationship to amount or type of change, but teachers demonstrating integrated change felt their program was stronger in this aspect; the average rating given by teachers who demonstrated integrated change was 4.8 ($n=20$, $SD=1.21$), compared to a mean rating of 4.3 for teachers demonstrating nonintegrated change ($n=39$, $SD=1.2$) and a rating of 4.3 ($n=21$, $SD=1.4$) for teachers demonstrating no change. In addition, those who dropped out of the professional development had half as many annual hours paid professional development release time: dropouts averaged 9.44 hours per year ($n=16$, $SD=8.6$), whereas completers, as a whole, averaged 18.8 hours per year ($n=81$, $SD=19.4$), and relationship between number of hours participants attended the NCSALL Professional Development and their annual professional development release time was significant ($r=.30$, $p<.05$, $n=97$).

Opportunities for collegiality among teachers (inside and outside of the program). We hypothesized that teachers who feel they have more opportunities to meet and share with or talk to colleagues, either inside or outside of the program, would feel more supported to change. We asked teachers several questions about their level of collegiality (the opportunities they have for meeting and sharing with other teachers), then formed a composite score for collegiality overall. We also asked teachers how many

⁵⁵ Working full time was also significantly related to having paid prep time ($\chi^2=7.1$, $df=1$, $p<.01$, $n=77$), which was related to change among completers.

⁵⁶ There were nine cases that could be considered outliers (teachers who reported high numbers of hours of paid professional development release time); one teacher reported paid release time of 150 hours a year, which is equivalent to almost four weeks of paid professional development release time. Taking out these outliers does not change either the trend or the significance: teachers demonstrating integrated change still have more paid hours of professional development release time (17.83 hours per year, $n=18$); however, this mean was still not significantly different from teachers demonstrating no change or nonintegrated change.

times per year, within their program, teachers meet to share ideas for teaching (not just to talk about parking policies or paperwork). Across the whole sample, neither collegiality nor frequency of teacher sharing meetings was associated with type or amount of change.

However, this factor appears to be similar to program situation: while it was not significant as measured by the indicators above, it surfaced as a strong factor for many teachers within the subsample analysis and in the open-ended questions of the survey. In our subsample, there were teachers who had adequate opportunities for collegiality in their programs and those who did not. For those who felt isolated in their programs, there was a clear pattern in the qualitative analysis that showed that they felt this lack of collegiality affected their initiative to take action based on what they had learned in the professional development. Lack of opportunities for collegiality operated as a barrier to change for those who valued collegiality. Teachers felt that sharing ideas with colleagues, even colleagues who had not participated in the professional development, helped them to continue thinking about what they had learned and prompted them to take action. Therefore, we identify opportunities for collegiality as a somewhat important factor because it was voiced so strongly by teachers in the subsample interviews and open-ended questions as a barrier (to those who lacked opportunities) and a support (to those who had opportunities) to taking action. However, because it did not emerge in the quantitative analysis, further research could investigate exactly how collegiality supports change for those teachers who value it. These findings tentatively support the use of program-based professional development models, especially if the program also organizes opportunities for teachers to share ideas during and after the professional development.

The following program or system factors that were not important to type or amount of change included:

Enrollment policy (closed, rolling, or open). We hypothesized that closed enrollment would support change, and open enrollment would hinder change, based on the assumption that open enrollment contributes to more turbulence in the classroom, making it more difficult for teachers to implement their planned lessons, including new activities. If the teacher is constantly dealing with new students, then she or he may not have as much time, energy, or freedom to adopt new practices. Most of the teachers (71%) in our sample (for whom we have data about enrollment) teach in classes and programs with open enrollment policies; only 16 teachers teach in closed enrollment situations.⁵⁷ However, enrollment policy was not related to either amount or type of change.

⁵⁷ "Rolling enrollment" was defined in the questionnaire as classes or programs where students may enter only at specified times (i.e., once a month).

State in which participant worked (Connecticut, Maine, or Massachusetts).

The number of teachers completing the professional development in each state was roughly the same (MA=26, CT=29, ME=28). We hypothesized that the differences in delivery and professional development systems among the states might contribute to differences in teacher change, but this was not the case: there were no significant differences in either type or amount of change related to state in which the participant lived.

Access to resources (i.e., access to own classroom, desk, resource room, photocopier, materials, etc.). We hypothesized that teachers who work in programs with better facilities and more resources would be better supported to change. Neither facilities nor resources demonstrated a significant relationship to either measure of change.

Program working on the same issue (learner persistence) as part of its program improvement effort. Sixty participants indicated that their program has a process for program improvement. Of those, only 11 indicated that their program was actively addressing learner persistence, and this proved not to relate to amount or type of change, although in the subsample we found that teachers whose programs had not previously addressed the problem of learner persistence *and* where those teachers had access to decision-making did seem to demonstrate more change.

Teachers' perception of leadership in the program. We hypothesized that strong leadership in a program (at least as reported by the teachers themselves) would be a supportive factor for change. We asked teachers a range of questions about how strong they perceived the leadership to be in their program.⁵⁸ On a composite of leadership questions, among teachers who completed the professional development, there was no relationship between teachers' view of their programs' leadership and either measure of change, although teachers who viewed their program leadership as weak demonstrated more change.

Perceived freedom to decide what and how to teach. We asked teachers to rate (on a scale of 1–6) how much freedom they had to decide what to teach and how to teach in their classrooms and created a composite score. There was no significant relationship between perceived teaching freedom and either measure of change.

Program type. Whether the program the teacher worked in was a community-based organization (CBO), a local education agency (LEA) connected to a school district, a correctional facility, library, homeless shelter, workplace, community college, or other type of program was not associated with change.

⁵⁸ Questions included the extent to which teachers felt their directors supported them to make change, rating of overall quality of leadership in the program, and rating of directors' expertise.

For a further explanation of the hypotheses underlying these factors, and the findings of these analyses, please see Appendix D: Additional Information on Factors.

Support from Subsample Data about Important Factors

In the sections above, we presented the most important factors from all the data, across all teachers in the sample. Teachers were more likely to change if they:

- Were motivated to learn about the topic or about theories of good teaching and student success
- Had fewer years of experience in adult education
- First taught in adult education (rather than in K–12)
- Had less formal education
- Attended the professional development for more hours
- Participated in professional development groups rated high quality by researchers
- Participated in professional development groups they (teachers) perceived to be of high quality
- Worked in programs that had not yet addressed the issue of learner persistence *and* where they as teachers had some voice in decision-making
- Received benefits as part of their adult education job
- Received paid prep time as part of their adult education job

To a lesser extent, factors that supported change included access to paid professional development release time, more working hours in adult education, a lower level of commitment to working in adult education, and flexibility in changing the curriculum. Collegiality and coparticipation (when coupled with opportunities for ongoing discussion between and after professional development sessions) were also secondary but still somewhat important factors. Finally, type (model) of professional development did not emerge as a key factor, although different patterns of change were associated with the three different models.

Looking across the entire sample of teachers provided us with one way to identify important factors from the multitude that might affect teachers. For any given teacher, however, these individual, professional development, program and system factors interacted to either prevent change or support it. The stories of the subsample teachers helped us to see how factors like motivation, education, experience, working conditions, and collegiality varied and prevented change in some teachers and supported it in others. By looking at these factors and the experiences of teachers within each type of change, we understood better how such factors interact. Specifically, for three of the four types

of change (no or minimal change, thinking change, and acting change), we wanted to know how the absence of important factors might have prevented more change. For the fourth type of change (integrated), the type of change we “preferred” to see as a result of this professional development, we wanted to know how the varying presence of these factors worked, together and separately, to support change.

Factors Related to “No or Minimal Change” in the Subsample

In this section, we discuss the factors that influenced the four subsample teachers who made little or no change. Why didn’t they make more changes in thinking and acting, and how did the various factors hinder them? Many of the factors that contributed to lack of change in these four teachers were mirrored in the larger sample: lack of motivation for professional development, poor professional development group quality, more experience in the field, and advanced degrees. Working conditions were also bare bones for this group as a whole:

Money is low. There’re no perks, no benefits. We’re not paid for prep time. I would like to see them make [teaching in adult education] a full-time job. I would like to see fewer of us teaching more hours. We have expressed it and we’re always told that this is the way it is.

—Beth, Wave Three interview

All of these teachers were part time. All were experienced teachers⁵⁹ in adult education, and all had master’s degrees. Three of the four began their teaching in the K–12 system. They appeared to be satisfied with both their own teaching and their programs, and none came in with a strong motivation to acquire deeper concepts about teaching. They were also all in the lowest-quality groups, with generally poor facilitation and poor group dynamics. Perhaps for this reason, three of the four disliked the professional development, and two were confused about its purpose, not being sure whether they were involved in a national study on learner persistence or on professional development.⁶⁰ Coming into the professional development, none of the teachers in this

⁵⁹ The only other part-time experienced teacher in our subsample took more action than these teachers and is therefore included in the “more action than thinking” category, but his actions were not sustained from Wave Two to Three and were limited to his practitioner research. He also didn’t change his approach to teaching; his main changes involved a desire to read more research and (initially) the desire for more collegiality with others (but this desire for collegiality also was not sustained through Wave Three). In some ways, he belongs in the “no or minimal change” group.

⁶⁰ At the beginning of the first session of each professional development activity, a member of the research team or a trained proxy gave an orientation about the study to the participants, and we explicitly informed participants that the focus of the NCSALL research was the effectiveness of professional development, not learner persistence.

type expressed strong motivation related to the issue of learner motivation, retention, and persistence; their longer experience in the field may have contributed to a feeling that there was nothing new to learn.

[In relation to formal professional development] I just don't see anything other than renaming things. I don't see a lot of new ideas. I don't know, maybe I'm just getting hardened to the whole thing. ... I'm being very negative, but I guess I am looking for something, but I don't know what it is.

—Penny, Wave Three interview

It was just of minimal interest and importance to me at this point, because I've been in this field a long time. I was a counselor, so I dealt with all those issues. None of it was new to me.

—Elizabeth, Wave Two interview

Their reasons for joining the professional development were either convenience, interest in the model, or the urging someone in their program who advised them to attend. Penny's motivation for attending the professional development was primarily to inform others of what she considered her program's successful individualized instruction format, and, as for several other GED teachers in our sample, since passing the GED test is the sole goal of her program, the content of the professional development (trying to help learners persist) did not seem relevant either:

I'm very confident in what I do which is a terrible way to be because you can always learn. Every year when they ask "what would you like?" I would like a sharing session with everyone in the vicinity. But then, people come to our program and we're the ones with the experience so we end up sharing our ideas and normally rejecting their ideas ... we listen, we try to get something out of it but we end up giving our ideas because they're working for us.

—Penny, Wave One Interview

You can't be terribly creative, you can't do these wonderful things: "oh, let's go out into the community and have a field trip" because you're teaching to the test.

—Penny, Wave Three interview

Elizabeth, having worked as an ABE counselor for nine years before teaching, was a strong "rejecter" of the topic and she wished that the professional development had consisted solely of being mentored on a topic of her own choice. Deirdre was not completely "invested" in the NCSALL Professional Development on learner motivation, seeing it as a lot of work that competed with the other professional development she was attending, and she expressed doubts about the value of practitioner research itself. The poor quality of their groups and their general dislike of the professional development was

in line with the finding from the overall sample that both rated and perceived quality of the professional development were associated with type and amount of change. Model did not seem an important factor, although none of the subsample “no or minimal change” teachers attended a multisession workshop.

Factors Related to “Thinking Change” in the Subsample

For these four subsample teachers, we wondered why, if their thinking changed, more action did not accompany it. Motivation seemed to play a role here: the most important common factor (for three of the four teachers) seemed to be a particular need or concern, unrelated to the topic, coming into the professional development. Three of four were dissatisfied with their program or teaching situation and had a strong need not associated with the topic of learner persistence: one had a need for collegiality and rejuvenation; one, a need to be respected as a teacher; another, a need to influence the program administration’s negative attitude. In all three cases, the most significant change they experienced was a realization or attitude change directly related to this need or dissatisfaction. The fourth subsample teacher in the “thinking change” type did not seem to feel any particular need or motivation coming into the professional development, either on or off the topic. However, three of the four teachers demonstrating change of this type were confident and satisfied with themselves as classroom teachers coming into the professional development. None of these teachers expressed a strong need to change how they taught or how they addressed learner motivation, and this may be a factor in why there was so little change on the topic. All four had teaching certificates or advanced degrees.

Three of the four taught GED and/or job skills; their teaching was focused on basic skills, predetermined goals, passing tests, and curriculum with a clear vocational focus. Changes in action may have been limited by either their own or their program’s inability to focus on learner persistence as part of the curriculum. Also, two of these teachers felt that they had no decision-making power in their program and thus found it difficult to initiate change at the program level.

I haven’t been heard, no, I have not been heard. I don’t feel that I’m listened to. It makes me feel that I am an outsider. I’m pretty powerless. So if you feel powerless, you’re not going to try to institute change, are you, on a program level?

—Lucy, Wave One interview

Model again did not seem to play an important factor, since all three models of professional development were represented in this type. Although we rated their groups as being mixed in quality (two were high-quality groups, one medium-quality, and one low-quality), the teachers in this group all rated the professional development as high quality; this may be due to the fact that the professional development offered three of

these teachers what they wanted off the topic: support within an unsupportive program, connection to other adult education teachers, the opportunity to talk with other teachers about concerns and issues.

I enjoyed that group of people [the other participants in the professional development] immensely. There are a lot of new ideas, a lot of enthusiasm that I didn't necessarily feel here in [my state].

—Gail, Wave Two interview

The staff needs to be supportive of each other, and the situation I was in last year, it was lacking. ... I was encouraged to seek a more positive work setting for myself and it helped build up my self-esteem.

—Caroline, Wave Three interview

Factors Related to "Acting Change" in the Subsample

In our subsample, there were four teachers who demonstrated primarily acting change. Our main question here, then, was why these teachers, three of whom were new teachers, did not integrate the actions they took with new knowledge or thinking. The key factor here seemed to be that these teachers were primarily motivated by the need to acquire new techniques they could apply quickly, regardless of content, in their classes. All four teachers in this type liked the professional development; all were in what researchers rated as high- or medium-quality professional development groups, and three of the four participated in the workshop model. Three of four were new teachers who had not taught in K–12. While factors such as being new to the field or to teaching support change, probably explaining why they made the changes that they did, the missing factor seems to be the motivation and skill to tie actions to a theory of good teaching and student success. As teachers just at the beginning stages of developing a philosophy of teaching and learning, they were primarily looking for techniques and confidence (rather than to deepen their concept of teaching) so thinking on the topic was not integrated into a cohesive theory of what adult learners need.

I had a lot of theory in graduate school, which is applicable, and it's helpful and I'm using it, but you can't just keep throwing theory at me and expect me to produce. I can't do it. I have to have something practical. I have to fit it into a framework.

—Brenda, Wave Three interview

I'm looking for a magic thing, but I haven't found it. ... I'm always looking for what can help me, I'm looking for things that could help them [students] more. There's a lot that I don't know.

—Emmanuella, Wave One interview

The three new teachers also worked in programs where the issue of learner persistence had already been discussed within the program, perhaps explaining why program action was limited. Overall, it does not seem that any came to the professional development with a burning need, but, rather, as new teachers, were simply on a path to learn and this was professional development that was offered and available. Their interest in the topic was minimal to moderate. They were more interested in acquiring new teaching techniques that they could use in their classrooms.

As a new teacher, I just felt I was kind of soaking that up as a sponge as much as I could...

—Brenda, Wave Three interview

They [the professional development] give me materials and they give me papers, then I start to teach that way, the way I was supposed to teach it. I'm a copycat ... I'm the kind of person that if you tell me it might help, then I'm going to try it. If it doesn't work, it doesn't work, but I have to try it.

—Emmanuella, Wave Two interview

The fourth, more experienced teacher was only attending because it was convenient and he had a point to prove to his program; when his program was not interested in changing based on the evidence he provided from his practitioner research, he gave up on his change and reverted to his previous teaching style.

The [practitioner] research fell on deaf ears. All I was told is, "Let's continue doing what we're doing." And I said "OK."

—David, Wave Three interview

Factors Related to "Integrated Change" in the Subsample

These five teachers made the type of change we "preferred," to a greater or lesser extent. We looked at their profiles in order to understand how the factors supported them to change in a way that enabled them to integrate thinking and acting. Many of the important factors played a role for these teachers: strong motivation to learn about the topic and theories of good teaching, programs that had not addressed the topic of learner persistence but were receptive to input from teachers about how they might improve, coparticipation, and opportunities for ongoing collegiality.

The professional development these teachers attended was of high quality, and the teachers perceived it as such. None of the teachers demonstrating this type of change participated in practitioner research: three were in mentor teacher groups, the other two in workshops. Two of the three minimal-to-moderate integrated change teachers missed

one of the sessions, and in each case, these were the last sessions, where the focus was on planning and strategizing for further action, perhaps explaining why their change was minimal-to-moderate rather than significant.

All expressed strong motivation, coming into the professional development, to address learner persistence, with a strong recognition of it as a problem. All teachers, for different reasons, expressed a need and desire to find a better, more theoretically based way to teach. Unlike the teachers in the thinking change (who either had no strong need or whose need was related to something outside of teaching, such as collegiality or voice in program decisions) or the teachers in the acting change (whose main need seemed to be different techniques to use in the classroom), the teachers in the integrated type were looking for a way to teach that included all of the theories of what helps learners be successful. The fact that all five teachers lamented their lack of better organizational or curriculum planning skills, which perhaps results from their limited formal training, highlights their awareness of the importance of those skills, as opposed to other teachers in our study who appeared to us to do a limited amount of curriculum planning and appeared unaware of its importance.

I had no training in teaching. I know that teachers have education; it's essential. I need to know how to put together lessons and how to organize information and put it into the classes. ... How do you present to students in a way they're going to understand? ... There has to be some sort of direction for the students, when they walk in the classroom, of where we are going.

—Esther, Wave Three interview

The structure of the professional development encouraged them to learn from practice, from listening more carefully to their learners. For each, the feedback they got from the learners encouraged them to sustain these practices over time. One difference between these teachers and those who did not demonstrate integrated change seems to be that integrated change teachers changed in their approach to teaching to a degree significant enough to keep them from reverting back to the old way of teaching.

Program structure played an important role in change for these teachers. We identified two program aspects that figured in teacher change: (1) Did the teacher have a voice in program decision-making? and (2) Was the program already working to improve learner persistence? What we saw, at least among the sample of teachers participating in our study, is that program structure and current activities related to the topic played a role in how much teachers could change; specifically, teachers had more opportunities for change when their program was not already taking action to address the problem *and* when the program structure gave them opportunities to suggest change. Where programs were already taking action to improve learner persistence, teachers' change was more limited. Where the teacher wanted to make a change but program philosophy or decision-making structure did not match, change was also limited. In two cases, (Debbie

and Pamela), the program structure was either so isolating or so impermeable to input from teachers that the program actions they attempted were rejected, leaving them with only the classroom as an arena in which to make change. Neither teacher had received an orientation as a new teacher nor had been evaluated as a teacher; neither had access to regular staff meetings where teachers were included in decision-making.

We're on our own. There's no support. None. ... Maybe that's why ... I gravitated toward mentoring. I was so desperate for some kind of feedback! Am I doing a good job? Isolation is difficult and gets in the way of me learning. I need to be stimulated and I need the ideas of other people. ... I think we need to find out from learners what it is that is holding them back. And that's a program responsibility. I think [poor attendance] is because they're not getting programs that are suiting their needs. ... But I think that whatever they [learners] need in order to make it is not being offered to them.

—Pamela, Wave Two interview

Both worked in large, top-down bureaucratic systems where adult education teachers were at the bottom, and their programs rejected the changes they suggested (such as having more teacher workshops or holding a class on a Saturday instead of a weeknight). These two teachers worked in programs where teachers were isolated and had no decision-making power to implement change and where no actions were being taken to address learner persistence.

In another case (Erica), the program was already taking many of the actions that her new knowledge indicated would lead to learners' success and persistence, so she simply joined the program actions already underway. In this case, the teacher had a voice in decision-making but program actions were already underway to support learners' success and persistence.

The two teachers with the most significant integrated change both worked in programs where there was some role for teachers in decision-making *and* where little had been done by the program to address learner persistence. Although the programs varied in the amount of support offered to the teachers, neither program resisted the new directions the teachers took. For example, Meg's first step was to join with her colleagues in the professional development to press the director to institute regular teacher meetings where they could brainstorm strategies to address learner persistence. This effort was successful:

We [the teachers in the professional development] couldn't meet the director as a group because of our teaching schedules so each and every one of us went in our different times and said, "Look this is what we're interested in. How can you make this happen?" And he said, "Hey, this is great." So we meet every Friday once a month. He's paying us and providing this on our time.

—Meg, Wave Two interview

In addition to a program structure and situation that encouraged action, both of the teachers who demonstrated the most significant change participated in mentor teacher groups where all of the other participants were teachers from their own programs.⁶¹ Both had important needs that were met by the specific type of professional development in which they participated. Neither had previously participated in professional development that was ongoing and highly collegial. As a new teacher with virtually no exposure to the field and a significant lack of confidence, Esther needed reassurance; the small size and egalitarian nature of the mentor teacher group provided her with a safe environment, which she identified as the most essential condition to her learning. As a veteran teacher, Meg needed to be challenged, and the mentoring experience gave her just the added nudge she needed to try something new (the mentor is coming to observe the class!). The mentor teacher group marked the first opportunity for teachers from Meg's program to discuss, for an extended period of time, issues important to them.

The two teachers who made the most significant change also appeared to be able to make connections between teachers and learners' realities. Unlike many teachers in our study, these two teachers saw themselves as on par with or equal to learners, thus allowing them to readily make connections between themselves and learners. Both were already predisposed to basing instruction on learners' needs, and both demonstrated an eagerness to expand their theories of teaching to concepts about what helps learners be successful.

The most important would be learners become part of the classroom and learners have a voice and a say in whatever goes on in the classroom. For the teacher to really listen. [The professional development] made me realize that students should be able to have the last administrative word on how they should learn and what is important to them, not being told what is best for them.

—Meg, Wave Three interview

Discussion of Factors That Influenced Change

The data from our study indicate that multiple factors interact to influence teacher change as a result of participating in professional development. Across our sample, change was either supported or hindered by the extent to which these factors applied; for any individual teacher, a combination of individual, professional development, program and system factors interacted to influence the amount and type of change experienced. Overall, we found that teachers changed more if they:

⁶¹ All five teachers in Esther's program participated in the professional development although two left the field during the course of the professional development activity and therefore dropped out. In Meg's case, the participating teachers were all from the ABE/ESOL component of her program and all participated for the entire 18 hours.

- Had a need to learn about the topic or about teaching in general (theories of good teaching and student success)
- Had fewer years of experience teaching/working in adult education
- Had their first teaching experience in adult education, rather than K–12
- Had a bachelor's degree or less
- Attended the professional development for more hours
- Were in higher quality groups (as rated by researchers *or* as perceived by the participating teacher)
- Had some decision-making input in programs where learner persistence had not been addressed
- Had access to benefits and paid prep time as part of their adult education job

Secondary but still somewhat important factors that supported teacher change included:

- Access to paid professional development release time
- More working hours in adult education
- A lower level of commitment to continue working in adult education
- Coparticipation in professional development when accompanied by opportunities for ongoing discussion between and after professional development sessions
- Opportunities for collegiality
- Flexibility in changing the curriculum

One of our main hypotheses at the start of the study was that model of professional development would make a difference in teacher change. We found, however, that model of professional development was somewhat but not most important as a factor: there was a trend toward more change among those who attended “reform” models of professional development. Teachers who participated in mentor teacher groups (particularly where the group consisted of teachers from the same program) were just slightly more likely to make “preferred change”; teachers who participated in practitioner research groups were slightly more likely to make more change overall. Higher amounts of overall change were related to more integrated change, demonstrated by mentor teacher group and practitioner research group completers, but these differences were not significant.

There are several possible explanations for why model of professional development was not a more significant factor in our study:

1. The sample was too small, and with greater numbers of teachers, the difference among models would be significant.
2. Features of professional development are more important than model (Garet et al., 2001 also found this), and since all three NCSALL-tested models shared similar features,⁶² differences among models were not as pronounced.
3. Factors related to professional development exposure (hours attended) and quality are more important than model, so that any model contributes to change as long as it is well-run, well-designed, and teachers attend for an adequate number of hours.
4. Individual and program or system factors, such as teacher motivation, level of education, and access to benefits, were more important than professional development model in influencing change.

Further research, perhaps with a larger sample size and comparing models that do and do not use an inquiry approach, might determine which of these (or other) explanations may prove true. It may also be the case that other models of professional development not investigated here are even more powerful, such as program-based teacher inquiry groups studying samples of student work to solve problems of practice, for example.

It was not surprising to us that teachers who attended high-quality professional development (or what they perceived to be high-quality professional development) for more hours also changed more. High-quality professional development, however, wasn't always led by professional facilitators; some of the teachers who had been trained to facilitate delivered professional development that was rated both by us and by participants as high quality.

While it was not surprising that those teachers who attended because they had a strong need to learn (either about the topic of the professional development or about teaching in general) changed more, we see the finding as a reminder that not all teachers attend professional development with a burning desire to learn about the topic the professional development covers. This is where Joyce's (1983) concept of categories of teachers as learners and consumers of professional development (omnivores, active consumers, passive consumers, entrenched, and withdrawn teachers) is supported by our

⁶² Extended exposure over multiple sessions; expectations and support for practitioners to try something new in their classrooms or programs between sessions and bring their experience back to the next session; time for planning what they will do with their new learning; time for participants to share their own experiences and ideas of what worked; use of an inquiry approach to learning about teaching, where teachers were to find out from learners about forces affecting their motivation, and then to act on what they heard.

findings, although we would prefer to simplify it to two categories: “settled” teachers and “hungry” teachers.⁶³ Our research leads us to propose a hypothesis (rather than a finding) about the teachers’ dispositions as learners: motivation to attend was a factor in what appeared to be an overall portrait of teachers who were either “settled” or “hungry” to learn. Among our sample, teachers who were more satisfied with their teaching or who had no strong need coming into the professional development (perhaps attending at the request of their director), and did not feel that learner persistence was a problem that they either could or wanted to solve, appeared “settled.” Those teachers who had a strong need to address the problem of learner persistence or a need to develop their theories of teaching and student success fit the portrait of “hungry” teachers: they wanted to learn new techniques, new theories, or new ways to address learners’ problems in their classrooms and programs. Our impression is that settled teachers were more likely to demonstrate minimal or no change and hungry teachers were more likely to demonstrate integrated change. However, we offer this concept not as a conclusion of our research but as an emerging hypothesis about an individual teacher disposition that might play a role in teacher change. Further research might use this construct of “settled” and “hungry” as a way to characterize teachers’ dispositions toward learning and develop data-collection protocols for explicitly researching its role in teacher change.

It appeared that being new to the field, teaching for the first time in this field, and having less formal education made teachers seek techniques or theories about learner persistence, good teaching, or student success. In our study, teachers who had more years of experience in the field of adult education, who began their teaching in K–12, and who had advanced degrees were more likely to seem satisfied with their practice and to demonstrate a stronger commitment to the field. This finding mirrors recent research by Livneh and Livneh (1999) among K–12 school teachers. They found that participation in professional development was predicted by (1) high internal motivation to learn, (2) high external motivation to learn (wanted career advancement or to network with others), and (3) lower levels of formal education.

We also discovered that there were teachers who identified an “off the topic” need during the course of the professional development and subsequently developed a motivation to change related to that need. These teachers were dissatisfied with some aspect of their program or working situation (isolation, difficulty with program administration, etc.). Through some aspect of the professional development (typically, sharing with colleagues), these teachers recognized this need, developed their thinking about collegiality or program strengths and weaknesses, and then took action to address the problem. Although such action did not address directly learners’ needs or persistence, it was action based on a need they had identified and as such denotes change for those teachers.

⁶³ Because we did not collect data that would allow us to type teachers either according to Joyce’s categories (as far as we know, Joyce did not develop a data-collection protocol for these categories) or as “settled” or “hungry,” we do not present this as a formal factor, but rather as a concept for further research.

Program and system factors regulating teachers' working conditions also influenced teacher change. We defined teachers' working conditions as whether or not they have access to:

1. **Resources.** These include classroom and program facilities, materials, and technology that affect how well teachers are able to do their jobs.
2. **Professional Development and Information.** These factors include opportunities for teachers to acquire the knowledge and information they need, primarily through professional development, and through access to written and electronic materials, that help them better understand their classrooms, their programs, and their field.
3. **Colleagues and Program Directors.** These include opportunities and mechanisms that allow teachers to get feedback from supervisors and talk to peers in their program, their state, and the larger field of adult education.
4. **Decision-Making.** These include opportunities and mechanisms for teachers to participate in improving the quality of services that learners receive, particularly through program policies and practices.
5. **A Well-Supported Job.** These factors include adequate pay; sufficient working hours to complete all of the teaching, program, and other tasks required of them; paid prep and professional development time; and job stability and benefits.

Different programs and adult education systems provided the teachers in our study with varied amounts of access to these working conditions, and certain of these factors more strongly influenced how teachers changed. Our findings indicated that access to decision-making and access to certain aspects of a well-supported job—particularly benefits and paid prep time and (to a lesser extent) more working hours and paid professional development time—affected how teachers changed after participating in professional development. Access to colleagues was an important factor for some of the teachers in our subsample, particularly when they participated in professional development groups where all of the other participants were from their own program. However, access to resources and to professional development and information in general did not emerge as particularly important, at least in relation to the professional development in this study.

Conclusion

We conclude that teachers' pathways to change were neither simple nor linear; change was complex and shaped by interaction among who they were as individuals, the quality and amount of professional development in which they participated, and the features of the programs and systems in which they work. Adult education teachers work within a particular ecosystem of funding, structure, and policies, and these factors intertwine with

individual factors and with the professional development they participate in. While we, in this research project, have endeavored to isolate the most important factors in order to propose recommendations for action that states, programs, and professional developers can take to increase the effectiveness of professional development, the reality is that any individual teacher's experience of change is determined by a unique interaction of these factors.

The complex interaction between individual, professional development, program and system factors that influenced how and in what ways teachers change is demonstrated best through two examples: one of a teacher (Penny) who made little change, and one of a teacher (Meg) who made significant change.

Penny's lack of change was influenced by the strong individual factors (lack of motivation to learn about the topic or, for that matter, about anything related to her teaching, and a greater amount of formal education), professional development factors (a dislike of the professional development facilitator, mentor teacher group model, and group in which she participated), and program and system factors (part-time status, a requirement to use a particular curriculum, program structure that emphasized individualized instruction for GED test prep). The interaction of these factors contributed to no real change: her lack of motivation to learn, based on her experience and her satisfaction with the personal teaching style she had developed, interacted with what she considered poor-quality professional development, and led her to reject both the topic and any suggestions the professional development had to offer. Also, since the program's goal was to prepare as many students as possible to pass the GED test, they had adopted a policy of cycling students through workbooks individually, and as such, Penny was not encouraged to care about students who dropped out; both she and her program took the stance that students who didn't persist were not ready to study for the GED, and so they were not concerned about them—other, more motivated students would readily take their place. Penny already felt that their program served students as well as it could, and being only a six-hour-a-week employee with no prep time, she was neither motivated nor supported to try new strategies for improving students' motivation, retention, and persistence. In sum, almost all factors—individual, professional development, and program/system—interacted to contribute to her lack of change.

On the other hand, Meg, who also participated in a mentor teacher group, had multiple factors that supported change. She had a strong motivation to learn, as a teacher who started teaching in adult education/family literacy without a master's degree. She loved the mentor teacher group in which she participated, partially because it was high quality and partially because all of the other participants were teachers in her program. Her program had not addressed learner persistence as an issue but was relatively open to input from both teachers and students; her director was approachable to discuss problems. Meg worked as a full-time teacher with benefits and prep time, so she had the time to seek collegial support to take action in the classroom and program. What she initially

learned in the professional development, which both she and the researchers rated as high quality, fueled by her motivation to know more about teaching and serving students, led her to make changes in her classroom in both curriculum and class structure. The fact that other teachers in her program were also participants in the professional development led them together to seek changes at the program level. With a responsive program director, Meg could also encourage her students to suggest changes at the program level. Discussions with the teachers in her program also motivated Meg to talk to teachers outside of her program about working conditions that she sensed influenced teachers' persistence. These multiple factors interacted to support transformational change in both her thinking on and off the topic and her actions at all levels.

CHAPTER THREE: CONCLUSIONS AND RECOMMENDATIONS

For the teachers in our study, change did not occur in a vacuum. How—and how much—a teacher changed was influenced by a complex interaction of factors: who teachers were coming into the professional development, the professional development itself, and the program and system in which teachers worked. While most teachers who participated in the professional development made some change, change was limited among teachers who felt less of a need to learn, who attended professional development that was not of high quality, and/or who worked in programs and situations where they were not supported to change. (Those who dropped out made very little change on average.)

Slightly more than one third of the teachers who completed the professional development changed their thinking as a result of participating in the professional development, but this did not always translate into changes in practice in the classroom and program, and this lack of concrete action was due partly to individual motivation and partly to working conditions and program factors that hindered teachers from taking action. However, about one quarter of those teachers who completed the professional development—particularly those who had less experience in the field and less formal education, who had a strong motivation to learn more about the topic or about theories of teaching and student success, who participated in high-quality professional development groups, and who had access to working conditions that supported change (prep time, benefits, opportunities for sharing with colleagues, a voice in decision-making in the program)—made significant change across multiple roles, and this professional development had a strong effect on them and their practice.

While the small sample size and design of the study limit generalizability of these findings to *all* adult education teachers, we present implications of these findings that are applicable to the teachers, programs, and states that participated in the study. Professional development decision-makers in other states must decide for themselves whether these implications are valid for their own population of teachers, based on the extent to which their teachers and programs resemble those that participated in our study.

The fact that 28% of the 83 teachers who completed the professional development demonstrated little or no change (and 16% of the original 100 teachers dropped out and also demonstrated little change) should be of interest to our field. Eighteen hours of professional development is longer in duration than most opportunities adult education teachers typically have for professional development.⁶⁴ When even 18 hours of professional development did not lead to significant change for about one third of our sample, we need to consider the implications for ensuring that teachers are willing, able, and supported to participate in professional development and use it as a springboard to

⁶⁴ Almost one quarter of our sample reported receiving no hours of paid professional development release time in the year prior to our study.

better practice since, arguably, teachers are the most critical factor in student success. We propose the following recommendations, based on the findings from our study, for policymakers in programs and states, for professional developers, and for teachers themselves to better support teachers so that they are able to make the most of professional development and contribute to the positive differences we seek in students' lives.

Recommendations for Program Directors and States

Improve teachers' working conditions, including access to decision-making in the program. Programs and systems had a big effect on the teachers in our study. Teachers' access to benefits and paid prep time seem to be the most critical. Access to paid professional development release time, more working hours, ongoing discussions and teacher sharing with colleagues during and after participating in professional development, and decision-making in the program also, to a lesser extent, influenced the level of change. The presence of these factors in teachers' jobs made it easier for teachers to learn more and do more as a result of participating in professional development. However, many teachers in our study lacked access to such conditions. Programs and states should consider the costs and benefits of providing such types of support to teachers in their states, not only to enhance the productivity of the professional development they offer but also to decrease teacher turnover within the field.

Pay teachers to attend professional development. Attending more hours of professional development contributed to an increased amount of change. The stipend we gave participants may have played a role in their continued participation: although some participants undoubtedly dropped out because they considered the quality of the professional development to be low, and others dropped out because of illness or new jobs, others said they left because they did not have the time.⁶⁵ Eighteen hours of professional development is quite an investment for some state adult education systems that feel they only have the resources to offer an annual one-day conference. It is also quite an investment of time and effort for teachers who may teach only six hours per week. However, if adult education teachers receive payment for the hours they attend professional development as well as the hours they teach, they may attend longer, leading to higher returns from investments in professional development.

Increase access to colleagues and directors during and after professional development. Teachers felt better supported to make change when they participated with colleagues from their program and also had opportunities to discuss what they

⁶⁵ Although there was no direct and significant relationship between amount of annual paid professional development time and change, there was a positive relationship between paid professional development release time and hours of attendance in the NCSALL Professional Development, which in turn was related to change, suggesting at least an indirect link between supported time and change.

learned with others following professional development sessions. Programs should find mechanisms, as part of professional development and as part of teachers' paid jobs, for teachers to share ideas about teaching. Particularly for teachers who feel isolated, program-based professional development may be a model that deserves more thought and more research. As long as the professional development is of high quality and is designed using principles of effective professional development, the convenience of being able to attend professional development in one's own program with other colleagues from the program may support change. Program-based professional development may also allow teachers to work together to suggest action at the program level under conditions where this is not ordinarily encouraged. When teachers have paid opportunities to continue to talk with their colleagues outside professional development sessions, there appears to be an even greater likelihood for integrated change. However, states and programs also need to provide opportunities for teachers to meet colleagues outside of their programs, so that teachers develop a critical sense of their programs' assets and needs and an awareness of being part of the field of adult education.

Establish expectations at the state and the program level that all teachers must continue to learn. Help teachers identify their highest-priority learning needs and provide professional development to match, recognizing that not all change is related to the topic of the professional development. When we recommend setting expectations for continued learning, we are not here talking about certification requirements or formal competencies; our study did not investigate the influence of those on teacher change. However, using the concept of the "settled" teacher, professional developers should realize that some teachers attend professional development without a strong desire to learn more about the topic, about theories of teaching and learning, or about good teaching practice. In our sample, not all teachers viewed this particular professional development as necessary. Some had no strong motivation to be there; they were not driven because they had a problem related to the topic and were essentially satisfied with their teaching and their program. While these teachers may have gained some knowledge on the topic, we did not see much change in them. We are *not* saying that these teachers were not good teachers; we have no data about that. We are saying, rather, that we discovered teachers in our sample who were attending professional development for reasons other than to learn about the topic or to develop their theories of good teaching and student success, and that this was a factor in how much they changed. Some of these teachers did acquire new concepts and benefits unrelated to the topic that affected them positively including: collegiality, knowledge of the broader field, and strategies for how to survive in or change the program within which they worked. Just as adult learners may gain something from education that is as, or more, important to them than reading, writing, or math skills (such as self-esteem, working in teams, goal setting, and so on), we found teachers in our study who gained confidence in their teaching, an awareness of what the "field" of adult education is all about, or a feeling of companionship with other teachers, even if they did not do much to address learner persistence in their classroom or program. These are not inconsequential results from professional development, but

there's no reason to believe that they wouldn't also result from professional development on topics that match teachers' learning needs more closely.

The fact that there were teachers participating in the NCSALL Professional Development who did not have a strong need to learn about the topic means that professional developers must strive to provide professional development, in convenient venues, that does address a strong learning need. As we have learned from teaching adult students, needs assessment and identification of priority learning goals take time. It involves more than choosing from a menu of professional development topics. It requires teachers to think about what they already feel they know and don't know, and to look within their classrooms at how their teaching is tied to student learning: where are students struggling and not making as much progress as either they or the teacher would like, and why? These needs should drive the type of learning and professional development a teacher seeks and the type of professional development a program or state offers. Teachers must then be provided access to multiple opportunities for professional development on a broad range of topics, some of which they may not even have considered before.

Perhaps such a "learning assessment process" for teachers would be best offered at the program level; it is easier for programs to know the learning needs of their staff than for the state professional development system. It requires programs, however, to establish teachers' participation in formal processes for both individual teacher improvement and program improvement initiatives, where teachers help identify priority program needs and these priorities, in turn, inform teachers' professional development needs. The fact that a few of the teachers who attended our professional development seemingly did not have a strong need to learn on any topic means that programs and states should figure out how to help all teachers adopt the stance that, despite one's qualifications, experience, or even success as a teacher, all teachers need to maintain an intrinsic motivation to continue learning. The mandate for teachers to "learn more and do better" also suggests that administrators hold themselves to the same expectations.

Recommendations for Professional Developers

Teachers are adult learners, and, like the adult learners they teach, teachers are not all alike: they work in a variety of program and system situations, have different backgrounds, and have a range of approaches and motivations for learning. In each professional development group, we found new and experienced teachers, teachers with more and less formal education, teachers with and without K–12 experience, teachers with and without access to working conditions such as benefits, teachers with and without decision-making power in their programs, and teachers with and without a strong desire to learn about the topic or about theories of good teaching and student success: groups of teachers who attend professional development are indeed "multilevel." These differences

influenced how teachers changed as a result of participating in the professional development. What we think we know about the best ways to teach adult learners is probably true for educating teachers, too. Specifically, our research recommends that professional developers pay attention to the following.

Ensure that professional development is of high quality. The quality of the professional development, as rated by us and by the participants themselves, was an important factor influencing change. It wasn't necessary for the professional development to be run by a professional trainer; mentor teachers ran some of the highest-quality groups. We assessed three quality factors: group dynamics, clear facilitation, and design. We didn't assess the relative importance of any of these factors compared to the others, but all three played a role in the quality of the group. The facilitator was a crucial element, and the best facilitators were those who followed the design while making changes that allowed time for addressing participants' concerns as they arose.

Offer a variety of professional development models for teachers to attend. All three models of professional development tested in the study (multisession workshops, mentor teacher groups, practitioner research groups) supported teacher change. However, the finding that none of these models was superior to the others (in terms of supporting teacher change) should not be taken to mean that they would be equivalent in every situation. We built similar design features into all the professional development models we tested,⁶⁶ so we cannot provide guidance or assurance about the efficacy of professional development models that don't have these features. In other words, our study sheds no light on whether "training" is as effective as practitioner research, if that "training" is only one session with no follow-up. The subtle differences we found among the models—that teachers completing practitioner research group professional development had slightly higher overall change and that teachers completing mentor teacher group professional development were slightly more likely to demonstrate integrated change—might have been more strongly expressed with a larger sample. Therefore, while there is no reason to reject any of these models as less effective than the others, there is also no reason to suppose that there are no differences among them.

There is, however, every reason to believe that a single model of professional development wouldn't have sufficed for all the teachers in our study, year in and year out. Teachers participated for different reasons, with different levels of experience in the field and in professional development, and so had different reactions to the professional development. These reactions in some cases influenced how long teachers stayed in the professional development and in other cases influenced the change they made afterward. For example, we found that practitioner research groups had a greater number of teachers

⁶⁶ More than one session, scheduled over time; expectations and support for practitioners to try something out in their classrooms or programs between sessions and bring their experience back to the next session; time for planning what they will do with their new learning; time for participants to share their own experiences and ideas of what worked; emphasis on an inquiry process/cycle of learning and taking action.

with more experience in the field, whereas mentor teacher groups had a greater number of teachers who worked fewer hours per week in adult education. This is an indication that teachers may opt to participate in different models based on their experience or situation. No one model of professional development is sufficient for the range of adult education teachers in our field.

Be clear during recruitment for “reform” models of professional development what participation will be like for teachers. Providing enough information about the professional development during recruitment is important, because participants’ expectations of the professional development affected group dynamics, and this was especially true for newer, “reform” types of professional development such as mentor teacher groups or practitioner research groups. When participants did not have a clear idea of what they would be expected to do during the professional development, they were confused, and this confusion sometimes annoyed other teachers in the group who were ready and willing to engage in the professional development activities. Adequate information about what to expect from nontraditional forms of professional development would have helped those teachers who were more familiar and comfortable with traditional professional development models, such as workshops, that ask them to learn about the knowledge produced by others rather than produce knowledge of their own.

Help teachers acquire skills to build theories of good teaching and student success. Teachers, especially new teachers, often say that they need new techniques and practical ideas; however, a larger “bag of tricks,” while helpful to those “acting” teachers in our study, did not lead to sustained, integrated change. Teachers need to understand *why* to use a particular technique, not just *how* to use it; they need the underlying foundational theory of teaching and learning that will allow them to integrate new thinking with new actions.

Teachers in our study who had the skills and desire to build such theories gained more from professional development, and even those teachers who didn’t have the skills but had the desire gained something from the professional development. While we discovered teachers who fit the description of “settled” teachers, in that they did not express a desire to build theories of teaching and learning, we also discovered other teachers who had a desire to refine their theories based on practice, but did not have the skills to do so on their own. They knew they needed some overarching theoretical framework, and some even knew they needed to create this framework through a combination of knowledge and practice, but they didn’t know how to go about taking what they had learned in the professional development and building on it through practice and reflection of their own. We found that reflecting critically on one’s practice in order to build continually one’s theories of teaching and learning was not a skill that some teachers simply acquired by dint of being teachers, and it was also not a certain by-product of attending a particular professional development model (such as practitioner

research) that endeavors to develop reflectiveness. Rather, building theories of good teaching and student success through a process of learning, practice, and reflection is a skill that teachers need to be taught deliberately and consciously. A corollary to this expectation is the recommendation that programs and states should work especially hard to reach new adult education teachers, especially those who are teaching for the first time. Our study demonstrated that these teachers may be more open to change, more apt to act upon what they learn, and more in need of developing theories of teaching and learning. These teachers need the skills to reflect critically on what they learn and tie it to a process of integrated thinking and acting.

Add activities to professional development that help teachers strategize how to deal with the forces that affect their ability to take action. Teachers need support in order to translate their new ideas into practice. Teachers in our study were affected by program and system factors that acted as barriers or supports to taking action based on what they learned in the professional development. Whether the barrier is lack of time to prepare new classroom activities, fear of trying something new within the constraints of curriculum and established program policies, or lack of help from colleagues or director in assessing how well something new worked, teachers need time in professional development to strategize how they will deal with these barriers once back in their program.

We feel that teachers in our sample would have been helped had we created an activity within the final session of the professional development where they could brainstorm what would support them to take action and what would hinder them from taking action. If they had time during the professional development to recognize and then strategize how to overcome common barriers, they might have left the professional development with ideas for increasing supportive factors and reducing hindering factors. Professional development cannot erase the barriers to change that exist in teachers' working contexts, but it can provide time and a platform for teachers to discuss these barriers and strategize how to deal with them on their own.

Recommendations for Teachers

We recognize, as do teachers, that teachers do not always have power to change the working conditions and situations in ways that would support them to get the most out of the professional development. Yet our research findings do support some recommendations for teachers to consider and work toward, together with their colleagues:

Expect high-quality professional development. Facilitators should be well organized and follow a clear plan but be able to adapt the activities in the professional development to your particular needs. Teachers should consider how they best learn and

request professional development models that match, being aware that different models have different requirements of them as a participant and learner.

Think clearly about what they want to learn in professional development.

Start by looking at students' learning and considering the areas where students and teachers feel they are achieving well and where they are not, and what this means for teachers' teaching. Teachers should work with program and state professional development decision-makers and make their needs known, so that they can attend professional development on topics that will be most relevant to their needs (and which will, consequently, have the greatest impact on learners' achievement).

Recognize the need to develop a philosophy and theory of good teaching and student success. Use professional development activities to help them continually revise, expand, and test that theory as they take action to improve the quality of their teaching. Recognize that no theory will ever be "finished"; as long as teachers teach, there is always something more to learn.

Work to increase opportunities for collegiality and teacher decision-making in their program.

Work with other colleagues to improve working conditions. Advocate for paid prep time, professional development release time, and benefits as part of their adult education job.

Final Thoughts

Many professional development studies in K–12 have investigated how teachers change over time as a result of professional development, but few studies of this type have been conducted in adult education. The important contribution of this study is that it offers, for the first time in the field of adult education, an understanding of the factors that affect how teachers change. A key finding of this study is that teachers change in different amounts and ways as a result of participating in professional development, and that individual, professional development, program, and system factors interact to affect this change. These factors, some of which are unique to adult education, such as lack of prep time and benefits, influence how teachers change and benefit from the professional development in which they participate.

Given that few adult education teachers enter adult education classrooms with formal preparation specifically in teaching adults, professional development becomes more important than ever. As the field moves into an era of stronger accountability, it is important for program directors, professional development leaders, and state staff to understand how such factors support or hinder the improvements in quality that are being

promoted at the federal, state, and program level. Programs and states increasingly will expect professional development to prepare teachers to adopt evidence from research in their classrooms and programs, in order to improve outcomes for learners. This study demonstrates that professional development alone, while necessary, is not sufficient to drive changes in practice. Professional development is one tool for change but needs to be offered within a context that supports teachers to make change. While teachers are always the link between professional development and student outcomes, they are never the only influence, and this research draws attention to some of the program and system factors that will need to be addressed in our field for change to happen. This may require those who make decisions about how to structure services for learners to think seriously about devoting more funding to better supporting teachers, at the expense of serving more students.

Our study indicates that models for improvement *do* exist in our field. There are programs in the field worth emulating, programs that find ways to support teachers to attend and make change. There are states that invest in teachers' working conditions in ways (more working hours, paid prep time, benefits) that will also "stretch" their professional development dollars. Certainly there are teachers ready to take advantage of professional development offered.

There is still much we don't know about professional development in adult education, such as the connection between professional development and student achievement among different learner populations. Our study provides information to professional development decision-makers about how to help teachers and programs make the most of the professional development that is offered, and we hope that future research will provide more information about other factors influencing teacher change that we were not able to test here. In the meantime, our field will have to continue to learn from the K–12 research on professional development and from what we can glean from evaluations of professional development activities. What is clear to us from our study, however, is that professional development can play a critical role in improving teachers' knowledge and supporting teacher change in our field, but even the hungriest teachers attending the best designed, highest-quality professional development cannot do it alone.

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APPENDIX A: PROFESSIONAL DEVELOPMENT MODELS AND OBJECTIVES

The core objectives for each professional development model (as presented to the participants) were:

1. **Knowledge:** *Learn more about the topic.* Develop your theories about the topic of learner motivation, retention, and persistence.
2. **Reflection:** *Be critically reflective about your work.* Learn from your own experience, question assumptions that guide your work, and think about your practice in relation to theories of teaching and learning.
3. **Action:** *Try out new learning.* Take action to address the issue of learner motivation, retention, and persistence in the classroom, in the program, and in the community and/or field of adult basic education.

A specific, additional objective for the practitioner research group model was to learn more about research, and for the mentor teacher group model an additional objective was to learn about peer/mentor observation and coaching.

The specific process we suggested that participants follow in addressing learner motivation, retention, and persistence consisted of five steps for gaining knowledge and taking action, including:

1. Understand the topic better.
2. Discover the forces that support learners in their pursuit of their educational goals.
3. Reflect on what you learned from students and what that means for you and your teaching.
4. Choose a goal to work toward.
5. Identify/create a strategy(ies) for taking action to address the issues you've prioritized.

This process was made explicit in both the workshop and the mentor teacher group model, and the sessions were designed to walk participants through the process over the course of the 18 hours. In the practitioner research model, participants were made aware of the above process through handouts and introduced to the specific process for practitioner research (presented as a cycle), which includes: (1) Identifying a question ("What's going on?"—what are the forces that affect learners' persistence? or "What happens when..."—taking action to address learner persistence); (2) Collecting data to answer the question (What are the forces? or How does the action work?); (3) Analyzing and interpreting the data; and (4) Sharing their findings with others in the group.

We identified and presented to participants six main strategies for addressing learner motivation, retention, and persistence, including:

1. **Safety.** An environment in which learners feel that it is okay to make mistakes, that they are respected for what they know, and they are equally respected and valued in the program, regardless of race, gender, class, sexual orientation, and so on.
2. **Community.** An environment among learners and between learners and staff in which learners feel that they are not alone, that they are needed by others, and that they can work together to solve problems.
3. **Self-efficacy.** A belief (of learners) that they can be successful when attempting new activities as learners, workers, family members, and members of their communities.
4. **Quality of Service.** High-quality instruction, program practices, and structures that are driven by the needs of learners and that are engaging, supportive, and relevant to their daily lives.
5. **Accessibility.** A program structure and system that ensures that all services students need (flexibly scheduled classes, day care, transportation, etc.) are available.
6. **Clarity of Purpose.** The realistic and meaningful goals learners have set for themselves and an understanding of how education will help them achieve such goals.

We suggested five arenas within which they, as classroom teachers and program members, might take action to address learner motivation, retention, and persistence:

1. **Within yourself.** Reflect on how your own experiences might affect how you work with learners (we did this by creating our own problem trees).
2. **Within the classroom.** Work with learners to identify or create activities that help them to increase/decrease their prioritized forces.
3. **With individual learners.** Work with individual learners to address forces that are particular to that individual but are not common to the whole class.
4. **Within the program.** Work with staff to implement program-wide changes (such as an improved orientation process for new learners).
5. **Within the community, society, or the field of adult basic education.** Work on your own or with students in the class to implement changes in these areas.

Specific Nature of Multisession Workshop Model

Three multisession workshops were held as part of this professional development study: one in Maine, one in Massachusetts, and one in Connecticut. Each multisession workshop was led by the same facilitator and included up to 16 participants. In Maine and Connecticut, the multisession workshop was delivered in three six-hour, all-day sessions. In Maine, these three days were spaced roughly one to two months apart, with four months from start to completion (the first workshop day was in July, the second was in September, the third was in October). In Connecticut, the three workshop days were spaced two weeks apart, every other Friday (the first day was in January, the second and third days were in February), with six weeks from start to completion. In Massachusetts, the multisession workshop was delivered in four-and-one-half hour afternoon sessions; these sessions were held over four consecutive Fridays in October (with one month from start to completion).

Specific Nature of the Mentor Teacher Group Model

Six mentor teacher groups (run by six different mentor teachers) were run as part of this professional development study: two groups in Maine, two in Massachusetts, and two in Connecticut. Each group consisted of one mentor teacher and up to five participant teachers. The mentor teacher was not a participant but the facilitator of the group's professional development. Each group met for 10 hours as a group; each participant teacher got eight contact hours one-on-one with the mentor. The configuration of the 18 hours was as follows: the group met first for three hours, followed several weeks later by a second meeting of three hours. Then, over the following two months, each participant met individually with the mentor teacher for a total of four hours (one hour of preobservation conference, two hours of observation in class, one hour of postobservation conference). The group then had a third meeting of two hours. In the two months following the observations, each participant teacher met individually with the mentor teacher for a second observation totaling four hours. Finally, the group had a fourth and last meeting for two hours. Each group set its own schedule of meetings and observations, but most groups ran four to six months from start to completion.

Specific Nature of the Practitioner Research Group Model

Six practitioner research groups were run as part of this professional development study: two groups in Maine, two in Massachusetts, and two in Connecticut. One facilitator ran both groups in Maine, and another facilitator ran both groups in Connecticut. Two other facilitators each ran a group in Massachusetts. Each group included up to seven participant teachers. Each group met for six three-hour sessions, most typically spaced one to two months apart. All groups started in the fall and ended by late spring, with six to nine months from start to completion.

Process of Developing the Models/Intervention

The first step in designing the three professional development models was to review the professional development literature for practical suggestions, based on the research, for designing training, peer coaching, study circles, and practitioner research (also called, in some literature, teacher inquiry). This review, coupled with the professional development experience of the research design team, helped us to identify common features for all of the models (i.e., experiential, multisession, etc.) and particular features for the specific models (i.e., the mentor teacher model should include time for a preobservation and a postobservation feedback session; practitioner research model should include an introduction to different methods of data collection that can be done in classrooms, etc.).

Next, we collected information about the topic of the professional development: learner motivation, retention, and persistence in adult basic education programs. After consultation with NCSALL researchers studying learner persistence (John Comings, Andrea Parrella, and Lisa Soricone), we reviewed the literature (both academic and teacher-generated) on learner persistence. Through this review, we were able to identify theories related to why adult learners drop or stop out and what strategies are thought to be most useful in increasing learner persistence. We also developed definitions for common terminology related to the topic.⁶⁷

With key elements of effective professional development and information on the topic, we developed an outline of the agenda for each of the three models. We then held two group meetings with all of the facilitators to review the outline and begin to flesh out the activities for each professional development model. The initial group meetings were followed by multiple meetings for all facilitators implementing the same model (i.e., all practitioner researchers met three times to plan and review activities for the practitioner research group model; all mentor teachers met twice to plan and review for their model).

In between meetings with the facilitators, the research team developed guides, complete with handouts and readings, on each of the professional development models. These guides included step-by-step instructions for the facilitators about how to facilitate all of the activities in the professional development model they would be implementing.

⁶⁷ Learner motivation is defined engagement while in class. Learner retention is defined as regular class attendance and continued enrollment in the program until goals are reached. Learner persistence is defined as a positive view of themselves as successful lifelong learners, even if they “stop out” or “drop out” at any given point. The issue of learners persisting in programs, in general, is categorized as “learners continuing to pursue their educational goals.”

Criteria for Selecting Facilitators

The criteria for mentor teacher group facilitators included:

- Currently teaching in an adult education program
- Extensive teaching experience in the field of adult basic education required
- Previous experience facilitating professional development (especially peer coaching) desired but not required
- Demonstrated ability to understand the demands of mentoring (i.e., good listening skills, nonjudgmental approach, ability to travel to teacher participants' programs to observe their classes, etc.)

All of the six mentor teachers chosen (two per state) had extensive experience teaching in the field, and four out of the six had previous experience facilitating professional development, but all were recognized within their states as strong teachers with leadership potential.

The criteria for practitioner research group facilitators included:

- Experience as a teacher in the field of adult basic education required
- Previous experience facilitating professional development desired
- Experience either conducting practitioner research oneself *or* facilitating others to do so required

Four facilitators were chosen to run the six practitioner research groups: the facilitators for Maine and Connecticut were able and willing to run both groups in their respective states, while in Massachusetts, two well-qualified facilitators were found, each of whom ran one group. All of the facilitators had previous teaching experience; three of them were also professional development specialists with experience in coaching practitioner researchers, while the fourth was a teacher with extensive experience conducting her own practitioner research.

The criteria for the multisession workshop facilitator was:

- Experience as a teacher in the field of adult basic education required
- Previous experience facilitating professional development required

We found one facilitator who was qualified, willing, and able to conduct the workshop in each state.

All facilitators attended two all-day orientation sessions in the spring and early summer of 1998. At these orientation sessions, facilitators were introduced to the study as a whole and to the topic of learner motivation, retention, and persistence. At these meetings, their input was sought about the design of the models. Once the guides were produced for each model, they were reviewed by each of the facilitators, each of whom received one-on-one assistance before the professional development started. Facilitators also received support from the research team during the course of implementing their professional development.

Facilitators were instructed to follow the guides closely, so that the professional development intervention was as uniform as possible across the states and the groups. However, one of the elements of effective professional development identified in the literature is that the professional development should be geared to the needs of the particular group of practitioners participating. Therefore, facilitators were also encouraged and allowed to make minor adjustments to the length or implementation of the activities (e.g., they might change a small-group brainstorm to a whole-group brainstorm if the group were small for a particular session). These changes were to be made based on the facilitator's sense of the importance to the teacher participants of a changed or lengthened discussion to meet the particular needs of the teachers in the group. However, they were instructed not to skip any of the activities or the handouts. Thus, facilitators were trained to work with the research team to strike a balance between the needs of the research (for conformity to the model) and the principles of effective and real professional development (for adaptation of the model to the specific group of participants). Overall, this balance was achieved, with the fewest adaptations needing to be made to the multisession workshop; the most to the practitioner research groups.

APPENDIX B: DEFINING TEACHER CHANGE

Our goal in designing and conducting the NCSALL Professional Development with teachers, regardless of model, was the same: to provide the best quality professional development, based on principles of effective professional development from the research and from our experience, that would help teachers learn and take action on the topic of learner motivation, retention, and persistence (LMRP).

The main focus of our study was “teacher change.” “Change” is defined as differences in thinking and acting. “Preferred change,” in this study, was change in which the participant acquired knowledge of the topic, took action to find out about forces affecting LMRP from his or her own learners, acquired knowledge of strategies for addressing those forces, made a plan to take action to address forces relevant to his or her own learners, then took action to address the forces (within self, within class, within program, outside of class with individual learners, or within field); in short, the participant achieved the three objectives of the professional development.

Preferred change is action based on knowledge gain—what we call “integrated” change—rather than knowledge not connected to action, or action not connected to knowledge. “No change” is lack of evidence of either knowledge gain or action taken. “Negative change” is rejection of the issue as a problem that should concern the teacher.

The professional development analysis team identified the following criteria for determining change according to outcomes (which are defined as differences in thinking and action between Wave One and Wave Three that can be attributed to participation in the professional development), on and off the topic.

Criteria for Change (Based on Objectives of the Professional Development)

Changes in Thinking

(Also includes beliefs, attitudes, perceptions, feelings, etc.)

- 1) On Topic
 - a) Learned about the topic (understanding the complexity of barriers and supports, changing attitudes toward importance of knowing who learners are, or broadening instruction based on learners’ needs)
 - b) Learned strategies for addressing LMRP
- 2) Off Topic
 - a) Gained general teaching knowledge (why to use new technique or approach, not related to LMRP)

- b) Became aware of, reflected on, or critically analyzed the weaknesses or strengths of:
 - i) The community within which they or learners live
 - ii) Their program
 - iii) The field of adult basic education
 - iv) How they best learn (including the type of professional development they prefer)
- c) Learned strategies (tools) for research
- d) Expressed importance of collegiality in program or in field

Changes in Action

1) On Topic

- a) Took action to find out about their own learners and the forces affecting their LMRP
 - i) With individual learners: Took informal action outside class (e.g., called learners at home to find out why they were absent)
 - ii) Within classroom: Took action informally inside classroom (e.g., added time to chat with learners within class time) or took action formally inside classroom (used a technique or made curriculum change)
- b) Took action toward addressing LMRP (based on what they learned from their own learners):
 - i) With individual learners: Took informal action outside of class
 - ii) Within classroom: Took formal or informal action inside of class
 - iii) Within program: Took action in program to improve own classroom and/or overall program
 - iv) Within field: Took action related to LMRP (offered professional development on the topic to others outside their program)
 - v) Within self (changing own behavior toward learners)

2) Off Topic

- a) Made a general teaching change (used a new technique, without intention to affect LMRP)
- b) Made a program change (initiated a policy or structural change [e.g., increased collegiality], without intention to affect LMRP)
- c) Made a learning change (used a new approach to own learning or professional development, without intention to affect LMRP)
- d) Made a field change (contribution to field or community, offered professional development off topic, research about field)

Coding for Change

Through coding of the open-ended responses to all three waves of questionnaire (for the 101 respondents for whom we had at least two waves of data), we were able to gauge change in a number of thinking and acting arenas. Altogether, there were 17 different areas of change. These corresponded to the criteria listed above for changes in thinking and acting, on and off topic (took general teaching action, learned about the topic). Ten of the 17 areas related to changes in thinking; 7 related to changes in acting; 12 related to changes in thinking and acting off the topic; 5 related to thinking and acting on the topic.

Two of the research team members read all of the open-ended responses for each person in the study, then made a judgment about whether the respondent had made no, minimal, moderate, or significant change in that area. If it was not possible to make a clear judgment about the level of change, the respondent was given a code of “too vague to judge” for that area. After coding all of the respondents’ answers for each of the 17 different areas, the two research team members compared their answers and reviewed any that had been coded differently by the two coders. Sometimes this entailed lengthy discussions and review of the answers for each respondent, with “too vague to judge” being the preferred default. Quantitative scores for change were derived by assigning a “0” score to no change, “1” to minimal, “2” to moderate, and “3” to significant change for each of the 17 areas of change. The rationale for scoring in each area is as follows:

- **Minimal** = a one-shot action; change in thinking that was limited to one or two new concepts or strategies
- **Moderate** = several one-shot actions or one small action that was sustained over time; several concepts or strategies that were sustained for a short period of time
- **Significant** = one big action or many actions sustained; multiple concepts that were sustained over time

This allowed us to see not only overall change, but also to separate the scores for participants according to thinking only, acting only, on the topic, and off the topic. The total possible score for each category was:

- Thinking on topic: 0–3
- Thinking off topic: 0–27
- Acting on topic: 0–12
- Acting off topic: 0–9
- Overall: 0–51

Coding for Type of Change

Criteria we used to determine in which category a teacher would be placed:

- 1) The **amount of change** in either thinking or acting relative to teachers' baseline (whether thinking changed a little or a lot, as evidenced by their responses to questions about concepts on the topic; whether they took a little or a lot of action, compared to the action they were taking at baseline).
- 2) **Whether action was "integrated" with thinking**; i.e., how much teachers understood *and* undertook the process of change (understanding topic, finding out from learners, choosing strategy to address the issue based on what learners had said, taking action to address, reflecting upon the outcome of their action) and integrated it with a cohesive theory of what adult learners need to succeed.
- 3) The **number of arenas in which change occurred** (as learner, teacher, program member, and/or member of the field).
- 4) Whether **change was sustained** until Wave Three (one year after professional development was completed).

Validity of Coding

Self-reported questionnaire data has its limitations (as it is not directly observed over time); respondents may underreport by filling out the questionnaire sparsely, or they may overreport, by claiming actions when none were taken. However, we were able to use the examples of the 18 subsample participants, having both questionnaires and interview data to compare, and estimate the amount of under- or overreporting that would be likely to occur in the sample as a whole. Coding of open-ended questionnaire data was done by code # (rather than name) so subsample participants' questionnaires were coded just like all other questionnaires. Afterward, we were able to check their overall amount of change and type of change (based on what they wrote only in the questionnaires) against what we knew of them from the more in-depth qualitative data. In two thirds of the cases, their questionnaire data (and thus scoring of change) was true to the type and amount of change we knew of them from in-depth information. In one case, a subsample participant reported more in her questionnaire than we learned from the interview (overreporting), but all of the remaining subsample participants were cases of underreporting (where, by the sparseness of their answers, they underreported changes in thinking and action we know them to have made). For example, one teacher was typed as "acting change" based on qualitative data but was coded as "no change" based on questionnaire; another was typed as "acting change" qualitatively but was coded as "thinking change" based on questionnaire. These six cases of under- and overreporting happened across professional development models and states. Therefore, the amount of change for the whole sample may be somewhat more than the scores based on the questionnaires in approximately one third of the cases. While we would prefer to

wrongly assume less rather than more change, it bears remembering that it is likely that more changes in thinking and acting might have been visible if actual observation had occurred. This points out one of the weaknesses of questionnaires as a data-collection method for determining change over time.

APPENDIX C: CRITERIA FOR RATING GROUP QUALITY

The rating of overall quality of group dynamics was based on six criteria, the extent to which:

- Participants were looking for the correct answer, versus looking for the “truth” or testing assumptions (looking for outside guidance versus reflection)
- Participants talked only to the facilitator, versus talking with each other
- One person dominated the conversations, versus participants taking turns talking
- Conversation was dull or lethargic, versus conversation being animated, energetic, and positive (i.e., participants were engaged)
- Participants asked for clarification of materials, exercises, or activities (i.e., they are confused), versus participants indicating they were clear about expectations
- The group experienced turbulence in attendance, versus all participants attending regularly

The rating of quality of facilitation was based on five criteria, the extent to which the facilitator:

- Acted mainly as a source of knowledge (“a sage on the stage”), versus acting as a facilitator of participants’ learning (i.e., to what extent did the facilitator ask questions that drew out the participants’ knowledge and ideas)
- Was “fishing” for the right answer (asking closed-ended questions), versus probing for comprehension and understanding (asking open-ended questions)
- Talked, versus the participants talked
- Used the manual as a script versus used it as a guide
- Commented on the fact that there was a guide to be followed, versus internalized the guide

Three criteria were used to evaluate the integrity of the model, the extent to which:

- The activities presented in the guide were not covered (versus all activities were covered to some extent)
- The scheduling of activities was problematic
- Participants mentioned that the NCSALL study interfered with their experience (a research effect)

APPENDIX D: ADDITIONAL INFORMATION ON FACTORS

Before conducting the study, we developed a set of hypotheses, gleaned from the professional development literature and from our experience in the field of adult basic education, about the individual, professional development, and program or system factors that were most likely to support or hinder the type or amount of change teachers demonstrate:

Individual factors

- Reason/motivation to attend the professional development
- Years of experience in adult education
- Venue of first teaching experience (K–12 or ABE)
- Level of formal education
- Level of professional development consumption
- Belief in purpose of literacy instruction
- Type of teaching (ABE, ESOL, etc.)
- Teaching situation (one-on-one, small class, large class)
- Teaching experience in K–12
- Belief that knowledge about the learner is important
- Age of teacher
- Level of commitment to working in adult education

Professional development factors

- Amount (hours) of participation in professional development
- Quality of professional development (as perceived by participants)
- Quality of professional development group (as rated by researchers)
- Model of professional development
- “Coparticipation” in professional development (with colleagues from own program)

Program or system factors

- Required use of curriculum
- Program situation (decision-making in the program)
- Access to benefits

- Access to prep time
- Number of hours teacher works each week in adult education
- Amount of paid professional development release time
- Enrollment policy
- Program concurrently working on same issue (learner persistence)
- State in which participant works
- Program type
- Teachers' perception of leadership in program
- Perception of freedom to decide what and how to teach
- Opportunities for collegiality
- Access to resources

Individual Factors

Reason for attending professional development. Our hypothesis was that teachers without a strong motivation to learn would change less, and we concluded that this hypothesis was supported. Teachers in this sample who responded to a question about their primary reason for attending the professional development ($n=87$) reported a variety of reasons for attending the professional development: 30% to learn more about the topic; 22% to participate in a particular model of professional development; 20% to learn more about teaching in general; 8% because their director asked them to attend; 5% because they wanted to be part of the research study; and the rest because they wanted Continuing Education Units (CEUs), thought the facilitator would be good, a colleague was attending, or wanted to meet other teachers. The qualitative data also supports the finding that teachers had a variety of motivations for attending the professional development, and that an interest in the topic of learner persistence was not the primary reason for the majority of teachers who participated. We don't doubt that the professional development being part of a research study probably affected the motivation of the 5% who said they wanted to participate in the research.

In Wave One, we asked teachers to rate (on a scale of 1–6) to what extent they considered learner motivation, retention, and persistence to be a priority topic, compared to other topics on which they had sought or would seek professional development. The mean score for the sample was 5.07 ($SD = .89$), which indicates a strong interest; on the other hand, it was not a score of six across the board, indicating that some of the teachers in our sample had other topics of equivalent or greater importance to them. Across the whole sample, a stronger existing motivation related to this topic was not associated with any measure of change. However, we had much richer information from the subsample

teachers on the question of motivation to attend the professional development, and within the subsample we saw a definite pattern: teachers who had reasons for wanting to attend other than to learn about the topic or about teaching (e.g., director urging, convenience, CEUs, interest in professional development model) more often demonstrated limited or nonintegrated change. The teachers who demonstrated integrated change expressed strong motivations, coming into the professional development, to solve the problem of learner dropout or a strong desire to learn more about teaching. The connection between motivation and type of change was strong enough in the subsample that we identify it as an important factor influencing change.

Years of experience in adult education. Our hypothesis was that teachers who have been teaching longer in this field have a greater depth of knowledge (which is perhaps connected to weaker motivation to learn on any given topic), and so may change less. We found that the hypothesis was supported among completers, for both amount of change ($r=-.245$, $p=.028$, $n=81$) and for type of change, as seen in Table 19 below:

Table 19: Type of Change by Years of Experience in Adult Education

(Completers only, $n=81$)

TYPE OF CHANGE	<i>n</i>	MEAN YEARS OF EXPERIENCE	<i>SD</i>
No or minimal	21	13.19	6.104
Nonintegrated	40	7.65	6.963
Integrated	20	8.35	5.869
Totals	81	9.26	6.833

$F=5.27$, $p<.01$

In our subsample, the pattern was supported: four out of four of the “no or minimal” change teachers, two out of four of the “thinking change” teachers, one out of four of the acting change, and two out of five of the integrated change teachers had more than three years of experience in the field of adult education. Although the sample size is small, we conclude that teachers in our sample who completed the professional development and who had been teaching for more years in the field were less likely to demonstrate greater overall change and change in a preferred direction; however, years of experience made no difference in whether a dropout exhibited change.

Venue of first teaching experience. We were not surprised to find that most teachers (69%) in our sample began their teaching career in a nonadult education venue. We hypothesized that a teacher who first started teaching in the adult education field, rather than in K–12, would be more likely to change as a result of participating in professional development, because they would be looking more for ideas and confirmation that they

were in fact doing a good job as a teacher. We found support for this hypothesis: among those who completed the professional development ($n=81$), teachers whose first teaching experience was in adult education had a mean overall amount of change of 10.9 ($n=25$, $SD=7.82$), compared to teachers who first taught in K–12 or another venue, who had a mean amount of change of 7.86 ($n=56$, $SD=4.62$), and this difference was significant (one-way ANOVA $F=4.87$, $p=.031$). Type of change was also significantly different by venue of first teaching experience, as presented in Table 20.

Table 20: Type of Change by First Experience Teaching

(Completers for whom we have data, $n=81$)

FIRST EXPERIENCE TEACHING	<i>n</i>	TYPE OF CHANGE			
		NO CHANGE	NON-INTEGRATED	INTEGRATED	TOTALS
ABE	25	5	9	11	25
K–12 or other	56	16	31	9	56
Totals	81	21	40	80	21

$$\chi^2=7.26, df=2, p<.05$$

This finding was supported among subsample teachers, where three of the four “no or minimal change” teachers started teaching in K–12 but three of the five “integrated” change teachers began their teaching in adult education.

Level of formal education. Research in K–12 on teacher quality (as defined by more years of formal education completed and certification) indicates that more formal education is related to higher student achievement (Darling-Hammond and Sykes, 1999); however, we do not know whether having an advanced degree (in any field) is related to change as a result of participation in professional development. However, based on the belief that teachers with more formal education have better-developed philosophies of education and theoretical schema upon which to “hang” new learning, we hypothesized that more formal education overall would be related to more change and to change in a preferred direction.

In our questionnaire, we asked teachers their highest level of formal education completed; we did not, however, ask them what field their degree was in. We found that formal education was negatively and significantly correlated with amount of change: those with a bachelor’s degree or less had a mean overall amount of change of 10.69 ($n=45$, $SD=6.47$); teachers with a master’s degree or more had an overall amount of change of 6.24 ($n=38$, $SD=4.13$), and this difference was significant (one-way ANOVA $F=13.37$, $p<.001$). Type of change was significantly related to level of formal education, as presented in Table 21 below:

Table 21: Type of Change by Level of Formal Education

(Completers for whom we have data, n=83)

LEVEL OF EDUCATION	<i>n</i>	TYPE OF CHANGE			
		NO CHANGE	NON- INTEGRATED	INTEGRATED	TOTALS
Bachelor's or less	45	6	25	14	45
Master's or above	38	17	15	6	38
Totals	83	23	40	20	83

$$\chi^2=10.45, df=2, p<.01$$

The subsample supported the rejection of our hypothesis, since all of the four teachers who fell into the “no or minimal” change type had master’s degrees, but three of the five teachers who demonstrated “integrated change” did not have a master’s or a teaching certificate.

Level of professional development consumption. We hypothesized that practitioners who are regular consumers of professional development might be more likely to demonstrate change as a result of our professional development. This was not the case. Level of professional development consumption (as gauged by the amount of professional development they attended in the year before and the year after attending our professional development, on all topics) was not related to type or amount of overall change. Participants in our study may also have sought out and participated in other professional development on the topic of “learner persistence” before, during, or after participating in the NCSALL Professional Development on the same topic. We asked participants, in each wave, to tell us how many workshops, conferences, study circles, and other types of professional development (including reading on their own) they had done *on* the topic of learner persistence. Fifty-six out of the 106 practitioners in our study indicated that they had received no other professional development on the topic, other than their participation in the NCSALL Professional Development, either before, during, or in the year after participation. Table 22 shows the breakdown of attendance in other activities on the topic before and after the NCSALL Professional Development.

Table 22: Participation in Other Professional Development on the Topic of LMRP

LMRP ACTIVITIES	YEAR PRIOR TO NCSALL PROFESSIONAL DEVELOPMENT (n=30)	YEAR AFTER NCSALL PROFESSIONAL DEVELOPMENT (n=20)
Attended workshops	15%	12%
Read on own	21%	15%
Attended conferences	8%	12%
Participated in curriculum development projects	7%	35%
Participated in study or sharing groups	27%	30%
Peer coached	10%	20%
Attended lectures	24%	20%
Participated in practitioner research projects	17%	20%
Attended college courses	7%	10%

We used a z-score average of all other participation to get a score for the amount of other professional development they received on the topic. The data indicate that attending other professional development on the topic was not associated with amount or type of change.

Belief in purpose of literacy instruction. The hypothesis here is that those teachers who believe in a broader purpose of literacy, beyond acquiring reading, writing, and skills, may be more likely to adopt new thinking and strategies for keeping students in the program. This hypothesis was not supported, based on asking participants in the Wave One questionnaire what they believed to be the primary purpose of literacy instruction. We asked teachers what they think the primary purpose of literacy instruction is, with the choices being (a) “helping learners develop basic skills (reading, writing, speaking) or accomplish specific tasks (e.g., getting a GED, filling out a check)” or (b) “helping learners develop the ability to use literacy in their own lives or work toward social change (e.g., writing health brochures for their own community, working to change welfare laws.)” The responses indicate that most teachers (65%) believe that the purpose of literacy is the acquisition of basic literacy skills. However, this factor was not related to either amount or type of change.

Type of teaching (ABE, ESOL, GED). We had no strong hypothesis that what type of adult learner a teacher taught was related to change, but we felt it was important to collect this data because an ESOL, GED, or ABE teacher may approach teaching in different ways. We do not consider the data collected on this question to be strong, given the difficulty of framing the question. While it would seem as if such a question is

simple to ask, in reality, many teachers in this field often teach multiple types of learner populations and learners at different levels. This occurs whether or not teachers are working in two different programs or only one program. We asked teachers to tell us the primary type of teaching they currently do, with choices including (a) “ABE/literacy (reading 0–4 level),” (b) “preGED (reading 5–8 level),” (c) “GED/Adult secondary education preparation,” (d) “ESL/ESOL,” or (e) “other” (which included “vocational education,” “family literacy,” etc.). After piloting, we also added an option to choose (f) “an equal combination of ABE/literacy, preGED, and/or GED,” since many teachers indicated that they often teach equal numbers of classes at several levels. The results indicated that there was a range of different types of teaching, so we combined teachers who completed the professional development into four categories⁶⁸ in order to increase cell sizes: (1) 0–8 level ($n=14$), (2) GED ($n=19$), (3) ESOL ($n=21$), and (4) equal combination of ABE, preGED, GED and other ($n=25$).

We found that type of teaching was not associated with either amount or type of change among those who completed the professional development (for whom we have data).

Teaching situation. This factor relates to whether a teacher teaches (or tutors) an individual student, a small group or class, or larger classes. Teachers were asked to state whether they provided one-on-one tutoring with either one individual or with different individuals during drop-in sessions, or whether they teach classes of different sizes (2–10 students, 11–20 students, 21+ students, or other). Because cell sizes were small in each of these categories, we coded teachers into three categories: (1) one-on-one teaching or tutoring, (2) small class (2–10 students), or (3) larger class (11+ students). In our sample, 14 teachers reported that they teach one-on-one or provide individual instruction; 33 teachers report that they teach small classes of less than 10 students; and 27 teachers report that they teach classes with more than 11 students.⁶⁹ There were no significant differences, nor any discernible trend, between overall amount of change or type of change by teaching situation.

Teaching experience in K–12. We hypothesized that those who had not been teachers in K–12 might change more, based on the idea that all of their teaching experience was in adult education and so they might be “hungrier” for professional development. While teachers who had been K–12 teachers had a lower mean amount of change (8.08 out of 30 [$n=52$, $SD=4.91$]) than teachers who had never taught in K–12 (10.10 out of 30 [$n=29$, $SD=7.32$]), this difference was not statistically significant. Having never been a teacher in K–12 was also not related to type of change.

⁶⁸ We used the primary type of teaching that teachers indicated on their Wave One questionnaire, when they began the professional development, rather than Wave Three, since some teachers had stopped teaching by that time.

⁶⁹ Five teachers report that their teaching situation is “other,” but they either provided no explanation or their explanation (e.g., “family literacy”) indicated that they did not understand the question.

Age. We had no hypothesis about the relation between age and change, and we almost didn't ask it of teachers, but then decided to add the question to the Wave Three questionnaire upon the advice of our research design team. Of teachers who completed the professional development, there were 18 teachers between the age of 26–40; 21 teachers between 41–50; and 39 teachers 51 and over. Teachers' age was not significantly related to any dependent variable of change.

Belief that knowledge about the learner is important. Our professional development presented a strategy for addressing learner persistence that suggested discovering the forces affecting persistence among learners. Therefore, we hypothesized that teachers who had a stronger belief that knowing one's learners well is important would demonstrate more change. The premise of this hypothesis is that teachers' belief that it is part of their role to know learners or that students' needs and goals should drive curriculum would be associated with more change in this particular study, where the topic and focus was helping learners persist. We asked teachers to what extent (on a scale of 1-6) they felt it was part of an adult education teachers' role to know about learners' lives, goals, and uses of literacy in everyday life. Their rating was not associated with any measure of change.

We also hypothesized that the extent to which a teacher identifies with or sees herself as relatively equal to learners and the extent of the teachers' ability to apply what is true for self to learners would be important factors. However, we could not find a way to accurately or validly assess such attitudes in the questionnaire, so we tested this hypothesis only minimally through our data on the subsample teachers. We felt that three of the four teachers who demonstrated "no or minimal change" expressed distance between themselves as teachers and the learners with whom they work. While a few other teachers in the sample—teachers who did make change in a preferred direction—also expressed "distanced" views of learners, those teachers with the most significant change expressed strong attitudes of equality and respect for learners. Since we did not collect information from the larger sample (via the questionnaire) about teachers' attitudes toward students, it is difficult to do more than hypothesize that these are dispositions which, at least in relation to the topic of learner motivation, retention, and persistence, contribute to greater change in addressing the issue.

We hypothesized that if the curriculum teachers used was driven by students' needs and goals, teachers would change more, taking action to address learner persistence through their curriculum. We also asked them what they felt "drives" their instruction: tests that students are required to take, directors' priorities, students' needs or goals, or required curriculum or competencies. The majority of teachers (68 out of 96) said that students' needs, goals, and issues are the most important factors in driving their curriculum; 10 teachers reported that required curriculum or competencies drive their curriculum; tests are the driving curriculum factor for 15 teachers; and 3 teachers

indicated it was their director or other factor (unexplained) that set the course. There was no significant association between either measure of change and whether the teacher reported that instruction was driven by students' needs or by other factors.

Professional Development Factors

Hours of participation in NCSALL Professional Development. The first hypothesis related to professional development factors was that attending the professional development for more hours would lead to more change. This hypothesis was supported, with more hours of participation (from 0–18 hours) positively and significantly associated with both overall amount of change ($r=.25, p<.05$) and type of change, as shown in Table 23 below:

Table 23: Mean Hours of Participation by Type of Change

(Dropouts and completers, $n=95$)

TYPE OF CHANGE	<i>n</i>	MEAN HOURS OF PARTICIPATION	<i>SD</i>
No or minimal	32	13.641	5.5402
Nonintegrated	42	16.333	2.7262
Integrated	21	15.667	3.2590
Totals	95	15.279	4.1313

$F=4.25, p<.05$

Teachers who completed at least two thirds of the professional development experienced more change than dropouts or those who did not participate at all; for those who attended at least two thirds (12 hours), the number of hours above that was not significant to amount or type of change. The significant difference was between the “no change” group and the “nonintegrated change” group ($p=.019$). Differences between the “integrated change” group and either “no change” or “nonintegrated change” were not significant.

Quality of the NCSALL Professional Development (as perceived by participants). The second hypothesis was that the quality of the professional development, as perceived by the participants, would be related to type and amount of change. In other words, the higher the participants rated the professional development quality, the more likely they would be to make changes as a result of it. To test this hypothesis, we asked participants a series of questions, using Likert scales (1=weak or low quality, 6=strong or high quality) about how they would rate the overall quality of

the NCSALL Professional Development in which they participated. We also asked them to rate particular elements of the professional development, such as facilitator/presentation, group dynamics, length of the activity, session organization, and readings/materials.

Table 24 below shows the aspects asked about and the mean scores for the sample in descending order.

Table 24: Ratings of Key Aspects of the NCSALL Professional Development

ASPECTS OF NCSALL PROFESSIONAL DEVELOPMENT	<i>n</i>	MEAN	SD
View of quality of facilitator	91	5.27	.76
View of quality of readings	90	4.94	.89
View of interaction with other participants	91	4.92	1.00
View of structure or design of sessions	91	4.82	.97
View of opportunity to meet over time	88	4.41	1.36

These scores indicate, overall, a favorable response to the professional development on learner motivation, retention, and persistence. There were no significant differences in rating of the professional development across states and models among those who completed it.

Teachers were also asked to rate the extent to which the NCSALL Professional Development affected them in various ways, again using a six-point scale (1="didn't affect me at all," 6="strongly affected me"). Table 25 below presents their perspective on the influence of the professional development on them:

Table 25: Participants' Rating of How the NCSALL Professional Development Affected Them

HOW PROFESSIONAL DEVELOPMENT AFFECTED THEM	<i>n</i>	MEAN	SD
Validated what they already knew	92	4.50	.85
Added to their knowledge on topic	92	4.46	1.1
Increased their confidence in how to teach	92	4.24	1.2
Increased number of colleagues	91	3.65	1.4
Changed their way of thinking about teaching	92	3.54	1.2
Changed their way of thinking about students	92	3.46	1.4
Transformed their practice	91	3.43	1.2

No significant differences were found in how participants from different states and different models felt the professional development had affected them. There was

also no significant difference between top and bottom mean score listed here. However, we see a pattern: participants felt the professional development affected them more strongly in their knowledge of the topic (the top two aspects in the table) than it affected their thinking and practice (bottom three aspects). This finding is supported by participants' responses to another six-point scale question: to what extent did participation in the NCSALL Professional Development affect the way you conduct classes (1="not at all," 6="to a great extent")? The means from both Wave Two and Wave Three on this question are almost identical: Wave Two mean is 3.69 ($n=76$, $SD=1.318$), and Wave Three mean is 3.64 ($n=84$, $SD=1.229$). These responses are very close to the mean for how much participants, in Wave Three, felt that the professional development had transformed their practice (3.43), indicating that participants' self-evaluation is that the professional development affected their thinking more than their actions.

In addition to the questions above, we also coded teachers' open-ended explanations for why they rated the professional development as they did. Table 26 below outlines their responses:

Table 26: Perceptions of Specific Aspects of the NCSALL Professional Development

(Completers and dropouts, $n=95$)

FACTOR	NUMBER OF PARTICIPANTS WHO MENTIONED AT ALL (OUT OF 95)	PERCENT WHOSE COMMENTS WERE ONLY POSITIVE	PERCENT WHOSE COMMENTS WERE ONLY NEGATIVE	PERCENT WHOSE COMMENTS WERE BOTH POSITIVE AND NEGATIVE
Facilitator	72	72%	3%	1%
Professional development model	74	52%	10%	17%
Readings	40	40%	1%	1%
Sharing with other practitioners	77	75%	3%	3%

These findings indicate that the quality of the facilitator and the opportunity to share with other practitioners were the two most important factors in how positively they felt about the professional development, and the professional development model in which they participated was the most important factor for those who felt negatively about the professional development. Of the nine participants who made a negative comment about the model, one participated in the workshop model, two participated in the mentor teacher group model, and six participated in the practitioner research group model.

We averaged 13 different Likert-scale responses to the 13 questions we asked about the quality of the professional development (Kronbach-Alpha reliability = .89), and used this combined average (a number between 1 and 6) as a measure of each subject's perception of the high quality of the NCSALL Professional Development. Teachers' perception of the quality of the professional development was positively and significantly correlated with overall amount of change ($r=.25, p<.05, n=81$). Their perception of quality was also positively and significantly associated with the type of change they demonstrated. Table 27 below presents the findings for teachers' perception of the quality of the professional development:

Table 27: Type of Change by Teachers' Perception of Professional Development Quality

(Completers for whom we have complete data, $n=81$)

TYPE OF CHANGE	<i>n</i>	MEAN COMBINED QUALITY SCORE	<i>SD</i>
No or minimal	21	3.90	.71
Nonintegrated	40	4.57	.63
Integrated	21	4.43	.68
Totals	81	4.37	.68

$F=8.05, df=2, p<.001$

The significant difference among groups was between the "no change" type and the other two types.

Correlations also show that years working in adult education field ($r=-.26, p<.05$) and years teaching adult education ($r=-.23, p<.05$) were both significantly and negatively correlated with the teachers' perception of the quality of the professional development, indicating that the longer the participant had been working and teaching in the field, the less she or he liked the professional development.

Rated quality of the group. Of the 15 groups, researchers rated six as high quality, four as medium quality, and five as low quality.⁷⁰ Although there was a definite trend toward high-quality groups having higher mean overall change, the difference in amount of change among groups by quality was not significant. The mean overall amount of change among those who completed in the high-quality professional development groups ($n=42$) was 9.6 ($SD=6.3$), compared to a mean of 9.0 ($SD=5.6$) for teachers who completed in the medium-quality groups ($n=25$) and a mean of 5.6

⁷⁰ Please see Appendix C for a complete description of the process of rating the professional development groups.

($SD=4.7$) for teachers who completed in the low-quality groups. One-way ANOVA indicates that the difference among groups is not significant.

However, the quality of the group was positively and significantly correlated to type of change among those who completed the professional development, as demonstrated in Table 28 below.

Table 28: Type of Change by Quality of Professional Development Group

(Completers for whom we have data, $n=83$)

QUALITY OF GROUP	<i>n</i>	TYPE OF CHANGE			
		NO CHANGE	NON- INTEGRATED	INTEGRATED	TOTALS
Low Quality	16	10	4	2	16
Medium Quality	25	4	15	6	25
High Quality	42	9	21	12	42
Totals	83	23	40	20	83

$$\chi^2=12.6, df=4, p<.05$$

These findings indicate that higher quality of facilitation and group dynamics were associated with more preferred type of change (integrated change). There was a trend toward higher overall amounts of change among completers from the high-quality groups, but this trend was not statistically significant.

Interestingly, there was not a significant relationship between the actual quality of the group (as rated by the researchers) and teachers' perceived quality of the group. Regardless of the actual quality, teachers rated it about the same: completing teachers in the lowest-quality groups ($n=16$) gave their professional development a mean rating of 4.11 (out of 6, on the z-score rating for 13 rating variables); teachers in medium-quality groups ($n=25$) gave their professional development a mean rating of 4.59; and teachers in the highest-quality groups ($n=40$) gave their professional development a mean rating of 4.33. Since both actual quality and perceived quality were associated with type of change, but not with each other, it is an indication that teachers in our study experienced professional development differently from one another and, in some cases, differently from how we as researchers rated it.

Type (model) of professional development. Although all three models were designed to be of the highest quality, and all three offered sustained exposure (18 hours over three–six different sessions) with encouragement to try activities and take action between sessions, the mentor teacher group and practitioner research group models offered slightly more one-on-one support to help teachers make direct changes in their

classrooms and programs. Therefore, we hypothesized that professional development models that offer more intensive one-on-one support to make changes (mentor teacher group, practitioner research) would result in more change, and that teachers participating in the mentor teacher groups and practitioner research groups would demonstrate more change overall and more change in a preferred direction (toward more integrated change) than would teachers in workshops. Conversely, since workshops include many hands-on activities and modeling of different training techniques by workshop facilitators, we hypothesized that workshop participants would make more general teaching changes than would practitioner research participants and mentor teacher group participants, so we expected to see more change off the topic among teachers who participated in the workshops.

Neither amount nor type of change was significantly related to model of professional development. Amount of change was highest among practitioner research group teachers who completed the professional development ($n=24$); their mean amount of change was 9.7 ($SD=7.7$). Mentor teacher group completers ($n=24$) had a mean amount of change of 9.3 ($SD=6.7$), and workshop completers ($n=35$) had a mean amount of change of 7.5 ($SD=3.5$). Differences among groups were not significant (one-way ANOVA $F=1.088$, $p=.342$). Type of change was also not significantly related to which of the three professional development models teachers participated in (if they completed), as seen in Table 29 below.

Table 29: Type of Change by Professional Development Model

(Completers only, $n=83$)

PROFESSIONAL DEVELOPMENT MODEL	<i>n</i>	TYPE OF CHANGE			
		NO CHANGE	NON-INTEGRATED	INTEGRATED	TOTALS
Workshop	35	8	20	7	35
Mentor teacher group	24	7	10	7	24
Practitioner research group	24	8	10	6	24
Totals	83	23	40	20	83

$\chi^2=2.1$, $df=4$, $p=.717$, not significant

Even though model of professional development was not significantly related to change, we saw different patterns of change among models; a larger sample size might have produced significant differences, but that is a question for future research. In each model, “nonintegrated” change (thinking or acting change) was most common, and the most preferred type of change (integrated change) was equal among groups.

However, the trend in percentages indicates that more teachers who completed the workshops (as compared to participants in the other two models) made nonintegrated change. Although there was no significant difference among models, those teachers who participated in mentor teacher groups and practitioner research groups demonstrated more overall change. In fact, no workshop completer had an “overall amount of change” score over 15 (in a range of 0–30), whereas four mentor teacher group participants and five practitioner research group participants had scores between 16 and 30. While this pattern would seem to uphold the hypothesis posed about the greater effectiveness of more in-depth, supportive professional development, the lack of significant differences among groups prevents us from accepting that hypothesis fully.

Being in professional development with others from the same program (“coparticipation”). All of the information we have on this variable is presented in the body of the report.

Participating in a model of professional development preferred by teacher. We hypothesized that teachers who participated in a professional development model that was their top preference might gain more from the professional development. Since teachers were not randomly assigned to a professional development model, nor did they in all circumstances (because of geography) have a choice of models, they might have been participating in a model that wasn’t their first choice. Teachers were asked, in the Wave One questionnaire, filled out before starting the professional development, whether they would prefer to participate in a workshop, a mentor/peer teaching group, or a practitioner research group, allowing us to determine whether there was a “match” between the type of professional development they preferred and the type in which they actually participated. The results indicate that participating in the type of professional development preferred by the teacher was not significantly related to either amount or type of change, as can be seen in Table 30 below.

Table 30: Type of Change by Match of Preferred Model with Actual Model

(Completers only, $n=83$)

MATCH OF PREFERRED MODEL WITH ACTUAL MODEL	n	TYPE OF CHANGE			
		NO CHANGE	NON-INTEGRATED	INTEGRATED	TOTALS
Match	45	16	20	9	45
No match	38	7	20	11	38
Totals	83	23	40	20	83

$\chi^2=3.2$, $df=2$, $p=.207$, not significant

In the final questionnaire, we again asked teachers to tell us what model of professional development they now preferred, giving them four choices: (1) single-session workshop or training, (2) multiple session workshop or training, (3) peer coaching or mentoring, and (4) practitioner research or inquiry group. We then looked at the means for overall amount of change and type of change by final preference for professional development and found that the model they preferred after completion was significantly related to amount of change. Those completing teachers who preferred mentor teacher groups as professional development ($n=8$) had higher mean amount of change (12 out of 30, $SD=4.2$), than teachers preferring practitioner research (mean amount of change=10.7, $n=18$, $SD=5.7$), teachers preferring multiple-session workshops (mean amount of change= 8.2, $n=26$, $SD=4.5$), with teachers preferring single-session workshops having the lowest mean amount of change (mean amount of change=6.5, $n=18$, $SD=4.8$), and this difference was significant (one-way ANOVA $F=2.73$, $df=3$, $p=.051$).

However, preference for type of professional development model was not related to type of change, as seen in Table 31 below.

Table 31: Type of Change by Final Preference for Professional Development Model

(Completers for whom we have data, $n=70$)

MODEL PREFERRED (WAVE THREE)	<i>n</i>	TYPE OF CHANGE			
		NO CHANGE	NON- INTEGRATED	INTEGRATED	TOTALS
Single-session workshop	18	8	6	4	18
Multiple-session workshop	26	5	17	4	26
Peer/mentor coaching	8	0	5	3	8
Practitioner research	18	5	6	7	18
Totals	70	18	34	18	70

$\chi^2=11.33$, $df=6$, $p=.079$, not significant

It is interesting that those who preferred peer coaching or mentoring and those who participated in the mentor teacher groups had the highest means for overall amount of change; however, the numbers are small and not significant.

Program or System Factors

Required use of curriculum. In some programs, teachers were required to use a specific curriculum (developed by the program or by the state). In other programs, teachers developed their own curriculum. Our hypothesis was that teachers who had the ability to develop their own curriculum would make more changes than teachers who were

required to use an established curriculum. To test this hypothesis, we asked teachers whether or not they were required to use a curriculum. Fifty-six (about 58%) of the teachers were not required by their program or state to use a curriculum. Among those who completed the professional development, 44 teachers said they were required to use a curriculum; their mean amount of change was 8.36 ($SD=6.4$). Thirty-five teachers were not required to use a curriculum; their mean amount of change was 8.6 ($SD=4.3$). This difference was not significant. Being required to use a curriculum was not significantly related to type of change, as shown in Table 32 below.

Table 32: Type of Change by Required Use of Curriculum

(Completers for whom we have data, $n=79$)

POLICY ON USE OF PROGRAM OR STATE CURRICULUM	<i>n</i>	TYPE OF CHANGE			
		NO CHANGE	NON-INTEGRATED	INTEGRATED	TOTALS
Required	35	8	21	6	35
Not required	44	14	18	12	44
Totals	70	22	39	18	79

$\chi^2=2.88$, $df=2$, $p=.24$, not significant

However, twice as many completing teachers who demonstrated integrated change reported that they were not required to use a curriculum, and patterns in our subsample strongly indicated that those teachers who teach to the GED test were much less likely to demonstrate change in a preferred direction. Therefore, we think that being required to use a curriculum may have some influence on teacher change. Although we did not characterize it as one of the most important factors, it is worthy of further research.

Program situation. All of the information we have on this variable is presented in the body of the report.

Access to benefits. Whether or not teachers received benefits as part of their adult education job was part of a configuration of factors we investigated, based on the hypothesis that teachers working under better conditions would be in a better position to take action. The configuration of working condition factors included access to paid prep time, paid professional development release time, more working hours, benefits, and stability on the job. (We did not ask about salary.) We discovered that access to benefits was related to type of change but not to overall amount of change: teachers completing the professional development (for whom we have this data) who did receive benefits as part of their adult education job had a mean overall amount of change of 9.3 ($n=35$, $SD=6.8$), whereas teachers who did not receive benefits had a mean overall amount of

change of 8.4 ($n=34$, $SD=4.5$), and this difference was not significant (one-way ANOVA $F=.508$, $df=1$, $p=.48$). In particular, access to benefits seemed to be an important factor supporting more integrated change.

Access to prep time. Teachers with paid prep time should be better supported to make changes in thinking and acting. Among completers for whom we have data about prep time, paid prep time was significantly related to type of change but not overall amount of change. Although completing teachers with paid prep time have a higher mean overall amount of change, differences between teachers with and without prep time were not significant. However, Table 33 below shows that prep time was related to more integrated change:

Table 33: Type of Change by Access to Prep Time

(Completers for whom we have data, $n=78$)

ACCESS TO PREP TIME	<i>n</i>	TYPE OF CHANGE			
		NO CHANGE	NON-INTEGRATED	INTEGRATED	TOTALS
Receive paid time	38	11	14	13	38
Do not receive paid time	40	10	25	5	40
Totals	78	21	39	18	78

$$\chi^2=6.7, df=2, p<.05$$

Number of working hours. Teachers who work more hours or work full time in the field of adult education may be more motivated to make change and have more time and support to take action based on what they learned from the professional development. This hypothesis was not supported statistically, in either amount or type of change: the 61 part-time teachers who completed the professional development had a mean amount of change of 8.9 ($SD=6.2$) while the 21 full-time completers had a mean amount of change of 7.9 ($SD=5.2$), and this difference was not significant ($F=.433$, $df=1$, $p=.51$). Type of change was also not related to full- or part-time status among those who completed the professional development, as seen in Table 34.

Table 34: Type of Change by Full-Time/Part-Time Status

(Completers for whom we have data, $n=82$)

JOB STATUS	<i>n</i>	TYPE OF CHANGE			
		NO CHANGE	NON-INTEGRATED	INTEGRATED	TOTALS
Full time	21	6	8	7	21
Part time	61	17	31	13	61
Totals	82	23	39	20	82

$\chi^2=1.5$, $df=2$, $p=.482$, not significant

The mean hours of working time among those 20 teachers who demonstrated integrated change is 25.4 hours per week ($SD=11.8$); the mean number of hours per week for those 39 teachers who demonstrated thinking or acting change is 22.2 hours ($SD=11.2$), and mean working hours for the 23 teachers who demonstrated no change was 24.1 hours ($SD=10.6$). This difference was not significant (one-way ANOVA $F=.589$, $df=2$, $p=.56$). However, all teachers in the subsample who demonstrated no or minimal change taught part time. Part-time status was also significantly related to dropping out of the professional development.

Amount of paid professional development release time. All of the information we have on this variable is presented in the body of the report.

Enrollment policy. Closed enrollment should support change. Open or rolling enrollment may hinder change because if the teacher is constantly grappling with new students, then she or he may not have as much time, energy, or freedom to adopt new practices. The type of enrollment was not a significant factor related to amount of change among those teachers who completed the professional development (one-way ANOVA $F=.022$, $df=2$, $p=.979$, $n=72$). Enrollment policy was also not related to type of change, as seen in Table 35 below.

Table 35: Type of Change by Enrollment Policy in Teacher's Program

(Completers for whom we have data, $n=72$)

ENROLLMENT POLICY	<i>n</i>	TYPE OF CHANGE			
		NO CHANGE	NON-INTEGRATED	INTEGRATED	TOTALS
Open	11	3	5	3	11
Rolling	8	2	4	2	8
Closed	53	14	28	11	53
Totals	72	19	37	16	72

$\chi^2=.314$, $df=4$, $p=.989$, not significant

Program concurrently working on same issue. We hypothesized that, if the program the teacher works in was simultaneously working to improve learner persistence, this would lead to greater teacher change. When programs are addressing an issue by changing structures or policies, teachers may be more motivated to learn about the topic (affecting knowledge gain) or to take action on the topic (affecting acting). Therefore, on the first questionnaire, we asked participants whether their program also had a process for program improvement (“Does your program choose at least one issue each year on which to work towards program-wide improvement?”) and, if so, what issue their program was addressing that year. Sixty participants indicated that their program has a process for program improvement. Of those, only 11 indicated that their program was actively addressing learner persistence. Among teachers who completed the professional development and for whom we have complete data on this variable ($n=80$), 47 said their programs had a process for program improvement, and of these 47, 9 indicated that the improvement issue in their program was the same as the professional development (learner persistence). These numbers are too small for valid statistical analysis, but there was no relationship between program improvement issue and either measure of change.

Table 36: Type of Change by Program Improvement Issue

(Completers whose programs choose an issue each year, $n=47$)

PROGRAM IMPROVEMENT ISSUE	<i>n</i>	TYPE OF CHANGE			
		NO CHANGE	NON- INTEGRATED	INTEGRATED	TOTALS
Same as PD (learner persistence)	9	1	6	2	9
Not same as PD	38	13	17	8	38
Totals	47	14	23	10	47

$\chi^2=2.02$, $df=2$, $p=.364$, not significant

State in which participant worked. Since the states in which the study was conducted had different delivery systems and professional development systems, we hypothesized that there might be some differences in change among participants from the three states. However, neither amount nor type of change was related to state of residence among teachers who completed the professional development:⁷¹ Mean overall amount of change was highest in Maine ($M=9.7$, $n=28$, $SD=6.8$), followed by Massachusetts ($M=8.8$, $n=26$, $SD=6.6$) and Connecticut ($M=7.5$, $n=29$, $SD=4.3$), but differences in mean were not significant by state (one-way ANOVA $F=1.02$, $df=2$, $p=.364$). There was also no difference in type of change by state, as Table 37 indicates.

⁷¹ Dropping out was not related to state.

Table 37: Type of Change by State

(Completers only, $n=83$)

STATE	<i>n</i>	TYPE OF CHANGE			
		NO CHANGE	NON- INTEGRATED	INTEGRATED	TOTALS
Connecticut	29	8	16	5	29
Maine	28	5	16	7	28
Massachusetts	26	10	8	8	26
Totals	83	23	40	20	83

$$\chi^2=5.52, df=4, p=.238, \text{ not significant}$$

Massachusetts teachers were approximately evenly split by type of change, while Maine and Connecticut shared a trend: greater numbers of teachers in each of these states demonstrated thinking or acting change.

Program type. Whether the teacher worked in was a community-based organization (CBO); a local education agency (LEA); a program connected to a school district, corrections facility, library, homeless shelter, workplace, or community college; or other type of program was not associated with more change. Since most teachers worked in either a CBO or an LEA, we regrouped the teachers into three program types: (1) CBO, (2) LEA, and (3) Other, which included all of the other categories. Program type was not related to amount of change: completing teachers from CBOs had a higher mean amount of change ($M=9.7$ out of 30, $n=21$, $SD=8.5$) than did teachers from LEAs ($M=8.2$, $n=46$, $SD=4.9$) or other types of programs ($M=8.6$, $n=16$, $SD=4.6$), but the difference was not significant (one-way ANOVA $F=.427$, $df=2$, $p=.654$). Similarly, there was no relationship between type of program and type of change among completing teachers, as seen in Table 38 below:

Table 38: Type of Change by Type of Program

(Completers for whom we have data, $n=83$)

PROGRAM TYPE	<i>n</i>	TYPE OF CHANGE			
		NO CHANGE	NON- INTEGRATED	INTEGRATED	TOTALS
CBO	21	9	6	6	21
LEA	46	10	25	11	46
Other	16	4	9	3	16
Totals	83	23	40	20	83

$$\chi^2=4.99, df=4, p=.288, \text{ not significant}$$

Teachers' perception of leadership in the program. In the K–12 literature, strong leadership is often associated with effectiveness of professional development. Using answers from teachers in our sample about their perception of leadership within their program, we developed a composite for a leadership variable (with a mean on a range of 1 to 6, 1=perceived weak leadership and 6=perceived strong leadership). Among teachers who completed the professional development, there was no relationship between amount of change and perception of leadership ($r=-.196$, $p=.076$, $n=83$). Type of change was also not related to leadership (one-way ANOVA $F=1.60$, $df=2$, $p=.208$) among teachers completing the professional development: teachers who made no or minimal change rated their program leadership higher ($M=5.3$, $SD=1.04$, $n=23$) than did teachers who made nonintegrated change ($M=5.0$, $SD=1.1$, $n=40$) or teachers who made integrated change ($M=4.7$, $SD=1.2$, $n=20$). Interestingly, however, the trend and relationship is in the negative direction; those who viewed their program leadership as weaker made more change, perhaps an indication that either teachers have more autonomy to make change when leadership is weak or that a perception of strong leadership precludes teachers from making change.

Teachers' perception of their freedom to decide what and how to teach. The hypothesis here was that teachers who felt they had more freedom to make decisions about how they teach would take more action to make changes in their classroom or program. We asked teachers (using a scale of 1–6) to rate how much freedom they have to decide what to teach and how to teach in their classrooms, then we averaged those two ratings. Among teachers who completed the professional development, amount of change was not related to perceived classroom decision-making ($r=-.069$, $n=79$, $p=.55$). Type of change was also not related to perception of freedom to make classroom decisions about what and how to teach: mean scores for teachers in all three types of change were 5.1 ($n=79$), so the difference was not significant (one-way ANOVA $F=.051$, $p=.95$).

Opportunities for collegiality. We hypothesized that teachers who feel they have more opportunities to meet, share, or talk with colleagues, either inside or outside of the program, would feel more supported to change, but more collegiality was not associated with more change. We asked teachers several questions about their level of collegiality (the opportunities they have for meeting and sharing with other teachers), then formed a z-score for collegiality overall. Collegiality was not associated with amount of change ($r=-.046$, $p=.71$, $n=71$), nor with type of change (no change teachers' Z-score=-.79, $SD=3.2$, $n=16$; nonintegrated change teachers' Z-score=.50, $SD=4.9$, $n=35$; integrated change teachers' Z-score=-.70, $SD=2.7$, $n=20$), and these differences were not significant (one-way ANOVA $F=.841$, $df=2$, $p=.44$).

We also asked teachers how many times a year, within their program, teachers meet to share ideas for teaching (not just talking about parking policies or paperwork). For completing teachers, the average number of times per year was 6.5 ($SD=10.7$, $n=80$).

Interestingly, the mean for teachers who demonstrated integrated change was lower ($M=3.9$, $SD=4.6$, $n=20$) than teachers who demonstrated no change ($M=6.9$, $SD=7.8$, $n=20$) and teachers who demonstrated nonintegrated change ($M=7.5$, $SD=13.8$, $n=40$), but this difference was not significant (one-way ANOVA $F=.799$, $df=2$, $p=.453$).

Access to resources. We hypothesized that teachers who work in programs with better facilities and more resources would be better supported to change. In the Wave Three questionnaire, we listed a number of different types of program resources (access to own classroom, own desk, copy machines, resource rooms, computers, appropriate-size furniture for adult students, appropriate heating and cooling, etc.), and asked teachers to tell us if these were “available” or “unavailable” in their programs. We then developed a single averaged score for each teacher for overall access to resources. For those teachers who completed the professional development, access to more resources was not associated with amount of change ($r=-.120$, $n=76$, $p=.304$), nor with type of change: teachers who demonstrated no or minimal change had a mean access to resources of 10.1 ($n=19$, $SD=2.6$), teachers who demonstrated nonintegrated change had a mean of 9.2 ($n=37$, $SD=2.5$), and teachers who demonstrated integrated change had a mean of 9.7 ($n=20$, $SD=1.9$). These differences were not significant (one-way ANOVA $F=.831$, $df=2$, $p=.44$). We also asked teachers to rate (on a scale of 1–6) how strong they felt their program facilities were; this rating was not related to either type or amount of change.

Multiple Regression Analyses

We also ran three different analyses to determine which variables might most strongly predict change of the following types:

- Amount of overall change
- Any change at all, dividing the sample into two groups: (1) those who made no or minimal change, and (2) those who made any change: thinking, acting or integrated
- More preferred change, removing those who made no change and dividing those who made any change into two groups: (1) those who made integrated change, and (2) those who made thinking or acting change

Based on our theoretical model, we identified 19 potential variables to be considered for our multivariate analysis.

VARIABLE CATEGORIES	VARIABLES
Professional Development	1. Model (workshop, mentor teacher group, practitioner research group) 2. Quality of professional development group (as rated by research team) 3. Quality of professional development (as rated/perceived by participants) 4. Number of hours attended the NCSALL Professional Development
Individual	5. Level of education 6. Commitment/desire to stay in the field 7. Venue of first teaching experience (adult education or K–12) 8. Years of experience in adult education 9. Level of professional development consumption (general) 10. Level of other professional development on topic of learner motivation, retention, and persistence
Program/System	11. State (Connecticut, Massachusetts, Maine) 12. Type of program 13. Required to use a curriculum
Working Conditions	14. Receive benefits 15. Receive paid preparation time 16. Access to resources 17. Hours worked per week 18. Hours paid professional development release time per year 19. Level of interaction with colleagues

To identify the key predictors for amount of change, we first looked at the correlation results and then conducted multivariate analysis tests based on these results. The bivariate correlations showed us the strength of the associations between the predictors and the outcome variables. Any variable with a correlation probability of .15 or better was included in our initial model. Although many variables were not strongly correlated with the dependent variable, we left them in the initial model because they were considered important variables to control for, and we wanted to include any variables that might have suppression effects.

Using these restrictions, nine variables were included in the preliminary model: quality of the NCSALL Professional Development groups, education, first experience teaching in adult education, years of experience, commitment, perceived quality of professional development, participation in other professional development on the topic, access to resources, and number of hours attended NCSALL Professional Development. Only three variables in the model were significant:⁷² education, commitment, and

⁷² This model is significant ($F=11.1$, $df=3$, $p<.001$). These three variables explain 27.5% of the overall variance.

number of hours attended NCSALL Professional Development. Of the three predictors, education is the strongest predictor of change; those teachers with a bachelor's degree or less were more likely to demonstrate higher amounts of change than those teachers with a master's or doctoral degree. Some of the variance is also explained by the exposure to the intervention (number of hours attended the professional development), since those teachers who showed more change were those who participated more fully in the NCSALL intervention. Finally, teachers who reported they have less desire to stay in the field demonstrated more overall change.

To identify the key predictors for any change at all, we created a dichotomous variable by combining those practitioners coded as having demonstrated nonintegrated and integrated change ($n=65$) to represent "any change," and those who demonstrated no or minimal change ($n=36$) as "no change." We followed the same analysis steps as in the multivariate analysis of amount of change, first performing bivariate correlations to determine which of our 19 potential variables were correlated with type of change. Again, we used a more liberal cut-off point and included any variables that had a correlation coefficient of .20 or better in our initial model. Using logistic regression, ten variables remained in the model, but only the education variable was significant: those with a bachelor's degree or less were 11 times more likely to change than those with greater than a bachelor's degree. No other variables were significantly associated with change.

To identify the key predictors for "preferred" change, we removed those participants who did not change at all ($n=36$), and compared only those with integrated change ($n=22$) to those with nonintegrated (thinking or acting) change ($n=43$). The two variables that most predicted change in a preferred direction (integrated change) in our study were whether teachers received benefits and whether teachers' first teaching experience was in adult education. For teachers who changed at all, those who received benefits⁷³ as part of their adult education job were five times more likely to demonstrate integrated change. Also, those teachers whose first teaching experience was in adult education, rather than in K-12, appeared more apt to change both thinking and acting as a result of participating in this professional development. Education was not a predictor of whether teachers made the more "preferred" type of change.

⁷³ Benefits were also strongly correlated with type of program (those who work in CBOs were more likely to receive benefits as part of their adult education job), but program type itself was not a strong predictor of change.