

ABSTRACT

MAYER, JULIA ELIZABETH. An Application of School-Based Intervention Implementation Adherence Monitoring and Performance Feedback Procedures. (Under the direction of William P. Erchul.)

The current study examined the application of implementation adherence monitoring and group feedback procedures with teachers implementing the Leveled Literacy Intervention (LLI; Fountas & Pinnell, 2008a). Using a repeated measures design across time, changes in implementation adherence levels were examined as teachers participated in problem-solving feedback sessions regarding their implementation adherence. Pre- and post-surveys were also employed to examine changes in perceptions about implementation monitoring and feedback procedures as well as relationships between various background variables and implementation adherence levels.

Fifteen teachers across seven elementary schools completed implementation checklists for every LLI session they implemented with small groups of first, second, and third grade students. The researcher and research assistants completed the checklists while viewing video recorded LLI sessions. Implementation adherence data were presented to teachers during group feedback sessions, where they also had an opportunity to discuss common barriers that interfered with implementing LLI and recommendations for overcoming those barriers. Feedback sessions were conducted at approximately 2 – 3 week intervals, and teachers received a written summary of their shared recommendations for improved implementation adherence.

Overall mean percent implementation adherence ranged from 85.69% - 91.92% on video data and from 86.67% - 89.98% on self report data. There were no significant changes in implementation adherence levels throughout the study. Overall, self report and video data indicated that teachers maintained high implementation adherence levels during baseline and

after each group feedback session. The number of previous LLI student groups taught had a significant effect on implementation adherence levels, but other indicators of previous training, experience, current LLI responsibilities, and primary teaching assignment had no significant effect. Teacher ratings also indicated that they found all monitoring and feedback procedures used in this study to be helpful, feasible, and comfortable to participate in and also found receiving feedback about their LLI implementation to be important. Their ratings of the importance of having LLI implementation monitored, the feasibility of monitoring and feedback methods, and their level of comfort with feedback methods also increased significantly.

Overall, findings from the study indicate that teachers can have positive perceptions of implementation monitoring and feedback methods after participating in them, and that a combination of self report, video observations, and collaborative group feedback sessions may effectively maintain high implementation adherence levels. The addition of other elements, including individualized feedback and goal setting, may have also been helpful, and future researchers are encouraged to incorporate those elements.

An Application of School-Based Intervention Implementation Adherence
Monitoring and Performance Feedback Procedures

by
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BIOGRAPHY

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CHAPTER ONE

Introduction

An increased emphasis on making data-based decisions in schools necessitates that school personnel measure how they deliver academic and behavioral intervention plans to students. Specifically, to help increase the validity of decisions regarding student improvement from interventions, school personnel should be assessing intervention implementation adherence. There are a variety of recommendations in the educational and mental health literatures regarding how to measure adherence to an intervention plan (e.g., self reports, direct observations, videotaping intervention sessions) and how to improve and maintain adherence levels (e.g., performance feedback, training, collaboration). School personnel will need to incorporate these researcher-derived recommendations in their schools efficiently, taking advantage of the unique resources available to them (e.g., materials, time, personnel, expertise) and using methods that are perceived positively by interventionists. In short, there is a research-to-practice gap regarding implementation adherence monitoring and support methods, and the dissertation study to be described was intended to help fill that gap.

This study utilized surveys and ongoing implementation adherence monitoring of a commonly implemented reading intervention in seven schools to examine: (a) how teachers' previous training and experiences affected implementation adherence levels; (b) how the provision of regularly scheduled, group-based, collaborative performance feedback sessions affected implementation adherence levels; and (c) how teachers perceived the monitoring and feedback methods used in this study before and after participating in them. Results have

implications for practitioners and researchers who are attempting to incorporate implementation monitoring and feedback procedures into daily practice.

CHAPTER TWO

Literature Review

This literature review begins with a discussion about the current trend of making data-based decisions about individual student academic and behavioral interventions. Included in this discussion is an emphasis on the importance of monitoring implementation of these interventions and key considerations when developing a measure to monitor implementation adherence. Following this section, methods for supporting implementation adherence are reviewed. Finally, the importance of considering perspectives of school personnel involved in monitoring and supporting implementation adherence is addressed.

Response to Intervention and Data-Based Decisions

School personnel are under increasing pressure to ensure that decisions regarding services for students are data based. This pressure, in large part, stems from legislative influences such as the Individuals with Disabilities Education Improvement Act (IDEIA) of 2004. IDEIA emphasizes the importance of employing primary/universal, secondary/targeted, and tertiary/indicated evidence-based support systems for academic and behavioral change. In other words, IDEIA encourages school personnel to provide research-supported academic and behavioral services for all students and to increase the intensity of these services for students who do not meet expected levels of growth. When students require more individualized services to address academic or behavioral delays, they often move to a higher tier level, based on a multi-tiered system of increasing intervention intensity

(Batsche, Elliott, Graden, et al., 2006). Schools that have adapted this multi-tiered approach to meeting students' needs are often considered to be implementing a response-to-intervention (RTI) model.

The rapid dissemination of RTI practices has been noted by Noell and Gansle (2006) as receiving increasing attention in schools and the literature (e.g., Barnett, Daly, & Jones, 2004; Fletcher, Francis, & Morris, 2005; Graner, Faggetta-Luby, & Fritschmann, 2005). A recent review of state department of education (DOE) websites and interviews with DOE representatives indicated that 32 states are either in the process of developing RTI models, providing RTI training and manuals for school personnel, or observing RTI pilot sites (Berkley, Bender, Peaster, & Saunders, 2009).

Despite the growing popularity of RTI practices, there are many unanswered questions and unexplored issues (Reynolds & Shaywitz, 2009). These issues include vague definitions of aspects of RTI (e.g., what constitutes an “adequate response” to an intervention?) and a lack of research bases to provide practitioners with guidance on how to implement RTI. Guidance on how to implement RTI should be driven by the importance of making decisions based on data, an essential principle of RTI (Barnes & Harlacher, 2008). For example, the decision to allocate more intensive intervention resources to a student should be based on assessment data indicating that the student did not “adequately respond” when receiving less intensive intervention resources. For this decision to be valid, there should be a system in place to monitor the extent to which the interventionist (i.e., the person responsible for implementing the intervention) implemented the intervention as planned.

However, there is evidence that many school personnel are not monitoring intervention implementation, which is a key aspect of valid data-based decisions (Berkely et al., 2009; Cochrane & Laux, 2008). This finding may not be surprising, as intervention outcome literature reviews reveal that intervention implementation data are often lacking (Hagermoser Sanetti, Gritter, & Dobey, 2011; McIntyre, Gresham, DiGennaro, & Reed, 2007). School personnel often are left with little guidance on proper procedures of monitoring intervention implementation. The result is that educational decision makers are apparently not verifying that interventions are implemented, but rather are assuming that they are. When operating within an RTI framework, these assumptions can have negative consequences for high-stakes decisions about student services and special education eligibility. The lack of implementation monitoring “compromises our knowledge of what interventions (or components) are responsible for problem resolution or improvement” (Wilkinson, 2006, p. 428).

Measuring Intervention Implementation

When assessing the implementation of intervention plans, there are several dimensions to consider, including: (a) *adherence* (i.e., whether the steps are followed as intended); (b) *quality* (i.e., the interventionist’s skills, decisions, and timing); (c) *differentiation* (i.e., whether the implemented intervention is kept distinct from other interventions); (d) *dosage* (i.e., length, frequency, and duration of intervention sessions); and (e) *participant responsiveness* (i.e., engagement between the interventionist and the student) (Roach & Elliott, 2008). Choosing which dimension(s) to assess may depend on the complexity and theoretical framework of the intervention as well as the purpose behind

assessment (Schulte, Mayer, & Parker, 2009). Perhaps various contextual factors within schools, including available personnel, time, and previous experiences monitoring implementation, also determine the appropriateness of which aspect(s) to focus on.

When school-based problem-solving teams are pressured to make valid, albeit efficient, decisions for a large number of students and have very little experience monitoring intervention implementation, a focus on adherence and dosage may be more appropriate. Adequately assessing quality and participant responsiveness as defined by Roach and Elliott (2008) may be more difficult and demanding of school resources. With quality and participant responsiveness, there may be fewer distinct behaviors to look for during assessment (Hamre, Justice, Pianta, et al., 2010), and intervention experts may be needed to judge whether observed quality and engagement between interventionist and intervention recipient are acceptable (e.g., Carroll, Nich, Sify, et al., 2000). Furthermore, some researchers emphasize that quality and interventionist-student engagement may not be any different from adherence if the focus on interventionist-student interactions is already built into a scripted protocol (Hamre et al.). To encourage practical implications for school personnel with little previous experience with monitoring implementation of planned interventions, the remainder of this literature review will focus on intervention implementation *adherence*.

Measurement Methods

Adherence to intervention plans has been measured using several different methods, including observations, self-report, and permanent products, and each method has its own strengths and weaknesses. Although direct observations of the intervention sessions have the

potential to provide an accurate assessment of adherence if conducted by trained observers, some researchers have argued against using them because they are time-intensive and sensitive to reactivity effects (Breitenstein, Gross, Garvey, et al., 2010; Gresham, 1989; Wilkinson, 2006). Breitenstein et al. noted that direct observations have the potential to bias the interventionist toward adhering more than normal (e.g., if trying to appear competent) or less than normal (e.g., if anxious in the presence of an observer). They also note that video- or audio-taping intervention sessions may help to reduce some of these reactivity effects as they do not require the presence of an observer.

Other researchers have argued against taking self reports (i.e., interventionist's self-administered checklist of completed steps) seriously, because it often results in biased, over-inflated levels of adherence when compared to direct observations or permanent products (Noell et al., 2005; Sterling-Turner, Watson, & Moore, 2002; Wickstrom, Jones, LaFleur, & Witt, 1998). Interestingly, self-reports are the most frequently used measure of adherence (Bramlett, Murphy, & Johnson, 2002), probably due to their cost efficiency. "Given that many schools are underresourced and must rely on less expensive and less labor-intensive monitoring tools, implementation research that uses teacher self-report data are important for informing the field" (Ransford, Greenberg, Domitrovich, et al., 2009, p. 512). Some researchers are more seriously considering the potential value in using self-reports, citing that teachers' self-reported assessment of adherence to intervention steps can be accurate as it corresponds well with direct observations (Biggs, Vernberg, Twemlow, et al., 2008; Hagermoser Sanetti & Kratochwill, 2009; McKenna, Rosenfield, & Gravois, 2009).

The use of permanent products (i.e., the collection of tangible results from intervention components) appears to avoid potential biases from self report and reactivity effects and resource demands of observations. For example, if one step of an intervention requires completing a sticker chart, then the presence of a fully completed sticker chart would be considered documented evidence of the implementation of that step. However, this method is not absent of drawbacks either, as it requires that each step in the intervention produce a permanent product. Teachers could also be producing permanent products to satisfy data collectors without actually implementing the associated steps with the child, and there have been no studies directly examining the agreement between permanent products and direct observations (Noell, 2008).

Qualities of a Monitoring Measure

Whether using observations, self report, or permanent products, it is important that an implementation adherence measure specify the active or essential steps of the intervention along with the behavioral indicators of those steps (Dusenbery, Hansen, Jackson-Newman, et al., 2010; McKenna et al., 2009). However, researchers and practitioners may often find identifying the active or essential steps difficult, as core components of the intervention often have not been defined conceptually (Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005; McGrew, Bond, Dietzen, & Salyers, 1994). Furthermore, when the core components *have* been identified, they are often not accompanied with behavioral indicators or criteria for adequate implementation levels (Fixsen et al.).

Other important aspects to consider when developing a measure of implementation adherence are the psychometric properties of the measure, such as documenting and

maintaining reliability. A comprehensive literature review of fidelity measures indicated that a commonly used approach to demonstrate reliability, particularly for measures involving observations, is to assess the percentage of agreement between raters (Hogue, Liddle, Singer, & Leckrone, 2005; Mowbray, Holter, Teague, & Bybee, 2003). For example, Knoche, Sheridan, Edwards, and Osborn (2010) developed a measure of implementation adherence that involves having coders view videotaped sessions while filling out a checklist. They conducted inter-rater reliability checks for approximately 33% of the intervention sessions using an 85% cut-off criteria. When inter-rater reliability fell below 85%, they conducted refresher training sessions for coders. Hogue and colleagues coded at least 30 hours of videotaped intervention sessions together using a pilot version of their implementation adherence measure to ensure reliability.

In the initial stages of measurement development, researchers or practitioners should consult the intervention literature and manual, along with experts and other persons who are familiar with the intervention to improve content and face validity (Biggs et al., 2008; Hogue et al., 2005; Knoche et al., 2010). For example, Biggs and colleagues, after studying the intervention manual, consulted with the developers of the intervention, attended intervention team meetings, and obtained feedback from the intervention team with several drafts of their adherence measure to ensure that the essential steps were covered and described accurately. Another method of validating a measure of implementation adherence involves correlating the measure with other possible approaches to assessment (e.g., correlating a self-report measure with direct observations as Hagermoser Sanetti & Kratochwill, 2009, have done) or with other pre-existing measures of adherence for the intervention (Bradshaw, Debman,

Koth, & Leaf, 2009). For example, Bradshaw and colleagues demonstrated the validity of a more efficient implementation adherence measure for positive behavioral support by revealing its association with a pre-existing, more resource-demanding measure.

Supporting Intervention Implementation

Several factors have received attention due to the proposed or demonstrated influence on implementation adherence levels: (a) training (e.g., Joyce & Showers, 2002), (b) performance feedback (e.g., Mortenson & Witt, 1998), and (c) collaborative support (e.g., Hagermoser Sanetti & Kratochwill, 2009). Overall, a larger quantity of higher quality studies with relevance to school-based implementation of interventions support performance feedback as a predictor of higher levels of adherence. Therefore, this document emphasizes the role of performance feedback.

Training to Implement the Intervention

Some researchers have revealed that the provision of direct training methods is a consistent predictor of implementation adherence, quickly bringing low baseline levels of implementation back up in many cases (Sterling-Turner, Watson, Wildmon, & Watkins, 2001; Taylor & Miller, 1997; Watson, Ray, Sterling-Turner, & Logan, 1999). Direct training typically takes the form of in-vivo practice, modeling, role-playing, or rehearsal with immediate correction in various combinations. Providing these training opportunities often proves to be superior to relying on didactic instruction, which typically takes the form of simply disseminating information about an intervention's purpose and steps of implementation (Fixsen et al., 2005; Joyce & Showers, 2002; Sholomskas, Syracuse-Seiwart, Rounsaville, et al., 2005).

Studies examining the effectiveness of different training settings are available, though limited. From their meta-analysis on the effective components of teacher training, Joyce and Showers (2002) discovered that coaching teachers in the classroom was superior to modeling and practice with corrective feedback at the training site at increasing the likelihood that teachers would implement the newly learned behaviors. Wasserman (2009) assigned one group of teachers to service learning training where they practiced new reading intervention skills with students in low-performing schools and another group of teachers to a peer learning group where they practiced the new skills with their peers at a training site. The teachers in the service learning group ultimately implemented more of the reading intervention skills in their classrooms. It seems that providing teachers with practice opportunities to implement new interventions with students in classroom settings rather than in less naturalistic settings such as a training site leads to higher adherence levels. Bringing in an intervention training consultant or assigning one of the school-based interventionist to serve as training coach so that new skills can be practiced and monitored on-site thus may be more effective than sending all school-based interventionists to a training site to practice new skills.

Gatekeepers of a school's resources can use intervention implementation adherence data to make informed decisions regarding the adequacy of training opportunities provided to interventionists (Fixsen et al., 2005). If implementation levels are generally low, for example, greater resources may need to be put into more effective training. If implementation levels are generally high and do not differ between interventionists who attended more costly training and those who attended less costly training, resources spent on

more costly training could be allocated to other needs within the school. Thus, it may be informative to provide school administrators with an indication of the type and setting of training that is associated with higher implementation levels of a widely used intervention in their school.

Performance Feedback: Introduction

Researchers have taken a variety of approaches when examining the impact of performance feedback on implementation adherence. Common methods in various combinations include revealing implementation adherence data to the interventionist, giving recognition for correctly implemented steps, reviewing the steps that were either missed or incorrectly implemented, and planning how to address future barriers to implementation. Appendix A provides more detailed information on performance feedback studies for school-based interventions in dyadic formats (i.e., between a researcher or consultant and an interventionist). This literature on the provision of feedback reveals several trends: (a) if feedback is provided, extensive training may not be necessary (e.g., Witt, Noell, LaFleur, & Mortenson, 1997); (b) weekly or biweekly feedback can be just as effective as daily feedback (e.g., Mortenson & Witt, 1998); and (c) providing a visual representation of implementation adherence levels (e.g., graphs of daily implementation levels) is more effective than not (e.g., Hagermoser Sanetti, Luiselli, & Handler, 2007).

Many researchers have employed feedback in a reactive fashion as a means to increase implementation adherence levels after they have already dropped below acceptable levels (e.g., DiGennaro, Martens, & McIntyer, 2005; Jones, Wickstrom, & Friman, 1997; Mortenson & Witt, 1998). This approach may be necessary in single subject designs to

demonstrate a functional relationship between the provision of feedback and implementation adherence levels. However, this functional relationship has already been well established, and practitioners will want to prevent unacceptable levels of implementation adherence from occurring in the first place. Duhon, Mesmer, Gregerson, and Witt (2009) emphasized this point, and used performance feedback instead in a preventive manner to keep implementation adherence levels at acceptable levels throughout the duration of an intervention program.

It is unclear what specific purpose(s) the provision of performance feedback serves for interventionists. For example, it may serve as a prompt to remind teachers to implement interventions as planned, capitalize on a desire to appear responsible to the person providing the feedback, or function as a reinforcement system. DiGennaro et al. (2005) hypothesized that feedback serves as a negative reinforcement system: Because time is a highly valued commodity, teachers might increase their implementation adherence levels to avoid losing time spent attending performance feedback sessions. However, this interpretation may only be supported if attendance at feedback sessions is contingent on not meeting acceptable implementation levels. Although Noell and colleagues (e.g., Noell, Witt, Gilbertson, Ranier, & Freeland, 1997; Noell et al., 2005) have neither tested a hypothesized mechanism for why feedback works nor measured social interaction, they have stated that, “The central hypothesized mechanism of that work is that behavior change is more readily sustained when it is observed by others and that the observations have some consequences, even if those consequences are simply modifying a social interaction” (Noell & Gansle, 2009, p. 83). This comment regarding social interaction raises an important question: Does the provision of

feedback influence interventionist behavior change because of the pressure to appear responsible or accountable?

Performance Feedback: Group Settings

Recently, Duhon et al. (2009) used the social desirability mechanism as part of their rationale for providing feedback in group settings for school-based interventions. They also emphasized that the responsibility and accountability that the interventionist has for a student or group of students is often shared among multiple members in school-based teams that develop and review interventions. In their study, implementation adherence levels were presented in a graph distributed to each member of the school's problem-solving team, while the researcher praised the interventionist for correctly implemented steps and gave recommendations for improved implementation. This approach effectively increased and maintained implementation adherence levels when used in both a reactive and preventive manner. However, after withdrawing the interventionists' required attendance at these feedback meetings, implementation adherence levels dropped. This latter finding may point to the importance of keeping group feedback sessions regularly scheduled throughout the entire course of an intervention program.

Other reasons for presenting and discussing implementation adherence data in groups rather than in dyadic meetings include issues of practicality. Conducting many brief feedback sessions with each individual interventionist may not be practical or effective in the real context of schools, especially considering that scheduling and structural factors are major obstacles to successful application of RTI (Sansosti, Noltemeyer, & Goss, 2010). Wilkinson (2006) outlined a structured interview for discussing intervention implementation

issues within dyadic consultation, but eventually admitted that conducting such individual interviews would “require a substantial investment of time from both the consultant and consultee” (p. 432). In schools where several teachers are implementing similar interventions or there are several personnel invested in the development and decision-making process of the intervention, it may be more practical and effective to have a group of these people come together for longer but less frequent feedback sessions. This intention may be accomplished by taking advantage of regular, already scheduled meetings such as those that occur for professional learning communities (PLCs) or problem-solving teams (PSTs).

Collaboration Among Interventionists

It is clear that performance feedback methods are an effective approach for increasing and maintaining adherence to intervention plans. However, in order to document that performance feedback influences implementation levels, university researchers have structured their studies to a great degree. For example, they have selected specific topics to discuss and the specific recommendations to give interventionists in feedback sessions in order to correct interventionist behavior in both dyadic and group formats. This top-down, hierarchical approach, although important to demonstrate the link between feedback and implementation adherence, may not be the best approach for school personnel to use. It fails to consider factors important when linking research to practice, including (a) valuable insight interventionists have to offer regarding unique contextual and student variables and (b) interventionist ownership over recommendations related to implementation (Kelleher, Riley-Tillman, & Power, 2008; Power, Jones, Roth, et al., 2005).

Rather than isolating interventionists during hierarchical approaches to interpreting and discussing implementation adherence levels, encouraging more collaboration between school personnel who are implementing similar or even identical interventions may be more ideal. With experience implementing the interventions and knowledge of contextual factors that may make implementation difficult, perhaps interventionists would benefit from collaborative problem solving discussions to address commonly missed or incorrectly implemented steps. In this light, researchers, instead of solely providing their own recommendations for continued implementation, could facilitate problem-solving discussions among interventionists, offering limited recommendations as needed. This process may be similar to what Schulte and Osborne (2003) have labeled *consultant-structured consultee participation*, whereby a consultant guides a consultee through different topics of discussion but consistently seeks input from the consultee to identify and address problems.

Some researchers have demonstrated the benefits of seeking more teacher input when developing intervention plans or implementation adherence measures (e.g., Hagermoser Sanetti & Kratochwill, 2009; Kelleher et al., 2008), with the rationale that teachers offer valuable knowledge about implementation logistics. However, research examining this approach to feedback sessions for school-based interventions is lacking. Burns, Peters, and Noell (2008), though, have conducted a study that may be informative for collaborative, group-based feedback. They presented average implementation adherence levels of steps in schools' standardized problem-solving process to PST members. Although providing feedback about steps in a problem-solving process is not directly analogous to providing feedback about steps in student interventions, the goal is the same—to increase adherence to

a planned sequence of behaviors. Implementation adherence levels were reflected in graphs distributed to each member of the PST during regularly scheduled meetings. Each step of the problem-solving process was reviewed while team members were encouraged to brainstorm ways to better address missed steps and set goals for future implementation. This procedure increased implementation levels of the majority of the problem-solving steps.

Collaborating on setting-appropriate goals for group-level performance is an area that has received relatively more attention in the I/O literature (Buller & Bell, 1986; Pritchard, Jones, Roth, Stuebing, & Ekeberg, 1988). For example, Pritchard et al. led a group of employees to form a consensus on their goal for work productivity, focusing their efforts on changing aspects of the job that were not meeting the predetermined goal. The group's productivity data were posted in a highly visible place, and trends in the data were discussed in regularly scheduled feedback meetings. Employee discussions included hypothesized reasons for increases and decreases in the data along with setting new attainable, yet challenging, goals for productivity. This process led to significantly improved levels of productivity, maintained for months after the researchers departed from the employment setting.

A group of professionals with experience implementing the same planned sequence of behaviors (e.g., an intervention plan) can come together for feedback sessions, taking a more collaborative approach while sharing their expertise and ideas for improved implementation. Teachers have expressed a need for their opinions to be taken more seriously and for an opportunity to engage in collaborative support after recommended interventions (Slonsky-Fowler & Truscott, 2004). Furthermore, presenting mean levels of

adherence may take some of the pressure associated with feedback off individuals (e.g., Truscott & Cosgrove, 2000) and allow interventionists to realize that they are not the only ones experiencing difficulty when implementing certain intervention steps.

Interventionist Perspectives

When introducing novel practices within an organization (e.g., a school) requires changes in attitudes and behaviors (e.g., implementation adherence monitoring and feedback procedures), considering the perspectives of affected staff members is important (Aarons, Sommerfeld, Hecht, Silovsky, & Chaffin, 2009; Eckert & Hintze, 2000; Hawkins, 1991). Staff perceptions are particularly important to consider in organizations experiencing pressure to transition into a culture of more structured service delivery mechanisms and methods to monitor adherence to how work plans are carried out (e.g., evidence-based practices in mental health agencies; Aarons et al.). With regard to monitoring adherence to a planned sequence of behaviors and providing performance feedback, staff perceptions have been examined in the following areas: (a) perceived importance (e.g. Cochrane & Laux, 2008); (b) perceived feasibility (e.g., Perepletchikova, Chereji, Hilt, & Kazdin, 2009); (c) perceived degree of comfort (e.g., stress, invasion of autonomy or privacy; Amick & Smith, 1992; Smith, Harrington, & Houghton, 2000; Stanton, 2000); and (d) perceived helpfulness (e.g., Coding, Feinberg, Dunn, & Pace, 2005; Kimball, 2002; Ovando, 2001; Yariv, 2006).

Overall, more research is available regarding perceptions of the importance, helpfulness, and feasibility of innovations in schools. In comprehensive reviews of implementation outcome literature, the perceived benefits of innovations (i.e., helpfulness of innovations) have been identified as factors affecting the implementation process (Durlak &

Dupree, 2008; Greenhalgh, Robert, Macfarlane, et al., 2005). Based on the rationale that RTI practices are particularly novel in secondary school settings, Sansosti et al. (2010) examined secondary principals' perceived importance of several critical dimensions of RTI and their perceived available resources and fit within school schedules (i.e., aspects of feasibility). For example, Sansosti et al. discovered that many principals perceived RTI practices such as using progress monitoring and evidence-based interventions as important, but also perceived that scheduling and structural factors limited feasible application of those practices. A national survey of school psychologists revealed that, although school psychologists overwhelmingly see the value in measuring adherence to intervention plans, staff buy-in, acceptance, and knowledge of its importance is needed before introducing that practice into schools (Cochrane & Laux, 2008).

When novel practices are implemented without considering staff perspectives or doing anything to address negative perspectives, unwanted consequences may result. Potential consequences include staff turnover and feelings of decreased job autonomy (Aarons et al., 2009), professional burnout (Ransford et al., 2009), physical or functional disengagement from team-based problem solving (Slonski-Flowler & Truscott, 2004), feelings of unease or tension while participating in feedback sessions (Truscott & Cosgrove, 2010), and long delays in or refusal to fully implement suggested changes (Ransford et al., 2009; Truscott & Cosgrove; Yetter, 2010). In one study, staff perceptions regarding new interventions (i.e., perceived support for implementation) were much stronger predictors of implementation adherence than education or experience (Klimes-Dougan, August, Lee, et al., 2009).

There are indications that key decision makers and school personnel may be avoiding proper integration of new monitoring and feedback procedures due to fear of poor staff perceptions, but without ever having measured staff perceptions. For instance, Yariv (2006) reviewed the feedback literature and discovered that leaders and supervisors often avoid providing feedback to poor performers (Larson, 1986), delay giving feedback (Bond & Anderson, 1987; Lee, 1993), and distort feedback to make the process seem less negative (Larson; Lee), all due to fear of how the feedback will be perceived by the recipient. Yariv demonstrated the reluctance to provide timely and accurate feedback by interviewing 40 principals of elementary schools. The principals were, in fact, generally hesitant to provide feedback on teaching practices. Cochrane and Laux (2008) surveyed 806 school psychologists and asked them to describe treatment integrity (TI) monitoring procedures in their school. Many school psychologists included reasons why TI was not measured in their school. Potential poor acceptance by teachers was one of the most frequently occurring reasons. One participant wrote, “The process of monitoring TI might be perceived by the teacher as intrusive and have a negative effect upon the consultation relationship which is based on mutual trust” (p. 505).

Despite the overall apparent avoidance to measuring perspectives of intervention adherence monitoring and feedback procedures, there are indications that these procedures can be perceived positively by interventionists in school settings. Teachers have reported high acceptability ratings for biweekly feedback sessions that lasted approximately 12 minutes during an 8-22 week period and consisted of praise and problem solving (Coding et al., 2005). In Noell et al.’s (2005) study, teachers assigned to the performance feedback

condition (i.e., provision of TPI data, praise for correctly implemented steps, and problem-solving for incorrectly implemented steps) provided high ratings of acceptability.

Individualized feedback sessions led by experienced interventionists have been rated as helpful and worth the time commitment (Dusenbury et al., 2010). In this latter study, feedback sessions began with praise for correctly implemented steps and an opportunity for the feedback recipient to choose topics of discussion and ended with the feedback provider choosing topics of discussion. In sum, it appears that supportive one-on-one feedback sessions, including praise and problem solving, can be viewed positively by interventionists in school settings.

However, to the author's knowledge, there is no school-based research examining: (a) how interventionists perceive provision of collaborative, regularly scheduled, group-based feedback sessions; and (b) *change* in interventionists' perspectives as they gain more experience with implementation monitoring and feedback procedures. There is also little information in the literature about how to improve perceptions of feedback other than to clearly communicate the procedures and purpose of feedback to interventionists early on (Copland, 2010).

Generally, when staff report positive perceptions of new practices, they are more likely to participate in them (Amick & Smith, 1992; Oats & Allinder, 1995; Yetter, 2010). Applying this finding to the implementation of individual student interventions, perhaps if interventionists see implementation adherence monitoring and feedback methods as acceptable, they may be more likely to be actively engaged in them (e.g., complete self-report forms, set up video equipment for observations, attend group feedback sessions,

contribute to problem-solving discussions for improved implementation). In addition, if research conducted in schools can demonstrate that certain intervention adherence monitoring and feedback procedures can be perceived positively by interventionists, perhaps school leaders will be more encouraged to set up these procedures rather than avoid them.

CHAPTER THREE

Statement of the Problem

The following points summarize the knowledge and concerns in the area of school-based intervention implementation adherence monitoring and support methods:

1. There is a recognized movement to make data-based decisions based on the faithful implementation and subsequent impact of interventions. To make valid decisions, school personnel should be monitoring and supporting implementation adherence to intervention plans. However, there are indications that monitoring and supporting intervention adherence do not commonly occur in practice.
2. Researchers have revealed that training, provision of performance feedback, and use of collaborative problem-solving discussions are potential methods to support adherence to the steps of an intervention. School personnel may benefit from utilizing support methods that capitalize on interventionists' experience and knowledge, are easy to implement, and are perceived positively by interventionists.
3. Regularly scheduled, collaborative, group-based feedback sessions involving interventionists who implement the same intervention may be an effective implementation support method to incorporate into schools. However, little data are

- available to document the effectiveness of this approach for maintaining satisfactory levels of adherence to intervention steps and the perspectives of interventionists regarding this approach.
4. In a related way, to most efficiently allocate school resources, school administrators may benefit from knowing what types of intervention trainings and experiences are associated with higher implementation adherence levels.

Research Questions

The research questions (RQs) of the current exploratory research study are as follows:

Implementation Adherence Monitoring Methods

RQ 1: To what extent do teachers perceive self-report checklists and videotaped sessions of their implementation of an intervention as helpful, feasible, and comfortable to participate in?

RQ 2: How do teacher perceptions of implementation monitoring methods change as they gain more experience with them?

Implementation Adherence Support Methods

RQ 3: When teachers implement the same academic intervention and participate in regularly scheduled, group-based, collaborative feedback sessions, how do the following dependent variables change over time: (a) levels of implementation adherence; (b) understanding of essential intervention steps; and (c) overall ratings of adherence to the intervention framework?

RQ 4: To what extent do teachers perceive these feedback sessions as helpful, feasible, and comfortable to participate in?

RQ 5: How do teacher perceptions of implementation feedback sessions change as they gain more experience with them?

Previous Training and Experience

RQ 6: Do teachers with certain intervention training backgrounds and experiences differ with regard to their implementation adherence levels?

CHAPTER FOUR

Method

Participants

Participants included 15 teachers at seven elementary schools in a district in the southeastern United States who were implementing the Leveled Literacy Intervention (LLI; Fountas & Pinnell, 2008a) between August and April of the 2010 – 2011 academic year. Fourteen teachers were female, one was male, and all teachers were Caucasian. Primary teacher job titles included Literacy Coach, Reading Specialist, Exceptional Children's Teacher, and English as a Second Language Teacher.

According to the state's on-line database of school report cards from the 2009 – 2010 academic year and the district's *Opening of School Report* in 2010: (a) the total number of students attending these seven schools ranged from 414 - 625, with an average class size between 19.38 – 23.15; (b) between 40.0% - 58.3% of students were from non-white ethnic backgrounds; (c) between 12.0% - 27.7% of teachers were from non-white ethnic backgrounds; and (d) between 16.73% - 39.10% of students qualified for free or reduced lunch. Six of the seven schools met adequate yearly progress (AYP) during the 2009 – 2010 academic year, with 73.2% - 94.5% of students at or above grade level in reading, and 84.7% - 95.0% in math.

The RTI coordinator and other school leaders in the district were attempting to come to a consensus on defining RTI principles and policies for implementing RTI when the current study was proposed. The seven schools included in this study were in their first year of a 5-year RTI pilot program during the 2010 – 2011 academic year. As a model for their

RTI implementation, they were using the 3-tiered system of intervention service and professional learning community (PLC) collaboration that characterizes the Pyramid Response to Intervention (PRTI; Buffum, Mattos, & Weber, 2008). According to the distinctions that Buffum et al. make between reading interventions at different tier levels, LLI can be conceptualized as a tier 2 or 3 intervention, and staff at these seven target schools were using LLI as both a tier 2 and 3 intervention.

Measures

The following section introduces a measure of LLI implementation adherence and teacher surveys created by this author. Before introducing the LLI implementation adherence measure, a description of LLI follows, along with information regarding the research behind specific practices within LLI.

Leveled Literacy Intervention. Fountas and Pinnell (2008a) developed LLI as a result of their years of research and subsequent publications on effective differentiated literacy instruction (e.g., *Guided Reading*; Fountas & Pinnell, 1996), and analysis of text structure to create leveled books (e.g., K – 8th grade leveled books; Fountas & Pinnell, 2006). LLI is a supplementary, small-group literacy intervention for students who are below grade level in early reading and writing skills. The overall goal of the intervention is to bring students up to grade level within 14 – 18 weeks. Lessons are available for K – 3rd graders; the seven schools included in this study were using LLI with 1st – 3rd graders. Each LLI session is systematic and sequenced, and includes explicit instruction with a variety of leveled books and other materials for teaching word structure and sound. Each lesson lasts approximately 30 minutes, consists of 3-4 students, and is intended to be taught by trained

reading teachers or specialists. Instructional activities target reading comprehension and vocabulary, reading fluency, reading interest and motivation, phonemic awareness and phonics, and writing. Appendix B provides a description of activities that correspond to each of those targeted areas and examples of research bases that support use of those activities.

During its five-year development, LLI was implemented in 70 school districts across 15 states, and the developers of LLI collected data from several of these school districts. Results during that period indicated that second grade students met grade-level reading goals based on the Developmental Reading Assessment (DRA; Beaver, 2006), ESL students made significant gains in phonological awareness, letter naming, word recognition, and decoding on DIBELS assessments (Kaminski & Good, 2004), and the percent of first and second graders reading at or above grade level based on the Fountas and Pinnell Benchmark Assessment increased from 6% to 46% (Heinemann, 2010a; 2010b). The Center for Research in Education Policy (CREP) also released LLI data from 22 schools in a large urban area in the northeast (Harrison, Grehan, Ross, et al., 2008). Harrison et al. revealed that kindergarten, first, and second grade students made significant gains on the Gates-MacGinitie Reading Tests (MacGinitie, MacGinitie, Maria, & Dreyer, 2002) and that 90% of teachers perceived positive impacts on students' reading skills.

More recently, the CREP has collected data from two additional school districts during the 2009 – 2010 school year using a randomized, controlled trial, matched-pair design (Ransford-Kaldon, Flynt, & Ross, et al., 2010). Results showed that kindergarten, first-, and second-grade students receiving LLI made significantly greater gains on the Fountas & Pinnell Benchmark Assessment System than students in the control group. On DIBELS

assessments, students receiving LLI made significantly greater gains on Nonsense Word Fluency than control students in kindergarten and first grade. First-grade students receiving LLI also demonstrated significantly greater gains in Oral Reading Fluency and Letter Naming Fluency than control students. However, there were no significant differences in second grade students on DIBELS assessments. Although this research was conducted by an independent group of researchers, it was funded by Heinemann, the publishers of LLI. The LLI Research and Data Collection Project (Heinemann, 2011), under the direction of Fountas and Pinnell, examined changes in reading levels in 4,881 students participating in LLI across various geographic locations. Pre- and post-test data revealed that 68% of students gained at least three reading levels, while 12.5% gained at least seven reading levels. Gains were stronger when LLI was implemented according to the developers' recommended dose (i.e., five days per week for 14 – 18 weeks).

Although data on LLI appears promising, several disadvantages of the research base include the involvement of the developers and publishers of LLI, limited use of control groups and comparative intervention groups, reliance on the Fountas and Pinnell Benchmark Assessment System as an outcome measure, and lack of research published in peer-reviewed academic journals. However, LLI appears to be a widely used intervention for students who are behind grade-level in reading, particularly for those whose schools do not have enough resources to provide all struggling students with Reading Recovery (North American Reading Recovery Council, 1993; Harvey, 2011). For example, some schools have increased reading levels of students after placing those who scored lowest on reading screenings in

Reading Recovery while placing those who scored low but did not meet cut-off criteria in LLI (Harvey).

LLI implementation adherence checklist. To this author's knowledge, no standardized measure of LLI implementation adherence existed, and there were no reported quantitative data on LLI implementation adherence levels when this study was proposed. To fill this void, the LLI implementation adherence checklists in Appendix C, one for even-numbered sessions and one for odd-numbered sessions, were developed and used in this study. These checklists were created by reading LLI example lesson scripts, observing LLI sessions, and obtaining feedback from the 7 schools' literacy director, RTI coordinator, and an experienced LLI teacher. The developers of LLI were also contacted with a draft of the checklists for feedback on whether they reflected the essential framework of LLI. Based on their feedback, the author made revisions that included: (a) referring to the Prompting Guide (Fountas & Pinnell, 2009) rather than specifying which types of reading or writing prompts to use in order to give teachers more flexibility to respond to students' unique needs; (b) emphasizing the discussions between teachers and students after reading the new book to improve comprehension rather than just stating that teachers ask questions about the new book; and (c) clarifying that there are different formats of writing that teachers can use, including shared/interactive, dictated, or independent.

Fixsen et al. (2005) suggested that, in order to ensure that essential intervention steps are reflected in new implementation monitoring tools and that resulting measures are valid, researchers and practitioners should locate unique variance to treatment effects, hypothesized mediators, the theory behind the intervention, and evidence-based practices within the

intervention. The research on LLI was reviewed earlier in this method chapter, and unfortunately there is not enough information available to draw conclusions about unique variance or mediators. However, the evidence-based practices within LLI are clear (e.g., see Appendix B), expert feedback was obtained, and it was these sources that were considered during creation of the checklists.

The last five minutes of most LLI sessions are intended for additional instruction in Letter/Word Attack. This step was omitted from the checklist because it is an optional step for many of the sessions, and there is reason to believe that many teachers are unlikely to reach that last step (Harrison et al., 2008). Teachers often have to spend more time introducing new books and completing the Phonics/Word Work lesson, particularly for students who are farthest below grade level or for ESL students.

Teacher surveys. Appendix D contains two surveys that teachers completed. The Pre-Feedback Session Survey was completed once at the introductory meeting, before teachers experienced involvement with LLI implementation adherence monitoring and feedback procedures. The Post-Feedback Session Survey was completed once at the end of the study, after they experienced involvement with those procedures. Both surveys ask teachers to provide their ratings of helpfulness, feasibility, and level of comfort with the LLI implementation adherence monitoring and feedback procedures used in this study. Survey items also ask teachers to provide global ratings of: (a) how important it is that their implementation of LLI is monitored, (b) how important it is that they receive feedback on their implementation of LLI, (c) their understanding of the essential steps of LLI, and (d) how well they believe they implement the LLI framework accurately the majority of the

time. All ratings for survey items are assessed using a 6-point Likert scale, ranging from Strongly Disagree to Strongly Agree.

The first survey also assesses teachers' current LLI implementation responsibilities (i.e., number of days per week they are supposed to implement it and number of LLI student groups they lead), previous LLI implementation experience, exposure to various LLI training experiences, and teachers' primary teaching assignment. Pre-survey items also measure previous experience implementing Reading Recovery and allow teachers to write other reading interventions they have implemented in the past three years. Previous experience with Reading Recovery was specifically addressed due to its similarity to LLI, but it is more intensive and is offered in a one-on-one format. Teachers who have implemented Reading Recovery may have learned to be more sensitive to readers' behavior, learned the value of having conversations with students about books and providing many opportunities to link reading and writing opportunities, and may have more experience explicitly teaching phonics principles and word solving strategies (Fountas & Pinnell, 1996). These are all helpful skills for implementing LLI.

Procedure

This section describes how teacher participants were recruited and introduced to this study, how data were collected, and how feedback sessions were structured and scheduled. For an overview of the data collection and feedback session schedule for each group of teachers (i.e., Group A during the fall, and Groups B and C during the spring), refer to Appendix E. All of this study's procedures and materials were approved by the participating school district's executive director of Testing and Program Evaluation and approved (i.e., deemed exempt) by the university's IRB in August of 2010.

Recruitment and introduction. Prior to the start of the 2010 – 2011 school year, the literacy director and RTI coordinator for the participating school district contacted principals of elementary schools where LLI was being implemented within a pilot RTI model. During the initial recruitment round in the fall, principals at four schools expressed interest in the study, and the teacher recruitment letter (located in Appendix F) was distributed to teachers implementing LLI at those four schools. It was distributed during the first week of school, which was also the first week of LLI implementation for most teachers. The letter provides a brief summary of this study as well as an invitation to attend the introductory meeting.

A protocol for the introductory meeting can be found in Appendix G. At the introductory meeting, teachers learned about the purpose of this study, what their participation would involve, and how their individual data would be kept confidential. Five teachers (i.e., 20% - 30% of those who received recruitment letters) from two schools attended the introductory meeting in October of 2010. Four of those teachers agreed to participate and remained actively involved in the study throughout each data collection

period and feedback session. In order to obtain more participants, the study was continued with another round of recruitment in the spring. Recruitment procedures remained the same as those followed in the fall. The RTI coordinator and literacy director contacted principals at an additional seven schools in the same district. Principals at six schools expressed interest, and eleven teachers (i.e., 25% - 35% of those who received recruitment letters) from five schools attended the introductory meeting held in February of 2011. All of those teachers decided to participate, and all but one of them were actively involved during each data collection period and feedback session. One teacher had to discontinue participation in implementation monitoring and feedback procedures after the second feedback session when she went on maternity leave. Altogether, administration at 76.9% of schools contacted for this study expressed interest in participating, about 25% of teachers contacted attended the introductory meeting, and 93.8% of teachers attending the introductory meetings agreed to participate.

During the introductory meeting, the researcher emphasized that individual implementation levels would not be shared at feedback sessions; rather, an average of the feedback group's implementation levels would be shared. Additional points that were emphasized included the expectation that implementation levels would vary, that adherence to the steps listed in the checklists has no implications for employment, and that resulting implementation levels would not reflect a teacher's quality or competency. When teachers signed the consent form (located in Appendix H), they filled out the first survey. All participating teachers left the introductory meeting with materials to monitor their implementation adherence to LLI, including copies of the implementation checklist and a

data collection schedule. A master list was created linking teacher names with their assigned identification number. All completed implementation adherence checklists and video files were labeled with the teachers' identification numbers and session dates.

Some teachers were implementing LLI with several different student groups. To help keep some consistency, each teacher was asked to choose one student group to focus on throughout the study before leaving the introductory meeting. Teachers distributed the school district's Consent for Photography or Audiovisual Recording form to each student in their chosen LLI group so that their parents were informed of the study and were given the opportunity to indicate if they did not want their child to be in the recorded group. The form emphasized that the video would be focused on the teacher and that the videos would not be shared with any audience other than the researchers at NCSU. Teachers collected these forms, and only one student's parents indicated that they did not want their child part of the recorded group. This student was moved into another LLI group that was not part of this study.

Data collection and feedback schedule. Teacher surveys were collected at the introductory meeting (i.e., before teachers experienced LLI monitoring and feedback procedures) and at the end of the last feedback session (i.e., after they had experienced LLI monitoring and feedback procedures). Feedback session group assignments, schedules, and locations were determined during the introductory meeting for the fall group and during the few days after the introductory meeting for the spring groups. For teachers who indicated that they needed the researcher to record their sessions (two out of four teachers from the fall group, and six out of 11 teachers from the spring groups), a video recording schedule was

also determined during that time. When events interfered with implementing LLI on their scheduled recording day, those teachers either recorded their own session on another day that week or rescheduled for an alternate recording day. Teachers who recorded their own sessions used their school's flip cameras. The researcher downloaded their video data from the flip cameras or collected DVDs that a couple of teachers downloaded their video data onto.

Baseline data on teachers' implementation adherence levels were collected for 6 – 9 school days (see Appendix E). Baseline data collection was initiated after teachers had been implementing LLI for approximately 2 – 3 weeks rather than at the very beginning of LLI implementation. This strategy helped to ensure that all participating teachers were already accustomed to following a consistent LLI schedule and that student assignments to LLI feedback groups were stable. Furthermore, initiating baseline data after 2 – 3 weeks of LLI implementation allowed some teachers to complete the 10 “getting started” lessons of the first-grade level system, which have a slightly different protocol. When the baseline data collection phase started, teachers began completing the implementation adherence checklists after each LLI session, and one LLI session was recorded per week. The researcher collected the checklists and video data at the end of every school week from teacher mailboxes. These data collection procedures continued throughout the remainder of the study. Although the number of school days between each feedback session varied depending on the feedback group that teachers were assigned to, all teachers had a total of 34 school days to implement LLI, complete implementation checklists, and record sessions.

After baseline data were collected, teachers attended a total of 3 feedback meetings, separated by 9 – 11 school days. The feedback sessions were prescheduled rather than initiated after implementation levels dropped below a certain level to ensure that teachers' schedules could be accommodated and that feedback could be used in more preventive rather than reactive ways. Furthermore, very little is known regarding what kind of baseline implementation levels to expect with LLI. The feedback sessions were held less frequently than what is typically seen in implementation feedback research (i.e., daily to weekly) in order to help sustain practitioners' use of implementation feedback procedures beyond the presence of researchers (i.e., to help bridge the research-to-practice gap). Group feedback sessions that are spread further apart may be more practical, considering available time and resources, and are likely to reflect the schools' normally scheduled biweekly or monthly PST/PLC meetings. To participate in previous research on weekly group feedback sessions, school personnel have had to alter their normally scheduled biweekly PST meetings (Duhon et al., 2009), so they may have been discouraged from continuing to use group feedback sessions after the completion of the study.

Video coding and training. Of the 97 video-recorded LLI sessions, 9 videos were omitted due to reasons explained in the Results chapter. This left 88 usable videos (i.e., those that captured the entire LLI session without technical difficulties). The researcher viewed all 88 usable video-recorded LLI sessions while filling out the appropriate LLI checklist. Forty-three of the usable videos were of even sessions, while 45 were of odd sessions. Two undergraduate research assistants also viewed 28, or 31.82%, of the usable recorded sessions while completing the implementation adherence checklists in order to provide reliability

checks. The percentage of recorded implementation sessions for reliability checks is slightly greater in this study than the percentage used by previous researchers (e.g., Burns et al., 2008, used 25% of recorded implementation sessions for reliability checks). Eleven of the usable videos that the research assistants coded were even, while 17 were odd. Research assistant A coded 7 videos in the fall, and 11 videos in the spring. Research assistant B coded 10 videos in the spring, different from the videos that research assistant A coded. The LLI Prompting Guide (Fountas & Pinnell, 2009) was available to the researcher and research assistants during video coding to check that teachers used prompts from the Prompting Guide, as indicated in the implementation adherence checklists.

There were two initial video coding training sessions—one in the fall with research assistant A, and one in the spring with research assistant B. Due to the unavailability of pre-existing videotaped LLI sessions, a method similar to what Burns et al. (2008) used for training coders observing intervention sessions to establish understanding and initial agreement was used. The researcher and research assistants viewed and coded two recorded sessions together, one even and one odd, from baseline data collection. During that time, they discussed behavioral indicators from the teacher that warranted a step being present or absent. After this step was completed, the researcher and research assistants independently coded sessions until reaching 100% agreement on two sessions. The researcher and research assistant A met 100% agreement twice after independently coding one even session and one odd session, randomly selected from the beginning of fall data collection. The researcher and research assistant B met 100% agreement twice after independently coding one even session and one odd session, randomly selected from the beginning of spring data collection.

Research assistant A also received a refresher training session during the beginning of spring data collection. This included coding one even session and one odd session from spring baseline data collection and then meeting to discuss disagreements. There were no disagreements during the refresher training session.

Video coding reliability data were reviewed during research meetings, occurring at 2 – 3 week intervals. Three meetings were held in the fall with the researcher and research assistant A, and three meetings were held in the spring with the researcher and both research assistants. At these meetings, the following data were reviewed: Total videos coded since the last research meeting, range and average of percent agreement since the last research meeting, and frequency of disagreements per LLI step on even and odd checklists since the last research meeting. Disagreements were briefly discussed, not with the intention of reaching an agreement, but simply to be reminded as a group of the behavioral indicators required to consider a step implemented. The total number of video recorded sessions coded by research assistants by teacher and by type of session (even or odd) was also reviewed. An attempt was made to keep total numbers similar across teacher and across type of session.

Feedback session procedures. Teachers were divided into feedback groups of 4 – 6. The group format enabled collaborative discussions among teachers. There were a total of three feedback groups. The fall group consisted of four teachers, three from school A, and one from school B. The fall feedback sessions were held at school A. There were two spring groups. The first group consisted of six teachers, four from school C, and two from school D. Feedback sessions for this group were held at school C. The second spring group

consisted of five teachers, two from school E, two from school F, and one from school G. Feedback sessions for that group were held at school F.

The researcher followed the feedback protocol in Appendix I for each feedback session and for each feedback group. The research assistants were not available during the feedback sessions to monitor the researcher's adherence to the feedback protocol, and teachers expressed discomfort of having the feedback sessions recorded. Therefore, the researcher simply checked off each step of the protocol to help ensure fidelity. All steps were followed as written during every session.

During the first part of the feedback sessions, issues and questions regarding data collection procedures were addressed. These typically included scheduling issues with recording sessions, school events that interfered with implementing some LLI sessions, and technical problems with flip cameras. The second part of the feedback sessions included reviewing the importance of monitoring implementation adherence levels. The intent of this second part was to continue to remind teachers that the purpose of collecting implementation data was not to evaluate their competency as teachers or to make employment decisions and to increase the likelihood that they would complete the checklists with thoughtfulness and honesty.

The third part of the feedback sessions included presenting and discussing the group's average implementation levels and percent agreement between self-report checklists and researcher-completed checklists for recorded sessions. Teachers received handouts summarizing this data, similar to what participants in previous studies have received (e.g., Burns et al., 2008; Noell, Gresham, & Gansle, 2002). The handouts contained one line graph

and one bar graph. The line graph displayed the group's average percent adherence across each school day during the most recent data collection phase. One line represented self report data, and one line represented video data based on researcher-completed checklists. The bar graph displayed the group's average implementation levels for each core area of LLI, based on self report data, during the most recent data collection phase. Each bar represented a core area of LLI. There is overlap between some steps across even and odd sessions, so some core areas are a combination of steps across even and odd sessions, while other core areas contain just one step on an even or odd session. Bars were color-coded based on intervention domain. For a list of core areas and domains presented in the bar graphs, see Appendix J.

Two tables were also included on the teachers' handouts. One table was presented with the line graph, listing the dates, number of self report checklists and recorded sessions obtained from each day, average and range of percent implementation during each day for self report data and video data, and the self-report-video percent agreement. The other table was presented with the bar graph. It listed the overall average percent implementation for each LLI core area implemented at or above 80% in one column, and those below 80% in another column.

The researcher reviewed all of the data on the teachers' handouts. First, general trends in line graphs were reviewed, including how the lines showed an upward or downward trend, the variability of percent adherence, and the total number of checklists or videos obtained on each day. Then, the percent adherence between self report and video data was reviewed. Discussions among group members during this part of the feedback session

covered ideas for why implementation levels may have been lower or higher for certain days, and examples of what would and would not count as adherence to particular intervention steps.

Next, the researcher reviewed the bar graphs, stating those core components that were implemented at or above 80% and those that were implemented below 80%. An 80% cut-off point was used because previous researchers and practitioners have used a criterion level of 80% to identify “good” adherence to essential intervention steps (Heartland Area Education Agency, 2007; Hagermoser Sanetti & Kratochwill, 2009). There were no data available to the researcher that would better inform an appropriate cut-off point for adherence to core steps of LLI. Teachers were praised for the steps that were implemented at or above 80% (e.g., “As a group, you have done a great job implementing...”). Then, they were asked to share ideas about obstacles that commonly interfered with implementing the steps that were below 80% and how they might overcome those obstacles. Teacher discussions during this problem-solving aspect of the feedback sessions also included general obstacles that interfered with overall implementation of LLI. Specific topics that teachers brought up and their shared ideas for improvement are described under the results section.

The researcher’s job during these problem-solving discussions was to guide the flow of conversation so that each LLI step below 80% was addressed, that all teachers were given opportunities to share common obstacles and ideas for improvement, and to guide the conversations back on target when necessary. The researcher also kept a written log of teachers’ shared obstacles and ideas for improvement and provided an oral summary of the obstacles and recommendations for improvement. One to three days following each

feedback session, the researcher summarized shared obstacles and recommendations for improvement into a word-processed document. This document was placed into each teacher's mailbox and also emailed to each teacher.

CHAPTER FIVE

Results

This chapter begins with a report of the frequency with which LLI was implemented, including events that commonly interfered with implementation and how sessions that were split across multiple days were analyzed. Following this, percent agreement between teacher- and researcher-completed checklists and between researcher- and research assistant-completed checklists is reviewed. After a summary of teachers' reported understanding and adherence to the LLI framework from survey data, the LLI implementation adherence data collected throughout the study is described, and analysis of change in implementation adherence data is reported.

The effects of teachers' previous LLI training and previous experiences with LLI, Reading Recovery, and Guided Reading on LLI implementation adherence levels are also reviewed. Next, teachers' shared recommendations for improved LLI implementation adherence and suggestions for making LLI implementation feedback sessions more successful are described. Finally, an additional analysis is covered—the effects of current LLI responsibilities on implementation adherence levels.

Intervention Frequency

The recommended frequency of LLI sessions is 4 – 5 times per school week (i.e., 80% - 100% of school days; Fountas & Pinnell, 2008a). For this study, the frequency of LLI was assessed by counting the number of teacher-completed LLI implementation adherence checklists. Each teacher had 34 school days total throughout this study, except for one teacher who went on maternity leave. She had 17 school days. Table 1 lists the number of

sessions teachers implemented per data collection phase and the total percent of school days during this study that teachers implemented LLI. There was wide variability in LLI frequency. Teachers implemented LLI for 47.06% - 94.12% of school days, and only two teachers implemented LLI at the developers' recommended frequency. Teachers often indicated reasons why LLI was not implemented on certain days by leaving notes for the researcher in their mailboxes or providing this information in post-surveys. Common reasons given included end-of-grade (EOG) testing practice, delayed school openings, teacher workshops, traveling out of town for personal reasons, school assemblies, field trips, individual education program (IEP) team meetings, and other meetings.

Table 1

Frequency of LLI Sessions Based on Self Report

Teacher	Total Sessions				Total % of School Days
	Baseline	Post Feedback #1	Post Feedback #2	Post Feedback #3	
1	6	8	10	6	88.24
2	3	6	6	4	55.88
3	4	7	4	5	58.82
4	3	9	8	6	76.47
5	5	7	3	3	52.94
6	3	9	8	6	76.47
7	3	5	*	*	47.06
8	4	8	9	6	79.41
9	5	7	1	3	47.06
10	1	7	4	5	50.00
11	3	8	4	3	52.94
12	4	7	7	4	64.71
13	7	7	5	4	67.65
14	5	7	5	2	55.88
15	8	9	9	5	94.12

Note. The Total % of School Days represents the percent of school days in which LLI was implemented. It is calculated by dividing the total number of school days by the total number of LLI sessions implemented.

* Denotes missing data due to teacher absences.

In some cases, teachers repeated LLI sessions if they believed that students were not progressing as expected, had difficulty catching on to a concept, or had a lot of challenges reading one of the books. Fountas and Pinnell (2008a) have encouraged teachers to make

decisions such as repeating sessions based on student needs. Repeated sessions were not excluded from analysis but rather were treated as separate sessions. For example, if a teacher implemented 8 steps of a session one day, and then implemented 9 steps of that same session the next day, two data points of 88% adherence and 99% adherence were entered. The total number of repeated sessions was 11 (3.44% of all sessions).

Teachers occasionally split up LLI sessions, completing the entire session across more than one day before moving on to a new session rather than leaving a session incomplete and moving on to a new session. This action reduced the frequency of LLI sessions, but led to greater adherence to the sessions that *were* completed. The total number of split sessions across all teachers was 22 (6.88% of all sessions). Because data were entered and analyzed according to the percent adherence to the checklists by session rather than by date, teachers were not “penalized” for splitting up the sessions. The focus of the feedback sessions was on adherence to the intervention steps, not on the total frequency of LLI sessions. For example, if a teacher implemented the first three steps of a session on one day and the last six steps of that same session on the next day, one data point was entered as 100% adherence, rather than two data points of 33% adherence and 66% adherence.

Video recorded split sessions were omitted from analysis because, in those cases, the video only recorded the session on one day (i.e., it only captured some of the steps that the teacher implemented). The total number of videos omitted because they captured only part of split sessions was 7 (7.95% of all recorded sessions). On two other occasions, video recorded sessions were omitted from analysis due to technical issues. One video was omitted because it cut off halfway through the session. Another video was omitted because the data

file was corrupt. Table 2 lists the number of usable video recorded sessions for data analysis from each teacher per data collection phase and a total number of usable video recorded sessions for data analysis from each teacher.

Table 2

Video Recorded LLI Sessions Usable for Data Analysis

Teacher	Usable Videos				Total Usable Videos
	Baseline	Post Feedback #1	Post Feedback #2	Post Feedback #3	
1	1	2	2	1	6
2	1	2	2	2	7
3	1	2	1	2	6
4	1	2	2	1	6
5	1	2	0	2	5
6	1	3	2	1	7
7	1	2	*	*	3
8	1	2	2	2	7
9	1	3	1	0	5
10	0	0	1	2	3
11	1	2	2	1	6
12	1	2	2	1	6
13	2	2	2	1	7
14	2	2	2	1	7
15	1	2	3	1	7

Note. * Denotes missing data due to teacher absences.

Reliability

The reliability of the LLI checklists was assessed by computing the percent agreement between teacher-completed checklists (i.e., self report) and researcher-completed video ratings (i.e., video observations), and also between researcher-completed checklists and research assistant-completed checklists. In each case, the percent agreement was obtained by dividing the total number of agreements by the total number of disagreements and agreements. Between self reports and video observations, the overall agreement was good ($M = 89.14\%$), but the range was large. Between researcher and research assistants, the overall agreement was excellent ($M = 94.44\%$), and the range was smaller. Table 3 lists the mean and range of percent agreement between self reports and video observations and between researcher and research assistants per data collection phase.

Table 3

Percent Agreement on LLI Checklists

Data Collection Phase	Self Report with Video Observations		Researcher with Research Assistant	
	<i>M</i>	Range	<i>M</i>	Range
Baseline	84.72%	55.56% - 100%	93.06%	77.77% - 100%
Post Feedback #1	88.15%	44.45% - 100%	95.83%	88.88% - 100%
Post Feedback #2	93.06%	66.67% - 100%	94.44%	88.88% - 100%
Post Feedback #3	89.51%	55.56% - 100%	94.44%	88.88% - 100%

Appendix K lists the percent of total disagreements between self report and video observations and between researcher and research assistants for each LLI step. Percent of disagreements for each step was obtained by dividing the total number of disagreements for that step by the total number of disagreements throughout the study. Between self report and video observations, the most frequent disagreements were on step nine on the odd sessions (i.e., having a discussion with students about the new book after they read it). Following that, the most frequent disagreements between self reports and video observations were on step two from the even sessions (i.e., introducing the phonics principle), step nine from the even sessions (i.e., having a discussion with students about the new book after they read it), and step five from the odd sessions (i.e., providing an opportunity to practice the phonics principle).

Between researcher and research assistants, the most frequent disagreements were evenly distributed across four steps. These included step two on the even sessions and step three on the odd sessions (i.e., introducing a phonics principle), step one on the odd sessions (i.e., inviting students to read previous books), and step two on the odd sessions (i.e., using at least one prompt or one verbal praise statement when rereading previous books).

Implementation Adherence and Understanding

The third research question pertained to changes in teachers' pre- and post-ratings of their understanding of LLI steps and adherence to the LLI framework, along with ongoing changes in their implementation adherence levels on the LLI checklists. The research question asked, when teachers implement the same academic intervention and participate in regularly scheduled, group-based, collaborative feedback sessions, how do the following

dependent variables change over time: (a) levels of implementation adherence, (b) understanding of essential intervention steps, and (c) overall ratings of adherence to the intervention framework?

Ratings of understanding and adherence. The mean, standard deviation, and standard error of pre- and post-ratings of understanding and accuracy are listed in Table 4. Higher ratings indicate greater understanding of the steps or more adherence to the intervention. Ratings between 5 and 6 indicate that teachers agreed that they understood the essential steps of LLI or that they implemented the LLI framework with accuracy the majority of the time. On average, teachers indicated agreement on all pre- and post-ratings except for pre-ratings of accuracy to the LLI framework, which was neutral.

Table 4

Ratings of Understanding of Essential Steps and Adherence to LLI Framework

	<i>N</i>	<i>M</i>	<i>SD</i>	<i>SE</i>
Pre-Understanding of LLI Steps	15	5.40	.632	.163
Post-Understanding of LLI Steps	15	5.93	.258	.067
Pre-Accuracy of LLI Framework	15	4.80	.941	.243
Post-Accuracy of LLI Framework	15	5.33	.488	.126

Note. Given the anchors of the rating scale, mean ratings between 1 – 2.99 may be considered evidence that teachers disagreed that they understood the essential LLI steps or implemented the LLI framework with accuracy the majority of the time. Ratings between 5 – 6 may be considered evidence that teachers agreed that they understood the essential LLI steps or implemented the LLI framework with accuracy the majority of the time. Ratings between 3 – 4.99 may be considered neutral.

To assess significant change between pre- and post-ratings, two paired *t*-tests were conducted. On average, teachers reported significantly greater understanding of the essential LLI steps on post ratings than on pre ratings ($t(14) = -3.23, p < .05$). There were no significant differences between pre- and post-ratings of adherence to the LLI framework ($t(14) = -2.09, p > .05$).

Implementation adherence levels. The mean and standard deviation of percent adherence to the LLI checklists and the number of teachers with self report and video data are listed in Table 5. Data are reported by feedback group within each data collection phase, and as total or overall values across all feedback groups within each data collection phase. Overall mean percent adherence was relatively high across all data collection phases, ranging from 85.69% - 91.92% on video data and from 86.67% - 89.98% on self report data. Group B had the highest mean percent adherence across most data collection phases on video and self report data. Standard deviations were fairly large within some groups on any given data collection phase. The group with the highest standard deviation across data collection phases varied.

Table 5

Percent Adherence to LLI Implementation Checklists

Data Phase and Group	Video Data			Self Report Data		
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>
<u>Baseline</u>						
Group A (Fall)	91.67	10.64	4	91.67	8.21	4
Group B (Spring)	94.45	7.86	2	88.78	14.23	5
Group C (Spring)	87.78	6.09	5	80.54	8.62	5
Total	90.40	7.89	11	86.67	11.16	14
<u>Post Feedback #1</u>						
Group A (Fall)	77.78	14.34	4	91.22	4.43	4
Group B (Spring)	90.74	2.62	2	92.20	4.96	5
Group C (Spring)	90.00	7.24	5	84.89	10.32	5
Total	85.69	11.08	11	89.31	7.53	14
<u>Post Feedback #2</u>						
Group A (Fall)	87.50	2.78	4	88.19	9.18	4
Group B (Spring)	94.44	7.86	2	93.52	4.14	5
Group C (Spring)	94.44	3.93	5	87.88	9.24	5
Total	91.92	5.19	11	89.98	7.65	14
<u>Post Feedback #3</u>						
Group A (Fall)	87.50	9.49	4	86.81	13.82	4
Group B (Spring)	94.44	7.86	2	92.81	7.42	5
Group C (Spring)	82.22	16.85	5	87.74	7.31	5
Total	86.36	13.00	11	89.29	9.22	14

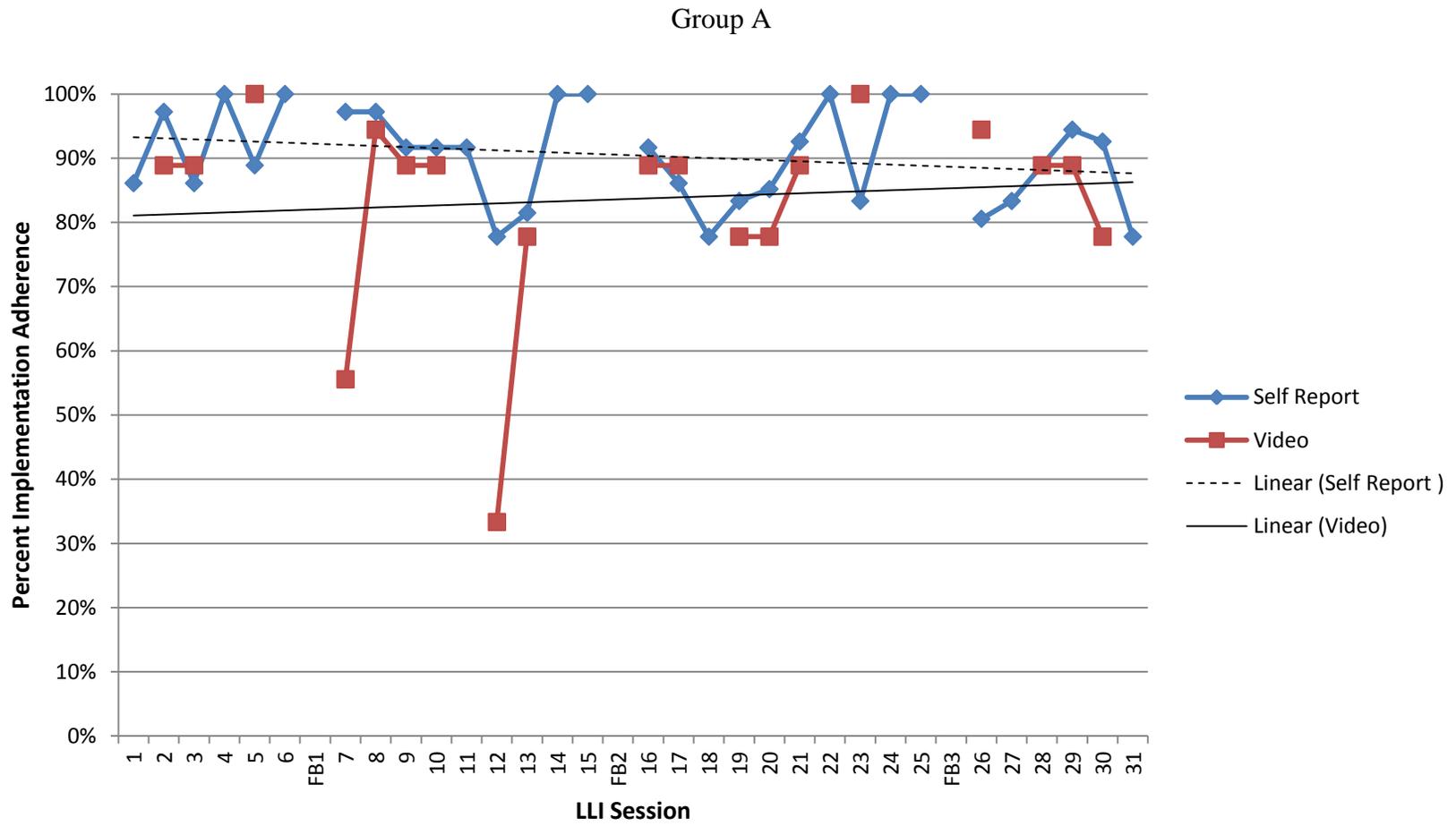
To assess change in implementation adherence levels, two mixed design ANOVAs were employed, one using video data as the dependent variable, and another using self report data as the dependent variable. In each one, feedback group was a between-subjects factor,

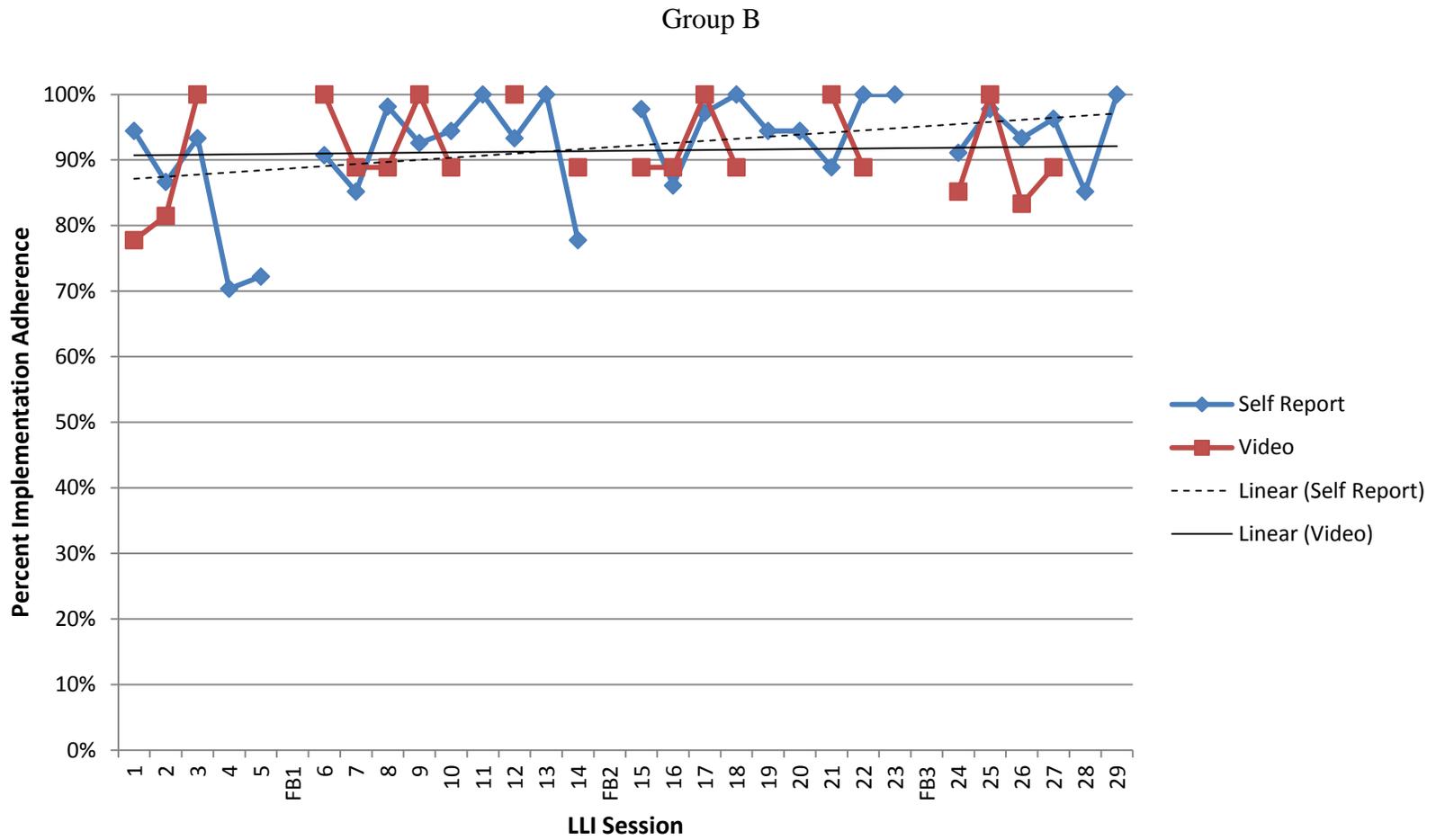
and the dependent variable was average percent adherence at baseline, post feedback session 1, post feedback session 2, and post feedback session 3. There were no significant main effects of time on implementation levels using video data ($F(3, 24) = .97$) or self report data ($F(3, 33) = .37$) and no significant main effects of group on implementation levels using video data ($F(2, 8) = .99$) or self report data ($F(2, 11) = 1.58$). The interaction between time and group was also not significant based on video data ($F(6, 24) = 1.14$) or self report data ($F(6, 33) = .60$).

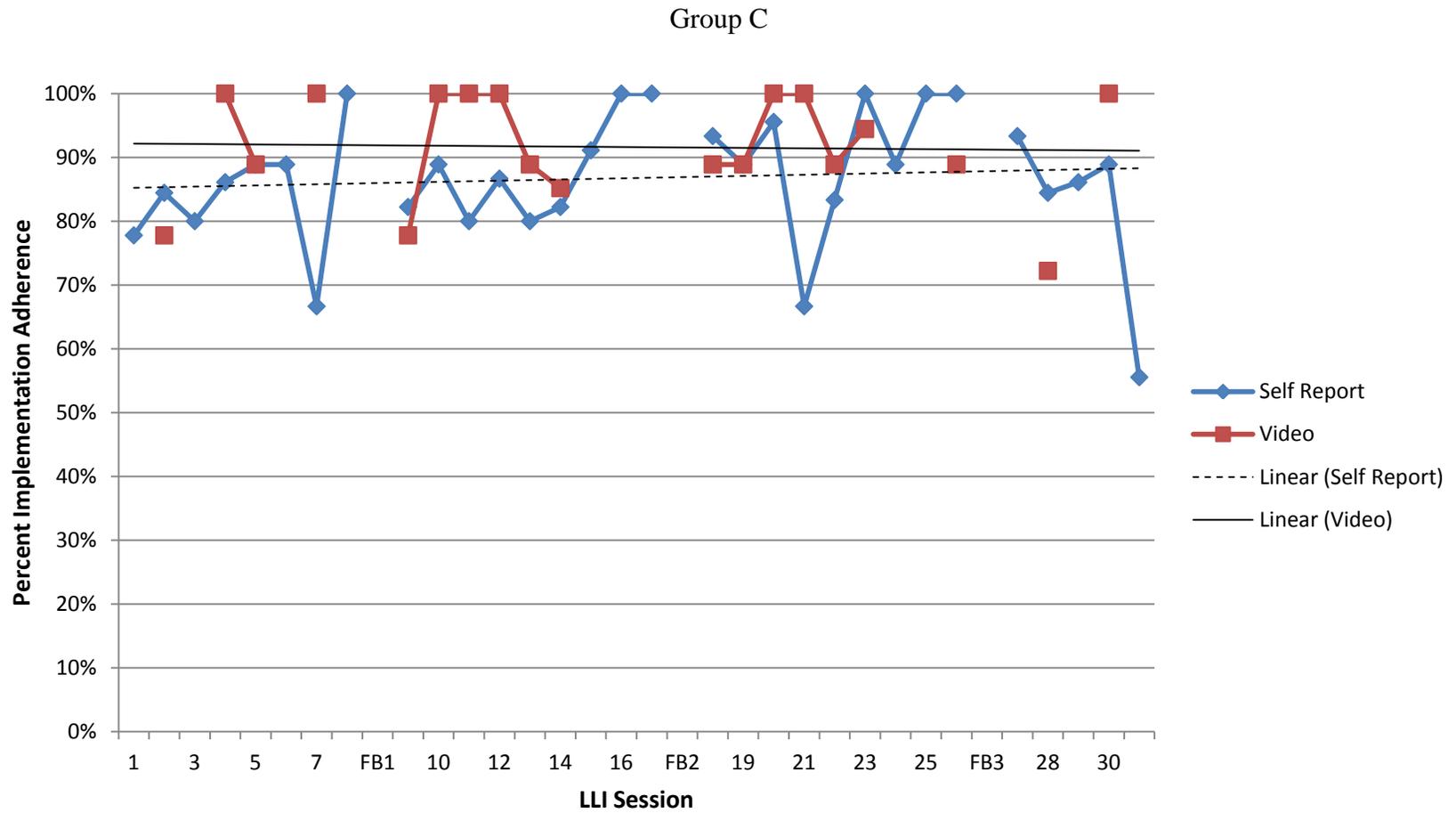
In order to see if there were general trends in percent implementation adherence across LLI sessions for each feedback group, trend lines were placed on line graphs, located in Figure 1. Group A (fall group) showed a slight downward trend in percent implementation adherence across LLI sessions based on self report, and a slight upward trend based on video data. Group B, one of the spring groups, showed a slight upward trend in percent implementation adherence based on self report, and a flat trend based on video data. Finally, Group C, the other spring group, showed a very small upward trend based on self report data and a flat trend based on video data.

Figure 1

Percent Implementation Adherence Across LLI Sessions







Note. FB1 represents feedback session 1, FB2 represents feedback session 2, and FB3 represents feedback session 3.

Previous Training and Experience

There were several factors regarding teachers' backgrounds with LLI training and various reading intervention experiences that had potential influence on LLI adherence levels. Research question six pertained to these factors, asking, do teachers with certain intervention training backgrounds and experiences differ with regard to their implementation adherence levels?

LLI training experiences. Eight teachers reported experience with training option A (Watched professional development DVDs), 11 teachers reported experience with training option B (Attended 3-day LLI introductory training provided in district), 1 teacher reported experience with training option C (Attended 6-day intensive LLI training at a university), and 6 teachers reported experience with training option D (Other). Training option C was omitted from analysis because only one teacher reported experience with it. Written descriptions next to training option D included additional workshops with Fountas and Pinnell, observed district LLI teacher, one-day local training, 3-day training in Charlotte with Fountas and Pinnell, and co-trained other teachers in the district.

The means, standard deviations, and standard errors of percent implementation adherence based on self report data and video data are listed in Table 6 for teachers with and without training experiences A, B, and D. The mean percent implementation adherence was higher for teachers with each training experience than for teachers without each training experience based on self report and video data. To determine if teachers with each training experience had significantly greater adherence to LLI implementation, a factorial ANOVA was employed. The analysis included three independent variables (training experiences A, B,

and D) with two levels each (Yes or No), and two dependent variables (mean percent implementation based on self report data and mean percent implementation based on video data). There was no significant effect of having participated in training experience A ($F(1, 14) = .41, p > .05$), B ($F(1, 14) = .03, p > .05$), or D ($F(1, 14) = 1.02, p > .05$) on implementation adherence based on self report data. There was also no significant effect of having participated in training experience A ($F(1, 14) = .45, p > .05$), B ($F(1, 14) = .00, p > .05$), or D ($F(1, 14) = .91, p > .05$) on implementation adherence based on video data.

Table 6
Percent Implementation Adherence Based on LLI Training Experience

Training Experience	Video Data				Self Report Data		
	Yes/No	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>M</i>	<i>SD</i>	<i>SE</i>
A: Watched professional development DVDs	Yes	89.76	5.91	2.98	90.03	5.68	3.32
	No	87.26	6.03	2.57	87.39	7.73	2.86
B: Attended 3-day LLI introductory training in district	Yes	88.58	5.39	2.25	89.21	6.64	2.51
	No	88.43	8.94	4.34	88.21	7.80	4.83
D: Other	Yes	90.65	6.01	2.55	91.24	6.61	2.84
	No	86.37	5.45	3.50	86.18	6.18	3.90

Experience with LLI and Reading Recovery. The means, standard deviations, and ranges of the number of previous LLI student groups and Reading Recovery students that teachers have taught, and the number of previous months they have implemented LLI and Reading Recovery are listed in Table 7. Overall, there was wide variability in teacher responses for each survey item assessing LLI and Reading Recovery experience.

Table 7

Previous LLI and Reading Recovery Experience

Experience	<i>N</i>	<i>M</i>	<i>SD</i>	Range
Number of Previous LLI Student Groups	14	2.75	2.61	0 – 10
Number of Previous Months Implemented LLI	14	10.86	7.57	0 – 23
Number of Previous Reading Recovery Students	13	40.15	51.17	0 – 144
Number of Previous Months Implemented Reading Recovery	14	68.86	72.06	0 – 185

To determine whether previous experiences with LLI or Reading Recovery significantly affected LLI implementation adherence, a factorial ANOVA was conducted. The analysis included four independent variables (i.e., each area of previous LLI and Reading Recovery experience listed above) with two levels each (i.e., high or low based on a median split) and two dependent variables (i.e., mean percent adherence based on self report data and mean percent adherence based on video data). Table 8 lists the means, standard

errors, and standard deviations of implementation adherence for each area of previous experience based on median splits.

Table 8

Percent Implementation Adherence Based on Previous LLI and Reading Recovery

Experience

Experience	Median Split	Video Data			Self Report Data		
		<i>M</i>	<i>SD</i>	<i>SE</i>	<i>M</i>	<i>SD</i>	<i>SE</i>
Number of Previous LLI Student Groups	≥ 2.5	92.49	5.79	2.37	92.28	6.49	2.56
	< 2.5	83.04	5.24	2.79	84.38	4.68	3.01
Number of Previous Months Implemented LLI	≥ 10.0	84.36	6.51	2.92	88.61	7.03	3.14
	< 10.0	91.17	5.88	2.54	88.06	5.87	2.73
Number of Previous Reading Recovery Students	≥ 30.0	90.49	6.41	2.97	87.12	9.11	3.21
	< 30.0	85.04	6.44	3.07	89.55	4.66	3.31
Number of Previous Months Implemented Reading Recovery	≥ 51.0	85.10	5.43	3.05	90.11	8.29	3.29
	< 51.0	90.43	6.89	2.79	86.55	4.13	3.01

There were no significant main effects of number of previous months implementing LLI ($F(1, 13) = 2.41, p > .05$), number of previous Reading Recovery students taught ($F(1, 13) = 1.15, p > .05$), or number of previous months implementing Reading Recovery ($F(1, 13) = 1.21, p > .05$) on video implementation levels. There was, however, a significant main

effect of the number of previous LLI student groups taught on video implementation levels ($F(1, 13) = 5.52, p < .05$). Teachers who had previously led at least 2.5 LLI student groups had higher average implementation adherence than teachers who had led fewer than 2.5 LLI student groups. There were no significant main effects of number of previous LLI student groups taught ($F(1, 13) = 3.32, p > .05$), number of previous months implementing LLI ($F(1, 13) = .01, p > .05$), number of previous Reading Recovery students taught ($F(1, 13) = .20, p > .05$), or number of previous months implementing Reading Recovery ($F(1, 13) = .46, p > .05$) on self report implementation levels.

Experience with Guided Reading. When teachers provided written responses to the survey question, “What other reading interventions have you implemented?” The most frequently occurring response was Guided Reading. Therefore, the effect of previous experience with Guided Reading on LLI implementation adherence was explored. Table 9 lists the means and standard deviations of percent implementation adherence for teachers with and without previous experience with Guided Reading.

Table 9

Percent Implementation Adherence Based on Experience with Guided Reading

Guided Reading	N	Video Data		Self Report Data	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Yes	5	89.15	6.91	90.49	6.76
No	10	88.26	5.50	88.56	6.71

An ANOVA was conducted to compare implementation adherence levels between teachers who had had experience with Guided Reading and teachers who had not had experience with Guided Reading. Previous experience with Guided Reading was the independent variable with two levels, and the dependent variables were percent implementation adherence based on self report data and percent implementation adherence based on video data. There were no significant main effects of experience implementing Guided Reading on video implementation adherence ($F(1, 15) = .07, p > .05$) or on self report implementation adherence ($F(1, 15) = .28, p > .05$).

Perceptions of Monitoring and Feedback Methods

The researcher was interested in understanding how teachers perceived the LLI adherence monitoring and feedback methods used in this study. There were two research questions that covered this topic, including research question one and four. These questions asked: (a) To what extent do teachers perceive self-report checklists and videotaped sessions of their implementation of an intervention as helpful, feasible, and comfortable to participate in, and (b) To what extent do teachers perceive these feedback sessions as helpful, feasible, and comfortable to participate in?

Two composite variables were created for each area of helpfulness, feasibility, and level of comfort. One composite variable was the sum of ratings for each of the two monitoring methods used in this study and listed in the survey, and one was the sum of ratings for each of the four feedback methods used in this study and listed in the survey. Using this same approach of summing ratings, there were six composite ratings total: helpfulness of monitoring methods, helpfulness of feedback methods, feasibility of

monitoring methods, feasibility of feedback methods, level of comfort with monitoring methods, and level of comfort with feedback methods. Ratings of importance were overall global ratings of the importance of monitoring implementation of LLI and obtaining feedback about LLI implementation based on single survey items, so there was no need to create composite variables of importance.

The means and standard deviations of pre- and post- survey ratings of monitoring and feedback methods are listed in Tables 10 and 11. Teachers perceived the monitoring and feedback methods used in this study as helpful, feasible, and comfortable to participate in at pre- and post- ratings. They perceived receiving feedback on their implementation of LLI as important during pre- and post- ratings. However, their ratings for importance of monitoring their implementation of LLI were neutral on pre- and post- surveys.

Table 10

Pre- and Post- Ratings of LLI Monitoring Methods

Area	Pre Ratings			Post Ratings		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Feasibility	15	9.00	1.51	15	11.13	.92
Helpfulness	15	9.73	1.75	15	10.60	1.50
Level of Comfort	15	9.60	1.88	15	11.60	.74
Importance	15	4.20	1.42	15	4.80	1.32

Note. Ratings for Helpfulness, Feasibility, and Level of Comfort of monitoring methods can range between 2 – 12. Given the anchors of the scale, ratings between 2 – 5.99 may be considered evidence that the respondent did not find the monitoring methods helpful, feasible, or comfortable. Ratings between 9 – 12 may be considered evidence that the respondent did find the monitoring methods helpful, feasible, and comfortable. Ratings between 6 – 8.99 may be considered neutral. Ratings for Importance can range between 1 – 6. Given the anchors of the scale, ratings between 1 – 2.99 may be considered evidence that the respondent did not find monitoring their implementation important. Ratings between 5 – 6 may be considered evidence that the respondent did find monitoring their implementation important. Ratings between 3 – 4.99 may be considered neutral.

Table 11

Pre- and Post- Ratings of LLI Feedback Methods

Area	Pre Ratings			Post Ratings		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Feasibility	14	19.14	2.28	14	22.21	2.52
Helpfulness	14	20.86	2.45	14	21.29	2.30
Level of Comfort	14	20.57	3.46	14	22.86	1.75
Importance	15	5.07	1.10	15	5.07	1.03

Note. Ratings for Helpfulness, Feasibility, and Level of Comfort of feedback methods can range between 4 – 24. Given the anchors of the scale, ratings between 4 – 11.99 may be considered evidence that the respondent did not find the feedback methods helpful, feasible, or comfortable. Ratings between 17 - 24 may be considered evidence that the respondent did find the feedback methods helpful, feasible, or comfortable. Ratings between 12 – 16.99 may be considered neutral. Ratings for Importance of feedback methods can range between 1 – 6. Given the anchors of the scale, ratings between 1 – 2.99 may be considered evidence that the respondent did not find receiving feedback of their implementation important. Ratings between 5 – 6 may be considered evidence that the respondent did find receiving feedback of their implementation important. Ratings between 3 – 4.99 may be considered neutral.

In addition to understanding how teachers perceived the monitoring and feedback methods used in this study, the researcher was also interested in knowing how teacher perceptions may have changed from pre- to post-ratings. Two research questions covered this area of inquiry, including research questions two and five. These questions asked: (a) How do teacher perceptions of implementation monitoring methods change as they gain more experience with them? and (b) How do teacher perceptions of implementation feedback sessions change as they gain more experience with them?

A total of eight paired *t*-tests were employed to compare pre- and post-ratings of importance, helpfulness, feasibility, and level of comfort of LLI monitoring and feedback methods. Holm's sequential Bonferroni procedures were used to examine differences. Results for each paired comparison are listed in Table 12. There were significant increases in feasibility of monitoring ($t(14) = -4.90, p < .007$) and feedback ($t(13) = -4.01, p < .009$) methods, and level of comfort with monitoring ($t(14) = -4.47, p < .008$) and feedback ($t(13) = -3.04, p < .01$) methods. There were no significant changes in ratings of helpfulness of monitoring ($t(14) = -1.75, p > .02$) and feedback ($t(13) = -.59, p > .025$) methods, the importance of having implementation of LLI monitored ($t(14) = -2.81, p < .013$), or the importance of receiving feedback about LLI implementation ($t(13) = .00, p > .05$).

Table 12

Changes in Pre- and Post-Ratings of Monitoring and Feedback Methods

Paired Comparisons	<i>Df</i>	<i>T</i>	<i>P</i>	<i>SE</i>
<u>Monitoring Methods</u>				
Pre-Importance – Post-Importance	14	-2.806	.014	.214
Pre-Helpfulness – Post-Helpfulness	14	-1.746	.103	.496
Pre-Feasibility – Post-Feasibility	14	-4.904	.000*	.435
Pre-Level of Comfort – Post Level of Comfort	14	-4.472	.001*	.447
<u>Feedback Methods</u>				
Pre-Importance – Post-Importance	13	.000	1.000	.276
Pre-Helpfulness – Post Helpfulness	13	-.592	.564	.724
Pre-Feasibility – Post-Feasibility	13	-4.007	.001*	.766
Pre-Level of Comfort – Post Level of Comfort	13	-3.040	.009*	.752

* Significant at $p < .05$ with Holm's sequential Bonferroni corrections

Teachers' Verbal Content

The recommendations that teachers shared during feedback sessions for improving implementation are listed in Appendix L. Some of the listed recommendations were repeated across feedback sessions and across feedback groups; in those cases, the recommendation is only listed once. Some recommendations were related to improving the quality of

implementation rather than improving adherence. Many of the teachers' recommendations were targeted at prompting or praising, saving time, and managing student behavior.

Teachers' responses to the survey question, "Please provide any suggestions you have about how to make implementation feedback sessions with teachers more successful" are listed in Appendix M. Responses varied, with some teachers expressing wanting practice filling out checklists together, more flexibility to implement LLI to fit ESL students, shifting some focus onto how students are responding to LLI, and more individualized feedback. There were also some positive comments written in response to the survey question. For example, one teacher expressed finding it helpful to meet with colleagues to compare notes, and one teacher liked the anonymity of the information so that people feel comfortable sharing.

Additional Analyses

On the pre-survey, teachers reported having a range of current LLI responsibilities (i.e., LLI student groups currently leading, number of days per week responsible for implementing LLI). The means, standard deviations, and ranges for the number of current student groups and the number of days responsible for implementing LLI each week are listed in Table 13.

Table 13

Summary of Current LLI Responsibilities

LLI Responsibilities	<i>N</i>	<i>M</i>	<i>SD</i>	<i>Range</i>
# Current LLI Student Groups	13	2.08	1.55	1 – 6
# Days Implementing LLI per Week	14	4.57	.62	3 – 5

To determine if teachers with different LLI responsibilities had significantly different implementation adherence levels, a factorial ANOVA was used containing two independent variables with two levels each and two dependent variables. Number of current LLI student groups and number of days implementing LLI per week were the independent variables, and levels were high or low based on median splits. Dependent variables were mean percent adherence based on self report data and mean percent adherence based on video data. Table 14 lists the means, standard errors, and standard deviations of implementation adherence for each area of LLI responsibilities based on median splits.

Table 14

Percent Implementation Adherence based on LLI Responsibilities

LLI Responsibilities	Median Split	Video Data			Self Report Data		
		<i>M</i>	<i>SD</i>	<i>SE</i>	<i>M</i>	<i>SD</i>	<i>SE</i>
Number of Current LLI	≥ 2.0	87.52	7.13	2.74	87.32	6.40	2.92
Student Groups	< 2.0	89.07	5.61	2.49	89.25	7.64	2.64
Number of Days	≥ 5.0	87.16	6.75	2.49	90.71	6.56	2.64
Implementing LLI per Week	< 5.0	89.43	5.01	2.74	85.86	6.28	2.92

There were no significant main effects of number of current LLI student groups ($F(1, 13) = .17, p > .05$), or number of days per week implementing LLI ($F(1, 14) = .37, p > .05$), on implementation levels based on video data. There were also no significant main effects of number of current LLI student groups ($F(1, 13) = .23, p > .05$), or number of days per week implementing LLI ($F(1, 14) = 1.48, p > .05$) on implementation adherence based on self report data.

Teachers who responded to the survey question about primary teaching assignment fell into one of three categories: Reading Specialist, Literacy Coach, or Other. Teachers who fell into the Other category held primary teaching assignments of English as a Second Language (ESL), or Exceptional Children (EC) teachers. An ANOVA was conducted to compare implementation adherence levels across primary teaching assignment. Means and

standard deviations are listed in Table 15. The two dependent variables were percent implementation adherence based on self report data, and percent implementation adherence based on video data. There were no significant effects of primary teaching assignment on video implementation levels ($F(2, 14) = 1.93, p > .05$) or self report implementation levels ($F(2, 14) = 1.35, p > .05$).

Table 15

Percent Implementation Adherence based on Primary Teaching Assignment

Primary Teaching Assignment	N	Video Data		Self Report Data	
		M	SD	M	SD
Reading Specialist	6	89.73	6.34	92.07	7.19
Literacy Coach	5	90.21	4.64	86.73	6.83
Other	3	82.42	5.24	85.83	2.67

CHAPTER 6

Discussion

This chapter includes discussions about the frequency with which LLI was implemented and qualities of the LLI checklists, including reliability, specificity/flexibility of the items, and missing indicators of quality. Following that, implementation adherence levels are reviewed and issues that may have influenced implementation adherence (e.g., repeated and split sessions, influence of self reports, reactivity of observations, content of feedback sessions) are discussed. Issues regarding teacher perceptions of monitoring and feedback methods and factors that were considered to affect implementation adherence levels (e.g., previous training and experience, current LLI responsibilities, primary teaching assignment) are also addressed. Finally, although limitations and future directions for practitioners and researchers are addressed throughout each topic as they relate to the results of this study, additional limitations and future directions are included in the last part of this discussion.

Intervention Frequency

There was wide variability in the frequency, or dose, of LLI sessions throughout the duration of this study. For example, teachers implemented LLI for 47.06% - 94.12% of the total school days. Disregarding the teacher who left for maternity leave, teachers implemented a range of 16 – 31 whole LLI sessions during this study. Only two teachers implemented LLI at the developers' recommended frequency. There are indications that students receive greater gains in their instructional reading level when they receive LLI at the recommended frequency compared to students who do not receive LLI at the recommended

frequency (Heinemann, 2011). Similar to results from this current study, teachers in the Heinemann study implemented LLI at a wide range of frequencies.

That some student groups were receiving LLI at a much lower frequency than other student groups is concerning when considering the types of decisions that school personnel make when there is an RTI model in place. If students are getting much less than, and in some cases only half of, the recommended frequency of an intervention, those students understandably may be more likely to show a slower rate of progress. As a result, they may be more likely to be referred for an evaluation to determine special education eligibility. In real practice settings, deviations from an intervention's recommended frequency are likely to be common (e.g., Benner, Nelson, Stage, & Ralston, 2010), such that school administrators may benefit from knowing how to support teachers so that they can implement interventions at their recommended frequency.

Comments that teachers made during this study about reasons why they could not implement LLI during school days may be informative in that regard. They mentioned a host of interfering activities, such as end-of-grade (EOG) testing practice, teacher workshops, school assemblies, field trips, individual education program (IEP) team meetings, and other meetings. They also expressed that delayed openings modified the school schedule so that there was not a time slot to implement LLI. Feedback from teachers in other studies also indicates that there is not enough planning time to prepare LLI lessons, that administration does not protect time for daily uninterrupted LLI teaching, and that it is difficult to coordinate scheduling of LLI groups with classroom teachers' schedules (Harrison et al., 2008; Ransford-Kaldon et al., 2010).

The manner in which LLI frequency was measured in this current study (i.e., the number of teacher-completed LLI implementation checklists) does present some limitations. Assessing frequency in this way assumes that teachers completed the checklists every time LLI was implemented. Nonetheless, the consistency between findings in this study regarding LLI frequency and teacher comments about interfering factors suggests that school administration may benefit from providing teachers with more support to implement LLI with greater frequency if they choose to continue using LLI as a tiered intervention. For example, they might ask SST or IEP coordinators to schedule meetings before or after school. They also might aid in coordinating or revising schedules between classroom teachers and LLI teachers so that students may receive their interventions more regularly.

Implementation Adherence Checklist

Reliability. The overall percent agreement between self report and video data and between researcher and research assistants was good; however, the agreement between researcher and research assistants was even better. There was also wide variability in percent agreement between self report and video data but not between researcher and research assistants. The overall mean and range of inter-observer percent agreement for this study is similar to that found in previous school-based implementation adherence studies (e.g., Coding et al., 2005; DiGennaro, 2005; Jones et al., 1997). Those who have examined the reliability between self report and other sources of implementation assessment have found varying levels of percent agreement. Although overall mean levels of agreement may be adequate, it is not uncommon for a substantial amount of variability to result (e.g.,

Hagermoser Sanetti & Kratochwill, 2011) and for self reports to result in higher implementation levels than observations (e.g., Noell et al., 2005; Wickstrom et al., 1998).

The research assistants received more in-depth training regarding how to fill out the LLI implementation checklists, including practice filling them out after obtaining some initial video files from teachers. In contrast, teachers did not receive any practice opportunities to complete the checklists. They simply listened to the researcher explain each step on the checklist during the introductory meeting and had a chance to ask questions. Although teachers indicated that they understood each step on the checklist during the introductory meeting, not having practice completing the checklist likely contributed to the lower and more variable percent agreement between self report and video data. A couple of teachers mentioned on surveys that it would have been helpful to have watched a recorded session together while filling out and discussing the checklist.

It was challenging to provide teachers with practice opportunities to fill out the checklists for several reasons. There were no videos of LLI implementation available to use with teachers before data collection began, and the IRB approval included the provision that only the researchers would be viewing videos of teachers implementing LLI. However, in retrospect it may have been possible for the researcher to simulate an LLI session with the research assistants and create videos demonstrating examples of what would and would not count as completing steps on the checklists. This approach has been employed in a residential school-based implementation study of behavioral interventions for students with Autism (Pelletier, McNamara, Braga-Kenyon, & Ahearn, 2010). A second introductory

meeting with teachers could then be held that would provide teachers with practice filling out the checklists while watching the videos.

It is also possible that some teachers may not have remembered what steps they completed when filling out the daily checklists. The researcher emphasized at the introductory meetings and feedback sessions the importance of completing it as soon as possible after implementing the intervention, or possibly during the intervention, in order to better remember what steps were implemented. However, it is probable that other events or responsibilities immediately following LLI sessions may have made it too difficult to complete checklists soon after the sessions were implemented. A clear benefit of having video recorded sessions is that the observer does not have to rely on memory to assess whether a step was present or not. The videos can be rewound for the purpose of re-examining certain steps, which also may partly explain the higher and less variable percent agreement between researcher and research assistants.

Specificity of items. Between self report and video observations, the most frequent disagreements were with steps that included having a discussion with students about the new book after they read it, introducing the phonics principle, and providing an opportunity to practice the phonics principle. Between researcher and research assistants, the most frequent disagreements were with introducing a phonics principle, inviting students to read previous books, and using at least one prompt or one verbal praise statement when rereading previous books.

Some items on the checklist with the highest percent disagreement indicate some need for those items to be revised, or for more examples of behavioral indicators of those

steps to be included on the checklists. It may have also been helpful to include examples of behaviors that would not count as implementing certain steps on the checklists. During reliability discussions occurring in research meetings and feedback sessions, the researcher often answered questions about what constitutes a phonics principle, what constitutes a demonstration of a phonics principle, and what constitutes a praise statement. Another topic of discussion during research meetings was the importance of carefully listening to the entire session, as some teachers informed their students that they would be finishing a book they started the previous day. In those cases, re-reading was not occurring, and those instances contributed to disagreements on the presence of the initial re-reading steps.

However, there was some indication that providing further specifications for LLI steps may not necessarily be the best approach. Some teachers expressed wanting more flexibility in how they implement LLI (e.g., to fit ESL student needs). There seemed to be some disagreement and confusion regarding how scripted or specific the LLI steps should be, or whether the steps were intended to be more general, and thus open to flexibility and teacher interpretation. LLI was considered a more scripted intervention by the literacy director and RTI coordinator who partnered with the researcher in creating the checklists. There are also indications that other researchers are perceiving LLI as a scripted intervention with less teacher flexibility when compared to interventions like Reading Recovery (Harvey, 2011). However, the developers of LLI have expressed on their website and implementation blog that LLI is not a lesson script, but a framework of core instructional procedures and suggested routines that teachers can implement in a way that suits their student group (Fountas & Pinnell, 2010). The LLI checklists used in this study were revised, based on

some of the developers' recommendations, to give teachers more flexibility in how they implement the steps.

It will continue to be a challenge for researchers and practitioners to balance specificity and flexibility in any measure of implementation adherence, particularly when it is not entirely clear which steps are essential to implement. With regard to school-based interventions, it is uncommon for essential steps and behavioral indicators of those steps to be clearly identified (Fixsen et al., 2005). Writing intervention steps in more specific ways may help increase reliability of an implementation adherence measure, yet caution must be made not to ignore the importance of teacher flexibility and decision-making skills so that individual student needs may be met. The importance in making intervention manual guides rather than a set of rigid routines has historically received attention in clinical psychology (e.g., Kendall, Chu, Gifford, Hayes, & Nauta, 1998). However, Kendall et al. have noted that a flexible approach to manualized interventions requires that the implementers understand the intervention on multiple levels, which may require more extensive training and experience. Other researchers have stated that, although greater specificity in adherence monitoring measures may help make more high-stakes service delivery decisions, it may detract from the practicality of completing the assessment (Schoenwald, Garland, Southam-Gerow, Chorpita, & Chapman, 2011).

Indicators of quality. Considering that essential steps of LLI are not clearly stated and that the developers of LLI emphasize the importance of teacher decisions in fitting the intervention to the needs of their student groups, including a measure of quality of implementation may have been a helpful addition to the LLI checklists. Although teachers

often provided good recommendations during feedback sessions to improve adherence to the LLI steps as they were written in the checklists, some of the teachers also shared recommendations related to issues of quality (e.g., using prompts that are appropriate to fit a certain reading difficulty). It appeared as though teachers were willing to discuss both issues of adherence and quality, so including a measure of quality for certain steps may have helped to guide some of the problem-solving discussions.

After the plans for this study were proposed and data collection was in place, there was one study released, funded by Heinemann Publishing, that monitored implementation of LLI using indicators of quality (Ransford-Kaldon et al., 2010). They used the LLI Observation Tool (LLIOT), which contained 20 items on a 4-point scale ranging from Not Observed, Needs Improvement, Acceptable, and Excellent. Researchers conducted two random observations of each LLI group. Items focused on implementation of the main LLI lesson components, use of general teacher strategies that should be present in a successful literacy intervention, and factors such as organization, pacing, and the availability of materials. The researchers provided observers with a manual to complete the ratings, which included definitions of terms and examples and explanations of target strategies. Observers also were provided with practice opportunities to use the rating scales. A similar approach may have been helpful in assessing quality for the current study. However, it was thought that focusing on adherence would be more practical for sustained practice in schools, as adherence typically lends itself to more distinct behaviors with less subjective judgments (Hamre et al., 2010).

It is unclear, however, what kind of reliability data may have resulted from incorporating rating scales to assess quality in the LLI checklists. Interestingly, Ransford-Kaldon et al. (2010) did not report any reliability data. It seems logical to expect variation in ratings, as they are more subjective than a checklist of adherence behaviors. Perhaps researchers can develop ways of incorporating indicators of quality with less subjective approaches (i.e., without relying on vague rating scales). For example, a frequency count of the prompts/praises statements that teachers used that were appropriate for the type of reading behaviors that students displayed may be one way to more quantitatively assess quality of LLI implementation.

Implementation Adherence Levels

The parameters are not well established in the literature regarding levels of implementation adherence for school-based interventions. However, baseline levels tend to show quite a bit of variability. For example, teachers have implemented interventions before receiving feedback at levels ranging from 0% to 100% (Noell et al., 1997) and from 0% to 95% (Hagermoser Sanetti & Kratochwill, 2009). As Noell et al. (2005) discussed, one pattern typically emerges when teachers are left with intervention plans to implement without receiving any implementation support or feedback. Between two to three weeks, implementation levels start to show a significant decline (e.g., Noell et al., 1997). Another predictable pattern is the immediate increase and less variability in implementation adherence when feedback sessions are put in place (e.g., DiGennaro-Reed, Coddling, Catania, et al., 2010; Duhon et al., 2009).

Data from the current study, however, are not consistent with the more familiar patterns typically seen in this line of research. Implementation adherence data were relatively high across all data collection phases. Mean baseline levels across each feedback group ranged from 87.78% to 94.45% on video data and from 80.54% - 91.67% on self report data. After feedback sessions were introduced, mean levels across each group ranged from 77.78% to 94.44% on video data and from 84.89% to 83.52% on self report data. Standard deviations remained within a range between 2.78 to 16.85.

An examination of trendlines across the entire study for each group revealed some very slight changes in either direction, and some flat lines. Group A showed a slight downward trend in percent implementation adherence across LLI sessions based on self report data. This was likely due to initially very high baseline levels. Group A also exhibited a slight upward trend based on video data, likely due to a few outliers after the first feedback session. Group B demonstrated a slight upward trend in percent implementation adherence based on self report and a flat trend based on video data. Finally, Group C showed a very small upward trend based on self report data, which may have been steeper without the influence of a couple of outliers after the second feedback session, and a flat trend based on video data.

Influence of assessment methods. Certain qualities of the LLI checklist may partly explain some of the nonsignificant effects across time, and the consistently high implementation adherence levels for most teachers. As discussed above, incorporating indicators of quality of implementation rather than just adherence, and making steps more specific may have resulted in more variability across all teachers. Making steps more

specific to include more stringent criteria may have led to wider variability in implementation adherence. There seemed to be variety in the way that teachers were prepared for LLI sessions, effectively managed time and student behavior, and how they effectively prompted and praised students based on their reading behaviors. In hindsight, these are all aspects of quality that might have been useful to measure.

It is possible, however, that there may not have been much variability or significant changes in implementation based on quality, either. Less is known about variability and changes in quality of implementation, as it is not frequently assessed like adherence is. Researchers have recently proven that quality of implementation is sensitive to changes over time, although the changes are not quite as drastic as those found in implementation adherence (e.g., Hagermoser Sanetti & Fallon, 2011). In assessing the quality of LLI implementation, Ransford-Kaldon et al. (2010) demonstrated that many of the lesson components were rated “Acceptable” or “Excellent” over 90% of the time, and it was rare for any component to be rated less than “Acceptable.” Teachers were also rated highly on their use of literacy instructional strategies (e.g., modeling and encouraging fluent oral reading, assisting students in problem-solving) and management of the learning environment (e.g., preparing materials, keeping organized, appropriately pacing the lesson, and engaging students). Overall, the lessons were delivered as designed 96.3% of the time, and there were some significant changes (from “Acceptable” to “Excellent”) in teachers’ management of the learning environment. However, the authors did not report any reliability data from the rating scales, so it is unclear what kind of agreement would have resulted from using rating scales to assess quality.

Other assessment factors that may have led to consistently high and less variable implementation adherence levels throughout the duration of this study were the introduction of the self report checklist and reactivity effects of being video recorded. Being exposed to a list of LLI steps and using that list to monitor one's implementation may have led to higher implementation levels. This is a possibility that cannot be assessed in this study, as teachers viewed and filled out the checklist from the very beginning of the study. Future studies can help address this confounding factor by waiting to introduce the self report checklist after using observations or permanent products only for some time, similar to how Hagermoser Sanetti and Kratochwill (2009) examined the influence of a self report assessment.

Researchers recently have demonstrated how introducing self report adherence measures can increase implementation adherence levels (Hagermoser Sanetti & Fallon, 2011; Plavnick, Ferreri, & Maupin, 2010). The video recording method used in this study may have inflated implementation adherence levels too, as teachers may have been more pressured than normal to demonstrate adequate completion of all LLI steps. However, it was also thought that using video recording would reduce some of the reactivity of direct observations, as previous researchers have discussed (Breitenstein et al., 2010).

The inclusion of repeated sessions in analysis and the manner in which split sessions were addressed may have also led to higher implementation levels throughout the study. During the cases where teachers repeated sessions based on student need, any improvements in implementation adherence may be due to practice having implemented that same session before. This happened in 3.44% of the total sessions. Because implementation adherence was analyzed per session rather than per day, sessions that were split across more than one

day tended to receive high implementation adherence levels. In those cases, teachers sometimes had more time to implement each step, while the frequency of sessions was typically decreasing unless they broke the cycle of split sessions. Split sessions (6.8% of total sessions) may have inflated adherence levels based on self report data but not for video data, as they were omitted from video analysis. To this author's knowledge, there are no studies within this line of research that address analysis of intervention sessions split across more than one day.

Split sessions are probably needed until improvements to LLI are made that would allow teachers to more successfully get through all essential steps within the allotted 30-minute intervention period. When teachers are asked about areas of improvement for LLI, they most frequently mention an inability to adequately complete a full LLI lesson in one 30-minute session, that the system is just too fast-paced for some students, and that the time required to prepare lessons is too extensive (Harrison et al., 2008; Ransford-Kaldon et al., 2010). There are a lot of transitions between activities within an LLI session. Successfully completing a full lesson in one day likely requires a well-behaved student group or good behavior management skills, a student group that does not need a lot of extra explanations or examples, and enough preparation time to have all materials organized beforehand.

Considering these factors, practitioners who are incorporating measures of implementation adherence and ways of supporting better implementation adherence will need to determine if they will focus on adherence for a whole session across several days or adherence for the steps that teachers have time to implement within a single day. Assessing both adherence to an intervention session's planned content as well as the frequency with

which it is implemented may help practitioners identify when there may be more frequent intervention sessions with lower adherence, or fewer intervention sessions implemented with more adherence. Recent studies have demonstrated how including only adherence or only frequency may provide misleading assessments of implementation integrity (Hagermoser Sanetti & Fallon, 2011). Having high adherence to just a few sessions may mean that, although students are benefitting from receiving all aspects of the intervention content, they are not receiving it at the frequency they might need in order to respond to the intervention.

Practitioners, researchers, and intervention developers will need to be familiar with what it takes to fluently and effectively implement all steps in an intervention plan. Having this knowledge will help to communicate practical recommendations for intervention length and frequency, and will also help members on student support or RTI teams more realistically specify the frequency and duration of interventions that students will receive. Teachers in this study were responsible for implementing LLI for an average of 4.57 sessions per school week (range = 3 – 5 days per week). Unless they can be provided with more uninterrupted time for implementation, along with adequate planning time to prepare for sessions, documentation on RTI forms and commitments made to parents should reflect what is actually happening with regard to frequency.

Influence of feedback session content. There are also some aspects of the group feedback sessions that may have interfered with making a significant impact on implementation levels. Teachers were shown overall mean percent implementation levels during feedback sessions, and within group variability in implementation adherence levels was quite high within some data collection phases. Consequently, teachers with the lowest

implementation levels may have thought they were implementing LLI with much greater adherence than they really were. Although it may have resulted in misleading representations of how an individual teacher was actually implementing the intervention, reporting the group's average implementation levels may have been beneficial in fostering shared group accountability. Presenting average implementation levels in group settings has been effective in previous school-based and I/O research when combined with opportunities for groups to set implementation goals (Burns et al., 2008; Pritchard et al., 1988). It is not clear whether teachers in this study felt a sense of shared accountability, however, as this was not measured on surveys, and group goals were not set during feedback sessions.

Some teachers in this study reported wanting more individualized feedback or thought it would be helpful to view their own videos. Providing teachers with more individualized feedback would likely require a greater time commitment from the persons responsible for analyzing the data for feedback, and it may also require a greater time commitment from the teacher. One group of researchers recently studied how video modeling during feedback sessions on implementation affects adherence levels (DiGennaro-Reed et al., 2010). After verbally summarizing the teacher's implementation data, they played a model implementation session, pausing the video before each step incorrectly implemented or missed the previous day in order to draw teachers' attention to those steps. It would have been interesting to study the effects of using this method in the current study, utilizing teachers' recorded LLI sessions to play back their sessions to them as a self-reflective feedback strategy.

It also may have been more effective to display teachers' individual implementation data during the group feedback sessions. Duhon and colleagues (2009) demonstrated that presenting teacher's individual implementation data in RTI meetings was an effective way of increasing implementation adherence levels, hypothesizing that the public accountability of having one's implementation displayed is a form of social pressure. Teachers in this study, however, liked the anonymity of the information so that they felt comfortable sharing. The potential for embarrassment when teachers' implementation adherence data is presented in teams has been recently discussed (Barnett, Hawkins, & Lentz, 2011), and may prevent teachers from contributing to productive, collaborative discussions.

Teachers in the current study openly collaborated and shared a variety of good recommendations to improve implementation, particularly related to prompting and praising students while they are reading, managing time throughout the session, and managing student behavior. Perhaps there is a practical and effective way to blend the benefits of both group and individual feedback (e.g., collaboration with those who are implementing the same intervention for problem-solving ideas along with the provision of confidential, individualized feedback). For example, teachers could be provided with a handout summarizing their own individual implementation data before being asked to share their experienced difficulties implementing LLI and their ideas of improving implementation of LLI.

It is also possible that the feedback sessions without a visual presentation of student progress monitoring data are not as effective as feedback sessions without such data. To this author's knowledge, there are no school-based implementation adherence studies comparing

the effects of feedback sessions with and without presentation of student progress monitoring data. Teachers may be more motivated to continue implementing the intervention or modify their adherence to an intervention based on how the student is progressing. One teacher in this study expressed wanting to shift the focus during these meetings onto how students are responding to LLI rather than how LLI is being implemented. Although there is a progress monitoring system built into the LLI system that teachers are responsible for using, perhaps they would benefit from seeing the student progress monitoring data summarized and presented in a visual manner along with their implementation data. Previous researchers who have employed this method have demonstrated their feedback sessions to be effective at increasing teachers' implementation adherence levels (e.g., DiGennaro, 2005; Duhon et al., 2009; Mortenson & Witt, 1998).

Perceptions of LLI Adherence and Understanding

Overall, teachers indicated agreement that they understood the essential steps of LLI on pre- and post-survey ratings. These results are consistent with those found in previous research where teachers were asked about their understanding of the goals and implementation procedures of LLI (Harrison et al., 2008; Ransford-Kaldon et al., 2010). In the current study, the pre-survey was completed after teachers had viewed the LLI implementation checklists, which may have enhanced their perceptions of how well they understood the essential steps. Teachers also may have been concerned on all pre-ratings to rate themselves any lower, even with reassurance from the researcher that data collected were not shared with employers and had no influence on employment. Teachers reported significantly greater understanding of the essential LLI steps on post-ratings than on pre-

ratings. Perhaps filling out self report checklists at every intervention session and participating in the group implementation feedback sessions (i.e., obtaining more frequent exposure to discussions of essential LLI steps) influenced an even better understanding of the essential LLI steps. Having more experience implementing LLI throughout the school year may have also led to an increased understanding.

Teachers' pre-ratings of agreement to the statement that they implement the LLI framework with accuracy the majority of the time fell within the neutral range. Post ratings fell within the agreement range, indicating that teachers may have developed a better understanding of their actual implementation adherence. Data containing percent implementation adherence suggest that teachers did implement the LLI framework with accuracy the majority of the time. There were no significant differences between pre- and post-ratings of adherence to the LLI framework. That percent implementation adherence showed no significant changes provides further support that the teacher's ratings of their accuracy to the LLI framework were valid.

Factors Affecting Implementation Levels

Several parametric ANOVAs were conducted to examine the influence of various factors on LLI implementation adherence levels. Across all analyses, the small sample size and high within group variability render discovering statistically significant results difficult. Nonetheless, there are some findings and descriptive information that lead to some potential recommendations and future directions for practitioners and researchers.

Previous LLI training. Across all LLI training experiences included in the analysis (i.e., watching the professional development DVDs, attending the 3-day LLI introductory

training within the school district, and other trainings), the mean percent implementation adherence was higher for teachers who had participated in that particular training experience than for teachers who had not. This is true with regard to self report and video data. However, there was no statistically significant effect of having participated in each training experience. The “other” category encompassed a wide range of training experiences, from attending other workshops, observing other LLI teachers, or even co-training other teachers to implement LLI. These activities are similar to other training experiences that LLI teachers have recently expressed participating in (Heinemann, 2011). Putting these experiences together in one category may not provide the best assessment of a uniform training category. Gathering more information regarding how much direct training activities were involved in each training experience (e.g., role-playing, practice implementing) or how much each training experience incorporated naturalistic settings to practice implementation may have been more helpful. Previous research suggests that these training aspects enhance future implementation adherence levels (Sterling-Turner et al., 2001; Taylor & Miller, 1997; Wasserman, 2009).

However, these results do open the possibility that less expensive and resource-demanding training experiences (e.g., watching the DVDs, observing other teachers) can be just as effective at training teachers to implement the essential LLI steps as more expensive training experiences (e.g., attending multi-day workshops provided by LLI’s developers or publishers). Future studies may consider assessing more detailed information about training experiences (e.g., amount of time spent practicing implementing LLI, performance feedback provided to teachers during training, the number of example lessons displayed) in order to

help identify the least resource-demanding training package associated with adequate implementation adherence levels. Ongoing LLI training activities that might have occurred during this study were also not assessed. For example, some teachers may have been receiving additional training during the course of LLI implementation that could have contributed to consistently high implementation adherence levels.

Experience with LLI, Reading Recovery, and Guided Reading. Overall, there was wide variability in teacher responses for each survey item assessing previous experience with implementing LLI and Reading Recovery. The only significant main effect on LLI implementation levels was the number of previous LLI student groups that teachers reported having taught prior to the start of this study. Teachers who had taught at least 2.5 LLI student groups had higher average implementation adherence than teachers who had taught fewer than 2.5 LLI student groups. This effect was only present when examining video implementation levels.

Although there was not a significant effect of having implemented Guided Reading (i.e., another reading intervention that can be delivered in small groups), it is possible that teachers with more experience teaching reading interventions involving multiple transitions in small group settings were able to more fluently implement LLI sessions. Teachers who had taught several LLI student groups before may have developed more effective ways of preparing lessons, managing student behavior, managing time during the lessons, and smoothly transitioning between activities. Previous experience with interventions that are delivered with individual students such as Reading Recovery, on the other hand, may not have been as helpful in developing those skills.

Current LLI responsibilities. There were no significant main effects of the number of current LLI student groups that teachers were leading (range = 1 – 6), or the number of days per week that teachers were responsible for leading LLI groups (range = 3 – 5) on implementation adherence levels. It was not the case that teachers strayed from the protocol if expected to implement it more or less often. Overall, teachers demonstrated strong commitment to implementing most steps of an intervention session despite having more or less current LLI responsibilities.

Primary teaching assignment. Teachers fell into one of several primary teaching assignments, including Reading Specialist, Literacy Coach, or Other (i.e., ESL or EC). There were no significant effects of primary teaching assignment on LLI implementation adherence levels. The literacy director for this school district mentioned that a lot of teachers expressed interest in implementing LLI. Teachers in other studies examining the effects of LLI have mentioned that their school needs more teachers to provide LLI to all students who need it (Harrison et al., 2008). Considering the results of the current study, it is possible that primary teaching assignment may not be an important factor in deciding who should implement LLI. However, considering the significant effects of previous experience with implementing LLI, teachers who have taught more LLI student groups may be in a better position to provide on-site training and support to teachers who are learning how to implement LLI.

Perceptions of Monitoring and Feedback

Teachers perceived the monitoring and feedback methods used in this study as helpful, feasible, and comfortable to participate in, based on mean pre- and post- survey

ratings. School psychologists may benefit from knowing this information, as they have reported believing in the importance of monitoring implementation, but fear that school staff will not find it acceptable in practice (Cochrane & Laux, 2008). Although these three components of acceptability have been combined in the past to provide a single acceptability rating of implementation monitoring and feedback methods (Mayer & Erchul, 2011), they were kept separate in the current study. It was thought that doing so would provide more helpful recommendations based on how teachers perceived multiple aspects of the specific methods used in this study. For example, if the feedback methods were perceived as helpful but not feasible, then changes in the schedule and length of the feedback sessions (while generally keeping the content the same) might be an improvement in practice. With all mean ratings in the current study falling within ranges that indicate more positive perceptions, there may be no recommended changes in these monitoring and feedback methods, based on teacher perceptions alone.

Teachers also perceived receiving feedback on their implementation of LLI as important during pre- and post-ratings. However, their ratings for importance of monitoring their implementation of LLI were neutral on pre- and post-surveys. There are a couple of reasons that may help explain why teachers rated feedback as important, although it is not clear why they continued to rate monitoring as neutral. The purpose of monitoring and feedback was briefly stated at the beginning of each feedback session, and communicating the purpose of feedback can help improve the feedback recipient's perceptions of the process (Copland, 2010). Previous researchers also have demonstrated high acceptability or social validity ratings of implementation feedback sessions that included both praise for steps

implemented well and problem-solving opportunities for steps that were missed or implemented incorrectly (Coding et al., 2005; Noell et al., 2005), aspects that were included in this current study.

It is possible that teachers who set up their own video equipment may have perceived video recording their LLI sessions as less feasible than teachers who had the researcher record them. On the other hand, teachers who set up their own video equipment may have been more comfortable with that as it did not involve having someone there in the room and may have been less of a distraction to students. Teacher perceptions were not analyzed separately based on whether teachers recorded their own sessions.

There were significant increases in feasibility and level of comfort with monitoring and feedback methods. The most significant changes were with feasibility of monitoring and feedback methods. Although pre-ratings indicated that teachers already anticipated perceiving the monitoring and feedback methods used in this study as feasible, they barely passed the cut-off point to be considered in the neutral range. Compared to pre-ratings of helpfulness and level of comfort, teachers seemed to be less sure about how feasible they would find participating in these monitoring and feedback methods. After having experienced participating in these monitoring and feedback methods, they were more sure of perceiving them as feasible. They were also more sure of how comfortable they find participating in these monitoring and feedback methods.

There were no significant changes in ratings of helpfulness of monitoring and feedback methods, and the importance of being monitored or receiving feedback about LLI implementation. These findings suggest that teachers accurately anticipated how much they

would find participating in these monitoring and feedback methods as helpful and important. Although teachers believed that receiving feedback about their LLI implementation was important at the beginning of the study, they did not believe it was any more important after having received feedback. That teachers never found monitoring of their LLI implementation important may mean that more effort is needed to obtain teacher buy-in regarding implementation monitoring.

Perhaps if the survey assessed perceptions of other aspects of the feedback sessions, such as the convenience of the time and location, there may have been more varied ratings of feasibility. For example, some teachers expressed wanting to rotate the location of feedback sessions to avoid having to drive to another school for each session. This sentiment may have affected their ratings of practicality of participating in the feedback sessions. However, these teachers may have found it more helpful to get ideas and recommendations from teachers at other schools rather than meeting with just the LLI teachers within their own school.

Limitations

In addition to those already discussed above, there are several other limitations to consider, one of which is the generalizability of results. The school district's leadership is quite accepting of progressive changes in service delivery and often participates in research initiated by several local universities. This leadership may have created a climate where teachers are also receptive to participating in new activities, research studies, and changing some of their practices. Furthermore, the teachers who attended the introductory meeting may have been more committed to implementing LLI and more open to having their own

behavior assessed and discussed. Had this study been conducted with schools/teachers without similar commitment and openness to change, implementation adherence levels, teacher participation during feedback sessions, and teacher perceptions on surveys may have been different. Specifically, implementation levels may have been lower and teacher perceptions may have been more negative.

The RTI coordinator and literacy director reported that, at some of these schools, implementation of Reading Recovery was occasionally monitored previously with video observations, and resulting feedback was provided in one-on-one meetings. Although there was not a system in place to monitor implementation of LLI, school leadership had been contemplating how they might incorporate one. Overall, implementation monitoring appeared to already be an acceptable practice, and teachers who have already experienced video monitoring and feedback sessions with Reading Recovery may have been more comfortable with the monitoring and feedback procedures used in this study. Previous researchers have noted that “The extent to which observational data collection (e.g., audio or videotaping of practice) fits comfortably within the culture and climate of routine practice settings likely varies” (Schoenwald et al., 2010, p. 38). In schools where observational data collection does not fit within the culture, the current study would likely have yielded different results.

Another limitation to this study is that there is no objective measure of adherence to the feedback protocol. The researcher checked off each step on the protocol as it was completed during the feedback sessions. Although this method of self reporting has been used in the past to assess adherence to feedback sessions (Hagermoser Sanetti et al., 2007), it

would have been helpful to have a less subjective assessment of adherence to the protocol. Researchers in previous school-based implementation feedback studies have had their feedback sessions directly observed (DiGennaro-Reed et al., 2010; Duhon et al., 2009; Mortenson & Witt, 1998; Noell et al., 1997) or audio recorded for later observations (DiGennaro, 2005), resulting in 94% - 100% adherence to feedback protocols. In the current study, some teachers were not comfortable with having the feedback sessions recorded, and no research assistants were available during scheduled feedback sessions to observe.

Although teachers did view their implementation adherence of LLI sessions according to both self report and video data, their implementation of each individual component of LLI was presented to teachers using self report data only. This methodological feature is a limitation because video data and self report data did not always indicate agreement, so implementation adherence of a certain component of LLI based on self report may have been an over-estimate or an under-estimate. For some groups on certain data collection phases, there were only a couple of video recorded sessions. In those cases, there were not enough video data within each data collection phase to comprehensively provide good estimates of how each intervention component was implemented for the group.

Finally, there was no quantitative measure of teachers' actual use of the recommendations shared during feedback sessions. "Actual use" may be difficult to assess for some of the recommendations (e.g., having all materials organized and prepared before the lesson starts), but other recommendations may be more readily observed during the sessions. For example, using a token economy system to help manage student behavior during the sessions is one teacher behavior that would be more readily observed on video

recorded sessions. Without an indication of how much teachers used some of the shared recommendations during feedback sessions, it is difficult to determine how much sharing and listening to recommendations for improved implementation was influential in changing teachers' implementation behaviors. Future feedback studies may benefit from including that information.

Future Directions

In addition to some of the future directions and implications for practitioners and researchers discussed in previous sections, there are some additional recommendations to offer based on information gathered during this study. First, it is unclear what teachers' implementation adherence to LLI was before the self monitoring was introduced. However, it is possible that the continued use of self monitoring checklists helped maintain high implementation adherence levels throughout the study. The continued use of self reporting is one implementation support method that is cost-effective and is not demanding of time. Practitioners may benefit from incorporating more self report assessments of implementation adherence, where essential intervention steps are listed and teachers become more aware of how they implement those steps.

Second, methods for making the collection of and summary of implementation adherence data from teachers more efficient may be worth researching. In the current study, the researcher invested considerable time collecting, analyzing, and summarizing implementation adherence data, and schools may not have personnel available to conduct similar activities. Using technology to monitor and create implementation summaries is one possible route for making this process efficient and sustainable in schools. For example, in

clinical and nursing research, time-efficient online data management systems for monitoring the delivery of different aspects of interventions have been reviewed and studied (Farran, Etkin, McCann, Paun, Eisenstein, & Wilbur, 2011; McLeod & Islam, 2011). Similar online systems to monitor school-based implementation of intervention programs have great potential for integrating adherence monitoring practices in schools.

Third, although it is informative to know how teachers perceive implementation and monitoring feedback methods, there are additional perceptions that may be important to assess in future school-based intervention implementation studies in order to help understand teachers' implementation behaviors. For example, teachers' perceptions of LLI as an effective intervention may have been just as helpful to assess as aspects of intervention training or previous experience with the intervention. Klimes-Dougan and colleagues (2009) discovered that staff perceptions of new interventions were stronger predictors of implementation adherence than previous education or experience. In addition to assessing perceptions about the intervention itself, future studies may benefit from gathering information about the extent which teachers believed that their intervention training was adequate, that school staff are supportive of tiered intervention time, that school leadership communicate the importance of tiered interventions, or that they believe they are given enough planning time. These are all teacher perceptions that other researchers examining LLI implementation have assessed (Harrison et al., 2008; Ransford-Kaldon et al., 2010).

Fourth, although average implementation adherence levels did not significantly change after collaborative group feedback sessions in this study, future research into the use of more partnership-based, collaborative approaches in monitoring and supporting teachers'

implementation is nonetheless recommended. The use of partnership-based approaches in creating a measure of implementation adherence monitoring has been associated with higher levels of implementation adherence (Hagermoser Sanetti & Kratochwill, 2009), and teacher input has been considered along with input from researchers and consultants when creating implementation checklists for other reading interventions (Benner, et al., 2010). In Hagermoser Sanetti and Kratochwill's study, teachers played an active role in specifying allowable deviations and essential steps that could not be changed, along with the format and frequency of implementation monitoring. Benner and colleagues also obtained teacher feedback on several versions of their implementation rating scale. In the current study, the researcher obtained similar feedback from the RTI coordinator and literacy director but not from the LLI teachers. Particularly when intervention developers do not make an implementation adherence checklist available or do not clearly specify the essential steps, using a partnership-based approach with teachers in creating a checklist may be helpful in promoting implementation adherence.

Fifth, considering the positive feedback from teachers and their active involvement during problem solving discussions, and previous research indicating that teachers want more collaborative support after receiving intervention plans (Slonsky-Fowler & Truscott, 2004), future research may also examine the use of partnership-based or collaborative approaches in generating ideas for improving intervention implementation. It is possible that the degree of active involvement in problem-solving discussions, input sought by the meeting facilitator, and breadth and depth of problems or ideas shared by the meeting attendees would be associated with enhanced implementation adherence levels. The content and process of

discussions in feedback sessions is not clearly specified, but seems to often focus primarily on reviewing missed steps and reminding teachers how those steps should be implemented (e.g., Coding et al., 2005, DiGennaro et al., 2005; Hagermoser Sanetti et al., 2007; Mortenson, 1998). Furthermore, feedback discussions have primarily been dyadic, between researcher and teacher (Coding et al., 2005; DiGennaro et al., 2005; Hagermoser Sanetti et al., 2007; Mortenson, 1998; Noell et al 1997; Noell et al, 2005), so when they *do* involve recommendations for improved implementation, the ideas are likely based on the researcher's expertise. In order to better understand the benefits of more collaborative approaches in generating solutions to overcome implementation barriers, researchers are encouraged to provide more information about the content, process, and verbalizations made during feedback discussions.

Although teachers in this study were very willing to share ideas and recommendations, it is possible that teachers across other samples or at other schools may not be as open and willing to share. In those instances, utilizing methods similar to those that some researchers have previously used may help provide more structure to the conversation (Dusenbury et al., 2010). For example, Dusenbury et al. provided feedback recipients and feedback providers with a list of topics to discuss during feedback sessions. The recipient was asked to choose a topic based on what they found challenging to implement, and the provider was asked to choose remaining topics to discuss, based on their video observations. In that study, however, the feedback provider was a person experienced in implementing the intervention, taking on more of a coaching role. The researcher in this current study was not experienced in implementing LLI, so it was thought that allowing recommendations to be

teacher-generated was better than providing teachers with recommendations based on observations. Practitioners may consider using experienced interventionists as feedback providers so that both the feedback recipient and provider can share ideas for improved implementation based on their experiences.

Finally, one aspect that might be helpful to add to future group feedback sessions is goal-setting. Particularly, having the group of teachers set goals for its overall average implementation level or for its implementation of specific components may have been more motivating to change implementation adherence behaviors. The feedback session facilitator could ask teachers to identify the area they believe is most important for student success and then set a higher implementation adherence goal for that area to achieve before the next feedback session. Similar goal-setting procedures, along with visual reminders of goals and ongoing adherence data presented as feedback, have been effective in changing productivity behavior in I/O research (Pritchard et al., 1988) and in changing behaviors of PST members in school-based research (Burns et al., 2008). Group goal-setting may be one way of fostering more shared accountability, influencing group members to alter their behavior.

Summary and Conclusions

The current data-based and RTI movements in schools indicate that practitioners are in an excellent position to start incorporating intervention implementation adherence data to make decisions about student services and school resources (Barnett, Hawkins, & Lentz, 2011). In turn, researchers are in a good position to make recommendations about how to assess and support implementation adherence for daily practice in schools. Half of experimental intervention studies published between 1995 – 2008 in four school psychology

journals did not include quantitative data on treatment integrity (Hagermoser Sanetti, Gritter, & Dobey, 2011), so it is clear that more research in this line of inquiry is warranted.

The current study was intended to incorporate some of the recommendations from the treatment integrity research in a way that would logistically fit within the context of several schools and incorporate more collaboration among teachers to problem solve implementation issues. LLI implementation checklists were completed by teachers each time they implemented a session, and by researchers when viewing video recorded LLI sessions. The primary researcher presented LLI implementation data during group feedback sessions, where teachers also had an opportunity to share common barriers that interfere with implementing LLI and recommendations for overcoming those barriers. Feedback sessions were conducted at approximately 2 – 3 week intervals, and teachers provided a variety of recommendations across different topics of implementing LLI. They received a written summary of their shared recommendations.

Although the frequency with which LLI was implemented was below the intervention developers' recommendations, teachers generally maintained high implementation adherence levels throughout the study. It is possible that the ongoing use of self report checklists, video observations, and group feedback sessions were influential in maintaining high implementation adherence data. Without these methods in place, teachers' implementation adherence to LLI, as it was assessed in this study, may have quickly fallen to lower levels. Many previous studies on implementation monitoring and feedback have demonstrated that adherence levels may start high, but quickly fall after the first couple of weeks of an

intervention, when there are no self monitoring or feedback procedures in place (e.g., Hagermoser Sanetti et al., 2007; Noell et al., 1997).

Several factors that may have affected implementation adherence were assessed, including previous training and experiences, current LLI responsibilities, and primary teaching assignment. The only factor that had significant effects on LLI implementation adherence was the number of previous LLI student groups taught. Teachers who had taught more student groups had higher implementation adherence levels. Perceptions about LLI monitoring and feedback procedures and understanding of essential steps of LLI were also assessed in pre- and post-ratings. Ratings indicated that teachers found all monitoring and feedback procedures used in this study helpful, feasible, and comfortable to participate in and also found receiving feedback about their LLI implementation as important during pre- and post-ratings. Their ratings of the feasibility of monitoring and feedback methods and their level of comfort with feedback methods also increased significantly. These findings suggest that teachers' perceptions of efforts that focus on implementation adherence monitoring may not be as negative as school psychologists generally anticipate (Cochrane & Laux, 2008). This finding is promising, considering that feared poor acceptability by teachers is considered a major obstacle in assessing implementation adherence. (Cochrane & Laux).

There are some key recommendations drawn from this study for researchers and practitioners. Primarily, self report assessments may be a cost efficient method of maintaining good implementation levels, but occasional observations and training to complement the self report assessments to improve reliability are warranted. Teachers were pleased with having the opportunity to engage in collaborative discussions with other

teachers who were implementing the same intervention. However, some of them did express a desire for more individualized feedback. Combining individualized and group feedback while still providing opportunities for collaborative problem-solving discussions to improve implementation would be a worthwhile endeavor for researchers. Furthermore, encouraging teachers to set group goals related to improving implementation adherence is an element that could be introduced in group feedback sessions.

Altogether, although this study lacked some experimental control and did not demonstrate a functional relationship between feedback sessions and implementation adherence levels, its findings shed some light on real applications of monitoring and feedback sessions and offers some valuable direction for practitioners and future research. Ultimately, influencing schools to use implementation adherence data to make decisions about student services is of benefit to conserving school resources and ensuring that students receive the interventions they need.

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Appendices

Appendix A: Effects of Dyadic Performance Feedback Methods on Implementation Adherence Levels

Authors and Year of Publication	Participants	Methodology	Results
Witt, Noell, LaFleur, & Mortenson (1997)	8 Teachers	Multiple baseline, with an in-vivo training phase followed by a second baseline phase and a feedback phase. Daily feedback sessions lasted 3-5 minutes and included presenting a graph of TPI levels. This phase was followed by a maintenance phase.	All teachers had 100% TPI after training, and a decreasing trend during the posttraining baseline. The feedback phase resulted in increased levels of TPI.
Noell, Witt, Gilbertson, Ranier, & Freeland (1997)	3 Teachers	Multiple baseline, with a consultation only phase followed by a feedback phase, initiated when TPI levels decreased or remained stable for the first teacher and after a predetermined number of sessions for the remaining teachers. Daily feedback sessions lasted 3-5 minutes and included a graph of TPI levels and student outcome data, praise for correctly implemented steps, importance of missed steps, and how to improve implementation for the next day. A maintenance phase followed.	Before feedback, all teachers showed decreasing and unstable TPI levels. These levels increased and stabilized when feedback was initiated and became more variable during the maintenance phase.
Jones, Wickstrom, & Friman (1997)	3 Teachers	Multiple baseline, with a consultation alone phase followed by a feedback phase. Feedback sessions occurred 3 times per week for 4-5 weeks sessions. They included revealing instances of student misbehavior followed by planned consequences.	Mean TPI levels did not exceed 37% during baseline or consultation alone phases, but increased to 60-83% during the feedback phase.

Mortenson & Witt (1998)	4 Teachers	Multiple baseline, with the feedback phase initiated when TPI dropped below 70%. Feedback sessions occurred on a weekly schedule until more increased levels remained stable. They included positive feedback for correctly implemented steps, corrective feedback for incorrectly/omitted steps, addressing any questions, obtaining verbal commitment to implement the intervention correctly, and reminding the teacher of continued data collection and FB schedule.	For the 3 teachers whose TPI fell below 70% (mean range of 48-61%), feedback resulted in immediate increases in TPI (mean range of 71-80%). Only 2 teachers were able to participate during the maintenance phase, demonstrating maintenance in feedback levels (mean range of 72-84%).
DiGennaro, Martens, & McIntyre (2005)	4 Teachers	Multiple baseline, with the feedback phase initiated when TPI decreased and remained stable. Teachers were given daily graphs in their mailboxes. Feedback sessions occurred when implementation was not 100% on a given observation day. It included practice of incorrectly implemented steps (each of these steps was practiced 3 times). Sessions were initially provided daily, and faded to every other session, once a week, and once every two weeks (all phases contingent on meeting 100% TPI for 3 consecutive days).	Before feedback, mean TPI levels ranged from 0-25%. During the feedback phase, mean TPI levels ranged from 70-96%. As feedback was faded, mean TPI levels ranged from 60-100%.

Coding, Feinberg, Dunn, & Pace (2005)	5 Teachers	Multiple baseline, with the feedback phase initiated when TPI levels were stable and/or decreasing. Feedback sessions lasted 12 minutes and occurred immediately following variable observations, every other week, ranging from 8-22 weeks. It included a combination of praise and constructive feedback (i.e., review over how the components should be implemented). After TPI levels increased and remained stable, 1-3 classroom observations were conducted to examine maintenance. The intervention included an antecedent component and a consequence component for student behaviors.	During baseline, mean TPI levels for antecedents ranged from 31-85%, and from 0-73% for consequences. During the feedback phase mean levels for antecedents ranged from 89-95%, and from 92-100% for consequence conditions. These levels were maintained during removal of feedback. Authors concluded that their approach was time efficient and practical.
Noell, Witt, Slider, Connell, et al. (2005)	45 Teachers	Randomized controlled trial, with teachers assigned to: (a) <i>weekly follow up</i> (teacher is asked how the plan is going), (b) <i>commitment emphasis</i> , (teacher is reminded about importance of TPI and encouraged to develop a plan to help themselves better implementation) or (c) <i>performance feedback</i> (teacher is provided with TPI data, praised for correctly implemented steps, problem-solves how to better implement other steps). Sessions started after 3 weeks of implementation and were faded from daily to every other day to weekly.	Mean implementation level was 77% for performance feedback, 52% for commitment emphasis, and 35% for weekly follow up.

<p>Hagermoser Sanetti, Luiselli, & Handler (2007)</p>	<p>A team of 2 Teachers and 2 Instructional Aides</p>	<p>Multiple baseline, reversal design (A-B-BC-B-BC), with feedback initiated when TPI dropped below 80% for 3 consecutive days. The first feedback phase included verbal feedback only (percentage, corrective feedback, and answer questions). The second feedback phase included verbal feedback + a graphic depiction of TPI levels. Following these phases, the graphic depiction was withdrawn and then reintroduced.</p>	<p>The mean TPI level was 72% during baseline, 42% during the first verbal only phase, 91% during the first verbal + graphic phase, 49% when the graph was withdrawn, and 87% when it was reintroduced.</p>
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Appendix B: LLI Target Skills, Activities, and Research Support

Target skill	Activities	Research support
Reading comprehension and vocabulary	During the introduction of new books and during discussions after reading a book, teachers converse with students about predictions, story content, and how they relate to student’s knowledge and experience. They point out and teach specific vocabulary words in the text and model use of the words during conversation. During reading, teachers prompt students to practice problem solving unfamiliar words that they encounter using visual information while keeping the meaning of the story in mind (e.g., referencing the pictures in the book).	Ambruster, Lehr, & Osborn (2001); Snow, Burns, & Griffin (1998); Fountas & Pinnell (2008b; 1996); Allor & McCathren (2004); Clay (1991); Swanson (1999); Mather & Urso (2002)
Reading fluency	Students reread books from previous sessions at least twice, so they have practice reading with success. Teachers model and prompt for rapid word solving, fluency, and phrasing.	Ambruster et al.; Fountas & Pinnell (2008b; 1996); Therrien (2004)
Reading interest/motivation	Students read leveled books based on careful assessment. New books are introduced every day, alternating between “easy” and “instructional” levels so that children experience success. Children read “easy” books with little to no help and “instructional” books with teacher support. Books are sequenced not only for success, but for continuity from one text to another to keep interest high. Lessons are also fast-paced to maintain student interest.	National Institute of Child Health and Human Development (2001b); Allor & McCathren (2004); Fountas & Pinnell (1999; 2006)
Phonemic awareness and phonics	Systematic and explicit instruction is provided, focusing on phonemic awareness and discrimination skills, letter-sound relationships, and spelling patterns. During book readings, teachers prompt students to problem solve difficult words by using their knowledge of letters, sounds, and visual patterns in words.	National Institute of Child Health and Human Development (2001b); Ambruster et al; Fountas & Pinnell (2008b; 1996); Allor & McCathren (2004); Dyson (1982); Pinnell & Fountas (1998); Cunningham (1995); Clay (1993); Mather & Urso; Stuebing, Barth, Cirino, Francis, & Fletcher (2008)

Writing	Several aspects of writing are addressed to be linked with the reading strategies. These include explicit instruction in sound analysis and spelling for new words and writing sentences about content from previous session books to practice sentence structure, grammar, and use of new vocabulary words. Writing may be done by students in their own workbook or by having the students assist the teacher write on a flipchart.	National Institute of Child Health and Human Development (2001a); Fountas & Pinnell (2008b; 1996); Pinnell & Fountas (1998); Rogers, L.A., & Graham, S. (2008)
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Appendix C: Implementation Checklists

Teacher ID #: _____ **ODD Session #:** _____ Date: _____

Directions: During or soon after each LLI session, please check off each of the following steps that you implemented.

<input checked="" type="checkbox"/>	Description of Step	Example
Reread Books		
	Invite students to read books they have read during previous sessions.	
	Use at least one suggested prompt from the reading section of the Prompting Guide if students struggle while reading. Use at least one verbal praise statement if students read well.	Prompt for Solving Words: "Do you know a word that starts with those letters?" Praise for Solving Words: "Great job thinking of other words that start with those letters!"
Phonics/Word Work		
	Introduce a phonics principle by describing it (i.e., introduce the letter-sound connection).	"Some vowels are together in words and make one sound."
	Demonstrate the phonics principle.	Use letter magnets to demonstrate that the "ee" pattern in words makes a long e sound.
	Provide an opportunity to practice using the phonics principle.	Instruct students to highlight words containing "ee" in a poetry book.
Read New Book at Instructional Level		
	Introduce the new book by talking about the pictures or various topics presented in the book.	"Now there will be two little pigs in the wood house. What do you think the wolf will do next?"
	While introducing the book, draw attention to at least one new and unfamiliar word in the text.	"Find Let. It has an uppercase L because it starts the sentence. Run your finger under Let and say it."
	Instruct students to read, and prompt them with at least two suggested prompts from the reading section of the Prompting Guide as you see appropriate.	General Problem Solving: "Try it another way." Monitoring/Correcting: "What could you check?"
	Talk with students about what they read and/or how it relates to what they have previously read, seen, or experienced.	"Do you think you would react the same way as the boy in this book? Why?"

Teacher ID #: _____ ***EVEN*** Session #: _____ Date: _____

Directions: During or soon after each LLI session, please check off each of the following steps that you implemented.

<input checked="" type="checkbox"/>	Description of Step	Example
Reread Books & Assessment		
	As other students read books they have read during previous sessions, instruct one of the students to read the previous day's book and take a running record of his/her reading behavior.	
Phonics/Word Work		
	Introduce a phonics principle by describing it (i.e., introduce the letter-sound connection).	"Some vowels are together in words and make one sound."
	Demonstrate the phonics principle.	Use letter magnets to demonstrate that the "ee" pattern in words makes a long e sound.
	Provide an opportunity to practice using the phonics principle.	Instruct students to highlight words containing "ee" in a poetry book.
Write About Reading		
	During independent, interactive, or dictated writing, prompt students with at least two prompts from the writing section of the Prompting Guide as you see appropriate.	Constructing Words: "Say the word aloud. Say it slowly." Conventions: "How can you show it is a question?"
Read New Book at Easy Level		
	Introduce the new book by talking about the pictures or various topics presented in the book.	
	While introducing the book, draw attention to at least one new and unfamiliar word in the text.	"Find Let. It has an uppercase L because it starts the sentence. Run your finger under Let and say it."
	Use at least one suggested prompt from the reading section of the Prompting Guide if students struggle while reading. Use at least one verbal praise statement if students read well.	Prompt for Solving Words: "Do you know a word that starts with those letters?" Praise for Solving Words: "Great job thinking of other words that start with those same letters!"
	Talk with students about what they read and/or how it relates to what they have previously read, seen, or experienced.	"Do you think you would react the same way as the boy in this book? Why?"

Appendix D: Teacher Surveys

The following survey items present several different ways that school personnel could collect data on your implementation of LLI. Next to each item are three different areas for you to express your opinion on these methods. For each area, please use the following scale and circle the appropriate number.

- 1 = Strongly Disagree
- 2 = Moderately Disagree
- 3 = Slightly Disagree
- 4 = Slightly Agree
- 5 = Moderately Agree
- 6 = Strongly Agree

	...this method would ultimately <i>help</i> me implement the intervention.	...participating in this method would be <i>feasible</i> to me, considering the time and effort required.	...I would be <i>comfortable</i> with participating in this method.
If you were videotaped one time each week while implementing LLI, and someone viewed these videotapes to assess your implementation...	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
If you filled out brief, one-page checklists every day of the LLI steps you implemented and someone collected these checklists to assess your implementation...	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6

*The following items present several ways that school personnel could provide group-based feedback to teachers about their implementation of LLI. **Feedback** is usually given about which intervention steps teachers have and have not been implementing as planned. Next to each item are three different areas for you to express your opinion on various feedback methods. For each area, please use the following scale and circle the appropriate number.*

- 1 = Strongly Disagree
- 2 = Moderately Disagree
- 3 = Slightly Disagree
- 4 = Slightly Agree
- 5 = Moderately Agree
- 6 = Strongly Agree

	...this feedback method would ultimately <i>help</i> me implement the intervention.	...participating in this feedback method would be <i>feasible</i> to me, considering the time and effort required.	...I would be <i>comfortable</i> with participating in this feedback method.
If feedback concerning teachers' implementation of LLI included...			
a discussion of problems teachers commonly found during implementation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
recommendations to solve those problems for future implementation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
a discussion of the importance of intervention steps that were commonly missed	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
graphs representing teachers' average implementation levelsof each LLI step	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6

Please answer the following questions:

1. How many LLI student groups are you currently responsible for leading? _____
2. How many days per week do you implement LLI? _____
3. Have you implemented LLI before the 2010 – 2011 academic year? Please circle: Yes or No
 If you circled “Yes”:
 A. Approximately how many LLI student groups have you led before the 2010 – 2011 academic year? _____
 B. What year and month did you first start implementing LLI? _____
4. Have you been trained to implement Reading Recovery? Please circle: Yes or No
5. Have you ever implemented Reading Recovery? Please circle: Yes or No
 If you circled “Yes”:
 A. Approximately how many students have you led through the Reading Recovery program? _____
 B. What year and month did you first start implementing Reading Recovery? _____
6. Please check each of the following LLI training experiences you have had:
 I have watched the professional development DVDs included in the Orange, Green, and/or Blue LLI systems.
 I have attended a 3-day LLI introductory training provided in my school district
 I have attended a 6-day intensive LLI training at a university
 Other LLI training experiences I have had: _____
7. Please check your primary teaching assignment(s):
 ESL/Dual Language
 EC/Special Education
 Literacy Coach
 Reading Specialist
 Other: _____
8. Please list the names of other reading interventions that you have implemented in the past 3 years, not including LLI or Reading Recovery:

Please indicate your agreement with the following statements by circling one number using the following scale:

- 1 = Strongly Disagree
- 2 = Moderately Disagree
- 3 = Slightly Disagree
- 4 = Slightly Agree
- 5 = Moderately Agree
- 6 = Strongly Agree

9. It is important that my implementation of LLI is monitored.

1 2 3 4 5 6

10. It is important that I receive feedback about my implementation of LLI.

1 2 3 4 5 6

11. I understand the essential steps of LLI implementation.

1 2 3 4 5 6

12. I implement the LLI framework with accuracy the majority of the time.

1 2 3 4 5 6

The following survey items ask about your experiences with having your LLI implementation monitored. Next to each item are three different areas for you to provide your opinion on the implementation monitoring methods. For each area, please use the following scale and circle the appropriate number.

- 1 = Strongly Disagree
- 2 = Moderately Disagree
- 3 = Slightly Disagree
- 4 = Slightly Agree
- 5 = Moderately Agree
- 6 = Strongly Agree

	...this method ultimately <i>helped</i> me implement the intervention.	...participating in this method was <i>feasible</i> to me, considering the time and effort required.	...I was <i>comfortable</i> with participating in this method.
When I videotaped one session per week while implementing LLI, and someone viewed these videotapes to assess my implementation...	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
When I filled out brief, one-page checklists every day of the LLI steps I implemented and someone collected these checklists to assess my implementation...	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6

The following items present several ways that you were provided with group-based feedback with LLI teachers about the implementation of LLI. Next to each item are three different areas for you to express your opinion on the various feedback methods. For each area, please use the following scale and circle the appropriate number.

- 1 = Strongly Disagree**
- 2 = Moderately Disagree**
- 3 = Slightly Disagree**
- 4 = Slightly Agree**
- 5 = Moderately Agree**
- 6 = Strongly Agree**

	...this feedback method ultimately helped me implement the intervention.	...participating in this feedback method was <i>feasible</i> to me, considering the time and effort required.	...I was <i>comfortable</i> with participating in this feedback method.
When feedback concerning teachers' implementation of LLI included...			
a discussion of problems teachers commonly found during implementation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
recommendations to solve those problems for future implementation	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
a discussion of the importance of intervention steps that were commonly missed	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6
graphs representing teachers' average implementation levels of each LLI step	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6

Please indicate your agreement with the following statements by circling one number using the following scale:

- 1 = Strongly Disagree
- 2 = Moderately Disagree
- 3 = Slightly Disagree
- 4 = Slightly Agree
- 5 = Moderately Agree
- 6 = Strongly Agree

1. It is important that my implementation of LLI is monitored.

1 2 3 4 5 6

2. It is important that I receive feedback about my implementation of LLI.

1 2 3 4 5 6

3. I understand the essential steps of LLI implementation.

1 2 3 4 5 6

4. I implement the LLI framework with accuracy the majority of the time.

1 2 3 4 5 6

****Please provide any suggestions you have about how to make implementation feedback sessions with teachers more successful.**

Appendix E: Data Collection & Feedback Session Schedule

Activity	Fall, 2010	Spring, 2011 (Group A)	Spring, 2011 (Group B)
Introductory Meeting	Oct. 12 th	Feb. 7 th	Feb. 7 th
Baseline Data Collection	Oct. 18 th – Oct. 26 th 6 school days	Feb. 14 th – Feb. 21 st 6 school days	Feb. 14 th – Feb. 24 th 9 school days
Feedback Session #1	Oct. 26 th	Feb. 21 st	Feb. 24 th
Data Collection Continues	Oct. 27 th – Nov. 9 th 9 school days	Feb. 22 nd – March 8 th 11 school days	Feb. 25 th – March 10 th 10 school days
Feedback Session #2	Nov. 9 th	March 8 th	March 10 th
Data Collection Continues	Nov. 10 th – Nov. 30 th 11 school days	March 9 th – March 22 nd 10 school days	March 11 th – March 24 th 10 school days
Feedback Session #3	Nov. 30 th	March 22 nd	March 24 th
Final Data Collection	Dec. 1 st – Dec. 10 th 8 school days	March 23 rd – April 8 th 7 school days	March 25 th – April 8 th 5 school days

Appendix F: Teacher Recruitment Letter

Dear Teacher,

You have received this letter because you implement the Leveled Literacy Intervention (LLI), and I would like to invite you to participate in a research study. This research project is part of my dissertation at North Carolina State University (NCSU) for the School Psychology Program, supervised by Dr. William Erchul.

The [*name of school district*] Literacy Coordinator, [*name of Literacy Coordinator*], has provided your name for this study as part of your school's participation in phase one of RtI implementation and the Executive Director of Testing and Evaluation, [*name of Executive Director*], has approved this study for the school district. Your involvement will help the RtI teams at [*names of participating schools*] as well as the district RtI team determine possible processes for evaluating the fidelity of implementation of tier two and three interventions.

The purpose of this project is to collect information on how teachers are implementing the essential steps of LLI, examine the effects of providing feedback on implementation levels and leading problem-solving discussions for groups of LLI teachers, and understand how teachers perceive these processes before and after they have participated in them. I will also be assessing how different training backgrounds and previous experiences with LLI and other related reading interventions relate to level of LLI implementation. There is a need to understand how to monitor and support implementation of academic interventions in schools, so your participation in this project would be a tremendous help and contribution to this area.

You can learn more about this project and have your questions answered by attending a meeting on [*date*] at [*time*] at the [*location*]. Participation in this research project is voluntary and will not affect your employment or reputation at your school in any way. All collected data for this project are kept confidential in a secured location at NCSU and will only be viewed by myself, Dr. Erchul, and research assistants at NCSU. Only average implementation levels for all LLI teachers across the four schools will be displayed during feedback meetings; your individual implementation levels will never be displayed.

Thank you in advance for your helpful contribution to this research project! I look forward to meeting you on [*date*] at the [*location*]. Dinner will be provided!

Thank you,

Julia Mayer, M.S.
School Psychology
North Carolina State University
jeeaston@ncsu.edu

Appendix G: Introductory Session Outline

INTRODUCTORY MEETING OUTLINE

- Welcome and overview of meeting
 - Offer teachers food/refreshments
 - Introduce myself and any project personnel who may be present
 - Thank teachers for attending the meeting
 - Let them know what I will be discussing (purpose of this research, what their participation would involve, and, if they consent to participate, giving them some data collection materials and a survey to fill out)

- Review what the purpose of this project is--
 - To examine how group feedback sessions affect implementation of LLI. Feedback sessions would include displaying and discussing LLI implementation levels with a group of teachers who implement LLI.
 - To examine how teachers perceive collection of their LLI implementation levels and how they perceive the feedback sessions.
 - To examine how teachers' training backgrounds and experiences with LLI and other related reading interventions relate to their LLI implementation levels.

- If they participate, what they will be doing--
 - Completing an LLI implementation checklist after each LLI session.
 - Videotaping one LLI session each week.
 - Attending three feedback meetings with all participating LLI teachers across the four schools. At these feedback sessions, I will display graphs of average implementation levels (not individual average implementation levels, but the average across all teachers). I will review the average levels for each of the core LLI steps and help guide a problem-solving discussion for commonly missed steps. Teachers will be encouraged to participate in this collaborative discussion by brainstorming why they believe certain steps are commonly missed and recommendations for improved implementation. Food/refreshments will be provided at these feedback meetings. The anticipated length of each feedback meeting is between 45 minutes to one hour.
 - Completing a survey that assesses teachers' perceptions of the data collection procedures and feedback sessions before and after participating in them. The survey also assesses teachers' training backgrounds and experiences with LLI and other related reading interventions.

- Emphasize that participation is voluntary.
 - You are not obligated in any way to participate in this research project. If you choose not to participate, it will not affect your employment or reputation at your school.

- Emphasize that data are confidential and will be kept securely.
 - I will be collecting the implementation checklists and videotapes at the end of every week. Only persons viewing your individual data will be myself and any research assistants who are helping me to analyze the data. Your name will not be connected to your data. You will be assigned an ID # that will be written on the implementation checklists and videotapes. I will keep a master list, secured at NCSU, with your name and ID #. This list will not be shared with anyone and will be destroyed upon completion of this project. Your individual data will also be kept in a secured, locked room at NCSU and will never be released to anyone.
 - Again, only average implementation levels will be displayed and discussed at feedback meetings. We know that not all teachers will be following each step every time they implement LLI. It is natural for there to be some variability in how teachers implement LLI, and we realize that the number of steps you complete does not determine your effectiveness and competence as a teacher.

- Ensure teachers understand procedures and time line
 - Pass out handout for procedures and schedule for data collection and feedback meetings.

- Pass out and review consent form
 - Read aloud the consent form
 - Ask if teachers have any remaining questions
 - Ask them to sign if they agree to participate
 - Collect consent forms and provide participants with a copy

- For those who give their consent to participate--
 - Distribute and review survey
 - Explain 3-column format and Likert scale for ratings of perceived helpfulness, feasibility, and level of comfort with implementation data collection and feedback methods.
 - Review the questions about training backgrounds and previous experiences.
 - Review the final Likert scale questions for ratings of perceived importance, understanding of essential steps, and overall assessment of their implementation adherence.
 - Collect surveys after teachers complete them.
 - Distribute and review implementation checklist.
 - Ensure that teachers understand all items on the checklist
 - Emphasize that there are separate checklists for even sessions and odd sessions.

- Create master list of teacher name with school and ID # in an excel file
- Give each teacher a set of implementation checklists
- Remind them again of what they are supposed to do and when the data will be collected. First data collection date on (date). Will be collected from a secured location in the front office of their respective schools.

Appendix H: Consent Form

North Carolina State University INFORMED CONSENT FORM for RESEARCH

Title of Study: Implementation Monitoring and Feedback Methods with the Leveled Literacy Intervention (LLI)

Principal Investigator: Julia Mayer

Faculty Sponsor: Dr. William Erchul

What are some general things you should know about research studies?

You are being asked to take part in a research study. Your participation in this study is voluntary. You have the right to be a part of this study, to choose not to participate, or to stop participating at any time without penalty. The purpose of research studies is to gain a better understanding of a certain topic or issue. You are not guaranteed any personal benefits from being in a study. Research studies also may pose risks to those that participate. In this consent form, you will find specific details about the research in which you are being asked to participate. If you do not understand something in this form, it is your right to ask the researcher for clarification or more information. A copy of this consent form will be provided to you. If at any time you have questions about your participation, do not hesitate to contact the researchers named above.

What is the purpose of this study?

The purpose of this study is to measure teachers' implementation of LLI, provide them with group-based feedback regarding their implementation, and collect information about their perceptions of the implementation monitoring/feedback process and other background information. The following questions will be addressed in this study: (1) How does group-based feedback effect implementation levels? (2) How do teachers' perceptions of implementation monitoring and feedback methods change as they experience these methods? (3) Do teachers with different intervention training and experience backgrounds exhibit different levels of LLI implementation?

What will happen if you take part in the study?

If you agree to participate in this study, you will also be asked to attend a total of four one-hour meetings with teachers who implement LLI from selected schools in the Chapel Hill-Carrboro City Schools. During the first meeting, you will be introduced to the LLI implementation and monitoring procedures that will take place for the remainder of the 2010 fall semester. You will be instructed to fill out an LLI implementation checklist after each LLI session, indicating which of the essential LLI steps you implemented for that session. You will also videotape one LLI session per week. The primary investigator will collect the checklists and videotapes at the end of each week. During the next three meetings the principal investigator will provide group-based feedback to all participating teachers about how the average essential steps of LLI are being implemented. None of these reports will include identifiable individual data in any of these sessions. This feedback will be presented visually so that you can see how implementation levels have changed over time and will also include a discussion of the importance of monitoring implementation, following through with essential intervention steps, and problem solving any difficulties implementing essential intervention steps. During these sessions, you will also be asked to complete a survey which will assess your perceptions

with the monitoring/feedback procedures and your previous training and experience implementing reading interventions.

Risks

There are no anticipated risks involved with participating in this study.

Benefits

There is a strong need to support implementation of interventions in schools and to know how much a student is receiving planned intervention steps in order to make data-based decisions. Furthermore, it is important to know teachers' experiences with and perceptions of implementation monitoring and support methods. By participating in this study, you would be adding to the knowledge in this area and you may receive information that will help you to work more effectively in LLI.

Confidentiality

The information in the study records will be kept confidential to the full extent allowed by law. Data will be stored securely in a locked room at North Carolina State University that the principal investigator and faculty sponsor will have access to. No reference will be made in oral or written reports that could link you to the study. You will NOT be asked to write your name on any study materials. The principal investigator will keep a master list of names and ID #s, but she will not share this list with school personnel, and the list will be permanently deleted upon completion of the study. At the beginning of the study you will be assigned a code which will be used to replace your name on all study materials, including the video tapes. The master list linking your identity to this code will be kept in a securely locked and stored separate from other study data. This master list will be permanently deleted upon completion of the study.

Compensation

You will not receive anything for participating.

How will participating in this study affect your employment?

Participation in this study is not a requirement of your employment at Chapel Hill-Carrboro City Schools, and your participation or lack thereof, will not affect your job. No individual reports associated with the data we collect from you will be reported to your principal or other school administrators.

What if you have questions about this study?

If you have questions at any time about the study or the procedures, you may contact the researcher, Julia Mayer, at jemayer@ncsu.edu or ____-____-____.

What if you have questions about your rights as a research participant?

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Deb Paxton, Regulatory Compliance Administrator, Box 7514, NCSU Campus (919/515-4514).

Consent To Participate

I have read and understand the above information. I have received a copy of this form. I agree to participate in this study with the understanding that I may choose not to participate or to stop participating at any time without penalty or loss of benefits to which I am otherwise entitled.

Subject's signature _____ **Date** _____

Investigator's signature _____ **Date** _____

Appendix I: Feedback Session Protocol

- Encourage teachers to enjoy any refreshments made available.
- Address any data collection issues or questions.
 - Issues or questions with specific items on the implementation checklist?
 - Issues or questions with collecting data on Fridays?
 - Technical issues getting video equipment set up?
- Review importance of monitoring implementation adherence levels of student interventions.
- Present average implementation levels with handouts to teachers and discuss data trends
 - Daily average percent implementation levels across time in a line graph based on self report data and video observation data. Also list range and total n for each day. Discuss how levels may be different from last data collection period, if applicable.
 - Percent agreement between self report and video data.
 - Overall average percent implementation levels for each core area of LLI framework in a bar graph. Discuss how levels may be different from last data collection period, if applicable.
 - Reread and Record
 - Reread Prompt or Praise
 - Phonics Introduce
 - Phonics Demonstrate
 - Phonics Practice
 - Writing Prompts
 - New Book Introduce
 - New Book Attention to Word
 - New Book Prompt or Praise (Easy Level)
 - New Book Prompts (Instructional Level)
 - New Book Discussion
- Identify core areas that teachers implement well
 - Identify those with an average level at or above 80% implementation.
 - Provide recognition/praise for implementing those core areas.
- Identify commonly missed core areas.
 - Identify those with an average level below 80% implementation.
 - Briefly review importance of these core areas as they fit into the LLI framework and research base.

- Facilitate problem-solving discussion, identifying why those core areas might be commonly missed and identifying recommendations for better implementation. Encourage teachers to collaborate to identify their own implementation obstacles and recommendations, and take notes. Common reasons and resulting recommendations might be (this is not all inclusive):

Problem	Suggested Solutions
Not enough time available for that step	<ol style="list-style-type: none"> 1. Tracking time devoted to each main component? LLI developers recommend set amount of minutes to devote to re-reading books, phonics/Word Work, writing about reading, reading a new book. 2. Have all materials needed to implement that step accessible before beginning the LLI session? 3. Does student behavior require that you frequently stop the lesson? How might you better manage student behavior? 4. Do school personnel allow you the full amount of time you need to implement LLI (30 minutes) without interruption? How might you let personnel know you need this full time and avoid interruptions?
Not understanding how to implement that step	<ol style="list-style-type: none"> 1. Need extra practice or advice from other LLI teachers on how to implement a certain step? 2. Using the scripted lessons that LLI makes available? Reviewing these scripted lessons before beginning a session?
Materials to implement that step were unavailable	<ol style="list-style-type: none"> 1. Do you share these materials with other teachers in the school? If so, can you coordinate with them so that you have the materials you need during your scheduled sessions? 2. If materials are missing, whom can you contact to obtain them? 3. Are you waiting until right before you start the session to gather materials? If so, could you gather these at an earlier time?
That step was not perceived as important during implementation	<ol style="list-style-type: none"> 1. Review why that step is important, how it fits within the LLI framework, and research behind it.

- Orally summarize teachers' shared obstacles and recommendations and remind them that they will receive a written summary.
- Provide teachers with more implementation checklists and video data cards, if needed.
- Remind teachers of next feedback meeting.
- By the day after the feedback session, email teachers the written summary.
- By 1 – 3 days after the feedback session, distribute handout of written summary in teacher's mailboxes.

Appendix J: LLI Core Areas and Domains

<u>Domain</u>	<u>Core Area</u>	<u>Steps on Checklists</u>
<i>Reread</i>	Reread and Record	Odd #1 + Even #1
	Reread: Prompt or Praise	Odd #2
<i>Phonics</i>	Phonics: Introduce	Odd #3 + Even #2
	Phonics: Demonstrate	Odd #4 + Even #3
	Phonics: Practice	Odd #5 + Even #4
<i>Writing</i>	Writing: Prompts	Even #5
<i>New Book</i>	New Book: Introduce	Odd #6 + Even #6
	New Book: Attention to Word	Odd #7 + Even #7
	New Book: Prompt or Praise (Easy Level)	Even #8
	New Book: Prompts (Instructional Level)	Odd #8
	New Book: Discussion	Odd #9 + Even #9

Appendix K: Percent of Total Disagreements for Each LLI Step

Odd Step	Self Report with Video Observations	Researcher with Research Assistants
1: Invite students to read books they have read during previous sessions.	3.61%	15.38%
2: Use at least one suggested prompt from the reading section of the Prompting Guide if students struggle while reading. Use at least one verbal praise statement if students read well.	6.02%	15.38%
3: Introduce a phonics principle by describing it (i.e., introduce the letter-sound connection)	6.02%	15.38%
4: Demonstrate the phonics principle	4.82%	7.69%
5: Provide an opportunity to practice using the phonics principle	8.43%	0%
6: Introduce the new book by talking about the pictures or various topics presented in the book.	1.20%	0%
7: While introducing the book, draw attention to at least one new and unfamiliar word in the text.	3.61%	0%
8: Instruct students to read, and prompt them with at least two suggested prompts from the reading section of the Prompting Guide as you see appropriate.	2.41%	0%
9: Talk with students about what they read and/or how it relates to what they have previously read, seen, or experienced.	12.04%	7.69%

Even Session	Self Report with Video Observations	Researcher with Research Assistants
1: As other students read books they have read during previous sessions, instruct one of the students to read the previous day's book and take a running record of his/her reading behavior.	2.41%	0%
2: Introduce a phonics principle by describing it (i.e., introduce the letter-sound connection)	10.84%	15.38%
3: Demonstrate the phonics principle	3.61%	0%
4: Provide an opportunity to practice using the phonics principle	6.02%	0%
5: During independent, interactive, or dictated writing, prompt students with at least two prompts from the writing section of the Prompting Guide as you see appropriate.	4.82%	0%
6: Introduce the new book by talking about the pictures or various topics presented in the book.	1.20%	0%
7: While introducing the book, draw attention to at least one new and unfamiliar word in the text.	6.02%	7.69%
8: Use at least one suggested prompt from the reading section of the Prompting Guide if students struggle while reading. Use at least one verbal praise statement if students read well.	7.23%	7.69%
9: Talk with students about what they read and/or how it relates to what they have previously read, seen, or experienced.	9.64%	7.69%

Appendix L: Shared Recommendations During Feedback Sessions

Area of Checklist	Teachers' Recommendations
Phonics lesson	<p>Can individualize to students' needs by reviewing older phonics lessons and choosing examples for them. Some students may need more time on this. Try to link it with what they are doing in the classroom.</p> <p>Using letter magnets can be a hassle. If possible, use smart boards, marker boards, or flip charts.</p>
Prompting during writing	<p>Prompt students to use what they already know or to cross-check with the book.</p> <p>Prompt students to take more risks and try harder words.</p> <p>Integrate the phonics principle into dictated sentences so that you can prompt students to use what they just learned. Dictated sentences allow you to really focus on increasing quality of prompting as you don't have to help students put together their own ideas.</p> <p>Let some of the smaller mistakes go, and prompt based on what you see as most important.</p>
New book: drawing attention to word	<p>Use suggested words in lesson guide or character names.</p>
Prompting/praising during reading	<p>If a book seems to be too difficult for the students, drop back to an easier level book.</p> <p>If the book seems to be really easy for the student, reinforce good reading behavior (expression, fluency, etc.) with specific praise.</p> <p>Briefly review your notes before the session to think about what to focus on for particular students.</p> <p>Focus on the students who have difficulty self monitoring while giving the other students more independence.</p> <p>If some students need visuals, pull out previous phonics lesson materials to help them solve words.</p> <p>If you do not want to interrupt a student's reading to provide praise, wait to do it after they are done reading the book or while they are turning the page.</p> <p>If there is a lot of background noise that makes it hard to hear students,</p>

	<p>make use of plays so that each student reads individually and louder.</p>
**General time-saving advice	<p>Do running record earlier by pulling the student 1st thing in the morning or a few minutes before the session begins.</p> <p>Have all materials ready to go and organized before the session starts.</p> <p>Track time with each component throughout the session.</p> <p>Set a timer to go off at intervals as a cue to start wrapping up one component. This is especially helpful for re-reading, instead of having the student read entire book. Okay to stop them at a certain point.</p> <p>If students take a long time to arrive, have the “commonly on time” student gather the other students up. Or, call their classroom teacher to remind them.</p> <p>If you find yourself waiting for some of the slower readers to finish the book, start discussions with students who have already finished the book.</p> <p>Use the play as part of the steps (rereading or initial reading of new book) instead of trying to squeeze it in as an additional component.</p> <p>Reduce number of sentences students write during the writing section.</p> <p>Read first or last couple of pages of the new book aloud while students follow along.</p> <p>Use 35 – 40 minutes if possible.</p>
**General behavior issues	<p>Use simple visual behavior monitoring systems (point system, sticker chart, jar of marbles...).</p> <p>Keep list of LLI tasks in visual place, and have a student check off each step as it is completed.</p> <p>Quickly remove materials from table when you are done with them so that students are not distracted by them.</p> <p>Send positive behavior notes home in reading bags. These could be standardized notes printed out for you to fill in their name and other details.</p> <p>If possible, shift time of day you do LLI. Students may be tired or upset at a certain time of the day.</p>

Appendix M: Teachers' Written Responses on Surveys

- I think these sessions went very well, especially when the teachers just talked about how it was going. It's helpful to have some time to meet with colleagues and have a chance to compare notes.
- Possibly watching a recorded lesson with the group and then filling out the checklist together. Then discussing how our observations were similar and different.
- Rotate schools so that same teachers aren't always traveling. Focus on how to adjust for ESL students; Fountas & Pinnell allow for more flexibility as opposed to the focus of this study which seemed to be rushing through lessons to document all parts were done in a day.
- I rely on teacher judgment, using LLI materials and philosophy.
- I think the most important question needs to be, "Is the child responding to this intervention? Is he making significant progress?" That question needs to determine how faithful the teacher is to the implementation. I do want the progress of the children monitored. That is different from monitoring the implementation of LLI.
- I would have preferred feedback on my teaching over feedback if I implemented LLI with fidelity.
- Your objectivity was just right for this project. Your style was very professional and conscientious. Delightful! Thank you for your work.
- Often have schedule glitches and don't complete a lesson
- Keep information gathered anonymous so people feel comfortable sharing. Videotaping myself was helpful in informing my instruction.
- I would be happy to view my tape with colleagues, so that I could get feedback on the prompting that I provide to help improve reading behaviors.