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**MAKING CHANGES THAT LAST: EXAMINING THE SUSTAINABILITY OF
AN EVIDENCE-BASED PRESCHOOL CURRICULUM**

A Dissertation in
Human Development and Family Studies

by

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ABSTRACT

Over the past decade or so, the need for evidence-based programs has intensified from both research and policy perspectives. While much effort has been put into developing educational interventions and demonstrating their effectiveness, little work has been done to promote the sustained use of such evidence-based programs over time. Thus, this study examined the sustainability of Head Start REDI (Research-based, Developmentally Informed), an evidence-based preschool curriculum which combines pre-literacy components with a social-emotional learning (SEL) curriculum, by following the intervention teachers (N=21) for the first two years after the formal REDI randomized trial ended. A mixed methods framework that included qualitative interviews, teacher surveys, and classroom observations was used to explore the extent to which the components of the REDI curriculum are sustained and to identify the factors that facilitate and hinder sustainability.

Results indicated that the REDI curriculum was sustained over time. PATHS, the SEL component, was sustained at the highest level with almost all teachers sustaining, while the pre-literacy components (Dialogic Reading, Sound Games and Alphabet Center) demonstrated somewhat lower rates of sustainability (approximately two-thirds of teachers). Barriers to sustainability of REDI included competition from other Head Start requirements, lack of time and teacher perceptions that REDI was not developmentally appropriate. Factors which facilitated sustainability included teacher perceptions of benefits to children, administrative mandates requiring REDI and teacher perceptions that the REDI approach matched her teaching style. Few pre-test factors were found to be associated with sustained use of REDI (e.g. teacher education and years experience or teacher characteristics). However, pre-REDI teaching quality was related to sustainability, as was implementation quality prior to the sustainability years.

That REDI was sustained at all for the two years following the intervention year is encouraging given that sustained use of the curriculum was not one of the original goals of the Head Start REDI project. The discussion focuses on the implications of the findings for informing future efforts at fostering sustainability of evidence-based preschool curriculums, including the possibility that an administrative mandate may be needed to ensure sustainability.

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Dedicated to

My loving husband, Jason.

I would never have made it through this experience without your love and support.

and to my beloved daughter, Hayden.

Some people say writing a dissertation is hard – I was crazy enough to take it on with a baby in tow! But I wouldn't trade the experience for anything.

I love you both dearly!

Chapter 1

Introduction

It is widely agreed upon that an early childhood marked by warm responsive care and developmentally appropriate learning environments can provide a solid base for positive, long term development. As a result, preventive interventions have successfully targeted early childhood education programs in order to improve long-term outcomes such as school drop-out rates, unemployment and delinquency (Conyers et al, 2003; Ramey & Landesman Ramey, 1998; Weikart & Schweinhart, 1997; Campbell & Ramey, 1994). A meta-analysis of the benefits of 35 early childhood education experiments found that the rates of an array of social and personal problems (i.e. school drop out, welfare dependency, unemployment, criminal behavior) were lower and academic achievement was significantly higher for children who attended high quality preschool (Gorey, 2001). However, knowing *when* to intervene and knowing *how* to intervene are not equivalent. If society is to benefit from the knowledge that interventions implemented in early childhood can be successful, it is important to carefully document which programs show positive results *and* to build a knowledge base about the best methods of implementing and sustaining successful (i.e. evidence-based) programs.

Thus, the aim of this study is to examine the implementation and sustainability of an evidence-based preschool curriculum (Head Start REDI) in the context of a randomized trial comparing the enriched “REDI” curriculum to the “usual” practice of Head Start classrooms. While the main REDI study focuses on child outcomes, this project uses a mixed methods approach to examine the factors that influence the implementation and sustainability of the REDI curriculum. This study follows the *teachers* for the first two years after the demands and support of the formal research project have ended. The following goals will be addressed:

- 1) To explore to what extent the components of the REDI curriculum are sustained after the teachers are no longer required by the research project to implement them.
- 2) To identify factors that may facilitate or hinder sustained use of the REDI curriculum components.

Chapter 2

Literature Review

Evidence-based Programs

Over the past decade or so, the emphasis on the need for evidence-based programs has intensified from both the research and policy perspectives. Within the field of prevention science, researchers have continued to pursue rigorous epidemiologically-based designs and precise interventions to examine the effectiveness of preventive interventions that can reduce later problem outcomes and promote healthy development (Kellam, Kireta & Moscicki, 1999). As a result, there have been numerous compilations of “best practices” programs that have demonstrated effectiveness in fields such as violence prevention (Elliott, 1998), substance use (Drug Strategies, 1996), mental health (Olds et al, 1999) and education (U.S. Department of Education, 2004). Using these lists as guides, federal policy makers have embraced the idea of ‘evidence-based’ practice and new initiatives such as the No Child Left Behind Act (NCLB, 2002) and Good Start Grow Smart (2002; 2004) now require that federal money for prevention programs should be spent on “evidence-based” programs (Kellam & Langevin, 2003).

The focus on evidence-based practice has led to an interest in the quality of program implementation, for even the best programs will produce few positive results if the program is not implemented appropriately. Thus, the field of prevention science has begun to recognize the importance of implementation in facilitating the success of preventive interventions and has encouraged the inclusion of implementation documentation. However, little work has been done on implementation within the field of early childhood education. Since early education settings vary tremendously in quality and type, it is imperative to study the process of implementation

within these settings to understand how context may affect the implementation of evidence-based early childhood programs.

In addition, contextual factors (such as setting, training and personnel) may also affect the sustainability of innovative early childhood interventions that often are plagued by a lack of flexible funding, relatively high staff turnover, and relatively low staff salaries. Early childhood education programs, such as preschools, daycares and Head Starts, often may not have sufficient funding to regularly invest in new programs, thus it is important that when an evidence-based program is selected, it can be easily maintained over time. With little research available about sustainability, especially in regards to early childhood interventions, this study examines what factors influence the sustainability of an evidence-based program in an early childhood setting.

Head Start

Head Start, which serves almost a million poor children each year, is one setting that could be utilized to address the mental health and school readiness needs of impoverished preschool children and provides an interesting backdrop to the study of implementation and sustainability of evidence-based practices. However, despite being considered the “premier” federally sponsored early childhood program (U.S. Department of Health and Human Services, 2001), Head Start is currently in the process of major changes as a result of the President’s new Good Start, Grow Smart initiative (Good Start Grow Smart, 2002). These changes, in part, are due to an accumulation of mixed results from studies evaluating the effects of Head Start. Historically, studies that examined Head Start’s effects on IQ and other cognitive measures have frequently reported fade out effects and concluded that Head Start has no lasting effects (Zigler & Muenchow, 1992). However, studies that have focused on effects besides IQ have tended to find

more positive results such as reduction in retention rates and increased access to preventive health care (Abbot-Shim, Lambert, & McCarty, 2003; Currie & Thomas, 1995).

Recent findings from the Head Start Impact Study report that Head Start has small to moderate effects on several measures of cognitive development but small to no effects on social skills and behavioral problems as compared to controls (USDHHS, 2005). Findings from the Head Start FACES study show that, despite improvements over the course of the year in areas of early mathematics and reading, Head Start children still lag behind national norms upon exiting the program (Head Start FACES 2000, 2003; Zill et al., 2003). Thus, it is generally agreed that while Head Start does provide beneficial services to poor children and their families, the children are still “not getting what they need” to succeed in school (USDHHS, 2003). This leaves Head Start uniquely positioned to improve the welfare of America’s children by implementing programs that have previously been shown to be beneficial (i.e. those that are “evidence-based”). However, if Head Start is to improve child outcomes in the domains of social-emotional and academic competencies through the implementation of evidence-based programs, more research is needed to assess the capacity of Head Start programs to implement and sustain evidence-based programming.

Head Start REDI

The Head Start REDI (Research based, Developmentally Informed) project addresses the above need by using Head Start classrooms as the setting for implementing a new curriculum composed of several evidence-based practices. Head Start REDI is a NICHD-funded evaluation of the effects of an evidence-based integrated curriculum targeting both the social-emotional and language/literacy skills important for Head Start children’s healthy adjustment and school readiness. The two main focus areas (language and social-emotional learning) were selected to

help improve school readiness across multiple domains and are supported by extensive empirical research.

Social Emotional Component of REDI

The social-emotional component of REDI consists of the Preschool PATHS (Promoting Alternative THinking Strategies) curriculum, a universal program that aims to build social skills, emotion knowledge and social problem solving skills through a curriculum implemented by classroom teachers. PATHS was originally developed for elementary-aged children and has generated many positive outcomes in school-aged environments (Conduct Problems Prevention Research Group, 1999; Kam, Greenberg, & Kusché, 1999; Greenberg & Kusché, 1998) including reduced aggression and hyperactive-disruptive behavior (as rated by peers) among first graders in general education classes and more positive teacher-rated behaviors related to emotional adjustment, lower teacher-rated behavioral impulsivity, and higher parent-rated social competence in the elementary school years. Once PATHS was shown to be successful with elementary students, it was adapted for a preschool population which is the version used in the REDI curriculum.

Preliminary findings from a randomized trial of preschool PATHS implementation in 10 Head Start classrooms in urban, semi-urban, and rural areas showed improved social and emotional competence according to multiple reporters and direct child measures with significant effects on internalizing symptoms (Domitrovich, Cortes, & Greenberg, 2002). A more recent evaluation of preschool PATHS in Head Starts found that children exposed to PATHS had higher emotion knowledge skills and were rated by teachers as more socially competent and less socially withdrawn as compared to controls (Domitrovich, Cortes, & Greenberg, 2007). In addition, preschool PATHS has been identified as a promising program targeting social-emotional development of young children that shows a high probability of efficacious adoption (Joseph and Strain, 2003).

Language and Literacy Component of Head Start REDI

Evidence-based programs targeting school readiness skills typically focus on improving children's early language and pre-literacy skills, specifically oral language skills, phonological sensitivity and print awareness (Lonigan, 2006; Dickinson & McCabe, 2001). REDI addresses these areas of knowledge by incorporating three specific curriculum components – Dialogic Reading, Sound Games and Alphabet Center - as part of the language/literacy portion of the curriculum.

Oral language skills, which refer to a child's ability to understand and produce single words, grammatically varied utterances, and oral narratives, are considered critical to the process of extracting meaning from printed text (National Reading Panel, 2000; National Research Council, 1998). Book-reading is a popular setting for programs targeting oral language skills and REDI follows suit by using dialogic reading in the curriculum. Dialogic reading, where many questions are asked about the story and children learn to become the story tellers, has been shown to produce changes in preschool language skills (Wasik & Bond, 2001; Lonigan & Whitehurst, 1998; Whitehurst et al., 1994). Low-income children who experienced dialogic reading in the context of a randomized control trial showed significant gains in expressive language skills as compared to the control children on both standardized measures of oral language and on spontaneous speech samples (Whitehurst & Lonigan, 1998). REDI prescribes 2 books per week, connected to the PATHs weekly theme, with specific vocabulary words and grammatical targets for the teachers to emphasize. Props are included with the books to help provide concrete examples of new vocabulary related to the books.

Other emergent literacy interventions have targeted phonological sensitivity, i.e. children's sensitivity to the sound-structure of oral language such as words, syllables and phonemes, as a way to improve reading readiness (Dickinson, McCabe, Anastasopoulos, Peisner-Feinberg & Poe, 2003; Whitehurst & Lonigan, 1998). Children who have participated in

phonological awareness training have shown improved reading achievement later on as compared to children who did not receive such specific training (Ball & Blachman, 1991; Bradley & Bryant, 1983; Lundberg, Frost & Petersen, 1988). Presenting activities in a developmental sequence (i.e. starting with basic listening activities and moving on words, then syllables, to phonemes) is most effective at improving children's phonological skills (Adams, Foorman, Lundberg & Beeler, 1998). From this evidence-based practice, emerged the REDI Sound Games which are short small-group activities set up in a developmental sequence designed to improve children's sensitivity to the sound-structure of oral language.

The third language/literacy component is the Alphabet Center which is designed to help improve children's print awareness. One of the main predictors of reading success is how well a child recognizes the letters of the alphabet (Adams, 1990). Since Head Start children are routinely unable to identify most of the letters of the alphabet (Head Start FACES, 2003), a more systematic way of teaching letters was included in the REDI curriculum. In the Alphabet Center, the children are introduced to a letter each week and given various activities that encourage them to recognize and write the letter.

Head Start REDI Design

Head Start REDI used a randomized-controlled design (see gray sections of Figure 2-1) with multiple informants and multiple measures to evaluate the impact of "cutting-edge practice" on child-level outcomes such as emergent literacy skills, social competence and behavior problems. Intervention teachers were given all necessary materials and trained in implementing the REDI curriculum and coaching strategies in an intensive three day training which took place shortly before the school year began. Once the teachers were back in the classroom, a REDI mentor met with the intervention teachers on a weekly basis to model appropriate techniques and

provided technical assistance and mentoring in implementing the REDI curriculum. Data on the quality of implementation was collected on a monthly basis through reports filled out by the REDI mentors. Classroom observations, child assessments and teacher reports were completed pre- and post-treatment in both intervention and control classrooms.

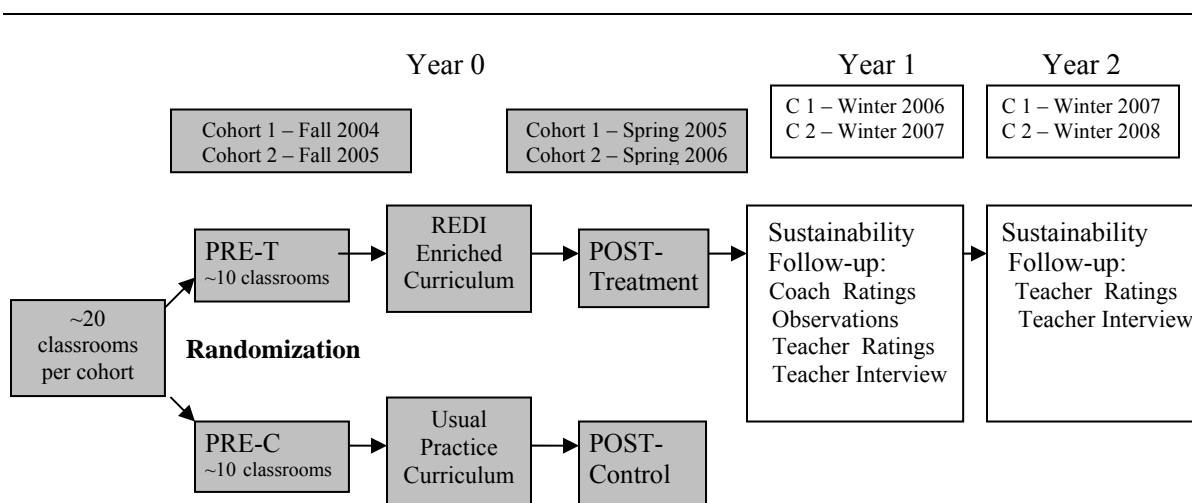


Figure 2-1: Design of the Head Start REDI trial with Added Sustainability Follow Up

The original REDI grant is primarily concerned with *child outcomes* and follows the child participants through second grade. Initial findings suggest that the REDI has been successful at improving positive behaviors and skills, particularly in the domain of social-emotional development (Bierman et al, in press). Teacher reports suggest that children receiving the REDI intervention curriculum show higher levels of emotional understanding and social problem-solving skills and lower levels of aggression as compared to the children in the control group. In addition, independent child observations found that children in the REDI group received higher ratings of learning engagement. Direct assessments show that REDI participants provide more competent solutions when presented with challenging social problems, show higher levels of emotion understanding and demonstrate higher levels of language and pre-literacy skills. With significant improvements in social-emotional and pre-literacy outcomes, the children

participating in the REDI classrooms were able to enter kindergarten more engaged and ready to learn than children in the control classrooms. In addition, teachers showed significant improvements in teaching quality after implementing REDI for a year. Based on observations at the end of the implementation, intervention teachers, as compared to those in the control group, talked with children more frequently and in more cognitively complex ways, established a more positive classroom climate and used more positive and preventive behavior management strategies (Domitrovich, Gest, Gill, Bierman, Welsh, & Jones, in press). Given the successful outcomes of REDI and potential for further diffusion, understanding which factors influence successful implementation and sustained use is crucial.

Research on Program Implementation

With the increased emphasis on developing effective programs, much attention has been paid to the acquisition of evidence necessary to deem a program a success. This has led to careful elaboration of the prevention research cycle (see Figure 2-2) which provides a model of the information needed to document evidence of a successful preventive intervention program (Mrazek & Haggerty, 1994). Most prevention research falls under the first three steps of the prevention research cycle and has resulted in the development of numerous effective programs. These programs have been deemed effective because significant positive results were obtained through rigorously controlled randomized trials, usually of relatively small size under somewhat controlled conditions.

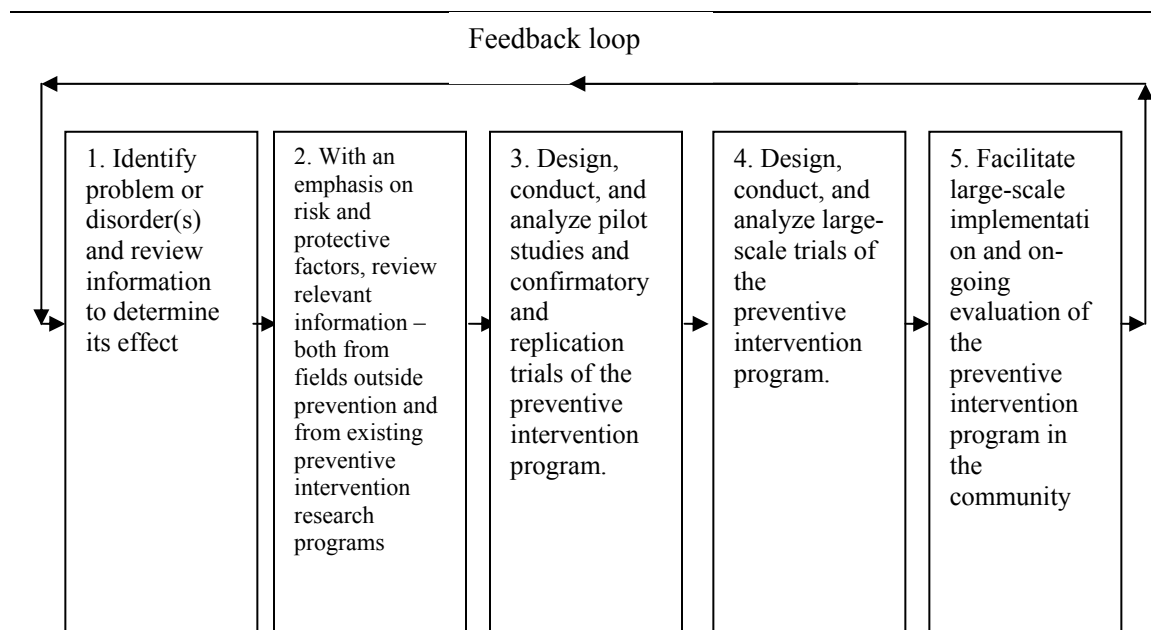


Figure 2-2: The Preventive Intervention Research Cycle. Although only one loop is represented here, the exchange of knowledge among researchers and between researchers and practitioners occurs throughout the cycle. (Mrazek & Haggerty, 1994).

Despite the accumulation of evidence about effective programs, there exists limited information about what contributes to the successful implementation of these programs in non-experimental, “real-world” settings or even the quality of implementation within small-scale efficacy trials. This is unfortunate considering that most preventive interventions are implemented in settings which present numerous obstacles to high quality implementation (Dane & Schneider, 1998). In an analysis of 1,200 published prevention studies, less than 5% provided information on program implementation (Durlak, 1997). Dane and Schneider (1998) found that only 39 of 162 studies of primary and secondary prevention included information about procedures for documenting fidelity and only 13 of those 39 included implementation quality in their analyses. Another study of 34 effective prevention programs for school-aged children found that only 21%

examined whether implementation quality was related to outcomes (Domitrovich & Greenberg, 2000).

The field of prevention research needs to move beyond a focus on efficacy trials, which test the extent to which a program produces positive results under near-ideal conditions, to effectiveness trials, which test the extent to which efficacious interventions have a beneficial effect in natural settings (National Advisory Mental Health Council Workgroup on Mental Disorders Prevention Research, 1998; Mrazek & Haggerty, 1994). Of particular importance to effectiveness trials is information about quality of implementation. As Kellam and Langevin (2003) note, “measures of variation in the quality of implementation are essential components in the analysis of impact (p.145).” Information on implementation processes can help avoid Type III errors, where the program itself is judged ineffective even though, in reality, the program was not implemented with fidelity. In their extensive review of studies with implementation data, Durlak and Dupre (2008) found that implementation *does* matter with 76% of the studies they examined in their review reporting a significant positive relationship between the level of implementation and at least half of all program outcomes.

Though the Head Start REDI trial shares aspects of both efficacy and effectiveness research, it is primarily an effectiveness trial because it is evaluating evidence-based curriculum components in the “real world” setting of Head Start classrooms with the implementation of the curriculum done by Head Start teachers. While some may argue that REDI is an efficacy trial because it is evaluating an original integrated combination of social-emotional and literacy components, each specific component already has extensive research supporting its effectiveness. Part of the innovation of the Head Start REDI trial is its use of ‘real’ Head Start teachers to implement the curriculum. A careful examination of the levels of implementation, and the factors that influence it, will benefit future plans for model diffusion.

The literature suggests several dimensions of implementation quality that should be addressed in evaluations including fidelity/adherence, dosage, quality of delivery, participant responsiveness, and program differentiation (Durlak & DuPre, 2008; Dusenbury et al, 2003; Domitrovich & Greenberg, 2000). Fidelity, dosage and quality of delivery are the dimensions most commonly included in classroom studies.

When considering how implementation affects outcomes, it is also important to consider the factors which contribute to variations in implementation quality. While some factors may be highly specific to a particular setting, there are other factors that may influence implementation across multiple settings and interventions. For example, a strong, charismatic, effective leader is often linked to the success of a program (Han & Weiss, 2005; Scheirer, 2005; Johnson, Hays, Center, & Daley, 2004). Kam, Greenberg, & Walls (2003) found that level of principal support influenced the effects of the PATHS curriculum on child mental health outcomes. Having a strong, local coordinator had the strongest association with high implementation fidelity in a study of the implementation process of Life Skills Training (Fagan & Mihalic, 2003). On the other hand, a poor fit between setting and intervention and limited resources (thereby affecting available materials and staffing) are two factors which often hinder the successful implementation of a preventive intervention (Dane & Schneider, 1998).

School-based interventions, like Head Start REDI, may face special considerations such as the quality of the curriculum model, the nature of the implementation support system, background and characteristics of the teachers and students, and regulations and policies of school and government bodies (Greenberg, 2004). This study utilizes a multi-level conceptual model and suggests three domains that may influence quality of implementation (and later, sustainability): teacher experiences (demographics, education, and years of teaching experience), teacher characteristics (teacher functioning such as depression and self efficacy, and teacher workplace feelings such as perceived support and job satisfaction) and quality of the classroom

environment (e.g. emotional support and instructional support). The gray areas of Figure 2-3 depict the conceptual model of the factors influencing implementation.

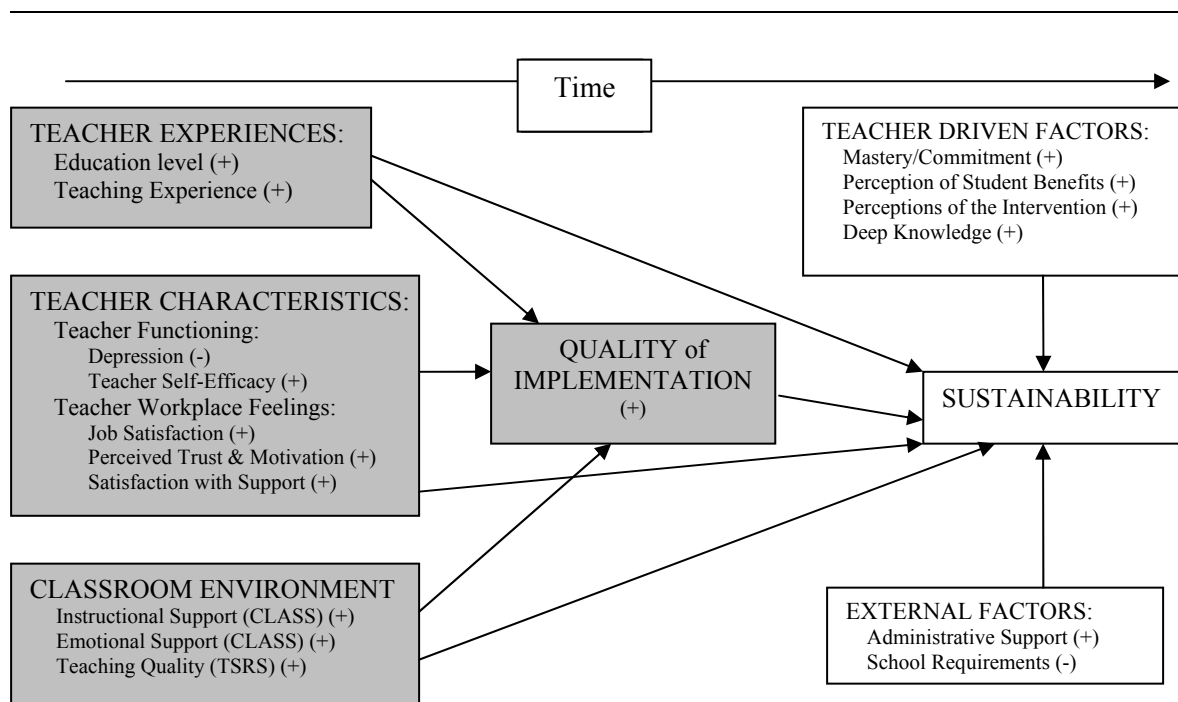


Figure 2-3: Model of Factors Influencing Quality of Implementation and Sustainability

Teacher Experiences

One of the core components of effective early childhood interventions has been the delivery of the program by well-educated, highly trained teachers (e.g. Campbell & Ramey, 1994; Weikart & Schweinhart, 1997). The use of well-educated individuals as program deliverers means that the staff is capable of understanding the complexities of the theoretical perspective of the intervention and can apply their knowledge to flexibly implement the program. Studies which have relied on typical preschool teachers, as compared to highly skilled mentor teachers, to implement programs have been less successful at producing positive effects, possibly because such teachers had lower levels of implementation quality (Whitehurst & Lonigan, 1998).

According to Head Start FACES data, only 36% of Head Start lead teachers had a bachelor's degree or higher in 2002 (Zill et al, 2006). To the extent that REDI represents a high quality curriculum, higher levels of education and more teaching experience may facilitate higher quality of implementation.

Teacher Characteristics

While numerous studies have linked education and training to quality of care, very few have included psychological variables such as stress or depression (Hamre & Pianta, 2004; Weaver, 2002), making it difficult to extrapolate to how such teacher characteristics might affect implementation quality. However, given the nature of symptoms manifested in depression, it is hypothesized that higher levels of teacher depressive symptoms would be linked with lower quality of implementation as the teacher could have difficulty summoning the energy or interest to properly learn and implement a new curriculum. On the other hand, teachers with higher levels of self-efficacy might be expected to have better implementation quality due to confidence in their ability to perform the job well. An examination of implementation of a school-based substance abuse prevention program found that strong self-efficacy was associated with higher levels of implementation (Rohrbach, Graham, & Hansen, 1993). Han and Weiss (2005) provide some evidence that teacher self-efficacy beliefs and teacher burnout, including emotional exhaustion, contribute to the quality of implementation of school-based mental health interventions.

The level of teacher support has also been examined in the implementation literature. Those teachers who feel supported by their administration are more likely to implement with high quality (Ransford, 2007; Gottfredson & Gottfredson, 2002). Many evaluations have found that a strong, charismatic leader, who presumably gives teachers a lot of support, is associated with the success of a program (Durlak & DuPre, 2008; Johnson et al, 2004; Scheirer, 2005). Teachers may also perceive more support (and thereby implement a new program with higher quality) when the

program is supported by the requirements and mission of the school setting (Greenberg, 2004; Scheirer, 2005; Johnson et al., 2004; Dusenbury et al, 2003).

Classroom Environment

Findings from comprehensive school reform studies have documented that the more chaotic the school environment, the less likely that school is to properly implement a new reform and to achieve positive program outcomes (Gottfredson, Jones & Gore, 2002; Tolan, Gorman-Smith & Henry, 2004; Gottfredson, Fink, Skroban & Gottfredson, 1997). Limited organization capacity, in the form of poor staff moral, history of failed programs, and sense of resignation, has been associated with difficulty in implementing and sustaining innovations (Gottfredson & Gottfredson, 2002). In addition, some interventions may be more successful in schools with more or less adversity. Hughes et al (2005) explored the effects of two school-based interventions for reducing aggression in schools of differing adversity. One intervention was more effective in schools characterized by low adversity while the other was more effective in high adversity schools.

Osher, Dwyer and Jimerson (2006) advocate the need to create conditions of learning in a school to foster academic achievement. Schools and classrooms that are able to provide safety, support, social-emotional learning and engagement/challenge create an environment in which children can succeed at academics (Osher, Sidana & Kelly, 2008). This rationale can be applied to the classroom as well. A teacher who runs a well-managed and organized classroom may be more likely to successfully navigate the challenges and changes associated with implementing a new curriculum. Chaotic classrooms are likely to be overwhelmed by just getting through the day so that the proper implementation of a new program may be beyond the teacher's capacity.

The quality of the classroom environment may be assessed by examining process factors, such as teacher-child interactions and language experiences, which capture the somewhat intangible day-to-day experience of the early care setting. Research on quality in early childhood

settings have shown that better process quality is linked to improved cognitive and social-emotional development outcomes for children (NICHD Early Child Care Research Network, 2002; Burchinal et al, 1997; Phillips, Scarr & McCartney, 1987; Ruopp, Travers, Glantz & Coelen, 1979). Since one of the goals of the REDI curriculum is to facilitate a positive (non-chaotic) environment and promote teacher-child relationships, those teachers that run a well-organized classroom and build strong relationships with their students may already be utilizing some of the elements of REDI; therefore, they may have an easier time implementing the program with high quality.

Based on the literature, several hypotheses emerge around the factors that influence the quality of implementation during the first year of REDI curriculum use. It is hypothesized that teacher characteristics (i.e. depression, self-efficacy, workplace perceptions), teacher experiences (i.e. education and years of experience) and the quality of the classroom environment will affect the quality of implementation of the REDI curriculum. Specifically, teachers with lower levels of depression, who perceive more workplace support and have higher levels of self-efficacy will be more likely to implement with high quality. Additionally, teachers with higher levels of education and more years of teaching experience will also implement with higher quality. Classrooms characterized by a warmer emotional climate, with better classroom management and higher instructional quality will be more successful at implementing the REDI curriculum.

Some of the hypotheses in Figure 2-3 have already been investigated prior to this dissertation (see shaded parts of Figure 2-3). The quality of implementation was above average during Year 0, the implementation year (Gill, Sanford DeRousie & Domitrovich, 2006). Even with generally high quality implementation, there was an increase of implementation quality over time (Domitrovich, Gest, Gill, Jones, and Sanford DeRousie, submitted). Specifically, teacher skills in behavior management, social-emotional support, sensitive-responsive behaviors and language support strategies showed small but statistically significant increases over the course of

the implementation year (Domitrovich et al, submitted). However, few factors were found to predict implementation quality or growth in quality over time. Teacher functioning (i.e. depression, efficacy, emotional exhaustion) was not found to be associated with level of implementation quality (Gill et al, 2006) or with growth in implementation quality over time (Domitrovich et al, submitted). Teacher education did predict growth. These findings point to the high quality implementation of REDI regardless of staff background and personal characteristics. With high quality implementation of REDI in Year 0 clearly documented, it is now important to investigate whether the REDI curriculum is sustained later on.

Research on Program Sustainability

Defining Sustainability

After a program has been implemented successfully, new challenges can arise as participants seek to maintain the program over time. The literature suggests that there are three types of sustainability: sustainability of results, sustainability of activities and sustainability of capacity (Shediac-Rizkallah & Bone, 1998) with most studies of sustainability focusing on how program activities are sustained over time (Scheirer, 2005). It is beyond the scope of this project to evaluate the outcomes of successive cohorts of children so this study will focus on the sustainability of program activities. However, it is commonly assumed that the positive benefits will continue if high quality implementation of the program can be maintained.

The first challenge of examining sustainability is to document whether the program has been sustained over time or not. While this may seem an easy task to accomplish, few in the literature have included sustainability measures in their research (Coburn, 2003; Domitrovitch & Greenberg, 2000; Durlak, 1997). In a review of work-site health promotions using the RE-AIM (Reach, Efficacy–Adoption, Implementation, Maintenance) model, only 8% of studies reported

any data on maintenance (Bull, Gillette, Glasgow & Estabrooks, 2003). The few studies that have examined sustainability suggest that sustainability of a school-based reform is not easy to achieve. In a study examining the sustainability of social-emotional learning (SEL) programs 5 years or more after implementation, Elias (2004) found that only 6 of 14 sites had achieved sustainability of their SEL programs. Adding to the difficulties of studying sustainability is the fact that education-based reforms often do not last for very long (Florian, 2001).

A key question in defining sustainability is whether sustainability requires strict fidelity or if it can also include some adaptation. This fidelity vs. adaptation debate has been strongly argued in the field of prevention. Some researchers argue that maintaining fidelity is the critical to sustainability (Elliott & Mihalic, 2004; Olds, Hill, O'Brien, Racine & Moritz, 2003). This view argues that it is unlikely that the positive benefits will be maintained without continued high level fidelity to the original program; therefore, efforts to sustain the altered program are not worthwhile. Others suggest that some degree of adaptation is acceptable since replication never results in complete fidelity (Bumbarger & Perkins, in press; Elias et al, 2003). This view also argues that allowing some adaptation will improve sustainability because it will help to foster ownership in the intervention (Scheirer, 2005; Johnson et al, 2004; Dusenbury et al, 2003). Additionally, Johnson et al (2004) argues that ongoing innovation is necessary for an intervention to continue benefiting the stakeholders. A tentative resolution to this debate is realized with the idea of "adaptation with fidelity" (Greenberg, Domitrovich, Graczyk & Zins, 2005) whereby researchers encourage the continued fidelity for implementing the core components, but allow for adaptation of other aspects of the programs. A concern with this approach is that there is little research that identifies what the core components are, or how much adaptation is possible before the possibility of achieving positive outcomes is compromised (Elliott & Mihalic, 2004; Elias et al., 2003).

The few studies that have documented sustainability have done so idiosyncratically and have been lenient about what constitutes sustainability. In an examination of the continued use of Project IMPACT, a mental health intervention for older adults, sustainability was defined as “continuing all or part” of the program after external funding ended (Blasinsky, Goldman & Unützer, 2006). A study of the sustainability of a residential substance abuse treatment program found that 92% of projects were continued after grant support ended, but only 36% continued with no significant change (Porowski, Burgdorf & Herrell, 2004). Thus, there is no current standard for how to define sustainability and some argue that setting one standard may not even be appropriate due to wide variation in what can and should be maintained for any given intervention (Shediac-Rizkallah & Bone, 1998). However, establishing some definition of sustainability is necessary in order to examine the factors which contribute to sustainability of an intervention.

Factors Influencing Sustainability

The literature identifies six general factors as critical to ensuring long-term sustainability for school-based interventions: on-going engagement and development of human capacities, school and district culture/climate, structures of the education system, school and district leadership, political context and innovation/reform attributes (CCE Center, 2004; Florian, 2001). However, these general factors should be considered within the context of the specific intervention and some may be more applicable than others to the sustainability of a classroom-based intervention that is primarily the responsibility of the teacher. For example, Gersten, Chard and Baker (2000) suggest that it is important to consider whether the intervention is structural (i.e. changing teacher-child ratios) in nature or whether it targets core-of teaching (i.e. curriculum) components. They argue that curriculum interventions have special considerations because such programs invariably involve confronting issues of teacher autonomy (Gersten et al, 2000). They suggest, along with Ellmore (1996), that teachers respond in fundamentally different

ways to initiatives that require them to modify their actual teaching processes as compared to structural interventions. Understanding the process of teacher change is crucial in order to help ensure that evidence-based curricular intervention will be sustained over time. Thus, while it is true that outside factors such as structures of the educational system or school climate may influence sustainability, this study opts to focus on more proximal factors, i.e. those directly associated with the teacher or those that have direct implications for teacher behavior and that may affect sustainability. Specifically, the factors thought to most directly influence sustainability of REDI (i.e. the concurrent factors) fall into two categories: teacher-driven factors and factors external to the teacher (see white areas of Figure 2-3).

Teacher Driven Factors. Teacher understanding and knowledge of how the intervention works is one factor that may be particularly important in sustaining teacher change (Coburn, 2003). Vaughn et al (2000) ask “Are teachers who are better able to articulate the rationale and function of instructional practices in a thorough manner more likely to maintain their implementation than teachers who understand procedures related to practice but little about its more theoretical structure? (p. 169)” Klingner et al (1999) studied the sustainability of research-based reading instructional practices with special education teachers and suggested that one of the barriers to sustainability was “not having an in-depth understanding of a practice (p. 272).” Gersten et al (2000) also specifically address teacher understanding and the ability of an innovation to change a teacher’s attitudes and beliefs as an important contributor to sustainability. Teachers who do not understand an intervention will be unlikely to grasp the importance of implementing the program with fidelity. However, few empirical studies have attempted to measure teachers’ understanding of the intervention model and then relate this dimension to sustainability and outcomes (Coburn, 2003).

Teacher change theory posits that it is only after teachers are able to see the positive effects of a new teaching practice that they fully embrace changing from their original practice

(Clarke & Hollingsworth, 2002; Guskey, 2002). When teachers were able to listen to the reactions of students to a new method of teaching, they were more likely to change their instructional practice (Borko & Putnam, 1995). In addition, if teachers perceive that their current efforts are not addressing a challenge in the classroom, and also notice that a new intervention is successful at making improvements, teachers may be more willing to change their practices and embrace the new curriculum (Hashweh, 2003; Han & Weiss, 2005). Thus, sustainable change may come about because the teachers are able to see the program's benefits to students and are able to understand why those benefits could be expected which leads to a change in teacher beliefs and behavior (Fuchs & Fuchs, 1998). Perception of benefits is important for sustainability even outside the field of education. A review of nineteen studies on the sustainability of health-related programs found that twelve out of the nineteen studies indicated that participants' perceived benefits contributed to long term sustainability (Scheirer, 2005).

Another factor theorized to affect sustainability is teacher's perceptions of the intervention – i.e. how use-friendly it is, the ease of fitting it into the day, and whether the materials are seen as age-appropriate and engaging (CCE Center, 2004; Greenberg & Domitrovich, 2002; Florian, 2001). If teachers perceive an intervention as user-friendly and easy to fit into their day, they may be more likely to maintain use of the intervention over time. Similarly, if teachers perceive the curriculum as age-appropriate and engaging to their students, they may be more willing to continue to use the curriculum's activities.

When evaluating sustainability of a given core-of-teaching program, Gersten et al (2000) suggest that there are often two routes to sustainability, administrative mandate and strong user commitment/mastery,(Florian, 2001). Gersten et al (2000) suggest that strong user mastery is the “high road” and more successful path to sustainability. The literature on sustainability frequently stresses the importance of strong user commitment and ownership in ensuring sustainability of a program (Gersten, Chard & Baker, 2000; Johnson et al, 2004). However, other research suggests

that requiring a program to be used, i.e. implementing by mandate, may actually be a more successful strategy (Hall & Hord, 2006). Therefore, it is necessary to include factors external to the teacher in the conceptual model as well.

External Factors. Though the extent to which use of a curriculum is sustained with fidelity is heavily dependent on the classroom teacher, there are factors external to the teacher that may come into play. For example, Klinger et al (1999) examined the extent to which three reading instructional practices learned by a cohort of teachers through an intensive year-long professional development experience were sustained over time. Factors which facilitated the sustained use of the three instructional practices include a support network, administrative support/leadership, along with student benefits, available materials, and students' acceptance of an instructional practice. Impediments to sustainability included high stakes testing pressures, emphasis on content coverage, time constraints, a mismatch between teaching style and practice, and a limited understanding of a practice (Klinger et al, 1999).

The presence of a program champion is frequently targeted as key to sustainability (Scheirer, 2005; Johnson et al, 2004; Hall & Hord, 2006) and thus, the extent of the teacher's administrative support is one factor likely to influence sustainability. In the case of a school-based intervention, the head administrator is particularly important to have on board (Elias et al, 2003). Han and Weiss (2005) call the principal the "gate keeper" for the successful adoption of a new intervention program. In a study examining the sustainability of SEL programs 5 years or more after implementation, one of the common factors among sustaining sites was clear commitment and support from a key group of people including the school administrator (Elias, 2004). The developers of Success for All (SFA), a comprehensive reform program for elementary schools, suggest that one of the reasons SFA has endured for so many years is that SFA schools are required to hire a SFA facilitator who then acts as a 'program champion' and is

able to “cushion the staff from changes in principals, district staff, or district policies (Slavin, 2004: p.64).”

Another important factor for sustainability is the extent to which the intervention ‘fits’ with the organization’s mission and adoption into the organization’s structure. Theoretical discussions of sustainability emphasize the importance of institutionalization of a program into the organizational structure (Massatti et al, 2008; Pluye et al 2004, Johnson et al, 2004). Scheirer’s (2005) review of 19 empirical studies of the sustainability of health-related programs found that 12 of 19 emphasized ‘fit’ as important to sustainability. This may be especially applicable to school-based interventions given the often capricious climate of school and district leadership and political context (Florian, 2001). Elias et al (2004) found that the integration of the program into whole-school scope and sequence was a key factor for sustainability. If a program does not fit with the school’s mission, or competes with other program requirements, sustained use of a new intervention may be compromised.

This study will examine both teacher-driven and external factors as direct influences on the sustainability of the REDI curriculum. In particular, this study will look at the teacher-driven factors of teacher perception of benefits, mastery/commitment, deep knowledge, and teacher perception of the intervention. The external factors that will be addressed include administrative support and program requirements. In addition, the factors posited to affect implementation quality (teacher experiences, teacher personal characteristics and classroom quality) are also seen as influencing sustainability since sustainability can be conceptualized as continued implementation.

There are several hypotheses to be examined in relation to the two goals of this study. Figure 2-3 provides a visual representation of the conceptual model with the proposed associations between concepts. In response to Goal 1, the first hypothesis is that higher implementation quality in Year 0 will be associated with higher levels of sustainability in Years 1

and 2. Successful sustainability is hypothesized to be dependent upon successes experienced during previous phases (Han & Weiss, 2005; Fixsen et al, 2005). Additionally, as many of the issues of implementation and sustainability overlap, the factors that influence whether a program is implemented with fidelity (as described earlier) may also influence the extent to which use of the program is sustained in the following years.

The remaining hypotheses concern Goal 2: exploring what factors influence sustainability. A second set of hypothesis focuses on the concurrent factors (i.e. those measured during the sustainability years) that may influence sustained use including teacher-driven factors and factors external to the classroom. It is hypothesized that teachers' perceived benefits of REDI to children, teachers' perceptions of the intervention, teachers' deep knowledge of the intervention, and teachers' mastery of techniques will affect the level of sustainability (Figure 2-3). Specifically, the more a teacher sees the program as benefiting children, the more likely she will be to sustain use of the program. If a teacher has favorable perceptions of REDI - i.e. sees REDI as easy to fit in her day, as user-friendly, as age-appropriate for her students – she will be more likely to sustain over time. Additionally, the greater a teacher's knowledge of the intervention is and the greater her mastery of the techniques, the greater the level of sustained use.

External factors such as administrative support or program requirements are also hypothesized to influence sustained use. The more a teacher feels supported by her supervisors and colleagues, the higher the likelihood that use of the REDI program will be maintained. However, if there are many curriculum requirements that compete with the time needed to properly administer the REDI curriculum, then the likelihood that REDI will be sustained will decrease.

A final set of hypotheses concerns the pre-implementation variables of teacher background, teacher characteristics and teaching quality. It is hypothesized that these “predictor” factors will influence sustainability much the same way as they influence implementation quality.

Specifically, teachers with lower levels of depression, who perceive more support and have higher levels of self-efficacy will be more likely to sustain REDI with high fidelity. Additionally, teachers with higher levels of education and more years of experience teaching will also sustain at higher rates. Teachers who create a warmer emotional climate, have better classroom management, and higher instructional quality will also be more successful at sustaining the REDI curriculum.

Using a Mixed Methodology

This study will use a multi-informant, multi-method format to investigate the above hypotheses regarding the implementation and sustainability of the Head Start REDI curriculum. Both quantitative and qualitative methodology will be used. The mixture of approaches is particularly applicable to prevention research, because prevention research is concerned with both statistical evidence and unique contextual factors. Social interventions are, “complex phenomena which require the application of multiple methodologies in order to properly understand or evaluate them (Steckler et al, 1992: p. 4).”

Qualitative research comes from an interpretivist epistemology (as opposed to the positivist epistemology associated with RCTs) where the goal of research is to engage people in dialogue in order to find insight into human action (Buchanan, 1992). While quantitative research is about prediction and identifying cause and effect relationships, qualitative is about gaining greater understanding and elucidating multiple viewpoints (Steckler et al., 1992). Strengths of qualitative research include the focus on context and the views of participants. Qualitative research sees social phenomenon holistically. Instead of employing a researcher-driven framework such as often the case in quantitative studies, qualitative research is often shaped by the participants as much as by the researchers. Questions in interviews may shift on the basis of the participant responses and what participants identify as important. Qualitative research is exploratory and fundamentally interpretive; it can be extremely useful when the important

variables have not yet been identified (Creswell, 2003). It generates rich, detailed, valid process data that is immersed in contextual understanding (Steckler et al., 1992).

A mixed methods approach is most appropriate for this study given the limited research on implementation and sustainability. Mixed methods are ideal for expanding understanding of the topic under study (Johnson & Onwuegbuzie, 2004; Creswell, 2003) because they are characterized by a flexibility of design. In mixed methods research, the research question guides the selection of methods (Johnson & Onwuegbuzie, 2004). Quantitative methods can be used to uniformly and objectively document the extent to which programs implement and sustain the intervention, as well as the extent to which moderating factors are present and contributing to differences across sites. The inclusion of qualitative methods helps gain additional depth of information and captures contextual complexities that may not be accounted for in quantitative measures. After all, in the final two phases of the prevention research cycle (see Figure 2-2), context is extremely important. Each school and/or teacher has a unique history and situation which needs to be taken into account when trying to implement and sustain a new program. Research methods that are attuned to context, i.e. qualitative research, are important to include.

Chapter 3

Research Design

Sample

The sample was drawn from the 44 classrooms that participated in the Head Start REDI randomized control trial. The classrooms were located in 24 Head Start Centers in three rural counties in Pennsylvania. Classrooms were randomized to intervention or control conditions, with randomization occurring at the center level to avoid contamination. The treatment classrooms implemented the REDI enriched curriculum (i.e. PATHS, Dialogic Reading, Sound Games and Alphabet Center) while the control classrooms continued to use their usual practice curriculums (High Scope for 2 counties, Creative Curriculum for the third). Data collection for this project took place in the intervention classrooms only.

Twenty-one teachers participated in this study across the two sustainability years. In Year 1, twenty teachers contributed data; in Year 2, fourteen of these teachers provided data. Of the six teachers who did not provide data in Year 2, two teachers declined to participate, three had moved to non-Head Start classrooms (and were thus ineligible for assessing sustainability), and one was on maternity leave during the data collection period. Thus, of the 18 eligible teachers in Year 2, 16 (89%) continued to provide data in Year 2. One additional teacher, who did not complete the Sustainability Survey and Interview in Year 1, completed the measures in Year 2. Thus, a total of fifteen teachers contributed Year 2 sustainability data. These teachers, primarily white females (see Table 3-1), provided data through in-depth interviews, teacher-reported surveys, and research staff observations and reports. These methods combine to explore the extent to which Head Start REDI, an evidence-based early childhood prevention program, is

implemented and maintained over time, as well as to identify the factors supporting or hindering implementation and sustainability of the REDI curriculum.

Table 3-1: Participants

	Number of Teachers (N=21)
Female	20 (95%)
Ethnicity	
White	18 (85%)
Black	2 (10%)
Multi-racial	1 (5%)
Education	
High School	2 (10%)
Some post High School	2 (10%)
Associate degree, vocational certificate	4 (19%)
4-yr degree (or more)	13 (62%)
Experience	
0 to 5 years	6 (29%)
6 to 10 years	4 (19%)
11+ years	11 (52%)

Study Design Overview

Head Start REDI data collection for Cohort 1 began in the fall of 2004 with post-test data being collected in the spring of 2005 (Year 0); Cohort 2 data collection began in the fall of 2005 and the post-test was collected in the spring of 2006 (Year 0). Implementation data was collected across Year 0 for both cohorts.

The greater part of sustainability data collection took place during Year 1, i.e. the year following the implementation year (Year 0). This time period for data collection was targeted because it documents the transition to sustainability. Year 1 was the first time the teachers were no longer mandated by the research program to use REDI in their classrooms. With the child participants of the REDI trial no longer in the Head Start classrooms, the level of technical

support offered to teachers was reduced. Specifically, the REDI coaches visited the classrooms once a month, instead of continuing with weekly meetings as was done during the implementation period. Support in Year 1 was driven primarily by teacher-generated questions, rather than using a designated protocol of assistance. Teachers were allowed to keep all of the REDI materials. Data collected during Year 1 documented the transition period between implementation with full research-team support and sustainability with no research-team support. Therefore, collecting data in Year 1 provides information on whether the teachers will continue use of the REDI curriculum without substantial outside encouragement and assistance.

Sustainability data was also collected during Year 2. In Year 2, local Head Start programs were fully responsibly for supporting teachers' use of REDI. In addition, by Year 2, all teachers within the Head Start programs were trained in the REDI curriculum and given the materials as per the research agreement between Penn State and the Head Start programs. Thus, the decision about whether to continue use of the REDI curriculum in Year 2 was left to the Head Start program. This year of data collection provided valuable information about whether the REDI curriculum and coaching strategies are sustainable without support from the research team.

Sustainability data collection began in Year 1, Winter 2006, for Cohort 1 (for Cohort 2, Winter 2007). Year 1 sustainability data collection consisted of REDI coach observations and reports in both the winter and the spring, classroom observations in the fall and spring, and teacher interviews and reports during January and February. Year 2 sustainability data collection for Cohort 1 (Winter 2007) and Cohort 2 (Winter 2008) consisted only of teacher interviews and reports.

The winter months were chosen as the optimum time to collect the teacher interviews because by that time the classrooms are expected to have established a daily routine and are committed to using whatever curriculum they had selected for the year. Head Start programs typically begin in August/September and it takes a couple months for teachers and children to

become acquainted and establish a daily routine. Data collection too early in the year may have provided an inaccurate picture of the classroom climate and usual teaching practices as classroom relationships and routines were not yet stable.

Within each intervention classroom, only the head teacher was included in the sustainability follow-up. The period of sustainability data collection covered the two years following the year of implementation. Sustainability data collection consisted of measures at both the classroom level and at the level of the individual teacher for Year 1 and only at the individual level for Year 2.

Measures

Pre- Implementation Measures

Teacher Experiences. At pre-test, teachers completed *The Background Information Survey* to provide information about their demographics including age, gender and ethnicity and their education level, training and years experience with children. This version, adapted from the Head Start Teacher Self-Administered survey from the Head Start Family and Child Experiences Survey (FACES, 1999), consists of 15 items, as opposed to the 23 items in the original measure. Some questions involve direct input from teachers (i.e. age or years of experience in teaching), some require a yes /no response (i.e. do they have a certain credential?) and others offer multiple options from which to choose (i.e. education level). There is no cumulative score for this scale; all questions are analyzed individually. The variables for teacher education level and teaching experience were drawn from this survey. *Education* was coded as a continuous variable with values ranging from less than 12 years (for less than high school education) up to 18 years (for completion of a Masters degree). *Experience* was coded as the total number of years the individual had been employed as a teacher in a preschool setting.

Pre-Implementation Report of Teacher Characteristics. Teacher depression was assessed using the Center for Epidemiological Studies Depression Scale (CES-D: Radloff, 1977). The

CES-D is a 20 item self-report measure used to assess depression symptoms in the general population. Each item states a feeling such as “You did not feel like eating”, “you felt sad”, or “you were as good as other people.” Teacher responded by judging how often they had the specific feelings during the past week using a four-point scale where 0 means “rarely or never (less than 1 day)”, 1 means “some or a little (1-2 days)”, 2 means occasionally or moderately (3-4 days) and 3 means “most or all (5-7 days). The cumulative score of all items (some are reverse coded) indicates how depressed the subject is ($\alpha = .82$). The possible range for the total score is 0 to 36.

The *Teacher Self-Efficacy Scale* collects information about the teacher’s beliefs or expectations of the Head Start program. There are twenty items total; fifteen were adapted from the Teacher Efficacy Scale from Gibson and Dembo (1984) and five were chosen from the Teacher Efficacy scale used by Sodak and Podell (1996). Each item is a statement about the teacher’s belief of the teaching program and the teacher rates the extent to which he/she agrees with the statement on a six point scale, where 1 is “strongly disagree ” to 6 “strongly agree”. This version includes three subscales similar to those used by Sodak and Podell (1996). Teaching efficacy includes 9 items about teachers’ beliefs about the influence of external factors, such as the home, heredity and TV violence, on the impact of teaching; personal efficacy includes 4 items that address a teacher’s beliefs about their ability to perform specific behaviors; and outcome efficacy is made up of 7 items that refer to teacher’s beliefs that student outcomes are attributable to their actions. Items in the teaching efficacy subscale were reverse-coded so the higher the rating is, the more confident the teacher feels about their efficacy. Subscale scores are calculated by averaging across items. For these analyses, the total composite score, labeled *Teacher Efficacy*, was used ($\alpha = .70$).

Within the domain of *Workplace Feelings*, three variables were included in analyses – job satisfaction, perceived trust and motivation, and satisfaction with support. *Job Satisfaction*

was measured with a 13-item scale (Gill, Greenberg, Moon & Margraf, 2007) that focused on the domains of salary and benefits, interpersonal climate (e.g., How satisfied are you with communication between ranks in the agency?), supervision, and roles and responsibilities ($\alpha = .95$). *Perceived trust and motivation* and *satisfaction with support* came from the Organizational Culture Scale (Glaser, Zamanou & Hacker, 1987) which consists of 28 questions exploring teachers' perceptions of several different aspects of their work environment plus 11 additional items regarding organizational trust and motivation (e.g., In this Head Start program, teachers and other professionals trust each other). Sample items from the Organizational Culture Scale include: "My Head Start supervisor is approachable", "When changes are made the reasons why are made clear", "I am asked to make suggestions about how to do my job better" and "Working here feels like being part of a family." Teachers used a 5-point Likert scale to answer each item. The response options on this scale are: to a very little extent (1), to a little extent (2), to some extent (3), to a great extent (4), and to a very great extent (5). For the 39 item scale, $\alpha = .95$.

Pre-Implementation Observations of Teaching Quality. Quality of the classroom environment was assessed using the *Classroom Assessment Scoring System* (CLASS: LaParo, Pianta & Stuhlman, 2004). The CLASS targets the levels of emotional support in classrooms, as well as the quality of general instruction. The CLASS consists of 10 items rated on 7-point scales with 1 representing "uncharacteristic" and 7 "extremely characteristic" of the observed classroom. Items in the Emotional Support subscale assess positive climate, negative climate (reverse coded), teachers' sensitivity, over control (reverse coded), and behavior management. Items in the Instructional Support subscale assess productivity, concept development, instructional learning formats, the quality of feedback provided to children, and children's engagement.

Each CLASS item is given a rating after an observation period of 20 consecutive minutes. Four 20-minute epochs were rated in one day in each classroom by the same observer; ratings for each item were then averaged across the 4 epochs. Summary scores were created by

averaging the average item scores of the 5 items in each subscale. Alphas for each subscale from the entire Head Start REDI sample of Head Start teachers (both intervention and control) ranged from 0.61 to 0.91 with the alpha for the overall CLASS scale at 0.92.

The *Teaching Style Rating Scale* (TSRS; Domitrovich, Cortes & Greenberg, 2000) consists of 3 subscales with three items each for a total of 9 items. All items were rated on a 5 point Likert Scale from 1 (almost never) to 5 (almost always). Observers completed the TSRS individually for the Lead and Assistant teachers immediately after concluding a three-hour observation period in the classroom, though only lead teacher data is used in this study. To document observer reliability, four observers each completed 2 sets of TSRS ratings (one for each classroom teacher) with the master observer. Average agreement on TSRS items was 93% within 1 scale point. Individual items were averaged to create three subscales. The *Classroom Management* subscale consisted of three items describing the teacher's preparedness, use of consistent routines, and effective control and limit-setting ($\alpha = .83$). The *Discipline* domain included three items that described proactive/preventive approaches, the use of positive behavior management (such as praise, reinforcement and redirection), and the absence of negative discipline ($\alpha = .85$). The *Positive Emotion* subscale included three items assessing emotion expression, support for student emotion regulation, and emotion modeling ($\alpha = .90$).

Measures during the Implementation Year (Year 0)

The implementation measures - REDI Coach Implementation Ratings and Teacher Implementation Perceptions Survey - were designed specifically for the Head Start REDI project. See Table 3-2.

Table 3-2: Measures completed during the Implementation Year

Measure	Description	Approximate Time of Measurement
REDI Coach Implementation Ratings	Using classroom observations, review of teacher logs, and weekly supervision meetings, REDI Coaches rate implementation quality and general usage globally and for each REDI components individually	Completed monthly during Year 0
Teacher Implementation Perceptions Survey	Teachers report their opinions about the REDI program both in terms of the curriculum materials and the coaching strategies. Topics covered include ease of use, administrative support, perceived impact on children and plans for continued use of REDI in future.	End of Year 0

Implementation Quality. The *REDI Coach Implementation Ratings (CIR)* were completed monthly by the REDI coaches based on weekly meetings with the intervention teachers and the weekly implementation logs completed by the teachers. This measure consists of 22 items which cover the key aspects of implementation quality including dosage, fidelity and child engagement for the REDI curriculum component. Of most interest to this study were the general ratings of implementation quality at the global level and for each individual REDI component. These *Implementation Quality* scores used in the analyses capture the coaches' ratings, on a 7 pt scale, of the item "based on your classroom observations, review of the teacher logs and weekly supervision meetings, what is your evaluation of the overall quality of [REDI component] implementation for this month."

Teacher Perceptions of the Intervention. At the end of Year 1, as part of the post-intervention data collection, teachers also completed the *Teacher Implementation Perceptions Survey (TIPS)*, a survey about their experiences with the REDI curriculum. Thirteen questions were asked about the REDI curriculum and coaching strategies; most used a 5 point Likert scale. Examples of questions that teachers were asked to respond to include user-friendliness of REDI, ease of fitting REDI into the daily routine, perceived level of child interest in the components and

the perceived impact of REDI on child development. For each of those items, teachers reported for each individual component. Teachers were also asked about the perceived support of coworkers and supervisors in relation to use of REDI and the extent to which they planned to continue using REDI in the future.

Several variables were created from the TIPS and used in the analyses. *Curriculum Acceptability* is the average of the two items addressing extent to which teachers thought the REDI component was user-friendly and how easy they felt it was to fit into their day. *Perceived Effectiveness* is the average of the two items covering the teacher's perception of how engaged and interested the children were and the developmental impact of the REDI component. Curriculum Acceptability and Perceived Effectiveness were both calculated for each curriculum component – Dialogic Reading, Sound Games, Alphabet Center and PATHS. *Enthusiasm for Continued Use* was based on one item asking teachers about their enthusiasm for continuing to use the REDI curriculum as a whole. *Fit Teaching Style* is drawn from the question which asked the teachers to rate the extent to which they felt the coaching strategies matched their teaching style. There were six coaching strategies included in the rating; Fit Teaching Style was calculated for language/literacy coaching strategies (3 items) and social-emotional coaching strategies (3 items). *Administrative support* was created from three items that assessed the extent to which teachers felt that the Head Start director, their educational manager, their Head Start supervisor and their co-teacher valued REDI's goals, supported the integration of REDI and encouraged the continued use of REDI.

Measures Completed during Sustainability Years

For the sustainability follow-up in Year 1, a multi-method, multi-measure assessment framework was used, with three measures from two sources of data (see Table 3-3). Three distinct measures of sustainability were drawn from this multi-measure approach.

Table 3-3: Measures Completed during the Sustainability Years

	Measure	Description	Approximate Time of Measurement
REDI Coach Report	REDI Coach Sustainability Ratings	Observation of a REDI lesson conducted by REDI Coach with ratings of implementation rate & quality and general usage for REDI components and globally	Completed Spring of Year 1
Teacher Report	Teacher Sustainability Perceptions Survey	Asks teachers to rate how much they are using the Head Start REDI components on a regular basis (i.e. this year). Also asks about the extent to which the teachers feel they have modified any of the REDI components from their original usage	Completed in Winter of Years 1 & 2
	REDI Qualitative Sustainability Interview	Open ended, semi-structured interview about the teacher's continued use of REDI components, factors that sustain/hinder use of curriculum and teacher's knowledge of how REDI benefits child development.	Completed in Winter of Years 1 & 2

Coach Report Measures. The *REDI Coach Sustainability Ratings* (CSR) were adapted from the implementation measures and are used to track change or stability over time. The REDI Coach Sustainability Ratings was completed twice a year (winter and spring) after the coach conducted a classroom observation. For this study, only the spring coach ratings were used due to missing data in the fall for one site. A copy of the REDI Coach Sustainability Ratings is included in Appendix B.

Coaches rated the sustained implementation quality of each REDI curriculum component as well as completed a global assessment of sustained implementation quality of the entire REDI curriculum based on their observations of the teacher in the classroom. For the coaches' observations, teachers were asked to conduct a Dialogic Reading and PATHS lesson for the observation. Teachers were not required to demonstrate use of Sound Games or Alphabet Center so there is a smaller sample for those two curriculum components. Those missing numbers may indicate a lack of sustained use- the coaches did not get to observe the component because it was

no longer being implemented at all - or it may just have been neglected during that particular day. Like the CIR described above, the main variables drawn from the Coach Sustainability Ratings were based on the coaches' overall evaluation of implementation quality for each individual component and for global implementation of REDI. These *Coach Sustainability* ratings represent the first measure of sustainability.

Teacher Report Measures. Teachers completed the Teacher Sustainability Perceptions Survey (TSPS) at the end of both Year 1 and Year 2. The TSPS basically parallels the TIPS described above, with two main exceptions. One, alterations were made to reflect the sustainability time frame. Two, more questions were added to address continued use, changes made to the curriculum, and participation in additional trainings. There are 20 items total for the Teacher Sustainability Perceptions Survey; most were rated on a 5 point Likert Scale. A copy of the Year 2 TSPS is included in Appendix B.

The second measure of sustainability, *Teacher-Report Sustainability*, was created from the *TSPS* variable by averaging together three items, rated on 5 point Likert scales, for each curriculum component: 1) to what extent was REDI implemented as written?; 2) to what extent have you made changes to REDI components by shortening the lessons? (reverse-coded); and 3) to what extent have you made changes by incorporating new materials/activities? (reverse-coded). Three of the four curriculum components (Dialogic Reading, Sound Games and the Alphabet Center) contained the items as described above. In Year 1, Cronbach's alphas for Dialogic Reading and Sound Games were .72, and .79 respectively suggesting the items are highly related and form a scale with high internal consistency. PATHS Teacher- Report Sustainability included 9 items with a Cronbach's alpha of .85. The Alphabet Center reliability analyses showed lower internal consistency with an alpha of only .33. In Year 2, Cronbach's alpha for Dialogic Reading and Alphabet Center were .85, and .63, respectively, suggesting a scale with internal consistency.

PATHS Teacher-report Sustainability (9 items) had a Cronbach's alpha of .93 while Sound Games showed lower internal consistency ($\alpha = 0.44$).

Several other variables that assess the concurrent teacher-driven factors also were drawn from the TSPS. First, a number of single-item measures were used for each of the four curriculum components. These items are *User-friendliness*, *Ease of Fit*, *Child Interest* and *Developmental Impact*. Like in Year 0, three items were combined to measure *Fit Teaching Style* for both Language/literacy and Social-Emotional components. Also, as in Year 0, *Enthusiasm for Continued Use* was drawn from the item asking teachers about their enthusiasm for continuing to use the REDI curriculum as a whole.

Other variables from the TSPS assessed external factors such three items covering teacher's perceptions of support. *Co-teacher Support* refers to the extent to which teachers felt that their co-teacher valued the goals of REDI and supported the integration of REDI into daily activities. *Administrative Support* consists of the extent to which teachers felt that the Head Start director, their educational manager and their Head Start supervisor valued REDI's goals, supported the integration of REDI and encouraged the continued use of REDI.

The *REDI Qualitative Sustainability Interview* is a collection of open-ended questions designed to elicit information about the teacher's continued use of REDI components, factors that sustain/hinder use of curriculum and teacher's knowledge of how REDI benefits child development. The Interview was developed specifically for the sustainability project after it had been piloted in other Head Start classrooms which are using the preschool PATHS curriculum. After completion of the first year of sustainability data collection, the questionnaire was amended slightly for Year 2; questions asking about Head Start's philosophy, program efforts towards maintaining use of REDI and "lessons learned" were added. A copy of the REDI Qualitative Sustainability Interview used for Year 2 is included in Appendix B.

For the third measure of sustainability, *Qualitative Sustainability*, teachers' interview responses were coded as to whether they made any statements indicating that they were still using parts of the REDI curriculum. Any mention of regular continued use, regardless of subsequent comments about changes made to the component, was recorded as "yes, REDI sustained" indicating that the teacher had sustained use. If teachers said they were not still using the component, or only used it sporadically, were coded as "no, REDI not sustained."

Chapter 4

Results

Plan of Analyses

To address Goal 1, the first step is to document the extent to which teachers sustained the REDI curriculum components during Year 1. Three measures of sustainability are examined: Teacher-Reported Sustainability, Coach Sustainability, and Qualitative Sustainability. Given convergence of these measures, a measure of Cross-Method Sustainability for Year 1 is created.

Next, to examine Goal 2, the factors which have been hypothesized to influence sustainability of the REDI curriculum will be explored. First the qualitative teacher-report data, then the quantitative teacher-report data will be examined. The two types of data will be compared to determine whether teachers are identifying the same factors through the different methods. Then both the associations between concurrent factors (teacher perceptions of the intervention, teacher perceptions of benefits, extent REDI fits teaching style, administrative support and co-teacher support) and Cross-Method Sustainability, and between the ‘predictor’ factors (teacher experiences, teacher characteristics, pre-REDI teaching quality, teacher perceptions of the intervention in Y0, and coach-rated implementation quality in Y0) and Cross-Method Sustainability will be examined.

Third, continued use of REDI in Year 2 will be explored through Teacher-Reported Sustainability. The association between Teacher-Reported Sustainability in Year 1 and 2 will be calculated. Finally, both the concurrent and predictor factors will be correlated with Year 2 sustainability.

Sustainability in Year 1

Quantitative Teacher Report

During Year 1, PATHS was sustained at the highest levels (mean = 4.6) while Dialogic Reading (DR) was sustained at the lowest levels (mean = 3.55). The Alphabet Center (AC) and Sound Games (SG) are in the middle with means of 3.8 and 4.0, respectively. Further analysis of the teachers' reports for PATHS showed that 85% of the teachers (all but three) sustained at a rating of 4 or higher which indicates that they were "pretty much" continuing to use PATHS. In contrast, for DR, only 40% of teachers (8 of the 20) reported that they were sustaining DR at a rating of 4 or higher. In addition, two teachers had DR Teacher-Report Sustainability scores of 1, indicating they were "not at all" sustaining DR. Table 4-1 displays the descriptive statistics for Teacher-Reported Sustainability for each curriculum component.

Table 4-1: Basic Statistics for Teacher-Reported Sustainability for each of the REDI Components

	Dialogic Reading	Sound Games	Alphabet Center	PATHS
N	20	20	20	20
Mean	3.55	4.02	3.80	4.60
Std. Dev.	1.02	0.85	0.62	0.45
Min	1.33	2.67	3.00	3.67
Max	5.00	5.00	5.00	5.00

Coach Report

Using the *REDI Coach Sustainability Ratings*, the REDI coaches rated the implementation quality of each curriculum component as well as a global assessment of implementation quality of the entire REDI curriculum in the spring of the first year of sustainability (Year 1). Coach Sustainability for each curriculum component was similar to Teacher-Reported Sustainability with PATHS showing the highest level of implementation

quality (mean = 4.57), DR showing the lowest (mean = 3.81) and SG and AC in the middle (means of 4.00 and 4.06 respectively). In general, the coaches gave slightly lower scores than did the teachers. The coaches rated only a few teachers as a 6 and none were rated as a 7.

The mean level of global Coach Sustainability (when coaches rated implementation quality of the REDI model as a whole) in the spring of the Year 1 was 3.62 which is midway between weak and adequate as per the descriptions of the scale points. The majority of teachers (57% or 12 of 21) were rated as a 3 – weak global implementation quality. Only one teacher received a score of 6, ‘very strong.’ None received a 7, ‘exemplary.’ It is interesting to note that the quality of implementation quality for the individual components was higher than the overall global implementation quality coach ratings, which is likely to be affected by the lowest score of any component. Table 4-2 shows the descriptive statistics of global Coach Sustainability as well as the statistics for each curriculum component.

Table 4-2: Basic Statistics for Coach Sustainability during Year 1

	Global REDI	DR	AC	SG	PATHS
N	21	21	17	15	21
# Missing	0	0	4	6	0
Mean	3.62	3.81	4.06	4.00	4.57
Std. Dev	1.02	1.08	.97	1.07	1.03
Min	2	1	2	2	2
Max	6	6	6	6	6

Qualitative Teacher Report

From the qualitative interviews, teachers’ responses were coded as “yes, sustained” or “no, not sustained” for each part of the REDI curriculum. Eight teachers (40%) reported that they were using all parts of the REDI curriculum during Year 1.

When examining individual components, all teachers reported that they were using some aspect of the REDI curriculum in Year 1. A similar pattern of sustained use of the REDI components emerges from the qualitative interviews as was found in the quantitative data from the teachers and coaches. PATHS was most likely to be sustained, while DR was sustained the least. All of the 20 teachers, 100%, reported that they were continuing to use the PATHS curriculum in the first year of sustainability, while 14 teachers, 70%, reported that they were continuing to use DR in their classrooms. SG was sustained at the same rate as DR with 70% of teachers reporting that they were continuing to use SG. The AC fell in the middle with 85% of teachers continuing some use of the AC.

However, teachers were not simply reporting that they sustained the curriculum as written. Many teachers provided lengthy descriptions about how they had altered their implementation of REDI from how they were first instructed to implement it. The AC was the component most frequently included in descriptions of REDI modifications: 15 of the 17 teachers (88%) who were continuing to use the AC described adaptations. Some of these changes can be considered positive adaptations such as more extensive incorporation of the letter into daily activities. One teacher describes how she added to the REDI Alphabet Center by saying,

“We've incorporated using... the letter every day. Like in our morning message, they have to come find the letter, or find the letter around the room. Different things like we go on a walk, we find the letter.”

Other changes suggest a departure from fidelity to the REDI curriculum such as eliminating the weekly tracking system to document children's letter knowledge or not creating a word wall.

Dialogic Reading also faced modifications from the teachers, many of which detracted from the original REDI curriculum. Common changes that might be seen as detrimental include altering the typical schedule of DR by reading more than 2 books a week, not reading the same book twice, or not using the prop book as well as using books other than the REDI books, and not focusing as sharply on the accompanying vocabulary and grammatical targets. Ten of the 14

teachers who were continuing DR reported some change in their implementation. The following comments demonstrate common changes to DR:

"We do one book a week and we do the first day, the kids look at the pictures and talk about the pictures. The second day we read it and ask the dialogic questions. The third day, the kids retell the story by looking at the pictures and then the fourth day we do an extension. So we only do like one extension for the story versus 2 and just read it differently." Cohort 1

"We don't read the book two days in a row. Like on Tuesday, I do the props and I read the first book. Wednesday I read the second book. Thursday and Friday I pick two of my own books. So we're not doing the same books two days in a row." Cohort 2

For teachers who continued to use SG, two main types of change were described. The first was to slow down the progression of games so that the teachers were not keeping up with the schedule suggested in the REDI curriculum, but were still progressing in the same order. This can be seen as a positive change because it adapted the curriculum to better suit the needs of the children in the class. Teachers often worked with REDI coaches to figure out a more appropriate progression. The second common change was less positive as teachers decided to simply pick and choose favorite sound games to do whenever it fit their schedule.

PATHS was seldom modified. Even teachers who were not interested in other aspects of REDI, or who had made substantial changes to the other components, stated that they were continuing to use PATHS as written. Any changes that were discussed were usually minimal and often served to enhance the children's experience of the PATHS curriculum such as ad-libbing the puppet conversations rather than following the script verbatim or extending discussion of emotions by having children identify their emotion when they arrived in the morning. Occasionally there were adaptations that detracted from the PATHS experience such as not sending the PATHS-related parent handouts home but these were rare.

Year One Sustainability across Methods

The next step in the analyses was to create a measure of sustainability that incorporated information from the multiple data sources. We first examined the degree of convergence across the measures of sustainability through correlations and direct comparisons. To do so, criteria were established for what constituted “sustained” for each measure of sustainability – Teacher-Reported Sustainability Scale, Coach Sustainability and Qualitative Sustainability.

Convergence of Sustainability Measures

Teacher-Reported Sustainability for each REDI component was correlated with Coach Sustainability by component. Results are shown in Table 4-3. In general, correlations were positive, but modest in size. Given the small sample size, there were few significant correlations between the two measures of sustainability. Only DR showed a significant association between the coach-rated and teacher-rated sustainability ($r=.45$, $p<.05$).

Table 4-3: Correlations between Teacher-Reported Sustainability and Coach Sustainability by Component

		Teacher-Reported Sustainability				Coach Sustainability			
		DR	SG	AC	PATHS	DR	SG	AC	PATHS
Teacher-Reported Sustainability	DR	-	-.22	-.23	-.12	.45(*)	.18	.26	.23
	SG		-	.29	.51(*)	-.40+	-.19	-.42+	-.34
	AC			-	.29	.16	-.12	.21	-.17
	PATHS				-	-.18	-.34	-.31	-.30
Coach Sustainability	DR					-	.45+	.70(**)	.64(**)
	SG						-	.72(**)	.76(**)
	AC							-	.57(*)
	PATHS								-

+ Correlation is significant at the 0.10 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Sustained use can also be characterized as a yes or no occurrence. Given the relatively low level of convergence obtained through linear correlations, convergence was also assessed by

examining the number of teachers designated as “sustained.” Criteria were assigned that defined what constituted “yes” sustainability within each of the three measures. For Teacher-Report Sustainability, teachers who scored higher than a 3.5 (on 5 pt scale) were considered to have sustained the curriculum. Given the scaling of the items, a score higher than a 3.5 should be interpreted as “pretty much” or “very much” and would be beyond “somewhat.” Using this standard, sustainability for each component ranged from 55% for the AC to 100% for PATHS. See Table 4-4 for specifics.

For Coach Sustainability, teachers who were scored at 4 or higher (on 7 pt scale), regarding the overall quality of implementation of a particular component were designated as sustaining that component. The percent of teachers sustaining ranged from 62% for DR up to 90% for PATHS (see Table 4-4).

For the Qualitative Sustainability measure, teachers who discussed how they were continuing to use the particular component in a manner that was similar to how they used it during the implementation year were coded as having sustained the component. The percent of teachers sustaining the individual REDI components ranged from 70% for DR and AC to 100% for PATHS. See Table 4-4.

Table 4-4: Comparison of Number of Teachers who Sustained each Curriculum Component Across Methods and Sources

	Teacher-Reported Sustainability	Coach Sustainability	Qualitative Sustainability
	≥ 3.5 (out of 5)	≥ 4 (out of 7)	<i>Yes, they sustain</i>
DR	12/20 (60%)	13/21 (62%)	14 of 20 (70%)
SG	14/20 (70%)	10 of 15/21 (66%/48%)	14 of 20 (70%)
AC	11/20 (55%)	13 of 17/21 (76%/62%)	17 of 20 (85%)
PATHS	20/20 (100%)	19 of 21 (90%)	20 of 20 (100%)

In general, the patterns of sustainability were similar across the methods. All components were sustained to some degree with at least 50% of teachers continuing to use the curriculum during the Year 1. Across methods, DR had the lowest levels of sustainability while PATHS had the highest (almost 100% across all measures) and Sound Games and AC fell somewhere in between. Additionally, the percentage of teachers sustaining each component was similar across methods. One notable disparity between the sources is the high level of sustainability for the AC from the Qualitative Sustainability Interview; this may be due to the fact that while many teachers reported continuing the AC, they also described many changes to the AC. This high number of changes was not captured in the qualitative definition of sustainability (teachers simply sustained or did not sustain) but was noted in the Teacher-Report ratings and Coach ratings.

Cross-Method Sustainability by REDI Component

Given the degree of convergence across methods, the next step was to create a summary measure of sustainability across raters and methods, i.e. *Cross-Method Sustainability*. Using all three sources, teachers were grouped into high, medium and low levels of sustainability for each curriculum component. To generate the high, medium and low categories, the scores on each measure were considered along with the relative ranking of the teacher compared to the other teachers. To be classified as high in sustainability, the teachers met the following three criteria: 1) they indicated they were still using the component in the qualitative interview; 2) they were ranked in the top third of either the coach ratings or self-report scores of sustainability and 3) were ranked in the top 50% of the other (either the coach or self-report rating). For example, one high sustaining teacher said she was continuing to use DR in the interview and had a coach rating of 5 (in the top third) and a self-report score of 4 (in the top half).

To be classified in the low (or no) sustainability category, teachers met the following three criteria: 1) they were rated as a 3 or lower by the coaches; 2) their coach ratings and self-report scores put them in the bottom third of the rankings; or 3) if a teacher said they were **not** continuing to use the component during the interview, the teacher was automatically categorized as low/no sustaining. For example, one teacher said she was not sustaining SG during the interview, and scored a 2 for Coach Sustainability which placed her in the low category even though her Teacher-Report Sustainability was 4.67.

If a teacher did not fit into either the high or low sustainability categories, then she was classified in the medium sustainability category. This usually meant that a teacher was in the middle third of the coach and self-report rankings, with scores of 3 or 4 for the coaches rating and 3-4 for the self-report score. For medium level, if teachers did happen to have a high coach rating or self-report score, then the other one was usually at a much lower level. All teachers in the medium sustainability category had reported that they were sustaining the curriculum in the interview. For example, one teacher who was classified as medium sustaining for the AC had a self-report score of 5 but a coaches rating of 3.33 which put her 15th out of 20 in the rankings.

Similar patterns of sustainability levels emerged for the language and literacy components: DR, SG and AC (see Table 4-5). Five or six teachers were classified as high sustaining, eight were medium sustained, and 6 or 7 teachers sustained at low levels (or did not sustain at all). A different pattern emerged for PATHS sustainability. Due to the limited variability of scores, and the generally high scores of teachers on PATHS implementation (the overall mean was at least a half point higher for PATHS as compared to the other curriculum components, see Tables 4-1 and 4-2), many more teachers fell into the high sustainability group than with the other REDI components. For PATHS, ten teachers were high sustainability, eight were medium and two were low.

Table 4-5: Number of Teachers in Each Category of Cross-Method Sustainability by REDI Component

	Level of Sustainability		
	Low	Medium	High
DR	7	8	5
SG	6	8	6
AC	5	8	7
PATHS	2	8	10

There were significant positive correlations between DR, AC and PATHS (see Table 4-6) suggesting that teachers who sustained one of these components at a high level were more likely to sustain the others at similar levels. SG were not significantly associated with any of the other curriculum components.

Table 4-6: Correlations between Cross-Method Sustainability of REDI Components

	DR	SG	AC	PATHS
DR	-	0.00	.60**	.54*
SG		-	.25	.097
AC			-	.47*

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Cross-Method Sustainability – Whole REDI Curriculum

After determining sustainability for each REDI component, the teachers were then categorized based on their sustained use of the REDI curriculum as a whole. This summary score across components addresses the question of which teachers have continued to sustain all parts of the REDI curriculum and which teachers are failing to sustain any REDI components. “Global” sustainability categories were determined by examining whether a teacher performed at similar

levels across components. If a teacher was at the same level of sustainability for three of the four components, then that level was assigned as the level of global sustainability. For example, a teacher who was high on DR, AC and PATHS and medium on SG would be classified as high global sustainability; one teacher classified as globally low was medium on DR and low on SG, AC and PATHS. Thirteen of the twenty teachers were easily classified using that method. For the other seven teachers, the global sustainability rating assigned was the same as their Dialogic Reading classification because DR drove much of the REDI curriculum and had the highest variability of implementation quality. The DR classification did match at least one other component's sustainability level. For example, one teacher classified as globally medium was medium on DR and PATHS and low on SG and AC. Using these criteria, five teachers were globally high sustaining, nine were medium and six were low (see Table 4-7).

Table 4-7: Global Cross-Method Sustainability

	Level of Sustainability		
	Low	Medium	High
Whole REDI Curriculum	6	9	5

Factors Contributing to Year 1 Sustainability

The next analyses address Goal 2: to identify factors that may facilitate or hinder sustained use of the REDI curriculum. There are many possible reasons why a curriculum may or may not be sustained over time. Some may be unique to a specific teacher/classroom while others may affect sustainability no matter what the setting. To identify factors, the qualitative data was examined using content analysis (Stemler, 2001) to ascertain what the teachers felt had contributed to their sustained use of the REDI curriculum. Next, the factors present in the Teacher

Sustainability Perceptions Survey were examined— these were termed the *concurrent* factors and were seen as directly affecting sustainability in the conceptual model. Third, correlations were used to explore what “predictor” factors, i.e. those variables measured before the sustainability years, are associated with sustainability.

Qualitative Concurrent Sustainability Factors

The open-ended Qualitative Sustainability Interview allowed teachers to describe in their own words what helped or hindered them in sustaining the REDI curriculum. Each Year 1 Sustainability Interview was read through and content analysis was used to identify emergent themes of why teachers were or were not sustaining REDI. First, all responses teachers gave as to why they were or were not continuing to use the REDI components were coded into an extensive list of various supports and barriers, with many of the items incorporating the exact phrasings of the teachers. Next, this list of items was examined and items were consolidated into broader categories of factors that influence sustainability (see Table 4-8).

Table 4-8: Qualitative Concurrent Factors Contributing to Sustainability

Factor	% of Teachers Who Made Comments
<i>Why Sustain</i>	
Teacher sees benefits of REDI in children	100%
Students engage with and use curriculum skills	85%
REDI approach matches teaching style	75%
REDI helps teachers improve their teaching skills	85%
REDI helps create a better classroom atmosphere	60%
REDI addresses specific concerns of classroom	65%
Positive support from teaching team	80%
REDI is easy to use	50%
REDI was required	45%
<i>Why Not Sustain</i>	
REDI conflicts with other program requirements	70%
Not enough time to do REDI	50%
REDI not developmentally appropriate	50%
Limited or no support for using REDI	40%
REDI conflicts with teacher's philosophy and style	40%

Reasons Teachers Do Sustain REDI. Out of the extensive list of reasons the teacher provided as to why they sustained REDI, nine categories of reasons emerged that were endorsed by at least half of the teachers. The most common rationale given for continuing to use REDI was that the teacher saw benefits for the children. All teachers made some mention of their perception that REDI benefited their children's development. Across the teachers, all of the components were specifically identified as providing benefits – though PATHS and Dialogic Reading were the components most commonly addressed as represented in the following remarks.

"I think PATHS really builds their self confidence, their self-worth, it really makes them feel good about themselves and respect each other. I think the PATHS lessons teach them a lot about feelings and identifying, working with other kids." Cohort 1

"[REDI has helped] definitely their vocabularies, their appreciation of books and their understanding of authors and illustrators, kind of how a story is set up.... I

think it's really helping them to be more expressive in their creative activities like telling stories, talking about their art and their other things that they do." Cohort 2

A second reason for sustaining REDI was that teachers reported positive student engagement with, and use of, the curriculum skills. Seventeen of twenty teachers cited this reason. Teachers often remarked on how their students liked the various REDI materials – the puppets, the props, the books – as well as the activities – answering questions about the books, talking about what Twigg and his friends were up to, etc. The teachers were excited to see the children actually using the skills they were teaching. These discussions were often in reference to PATHS and the social problem solving skills but sometimes teachers talked about how their children would use the language skills as well. One teacher described how she heard her children recasting to each other:

"They ask each other questions and I even catch some of them recasting to each other. Because they'll be like, somebody will be like, so my mom got me these at Wal-mart. Oh so your mom went to Wal-Mart and stuff like that. So they're doing the back and forth to each other." Cohort 1

A third reason that teachers said they were continuing to use the REDI curriculum was that the REDI approach matched their teaching style – continuing to use REDI just meant doing the same things they had done in the past. This may have meant talking with children about their feelings, as is done in PATHS, or presenting children with books regularly, as done with DR lessons. Fifteen of the twenty teachers made some mention of how REDI matched their teaching style, and all the components were mentioned by teachers as matching up with what the teachers were already doing. The following comments epitomize the responses in this category:

"And I like PATHS, it's very similar to my personal way of dealing with behaviors and all of that, like using their words and you know, telling their friends. That's very, that was really, that part was really easy for me because I've always been, that's how I've always done things." Cohort 2

"And then the DR I really like because, it was a lot of what I did already, was ask them questions and stories. It just guides me a little bit more through it." Cohort 1

That fact that REDI helped teachers improve their teaching skills is the fourth reason mentioned for sustained use. Sometimes REDI acted a reminder, setting down in print strategies and activities that teachers knew were effective, but just did not always do on a regular basis. As one teacher said,

"People get set in their ways. And I think it's good to just go back and have a reminder every once in a while [to]...use a lot of positive feedback with the children...Use a lot of redirections with the children...Because sometimes you ...forget stuff...because you're more worried about this thing instead....Everyone needs a little refresher every now and then." Cohort 1

REDI also introduced teachers to new concepts and approaches to learning. Some learned to incorporate a new skill like puppetry or recasting into their daily routine while others were awakened to the importance of social-emotional learning. One teacher responded,

"I think [REDI has] made us stop and think about the emotional view...I think it just really made me aware that it's a component of the child's developmental being. Before, probably when I first started, it was more...of an academic approach before. And now it's kind of just made me a little bit more aware that there's more to a child." Cohort 2

Seventeen of the twenty teachers commented that REDI helped improve their teaching. PATHS, the coaching strategies, Dialogic Reading and Sound Games were usually included in these particular comments.

A fifth reason mentioned by twelve of the twenty teachers in Year 1 was that REDI helped create a better classroom atmosphere. This type of comments was usually directed at PATHS and the changes that were wrought as a result of REDI's focus on explicitly teaching emotions and social-problem solving skills. Two comments from teachers summarize this particular support for sustaining REDI:

"In the end, your classroom has just changed. The dynamic. Kinds of problems you had before, they do get resolved. I've noticed a big change. You don't have the aggression, the disruptions, it's run real smooth." Cohort 1

"You can feel the difference, at least to me, in a REDI classroom. There's community, the kids really care about each other. Because they're willing to tell each other their feelings. And it's just amazing to me the difference." Cohort 2

That REDI addresses specific concerns of the classroom was a sixth reason that thirteen of twenty teachers identified for continuing to use REDI. Teachers reported that REDI provided a social-emotional learning curriculum where there had never been one before. Teachers had used curriculums that focused on academic skills, but had never implemented a curriculum that explicitly taught social skills and emotion knowledge. Teachers were also aware they were working in Head Start classrooms and were very concerned with the children's home lives, acknowledging the difficult family circumstances that many of the children faced. The teachers felt that PATHS really offered something special to their kids to help them learn to deal with the many frustrations they had to face on a regular basis. As one teacher said:

"PATHS...really helps kids deal with their emotions and these poor kids have a lot to deal with...I think a lot of kids don't get this at home. They don't get how to deal with your emotions and learning that it's okay to be mad at somebody, and how to deal with that." Cohort 1

"It seems like the social, we feel the social's more important in this atmosphere. Because the children come from different environments and they could use all the social-emotional help they can get." Cohort 2

One teacher also praised how REDI emphasized conversation because,

"Conversation is really lost in families. They just sit in front of the TV. ...In general talking is lacking. So it's been good just to talk. You can tell when you ask the children questions, they don't even understand. It's really getting them to say more than they started with. It's good to have conversations." Cohort 2

A seventh reason that teachers gave for sustaining REDI was positive support from their teaching team, particularly their co-teachers. One of the standard questions asked about the level of support received from the people they worked with; while administrators and supervisors were generally mentioned more as being unsupportive (see below), sixteen of the twenty teachers discussed how their co-teachers and teaching team supported their continued use of REDI in the classroom. One teacher elaborated by saying:

"The team that I have this year, they're on board with everything. My TA that I have this year, just got the training this past summer. So she's fairly new to it so she's, she still asks a lot of questions. The CSS that I have this year, I also had

last year so she knows what's going on. So she's able to jump in and help out with the different lessons as well." Cohort 2

The eighth reason that emerged was that teachers felt that REDI was easy to use. By "easy to use," teachers meant that all of the materials were included, the manuals had all the information all in one place, the lessons are laid out for you and that once you got the hang of it, the REDI curriculum was pretty easy to deliver. Many teachers commented on how REDI was very helpful in constructing their lesson plans from week to week. Ten of the twenty teachers cited ease of use as a reason they were continuing to sustain REDI. As one teacher said when talking about why REDI was special:

"I think it's special because REDI supplies everything for you. It's all there, I like that it has all the props and everything. It could be a good program with just the manual, but I especially like that all the props and materials are already there for you." Cohort 1

The final reason commonly cited is pretty straightforward – it was required. Nine of twenty teachers mentioned that they continue to use REDI because it was required. As one teacher succinctly commented:

"We do it because it is required. It's not an option. We never considered not using it because it is required." Cohort 1

Reasons Teachers Do Not Sustain REDI. Five main factors emerged that were endorsed by at least eight teachers as contributing to why teachers were **not** continuing to sustain REDI. The first two factors, competing requirements and lack of time, are difficult to differentiate. Competing requirements may refer to required activities that directly compete with the REDI components such as shared reading conflicting with REDI's DR. Conflicting requirements may also refer to the number of activities required by Head Start (i.e. teeth-brushing, two meals, journals, outside time, small group time, large group time, etc.) which may leave little time in the day to implement REDI activities – a scenario which some teachers may see as competing activities while others simply note a lack of enough time. During the research year (Y0), the

teachers were excused from certain Head Start requirements in order to focus on implementing REDI. Once the research project was over, the Head Start requirements were reinstated, placing constraints on the teachers, especially in terms of time demands, but also in terms of competing activities.

Fourteen of twenty teachers said that REDI conflicted with other program requirements. This most often referred to DR and usually meant that there were other requirements that were in direct conflict with REDI such as the mandate to use weekly (or bi-weekly) themes. Many programs were required to use thematic curricular approaches (designing classroom activities around themes such as snow, beach, garden, etc) and often the REDI books did not match up with what were considered appropriate Head Start themes. The AC also faced conflict from other alphabet-oriented activities. PATHS did not conflict with other requirements because there were no other organized SEL programs in these Head Start classrooms. Teachers expressed much frustration with the difficulties of finding time and energy to fit everything in (REDI, other HS requirements, personal favorite activities). Their frustration is evident in the following comments:

"It's just hard. We're trying to do everything, we're trying to High Scope, we're trying to do themes, and we're trying to do REDI and it's, you can't do everything." Cohort 1

"At the beginning of the year, we had a lot of, because Head Start requires us to do some other things than just REDI does. And since we're not just a REDI classroom this year, trying to fit them too into our daily scheduling that worked in a nice manner should I say was a little hard." Cohort 1

Teachers who only had 3 hours (half-day classrooms) with their children felt particularly hindered in their ability to deliver the curriculum in a satisfactory manner:

"I think definitely, if we had the longer day, than we could fit in more of the stuff, especially with, we could fit in everything with REDI, the PATHS and DR, plus what Head Start curriculum is expecting from us too. I think we could fit it all in." Cohort 1

"And for me to fit all that in, in my little like 20 min to 1/2 hour some days is really a big cram. And then I feel rushed and I think the kids know I'm feeling

rushed and they respond to that then, you know what I mean. So yeah, time is a big thing for me." Cohort 1

While teachers often talked about time issues in regards to the entire REDI curriculum, DR, SG, and AC were all specifically mentioned as being difficult to fit into the daily schedule. Ten teachers cited time shortage as reason why they were not sustaining REDI.

A third reason teachers commonly gave as to why they were reluctant to sustain REDI was that they did not feel that aspects of REDI were developmentally appropriate for their students. The SG were most commonly addressed by this complaint – eight of the ten teachers who voiced this concern specifically discussed their problems with SG. Some aspects of REDI were seen as too advanced for the children, especially those classrooms who had more three year olds than four year olds. The following comments illustrate this concern about developmental appropriateness:

“There are just some of the books that I think are way above this level. I think I would go back and look at your books again. I mean I realize that you picked out books with vocabulary that you want to highlight but some of the books are just way, you know, you can see them glaze. And I'm like oh boy and then I quick try to just get through the end of the book sometimes." Cohort 1

“The sound games, I'll put in my lesson plans but if the kids don't get them, then I don't do them. Because a lot of them are, for the three year olds, they just don't, they don't get it.” Cohort 2

“That's why I decided to hold off on the sound games, for that fact. I really liked them. But it didn't seem to me to be useful if they weren't going to be ready for it.” Cohort 2

During the interview, teachers were asked about the extent to which co-workers, administrators and parents supported or did not support their continued use of REDI. Their responses constitute a fourth reason for why teachers did not sustain: that teachers felt they had limited or no administrative support for continuing to use REDI. Often teachers commented on how their supervisors had little interest or knowledge about the REDI approach and related activities which resulted in little or no support for the continued use of the REDI components.

Occasionally lack of support was present in the co-teacher, such as when a teacher had an untrained teaching assistant due to rapid turnover. Eight teachers mentioned lack of support as a reason they were reluctant to sustain REDI.

“I have had lots of new assistant teachers. I have to teach them the REDI way. They still want to do it their own way.” Cohort 1

“I know our director has made a couple comments about not particularly liking the language and literacy activities.” Cohort 2

"My manager has no clue in the world what the heck REDI even is. Or why we do it or what the components of it are. She just says oh, I thought you did that because that was a REDI thing. And the people above her I think are pretty much in the same boat that she is." Cohort 1

The last factor that was common across 40% of teachers was that aspects of REDI conflicted with the teacher’s philosophy and style. Teachers who felt REDI did not fit with their personal teaching style commented on how it conflicted with their beliefs about teaching (such as the belief that children need plenty of time to play without the pressure of learning something specific). They also objected to REDI because they had to alter their preferred activities or because REDI simply required too much work to incorporate regularly. These concerns are exemplified in the following comments.

“So once this year, it wasn’t a requirement, I got rid of a lot of it because it just wasn’t a personal fit for me... I have a way of doing my circle. It’s my circle, I’m very protective of it. And then [after training]... they tell you, hey you can’t do your circle the way that you’re doing it... It was very upsetting... it just wasn’t me.” Cohort 2

“The sound games I don’t really see myself, like, a lot of them, I mean I think they’re really good for the kids to learn a lot of the skills but personally it’s just frustrating for me to use them.” Cohort 2

“You know the biggest problem I have, I feel like we're pushing too much. Letters and sound games, I feel like the kids, and I know they have to come from the teacher, we can chill down... I feel like there was too much emphasis on having kids learn letters...Quite honestly I wouldn't do a whole lot with letters at all if I didn't have to. I would have fun with the kids. But I still would work towards, you know, teaching them, just backing off letters you know more. Until they're ready. If they are ready, take them and work with them, but if they're not, let them be... You know we can still have it there but not make them feel like

they have to know letters. I think it makes them feel, their self-concept, self-esteem can get run down.” Cohort 1

"Basically the whole thing because Head Start is supposed to be following a High Scope curriculum and the High Scope curriculum basically says that children are supposed to be provided materials with no predicted outcomes. And a lot of the REDI activities, they want a specific outcome from those kids. You know, it's like doing the letter activity, you're actually making kids sit down and practice writing letters.” Cohort 1

“I didn't do that last year, the list of vocab words. I feel like that was a lot. I feel like they asked us to have to over and say words like that all through the week. It put a lot of burden on me, it made it hard. I strained myself to do that." Cohort 1

Quantitative Concurrent Sustainability Factors

In addition to the open-ended qualitative information, teachers also completed items in the TSPS that assessed factors theorized as contributing to sustainability (see Tables 4-9 and 4-10). Some concurrent factors (i.e. measured during the sustainability years) were rated in direct relation to each REDI component: user-friendliness of the curriculum, ease of fitting REDI into their daily routine, teacher perception of child interest in the components and teacher perception of REDI's impact on child development. Table 4-9 displays descriptives of these component-specific concurrent factors. Of note, almost all teachers responded that the REDI components were very user-friendly; no teacher rated the user-friendliness of any component lower than 3 ('somewhat' user-friendly). Ease of fitting into daily routine was the factor with the greatest variation for all REDI components.

Table 4-9: Descriptive Statistics of Component-Specific Concurrent Factors

	N	Min	Max	Mean	Std. Dev
Dialogic Reading					
user friendly	20	3	5	4.60	.68
ease of fit	20	1	5	3.65	1.50
child interest	20	1	5	3.90	1.17
impact on development	20	1	5	3.80	1.01
Sound Games					
user friendly	20	3	5	4.45	.69
ease of fit	20	1	5	3.30	1.53
child interest	20	1	5	3.45	1.00
impact on development	20	1	5	3.70	.87
Alphabet Center					
user friendly	20	3	5	4.40	.68
ease of fit	20	1	5	3.50	1.50
child interest	20	1	5	3.50	.95
impact on development	20	2	5	3.75	1.02
PATHS					
user friendly	20	3.00	5.00	4.72	.49
easy to fit	20	1.00	5.00	3.97	1.42
child interest	20	3.33	5.00	4.45	.50
impact on development	20	2.67	5.00	4.32	.68

Other factors were rated in relation to the REDI curriculum as a whole and thus can be considered variables that might influence sustainability across components (see Table 4-10).

These broad (i.e. non-component specific) factors include co-teacher support of use of REDI, administrative support for REDI, extent to which REDI changed their teaching style, extent that coaching strategies fit with their teaching style, and their overall enthusiasm for using REDI in the future.

Table 4-10: Descriptive Statistics of Broad Concurrent Factors

	N	Min	Max	Mean	Std. Dev.
Co-Teacher support	19	1.00	5.00	3.61	1.09
Administrative Support	19	1.33	5.00	3.57	1.01
Extent teaching style has changed b/c of REDI ^a	20	1.00	5.00	3.05	1.15
Fit teaching style - LL	20	3.00	5.00	4.43	.60
Fit teaching style - SE	20	3.00	5.00	4.15	.69
Enthusiasm for Continued Use	20	2	5	3.75	.85

^aThe extent to which using REDI changed their teaching style is coded such that the higher the number, the less the teacher's teaching style was changed by implementing REDI.

Cross-Method Comparison of Concurrent Sustainability Factors

Next the convergence of the quantitative and qualitative concurrent sustainability factors was examined to see if the same factors were being identified, and emphasized similarly, through the different measures. The comparison was fairly challenging due to the different approaches of the two methods; however, it was possible to identify approximately 8 factors from each method that had a “match” in the factors included in the other method. Once similar factors were identified (i.e. ‘user-friendliness’ from the Survey versus ‘REDI is easy to use’ from the Interview), the two were compared on the following criteria: on how strongly the teachers rated the quantitative factor as determined by the number of teachers who rated the factor 4 or above (based on an average across the REDI curriculum components) and the number of teachers who spontaneously generated the factor during their interview. A teacher who suggests a factor

without prompting during the interview probably considers that factor influential to their continued use of REDI; likewise, rating a factor 4 or higher seems to indicate that the factor should be influential on sustained use. See Table 4-11.

Table 4-11: Cross-Method Comparison of Concurrent Sustainability Factors

Quantitative		Qualitative	
Factor	Number of Teachers	Factor	Number of Teachers
User Friendly	19 of 20	REDI is Easy to Use	10 of 20
Impact on Development	13 of 20	Teachers See Benefits of Program in Children	20 of 20
Child Interest	13 of 20	Students Engage with and Use Curriculum	17 of 20
Ease of Fit	12 of 20	REDI conflicts w/ other program requirements	14 of 20
		Not Enough time for REDI	10 of 20
Fit Teaching Style	15 of 20	REDI Approach Matches Teaching Style	15 of 20
Extent Teaching Style Changed	6 of 20		
Co-teacher Support	13 of 19	Co-teachers & Teaching Team Support REDI	16 of 20
Administrative Support	8 of 19	Limited or No Support	8 of 20

Two factors were emphasized similarly in the two sources. Approximately 12 teachers from both sources endorsed Ease of Fit as influencing their sustainability. Co-teacher Support was also similar for both sources with 13 teachers rating co-teacher support 4 or higher in the survey and 16 teachers talking about co-teacher support in the interview.

Two factors were completely divergent. In the Survey, REDI had very high ratings for user-friendliness with all but one teacher rating user-friendliness at 4 or higher. In the Interview, only 10 of 20 teachers commented about how ease of use was influential to their continued use of REDI. Another inconsistency between sources emerged for impact on development. During the Interviews, all teachers made some mention of how they thought REDI benefited the children in their class. Conversely, in the quantitative data, only 13 of 20 rated REDI's impact on a development a 4 or higher.

There were two concurrent factors that were complex and perplexing in their comparison. First, the factor "match with teaching style" was a good fit between the qualitative "REDI approach matches teaching style" and quantitative "coaching strategies fit teaching style" with both sources having 15 of 20 teachers endorse the factor. However, the quantitative "extent teaching style has changed due to REDI" is at odds with those findings because only 6 teachers answered the questions in a way that suggested they had made few changes to their teaching style due to REDI. Instead, most teachers indicated that they had made some changes. These differences may be due to variations in wording but it is interesting to consider.

Second, administrative support was puzzling. The quantitative item was worded to solicit ratings of how well the administration supported REDI - and 8 of 19 teachers thought administrative support was an influential factor. However, when administrative support was discussed in the qualitative interviews, teachers typically focused on how a lack of support was making it harder to sustain REDI. So a direct comparison would mean comparing how well teachers were supported to continue REDI (quantitatively) with how much teachers were hindered to continue REDI (qualitatively). If the quantitative measure of administrative support is reverse-coded, there is only one teacher who gave no administrative support a strong rating (i.e. 4 or more). Thus, it appears that teachers were sending mixed messages about administrative support from one measure to the next.

Relating Concurrent Sustainability Factors to Year 1 Level of Sustainability

To understand what factors are related to sustainability, the Cross-Method Sustainability score for each component (scored high, medium and low) was correlated with the concurrent factors discussed above (see Table 4-12). The first 4 factors are component specific. Thus the correlation in the upper left hand box is the between the level of sustainability for DR and the rating of DR user-friendliness. In reference to the “fit teaching style” construct, the pre-literacy components (DR, SG, and AC) were correlated with the language and literacy items (LL) while PATHS was correlated with the social emotional items (SE) of “fit teaching style.”

Teachers who were rated as more likely to sustain DR also rated DR as having a greater ease of fit ($r=.61$, $p<.01$) with their teaching style. Teachers more likely to sustain SG rated this component as higher in user-friendliness, child interest and perceived impact on development ($r=.55$, $.52$, $.46$, $p<.05$ respectively). Both the AC and PATHS showed no significant correlations between sustainability level and the factors. PATHS may have shown low correlations because there was very little variability in sustained use between teachers. None of the components showed any significant correlations between sustainability level and the broader factors (teaching style change, administrative support, co-teacher support and teaching style match).

Table 4-12: Correlations between Year 1 Component Cross-Method Sustainability and Concurrent Factors

		DR	SG	AC	PATHS
Component Specific Factors	User-friendly	.29	.55*	.37	.01
	Easy to Fit	.61**	.42+	.31	-.03
	Child Interest	.29	.52*	.28	.02
	Developmental Impact	.24	.46*	.23	.15
	Fit teaching Style (LL or SE)	-.01	.09	.32	.27
Broad Factors	Administrative Support	.37	.09	.25	.28
	Co-Teacher Support	-.15	.14	.17	-.31
	Enthusiasm for Continued Use	.19	-.08	.28	.09
	Extent Teaching Style Changed	.13	.06	.18	-.03

+ Correlation is significant at the 0.10 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Relating “Predictor” Factors to Year 1 Cross-Method Sustainability

In order to test the earlier presented conceptual model on factors that may influence sustainable use, correlations were computed between the Year 1 Cross-Method Sustainability for individual REDI components and pre-REDI teacher experiences, teacher characteristics, pre-REDI teaching quality, the quality of REDI implementation quality, and teachers’ perceptions of REDI at the end of the implementation year. These correlations are displayed in Table 4-13. Teacher experiences (education level and teaching experience) were not significantly related to Year 1 sustainability, nor were teacher characteristics (depression, teaching efficacy or workplace perceptions). Teachers’ perceptions of REDI at the end of the implementation year also were not significantly correlated with later sustainability of any of the REDI components.

Table 4-13: Correlations of Year 1 Cross-Method Sustainability with “Predictor” Factors

		DR	SG	AC	PATHS	Global
Teacher Experiences	Education in Years	.36	.16	.31	.26	.00
	Teaching Experience	.02	-.18	-.30	-.18	.12
Teacher Characteristics	Job Satisfaction	-.14	.07	-.04	-.18	-.15
	Trust and Motivation	-.02	.04	.19	.03	.00
	Satisfaction with Support	.28	.19	.01	.19	.11
	Depression	.06	-.23	.21	-.06	-.17
	Teacher Efficacy	.09	.21	-.04	-.16	.11
Teaching Quality/Classroom Environment	TSRS Management	.36	.02	.24	.54*	.57**
	TSRS Discipline	.55*	-.02	.44+	.54*	.55*
	TSRS Positive Emotion	.13	-.07	.11	.20	.24
	TSRS Total	.40+	-.03	.30	.49*	.52*
	CLASS - Emotional support	.34	.13	.35	.39+	.50*
	CLASS - Instructional support	.19	.23	.26	.43+	.52*
Teacher Perceptions End of Implementation Year (Y0)	Curriculum Acceptability	.07	-.05	.14	-.22	.01
	Perceived Effectiveness	.26	.15	.29	.15	.31
	Fit Teaching Style - LL	.11	.34	.21	.22	.26
	Fit Teaching Style - SE	.32	.27	.23	.27	.31
	Administrative Support	.25	.06	.07	.14	.21
	Enthusiasm for continued use	.17	.00	.05	-.01	.18
Implementation Quality (Coach’s Rating)	Global Implementation Quality	.26	.14	.03	.27	.47*
	DR Implementation Quality	.14	.15	-.12	.32	.43+
	SG Implementation Quality	.14	.26	.28	.18	.30
	AC Implementation Quality	.18	.09	.00	.23	.26
	PATHS Implementation Quality	.38	.16	.20	.30	.52*

+ Correlation is significant at the 0.10 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

In contrast to the lack of effects related to teacher characteristics and attitudes, ratings of teacher’s pre-REDI teaching style on both the TSRS and the CLASS were significantly correlated to Cross-Method Sustainability in Year 1. Specifically, PATHS sustainability was positively correlated with TSRS management and discipline scales, as well as the total TSRS score ($r=.54$, $.54$ and $.49$, $p < .05$ respectively). PATHS sustainability was also significantly related to both

subscales of the CLASS (emotion, $r=.39$, $p<.01$; instruction $r=.43$, $p<.01$). The TSRS discipline subscale was also significantly correlated with sustainability of DR and the AC ($r=.55$, $p<.05$ and $r=.44$, $p<.1$ respectively) and TSRS total showed a trend with DR ($r=.40$). These findings suggest that teachers with higher rated teaching quality before REDI was implemented were more likely to sustain the REDI curriculum components (DR, AC and PATHS) over time.

Correlations were also computed between the Global REDI Year 1 Cross-Method Sustainability and pre-REDI teacher experiences, teacher characteristics, pre-REDI teaching quality, the quality of REDI implementation quality, and teachers' perceptions of REDI at the end of the implementation year to see if there were any different patterns of associations when looking at sustainability of the REDI curriculum as a whole. These correlations are displayed in Table 4-13. Teacher experiences (education level and teaching experience) were not significantly related to Year 1 Global REDI sustainability, nor were teacher characteristics (depression, teaching efficacy or workplace perceptions). Teachers' perceptions of REDI at the end of the implementation year also were not significantly correlated with later global sustainability.

As was the pattern with the individual components, ratings of teacher's pre-REDI teaching style on both the TSRS and the CLASS were highly related to Global REDI sustainability in Year 1. Thus, teachers with higher rated teaching quality were those most likely to sustain the entire REDI curriculum. Additionally, there were significant correlations between observed REDI implementation quality and Global Cross-Method Sustainability. The coach's rating of global implementation quality across the 8 months of implementation was significantly correlated to the Year 1 Global Cross-Method Sustainability ($r=.47$, $p<.05$). When looking at the implementation quality of specific curriculum components, both DR and PATHS implementation quality was significantly associated with Global Cross-Method Sustainability ($r=.43$, $p=.059$; $r=.52$, $p<.05$ respectively). This might suggest that DR and PATHS are driving the REDI

curriculum, which makes sense since they are the primary source of lessons and structure for REDI as a whole.

Sustainability in Year 2

Quantitative Teacher Report

Using Teacher-Reported Sustainability, PATHS is the REDI component sustained at the highest rate (mean=4.55) in Year 2. All teachers but 2 (85%) sustained PATHS at a 4 or better (“pretty much”). This is similar to Year 1 findings. In Year 2, the other three components (DR, SG, and AC) were also sustained at similar rates to Year 1 with means of 3.82, 3.69 and 3.64 respectively (see Table 4-14).

Table 4-14: Basic Statistics for Year 2 Teacher-Reported Sustainability by Component

	DR	SG	AC	PATHS
N	15	15	15	15
Mean	3.82	3.69	3.64	4.55
Std. Dev	.90	.71	.93	.52
Min	2.00	2.33	2.33	3.11
Max	5.00	5.00	5.00	5.00

To examine stability of sustainability between Years 1 and 2, correlations across time were computed. Of main interest was whether there was a significant correlation between Y1 sustainability¹ of a component and Y2 sustainability of the same component. SG, AC and PATHS all showed significant positive correlations from Year 1 to Year 2 (.70, .53, and .53, respectively) suggesting that teachers who continued to implement these REDI components in

¹In this case, Y1 sustainability is represented by Teacher-Report Sustainability, not Cross-method Sustainability.

Year 1 were more likely to continue to implement the components in Year 2. Surprisingly, DR sustainability in Year 1 was not significantly associated with DR sustainability in Year 2.

Table 4-15: Correlations between Year 1 and Year 2 Sustainability by Component (N=14)

		Year 1 Sustainability			
		DR	SG	AC	PATHS
Year 2 Sustainability	DR	-.25	.31	.05	.61*
	SG	-.09	.70**	.01	.48
	AC	.15	.08	.53+	.02
	PATHS	-.001	.16	.25	.53+

+ Correlation is significant at the 0.10 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Factors Contributing to Year 2 Sustainability

Concurrent Sustainability Factors in Year 2

As in Year 1, teachers responded to items which addressed concurrent factors that may influence sustainability. As in Year 1, all four REDI components were highly rated in terms of user-friendliness, with means ranging between 4.40 to 4.62 on a 5 pt scale (see Table 4-16). The other three items showed slightly more variability depending on the component. The means were similar to Year 1, with one exception; DR was slightly higher in ease of fit, child interest and impact in Year 2 as compared to Year 1. A new question added to the Year 2 Teacher Sustainability Perceptions Survey asked teachers how well they thought each individual REDI component corresponded with the philosophy of Head Start. All components were rated as

compatible with Head Start, with PATHS and DR receiving somewhat higher ratings than did SG and AC.

Table 4-16: Descriptive Statistics for Year 2 Concurrent Factors

	N	Min	Max	Mean	Std. Dev
Dialogic Reading					
User friendly	15	3	5	4.53	.64
Ease of fit	15	2	5	4.33	.90
Child interest	15	3	5	4.20	.56
Impact on development	15	3	5	4.13	.64
Match with HS philosophy	14	3	5	4.21	.70
Sound Games					
User friendly	15	3	5	4.40	.63
Ease of fit	15	1	5	3.60	1.30
Child interest	15	1	5	3.07	1.03
Impact on development	15	1	5	3.53	1.06
Match with HS philosophy	14	2	5	3.86	1.17
Alphabet Center					
User friendly	15	4	5	4.40	.51
Ease of fit	14	3	5	4.29	.73
Child interest	15	1	5	3.47	1.06
Impact on development	15	1	5	3.80	1.15
Match with HS philosophy	14	2	5	4.14	1.03
PATHS					
User friendly	15	3.00	5.00	4.62	.60
Ease of fit	15	2.00	5.00	4.40	.87
Child interest	15	2.00	5.00	4.18	.71
Impact on development	15	3.00	5.00	4.07	.71
Match with HS philosophy	14	2.67	5.00	4.36	.71

In Year 2, teachers again reported on the broad concurrent factors that may influence sustainability (see Table 4-17). Generally, teacher ratings were similar to findings from Year 1. In Year 2, support from both co-teachers and the administration were rated somewhat higher; Year 2 means were 3.94 and 3.92 respectively as compared to means of 3.61 and 3.57 in Year 1.

Table 4-17: Descriptive Statistics of Broad Concurrent Factors in Year 2

	N	Min	Max	Mean	Std. Dev.
Co-Teacher Support	15	3.11	5.00	3.94	.63
Administrative Support	13	2.00	5.00	3.92	1.02
Extent Teaching Style Changed	15	1.00	4.00	2.67	.90
Fit Teaching Style LL	15	3.33	5.00	4.24	.56
Fit Teaching Style SE	15	2.00	5.00	3.33	.90
Enthusiasm for Continued Use	14	3.00	5.00	3.93	.73

Relating Concurrent Sustainability Factors (Y1 and Y2) to Year 2 Sustainability

Both Year 1 and Year 2 concurrent factors were correlated to Year 2 Teacher-Reported Sustainability of each component (see Table 4-18). There were no associations between DR sustainability and any of the factors. SG sustained use was related to Year 1 user-friendly, ease of fit, developmental impact and co-teacher support, and Year 2 ease of fit. For AC sustained use, there were significant correlations with Year 1 ease of fit and child interest, and Year 2 child interest, developmental impact, and administrative support. There were also significant associations between PATHS Year 2 sustained use and Year 1 user friendly ($r=.53$, $p=.052$), co-teacher support, enthusiasm for continued use and fit teaching style ($r=.64$, $.56$, $.64$, $p<.05$ respectively) and Year 2 user-friendly ($r=.91$, $p<.01$), and enthusiasm for continued use ($r=.47$, $p=.086$).

Table 4-18: Correlations between Year 2 Teacher-Reported Sustainability by Component and Concurrent Factors

	Dialogic Reading	Sound Games	Alphabet Center	PATHS
Year 1 Factors:				
User-friendly	.26	.59*	.27	.53+
Ease of Fit	.14	.51+	.51+	.04
Child Interest	-.10	.29	.46+	.20
Developmental Impact	.31	.50+	.44	.38
Fit teaching Style (LL or SE)	.14	.12	.01	.64*
Administrative Support	.07	-.10	.38	.39
Co-Teacher Support	.18	.51+	.18	.64*
Enthusiasm for Continued Use	.10	.19	.16	.56*
Extent Teaching Style Changed	-.05	-.26	.15	-.19
Year 2 Factors:				
User-friendly	.30	.30	.12	.91**
Easy to Fit	.40	.45+	.36	.42
Child Interest	.22	.32	.59*	.01
Developmental Impact	.21	.43	.49+	.31
Match with HS Philosophy	.13	.18	.53+	.22
Fit Teaching Style (LL or SE)	.53+	-.16	-.04	.39
Administrative Support	-.07	-.04	.49+	.31
Co-Teacher Support	-.43	-.15	-.17	.18
Enthusiasm for Continued Use	.13	-.09	-.11	.47+
Extent Teaching Style Changed	.07	-.10	-.12	-.35

+ Correlation is significant at the 0.10 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Correlating “Predictors” of Sustainability with Year 2 Sustainability by Component

In order to test the conceptual model in terms of the “predictor” factors that may influence sustainable use, correlations were computed between Year 2 Teacher-Report

Sustainability and pre-REDI teacher experiences, teacher characteristics, pre-REDI teaching quality, the quality of REDI implementation quality, teachers' perceptions of REDI at the end of the implementation year and the three Year 1 Sustainability measures (see Table 4-19).

Table 4-19: Correlations of Year 2 Teacher-Reported Sustainability by Component with “Predictor” Factors

		DR	SG	AC	PATHS
Teacher Experiences	Education in Years	-.39	-.42	.11	-.27
	Teaching Experience	.39	-.07	-.27	-.11
Teacher Characteristics	Job Satisfaction	.01	.21	.02	-.13
	Trust and Motivation	-.11	.29	.59*	.11
	Satisfaction with Support	-.31	-.37	.33	-.29
	Depression	-.03	-.31	.26	.07
	Teacher Efficacy	.37	.31	.11	.31
Classroom Environment	TSRS Management	-.12	.02	.27	-.10
	TSRS Discipline	-.21	-.21	.54*	-.16
	TSRS Positive Emotion	.07	-.37	-.14	.04
	TSRS- Total	-.09	-.23	.24	-.08
	CLASS - Emotional support	-.04	.13	.37	.00
	CLASS - Instructional support	-.28	.15	.37	.05
Implementation Quality (Coach's Rating)	Implementation Quality (by Component)	-.11	-.19	.29	.24
	Global Implementation Quality	-.21	-.11	-.06	-.05
Teacher Perceptions of REDI at the end of Implementation Year (Y0)	Perceived Effectiveness (by Component)	.10	.01	.17	.03
	Curriculum Acceptability (by Component)	.49+	-.29	.47+	.28
	Fit Teaching Style - LL	.03	-.12	.14	.59*
	Fit Teaching Style - SE	.15	-.09	-.03	.51*
	Administrative Support	-.19	-.04	.11	.24
	Enthusiasm for Continued Use	.30	-.00	-.19	.39
Sustainability Year 1	Cross-Method Sustainability (by component)	-.22	.57*	.78**	-.05
	Teacher-report Sustainability (by component)	-.25	.70**	.53+	.53+
	Coach Sustainability (by Component)	-.52*	-.28	.80**	-.12

+ Correlation is significant at the 0.10 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Overall, few factors were related to Year 2 Teacher-Reported Sustainability. For teacher characteristics and teaching quality, only 2 of 48 correlations were significant: AC sustainability with trust/motivation ($r=.59$, $p<.05$) and AC sustainability with TSRS discipline scale ($r=.54$, $p<.05$). The lack of a pattern of correlations within these variable categories suggests chance findings. Year 0 curriculum acceptability was significantly correlated with DR and the AC ($r=.49$, $p=.06$; $r=.47$, $p=.08$ respectively). PATHS sustainability was significantly correlated with the extent to which teachers thought the coaching strategies (both LL and SE) fit with their teaching style at the end of the implementation year.

The single category of variables that did seem to have a significant association with Year 2 sustainability was Year 1 sustainability. For SG and AC especially, and PATHS somewhat, the more the teachers sustained the component in Year 1, the more likely they were to sustain the component in Year 2. DR showed no association from Year 1 to Year 2, except for with the coaches' rating and that was (unexplainably) negative.

Chapter 5

Discussion

Summary of Findings

The first goal of this study was to examine the sustainability of the REDI curriculum over the first two years following the implementation year. Results indicate that the components of the REDI curriculum were sustained over time. PATHS was the component that was sustained at the highest level and by the greatest number of teachers. Teachers frequently commented during the interviews how much they absolutely loved PATHS and that they would continue to use it even if it were not required by Head Start (which PATHS commonly was). As one teacher gushed,

“I think our program really loved that turtle. I think everybody loves that Turtle thing, that’s a big hit, it’s a big hit, I tell you.” Cohort 2

In contrast, the language/literacy components (DR, SG and AC) had lower levels of sustainability with approximately 60-80% of the teachers sustaining these components (depending on component and reporting source for sustainability). Even this somewhat lower rate of sustainability is sufficient to state that the REDI curriculum can be a sustainable model.

Re-visiting the Conceptual Model

Pre-Sustainability Factors

The second goal of the study was to assess what factors act as facilitators or barriers to sustained use of the REDI curriculum. While the conceptual model proposed a host of factors

which may directly, or indirectly, influence sustainability, the findings suggest that only some factors were statistically associated with sustainability, while others showed no relationship. Neither measures of teaching experience nor teacher personal characteristics predicted later sustainability. Even anecdotally, teachers rarely discussed these issues in relation to continued use of REDI. Some teachers did comment that REDI might be especially good for more inexperienced teachers, because “everything’s all laid out for you,” referring to the complete and scripted nature of the REDI model, but there was no significant correlation between experience and sustainability. In retrospect, this finding is not surprising given recent examinations of the REDI implementation data which found that no professional or personal characteristics were associated with the growth of coach-rated quality of implementation (Domitrovich et al, submitted manuscript). These findings have positive implications for professional development efforts because they suggest that teachers with a variety of professional backgrounds and characteristics can effectively utilize the REDI model.

While teacher background and personal characteristics did not predict sustainability, pre-REDI teaching quality did. The measures (CLASS, TSRS) used to assess classroom environment were focused on the process quality of the classroom; i.e. which teachers had better, more positive interactions with their students, which teachers showed better classroom management, etc. Results suggest that teachers with better relationships with their students and more effective classroom management were more likely to sustain REDI over time. Teachers who were already more competent may have found that REDI matched their teaching style, and therefore found it easier to sustain. A teacher who is able to foster positive relationships with her students may also be better prepared and better able to adjust to a new curriculum because she is not as distracted by classroom behavior issues. Thus, such a ‘high quality’ teacher may have been more successful at implementing the REDI curriculum, perceived more positive results attributable to REDI and then have been more likely to sustain REDI over time.

The relationship between teaching quality and sustainability corresponds with the finding that implementation quality in Year 0 also was related to sustainability in Year 1 (as well as that sustainability in Year 1 was associated with sustainability in Year 2). These results suggest a sequential process in which quality implementation builds from established teaching qualities, which then facilitates later sustainability. These findings provide support for the theoretical perspective that sustainability should be seen as a process that begins with the very first implementation activities, not just something tacked on at the end of the intervention process (Scheirer, 2005; Pluye et al, 2004). High quality implementation is necessary to establish a strong base on which to build successful sustainability. It is especially interesting that there was a positive relationship between implementation quality and sustainability in Year 1 given that implementation quality was so closely monitored (which allowed for little variability) in Year 0.

Concurrent Sustainability Factors

The more proximal factors of the conceptual model are those that may more directly influence the process of sustainability. Both teacher-driven factors (mastery/commitment, perception of student benefits, perception of child interest, perception of the intervention and deep knowledge) and factors external to the teacher (administrative support and school requirements) were hypothesized to influence teachers' sustained use of REDI. Due to the selection of measures for this study, the concurrent factors addressed were user-friendliness, ease of use, perception of impact on development, perception of child interest, administrative support, enthusiasm for continued use, the extent to which REDI matches teaching style and the extent to which REDI matches the Head Start philosophy.

The literature suggests that perceptions of an intervention may affect implementation and sustainability (Massatti et al., 2008; Hall & Hord, 2006; CCE Center, 2004; Coburn, 2003; Elias et al, 2003; Florian, 2001; Rogers, 2001); thus, in this study, teacher's perceptions of developmental impact, ease of fit, user-friendliness, and child interest (in the curriculum

components) were assessed. Teacher perceptions of how REDI benefits students emerged frequently from qualitative data. During the interviews, all teachers talked about the benefits that the children received from the REDI curriculum. Additionally, if teachers commented that they did not see benefits, which frequently meant they thought one of the REDI components was inappropriate for the children in their class, they usually were not sustaining that particular component (most often SG or AC). From the quantitative data, only the sustainability of SG and AC were related to developmental impact. That fact, coupled with the findings from the quantitative data, suggest that teacher perceptions of impact did affect their actions. However, a teacher's perception that REDI benefited the students did not *guarantee* sustained use.

Although ease of fit was definitely a concern of many teachers in the interviews, quantitative data on ease of fit showed that only DR demonstrated a significant association between ease of fit and Year 1 sustainability. This makes sense since DR implementation was the most demanding; many of the teachers spoke of how much time it took to complete the DR components and voiced concerns about DR competing with other daily requirements. In Year 2, both SG and AC were more likely to be sustained if teachers thought they were easy to fit into their day. Since teachers often commented about time restraints during the interviews, it is surprising that there were not stronger associations between ease of fit and the sustainability of the REDI components.

All of the components had high ratings of user-friendliness with very low variability, yet surprisingly user-friendliness was still significantly related to sustained use of SG. This finding corresponds well with the anecdotal evidence drawn from the teachers' qualitative interviews. SG was the one component that teachers either loved or hated – some teachers thought they were useful, and easy to do (i.e. high in user-friendliness) while others thought they were just a big nuisance, even when they thought children could benefit from them. As one teacher responded,

“The sound games I don’t really see myself, like, a lot of them, I mean I think they’re really good for the kids to learn a lot of the skills but personally it’s just frustrating for me to use them.” Cohort 2

As with user-friendliness, most teachers rated child interest as high, though there was more variability. However, only teacher perception of perceived child interest in SG and AC showed any significant association with sustained use. This corresponds with comments that teachers had stopped using SG because their children had showed low interest in them.

“The kids weren’t real interested in the sound games last year... So I kind of just pick and choose and do which ones I like and which ones the kids seemed to like last year... Some of the sound games from last year, the kids just didn’t get. Or they got bored with them. So that’s one of the reasons why I don’t do a lot of the sound games.” Cohort 2

Another teacher perception of the intervention that emerged from the qualitative data was the extent to which teachers felt their teaching style changed because of REDI. In the interviews, teachers frequently suggested that one of the things that made it easy to continue using REDI was that the REDI approach matched their teaching style, suggesting that they did not have to change their teaching style in order to implement REDI. This is supported by the quantitative analyses in which no significant association was found between sustainability and the extent that teaching style changed. However, if more precise questions had been asked in the quantitative survey regarding teacher change processes, there might have been even greater correspondence with the qualitative data. Despite the lack of a statistical relationship, the strength of the responses in the interview suggests that continuing to include match with, and change in, teaching style as a factor that may influence sustainability would be advisable.

Administrative support was also discussed in the interviews but did not show a significant association to any measure of Year 1 sustainability in the quantitative data. There was one significant association between administrative support and Year 2 sustainability only for the AC. This may be due to faulty measurement; the inclusion of a question that directly asked about how the Head Start administration (i.e. director, educational manager, etc) affected continued use

of REDI may have allowed for a statistically significant association. However, qualitative data suggests otherwise. Though teachers were directly asked about support for using REDI during the interview, they very seldom gave an elaborate answer. Only brief comments were made that yes, person A or B did (or did not) support them and then they quickly moved on to other factors. Support outside the classroom did not seem to play a large role in their use of the REDI curriculum – except in terms of what activities were or were not required by Head Start.

While administrative support (or lack thereof) in terms of regular actions by individuals was not often spontaneously discussed by the teachers, support in the form of Head Start requirements was a topic often discussed extensively during the qualitative interviews. Formal requirements were seen to affect sustainability in two ways. First, teachers talked a lot about how REDI was hard to sustain due to other program requirements. These other program requirements were sometimes in direct competition with REDI – such as a new alphabet program replacing use of the REDI Alphabet Center - and sometimes simply in competition for time during the day. Both scenarios point to how program requirements played a direct role in whether REDI was sustained. This was not directly assessed in the quantitative survey, except perhaps in ease of fit – which was significantly correlated with sustainability in Year 1.

Second, the teachers also noted that formal administrative mandates requiring use of REDI affected their sustainability of the REDI curriculum components. If the Head Start program required REDI, then the teachers were continuing to use the REDI components, though a program-level mandate did not guarantee that implementation quality was equivalent to the original level during Year 0. If REDI was not required by Head Start, teachers varied as to whether REDI was being sustained or not; many other factors such as competing activities, personal preference, class composition, etc., were likely to play a role.

The decision to impose a program-level mandate for REDI use was made for different reasons at the three sites. For one site, in Year 1, Cohort 1 was required to use all of REDI due to

the enthusiastic embrace of REDI by the top Head Start administrators. However, this focus on REDI did not last- for example, teachers attended a summer workshop on another group reading approach - and REDI was no longer mandated in Year 2. This site's experience provides a real-world example of two factors influencing sustainability – the importance of a program champion and the need to refrain from introduction of competing programs. At a second site, REDI was not required in Year 1 (and therefore not well sustained). However, after all of the wait-list control Head Start classrooms had been trained in the REDI curriculum as per the research agreement, REDI was required in Year 2 and all teachers continued to use REDI. In site 3, only PATHS was formally required and teachers varied considerably in the extent to which they continued to use the REDI language/literacy components during this study.

The Revised Conceptual Model

Given the findings discussed above, Figure 5-1 proposes a revised conceptual model. The factors that did not show significant associations have not been removed from the model but new factors have been added. Solid arrows represent significant associations found by this study; dotted arrows signify associations that have been looked at in other REDI analyses (Gill, Sanford DeRousie & Domitrovich, 2007; Domitrovich, Gest, Gill, Jones & Sanford DeRousie, submitted). While administrative support is not shown as linked to sustainability due to the findings in this study, future work on sustainability may document this relationship. Deep knowledge and mastery/commitment have been removed from the model due to a lack of measurement in this study (see Limitations section). It is important to keep in mind that this model demonstrates only factors that were examined in this study. There may be many other factors, such as the professional development model used and program climate, that may contribute to sustainability but were not included in this model.

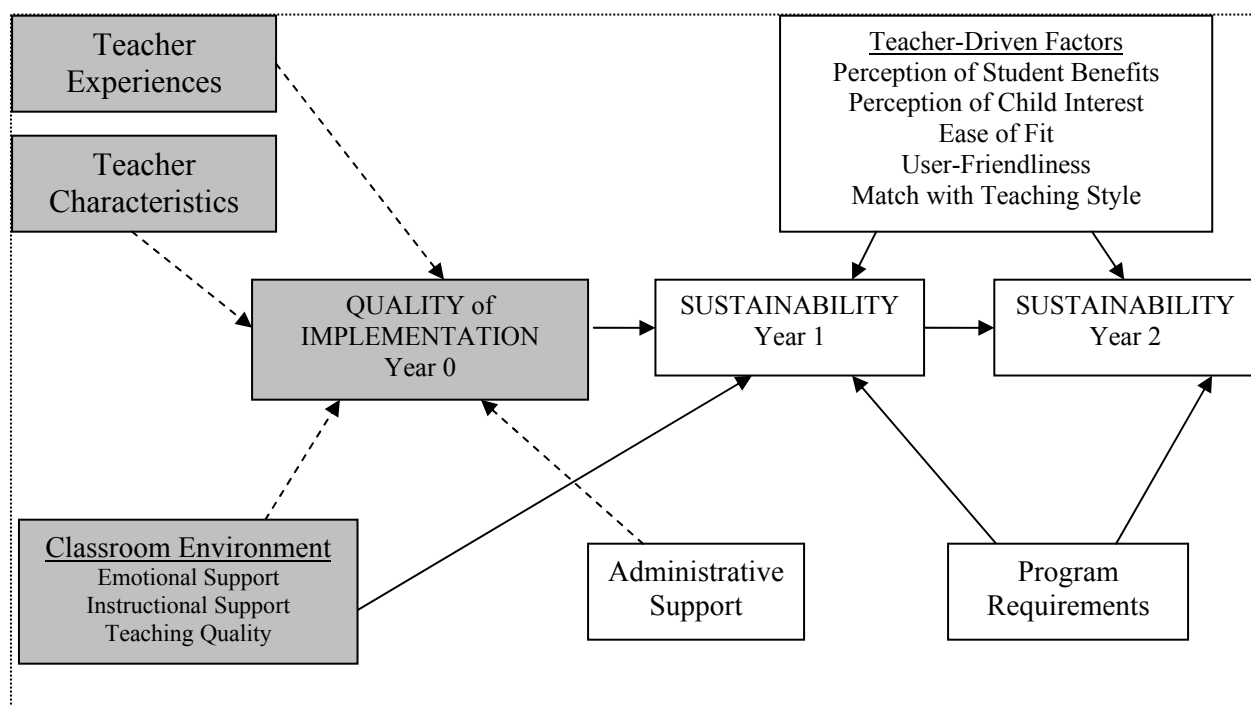


Figure 5-1: Revised Model of Factors Influencing Quality of Implementation and Sustainability

Other Issues to Consider

Fidelity versus Adaptation

One issue that may affect the findings about the sustainability of REDI was the choice to define sustainability as the extent to which teachers continued to use the REDI curriculum in the *same way* in which they were originally trained – in other words, to what extent did they continue to implement the components as written. Other sustainability studies have not used as strict a definition. In an examination of the sustainability of Project IMPACT, a mental health intervention for older adults, sustainability was defined as continuing all or part of the program after external funding ended (Blasinsky et al., 2006). Five of seven sites were designated as

sustaining but there was a great deal of variability in how the programs continued to implement the core components.

While some researchers would support the decision to focus on strict fidelity as a critical element of implementation and sustainability (Elliott & Mihalic, 2004), there are others who argue that some adaptation to a program is acceptable, even desired, if it helps the program to maintain over time by encouraging local ownership and buy-in (Scheirer, 2005; Greenberg et al., 2005). The debate continues about the relative necessity of implementing a program exactly as it was designed and how much room there is for adaptation which may help ensure that the program is sustained. The common conclusion is that it is important to remain faithful to the core components of the intervention so as to perpetuate positive outcomes, while at the same time allowing for some adaptation in order to foster ownership of the intervention and promote sustainability (Bumbarger & Perkins, in press).

Despite the debate, I would continue to argue that using a relatively strict definition of fidelity as the standard for studying the sustainability is appropriate because there has not yet been enough research to know which aspects of the intervention could be changed without affecting child outcomes. Schools have a notoriously difficult time implementing EBIs with fidelity – only 19% of district coordinators reported that their school was implementing a research-based curriculum with fidelity (Hallfors & Godette, 2002) – so a focus on implementation fidelity will help strengthen the field of school-based interventions. Once knowledge about identifying core components has been accumulated, along with knowledge about the best means of fostering high quality implementation, then an approach that allows for adaptation may be appropriate. It should be noted that the issue of fidelity vs. adaptation may also vary by type of intervention. For example, a limited twelve-week substance abuse prevention curriculum presented for 45 minutes each week may be much easier to maintain with

strict fidelity than a comprehensive model such as REDI that influences almost all aspects of a classroom.

Specifically looking at the sustainability of the REDI curriculum, it seems reasonable to expect that teachers would continue to implement REDI with high fidelity to the original curriculum. That is, there were a number of reasons why one might expect high fidelity in the use of REDI in Years 1 and 2. These include the fact that the important materials were provided, occasional mentoring was still available (at least in Year 1), and the waiting list control teachers were trained in REDI as per the original agreement which indicated overall acceptance of REDI as an adopted model for these programs. Additionally, with the original randomized control trial still on-going, there was not enough data to identify the core components. A broader definition of sustainability allowing for adaptations would have required that the assessment of implementation quality to have been much more detailed, with more specific questions about teachers' adaptations and much more extensive observations. Thus, in the present study, sustainability was defined as relatively strict fidelity to the original curriculum. As such, there were very high levels of sustainability for PATHS, and moderate levels of sustainability of the language/literacy components.

How Much Sustainability is Enough?

Given the near perfect level of sustainability for PATHS, the lower rate of sustainability (~66%) for the language/literacy components may be cause for concern, especially considering the considerable amount of effort expended on teacher support during the implementation year. The teachers had received extensive training in the curriculum, including a year long mentoring arrangement to help guide them in their implementation of the curriculum (4 hrs per week per classroom). Even in Year 1, the teachers still continued to receive monthly coaching, though this assistance was defined more by the teacher's questions and interests, than by the coaches heavily encouraging the use of REDI.

Given this system of training and mentoring, along with the fact that REDI is composed of evidence-based practices, it seems fair to expect that the language/literacy components would be sustained at a higher rate. However, the literature suggests that perhaps PATHS is the exception, and that the language/literacy components are sustained at rates on par with those of other interventions. In an examination of the examined implementation quality and sustainability of Life Skills Training across 42 sites, that 74% of sites were found to have implemented all components during the first two funded years was considered an “impressive” level of implementation (Elliott & Mihalic, 2004). When shifting focus to sustainability (i.e. continued implementation after the initial 2 year funding period ended), they declared that 35 out of 42 sites still implementing the program represented a “high level of sustainability (Elliott & Mihalic, 2004).” Scheirer (2005) chose 60% as her benchmark when examining sustainability across a variety of interventions; she found that 14 of 17 studies showed at least 60% or more sustainability for at least some of the intervention’s activities. In an examination of sustainability of PCCD funded initiatives off grant funding for two or more years, Bumbarger and Perkins (in press) found that 76% were still operating, albeit some at reduced levels of operation. There is also evidence that even high levels of on-going support (practice, feedback, coaching, consultation) do not prevent a proportion of teachers from exhibiting low levels of implementation (Joyce & Showers, 2002).

Thus, the sustainability rates of 65-75% for language/literacy components fit within the range of acceptability found in the prevention research field. However, since PATHS demonstrated such a high rate of sustainability, it seems fair to set that as the ideal standard for sustainability. In order to reach comparable high levels of sustainability for the language and literacy components in future endeavors, the REDI curriculum may need to include alterations whether to the implementation process or to the curriculum itself to help ensure that all parts of REDI are sustained at high levels.

Considering the Most Influential Factors

One way to support future efforts to promote sustainability is to consider which factors may exert the most influence on sustainability of a curricular intervention. Given the lack of a relationship between teacher background factors and sustainability, and the limited number of significant associations with teacher-driven factors, it is possible that forces external to the teacher may have the most influence on sustainability. This is especially important given the common unspoken assumption in studying curriculum sustainability that teachers have a “choice” in whether they sustain. In reality, teachers’ actions are often limited by the requirements and constraints of the program. Even a teacher who is inexperienced, or depressed, or who is dissatisfied with her job, or who perceives an intervention as difficult to use, must follow the dictates of the program and use the curriculum model provided. Thus, as suggested by Hall & Hord (2006), administrative mandate may be the most viable way of ensuring the sustainability of a program.

The change of administrative requirements in Year 1 of Sustainability across the cohorts in one site illustrates how program requirements and program leader decision-making affect continued use of the REDI curriculum components. For cohort one, implementation of the language/literacy component was not required and decision-making about continuing REDI was idiosyncratic or decided individually by the teachers. For cohort two, teachers were required, with strong administration support, to sustain all aspects of REDI, including the language/literacy components. When REDI was required, teachers complied and continued to implement the entire REDI curriculum. When the language/literacy components of REDI were not required, teachers did not sustain and offered numerous rationales as to why. Frequently they talked about how other Head Start requirements took up the time they might otherwise use for REDI. This issue points to the critical nature of administrative leadership in creating the organizational change necessary for sustainability.

Independent vs. Self-report Assessment of Sustainability

One unexpected finding was the fact that there were fewer significant associations between identified factors and Year 2 sustainability than there were between these factors and Year 1 sustainability. Teaching quality was not associated with Year 2 sustainability, nor was implementation quality. While it may be that Sustainability in Year 2 is not predicted by any of the factors measured in this study, the lack of relationship may also be the result of differences in how Sustainability was defined and measured in Year 2 versus Year 1. In Year 1, the significant associations were found between the factors and Cross-Method Sustainability – a measure of sustainability that was created from multiple sources and types of data. Sustainability in Year 2 was measured by *only* the quantitative teacher-report data.

If differences in measurement are to blame for the lack of factors associated with Year 2 Sustainability, it is necessary to ascertain the best sources for gathering information about implementation quality, particularly the aspects of fidelity and dosage. The literature suggests that the source which is most appropriate for gathering one or the other type of implementation quality information may vary. For example, Resnicow and colleagues found that a teacher self-report questionnaire was not a valid measure of implementation completeness (i.e. quantity or dosage), especially as compared to a teacher interview procedure (Resnicow et al, 1998). Observations are typically considered a more valid measure of fidelity (Dusenbury et al, 2005). In the present study, it is likely that the coaches are accurate sources of fidelity information because they were in the classroom on a monthly basis and were able to observe the delivery of the REDI curriculum components. Thus, the coaches' ratings of curriculum fidelity are important information to include in the documentation of sustainability. Further support for the inclusion of the coach ratings in the measure of sustainability comes from that fact that Coach Sustainability showed similar patterns of significant correlations with predictor factors as did Cross-Method Sustainability. See Table 1 in Appendix A. On the other hand, Teacher-Report Sustainability

alone showed very few associations with the sustainability factors, even in Year 1 (see Table 2 in Appendix A).

These findings might lead to the conclusion that the coach ratings (or other outside observers) would be a sufficient method of documenting sustainability. However, it was Cross-Method Sustainability that showed the strongest relationships with ‘predictors’. This may be an example of when “the whole is greater than the sum of its parts”. The observation protocol required the teachers to demonstrate lessons in PATHS and Dialogic Reading; this allowed the coach ratings to focus on fidelity to the original curriculum. However, because the lessons were requested for observations only twice in the year, and the coaches only visited the classroom once a month, the coaches’ ratings do not necessarily capture the dosage, or quantity, of the REDI components that the teacher implemented on a daily basis. It is entirely possible that a teacher could have chosen not to continue to use REDI in Year 1, yet still be able to demonstrate good fidelity during the observations due to the strength of training during the implementation year (Y0). Unless a teacher never really understood how to implement Dialogic Reading, and had not been sustaining REDI at all in Year 1, she would still probably be able to put on an adequate performance during the coaches’ observation.

Therefore, coaches, or other outside observers, may not be the best source for information about dosage. The teacher, who creates and enacts the daily lesson plans, could be a good source; however, there is some question as to whether teachers are valid sources of such information, particularly when responding through questionnaires. Teacher interviews, as compared to self-report questionnaires, may yield more valid, less socially desirable responses (Resnicow et al, 1998). In this study, the Qualitative Sustainability Interview may have offered the best information about dosage because it allowed teachers to freely discuss their use and may have provided a more honest assessment of their regular use of REDI. By creating a cross-measure

assessment that incorporated both coach-report and teacher-report data, a more valid assessment of sustainability, with information on both fidelity and dosage, was possible.

Thus, the Cross-Method Sustainability measure provided a more accurate assessment of sustainability than either the coach ratings or teacher-report measures alone. As the coach observations were not included in Year 2 data collection, the sustainability construct for Year 2 was limited to teacher report only. This may explain the lack of associations between Year 2 sustainability and the proposed factors.

Category Construction

The creation of the Cross-Method Sustainability variable allows this study to capitalize on the mixed-method approach. Though there were several ways in which to combine the data, a three category approach seemed the most suitable way to capture all easily discernible levels of sustainability, much like the conceptualization of the three degrees of sustainability – weak, medium and high – that Pluye et al. (2004) used to explain the differences between routines and standards in sustainability. Creating only two categories would make it difficult to distinguish between those teachers who are sustaining with high implementation quality and those teachers who are continuing to use the curriculum but with little finesse and enthusiasm. Since sustainability with high quality implementation is the goal, it made sense to use a categorization scheme that acknowledges that differences in performance. Any more than three levels would be hard to distinguish with any real meaning and may have been too specific to reliably utilize. Three categories appear to capture a range of sustainability – high for those who maintain with fidelity, medium for those continue with fidelity and a few adaptations and low for those who are use the components only occasionally, in a manner far removed from the original intention, or not at all.

Limitations

There were several limitations to this study. First, the study faced the common restrictions of a small N and limited longitudinal data. Though it would have been a contribution to the literature to try to predict sustainability using regression models that examined more components of the model simultaneously, the small sample size, particularly in Year 2, prevented this form of analyses. Additionally, a larger N may have allowed for stronger associations between sustainability and the factors to emerge.

This study also would have benefited from a longer period of follow-up rather than only covering the first two years after the implementation year. Studying the teachers' continued use of REDI in Year 1, with the available monthly mentor support, only captured the transition to sustainability as defined by the continuation of activities after the outside funding had ended. While Year 2 was a better representation of true sustainability, the quality of data was weaker due to the lack of observation ratings from coaches. Since sustainability is often considered to be the extent to which a program is sustained for at least two years after the implementation year (Bumbarger & Perkins, in press; Elias, 2004; Glasgow, Vogt & Boles, 1999), readers interested in long term predictions of the sustainability of REDI may be disappointed in the data that is available.

Second, while the conceptual model included many of the potential influences on sustainability, the measures used in this study did not reflect every factor in the model. For example, deep knowledge was included in the original conceptual model but could not be explored in the analyses due to the difficulties in operationalizing it. None of the items in the survey were applicable to the concept of deep knowledge. While there were interview questions that tried to address deep knowledge, teachers were frequently at a loss when responding to these questions. Teachers seldom volunteered the information that would be considered "deep

knowledge” about REDI – that REDI is composed of evidence-based practices, that the components were designed to work together (i.e. DR books linked to PATHS lessons), that the coaching strategies enhance the regular curriculum lessons, etc. In contrast to the connection between deep knowledge and sustainability proposed in the model, the few who were able to express these deep understandings of REDI were not especially committed to sustaining REDI. One teacher commented that she understood that all of it goes together but that if she had a choice, she would not use certain books in the DR model. Though the teachers’ qualitative responses indicate a lack of relationship between deep knowledge and sustainability, future studies may still find an association, particularly if better measures of deep knowledge are developed.

Mastery and commitment was another factor included in the conceptual model but not addressed directly in this study. It could be argued that the coach ratings of implementation quality during Year 1 represent a measure of mastery and this was included in the Cross-Method assessment of sustainability. However, if mastery is supposed to describe the *teacher’s perception* of how well she had mastered the curriculum, then the mastery factor was not measured. Similarly, commitment could be seen as measured by the question about enthusiasm for continued use; but since enthusiasm for continued use was generally not associated with sustainability, it may be beneficial to utilize a different measure of commitment in future studies.

Additionally, it is important to acknowledge that the revised conceptual model is not a complete representation of all factors which could affect sustainability. Factors such as teachers’ perceptions of the curriculum materials, the quality/quantity of training, and the system of on-going technical assistance, as well as broader factors such as the political climate and the educational structure of the Head Start program, may all influence sustainability (Greenberg et al., 2005; CCE Center, 2004; Florian, 2001). Some of these other factors were touched on in the interviews - particularly the teachers’ perceptions of the curricular materials. Some teachers

voiced strong opinions about the selection of books – some books were too hard, there were summer themes in winter, didn't fit with the Head Start themes, wanted to do more/less books per week, etc. Other comments were made about the structure of REDI: while some teachers praised how REDI was “all there for you” and made lesson planning easy, others felt REDI limited their creativity. However, despite these anecdotal comments, there was not a systematic focus on how variations in the curriculum materials, or how other factors such as training and technical support, may have affected sustainability. Future studies should incorporate a broader model of factors in order to expand knowledge of sustainability influences.

Some may also argue that this study is limited by the focus on the REDI curriculum components, rather than looking at the sustainability of both the curriculum components and the coaching strategies. The focus on the curriculum components was chosen because the components are a more concrete portion of the implementation of REDI. The concreteness makes it easier for teachers to respond to questions about continued use and easier for the researcher to document sustainability. Including coaching strategies in this study of sustainability would have raised difficult questions about what constitutes sustainability – if a teacher is using the coaching strategies but none of the lessons, are they sustaining REDI? If a teacher already used a particular technique (i.e. recasting), and continues to do so, are they really sustaining REDI? The coaching strategies are an important part of the REDI program and deserve to be included in future studies of the sustainability of REDI.

One final limitation comes from the perspective that a critical piece of sustainability is documenting whether positive results are maintained over time (Pluye et al., 2004; Shediac-Rizkallah & Bone, 1998). Since interventions are implemented with the goal of improving outcomes, ensuring the sustainability of an effective intervention should mean perpetuating the positive outcomes over time, for there is little value in sustaining an intervention that no longer benefits the intended recipients. Unfortunately, this study did not include measures to document

whether the benefits of REDI (i.e. increased school readiness for Head Start children) were being maintained during the sustainability period. Though the standard assumption is that continued high quality implementation means the children are continuing to benefit, this study is unable to provide any support for that assumption. Future studies of sustainability would do well to include measures of the desired outcomes as part of the examination of sustainability.

Implications

This study met the goal of examining the sustainability of the REDI curriculum. The findings demonstrate that sustainability of an evidence-based preschool curriculum is possible – especially the portion that was devoted to social-emotional learning. One of the big questions is why PATHS was sustained at near perfect levels as compared to the more moderate level of the language/literacy components. Answers may be found in the qualitative data. The teachers' comments from the qualitative interviews stress how PATHS filled a void in the curriculum. The teachers explained how they had always tried to focus on social-emotional development in their classroom but had never had an actual curriculum to address social-emotional learning. PATHS was able to fill that void by providing a social-emotional curriculum that was self-contained, had all the necessary materials, and was relatively easy to implement. This attention to a “hole” in the curriculum, along with the overwhelmingly positive response of the children and easy to use materials, allowed teachers to embrace PATHS and enthusiastically sustain it in Years 1 and 2.

On the other hand, the language/literacy component focuses on academic skills which have been an explicit focus in Head Start programs over the past few years after criticisms that Head Start was not doing enough to help foster such skills. Given that multiple programs have been initiated to boost the academic skills of Head Start children, and that many of the teachers had accumulated many years of experience in the classroom, many teachers already had particular

ways of approaching the academic activities that REDI included. For example, DR addressed a part of the preschool curriculum – reading books – that is very common in classrooms and often a very personal part of the curriculum. While some teachers appreciated the REDI Dialogic Reading approach, others preferred to use their old method, with their own books, and thus did not make an effort to sustain REDI. Future efforts to implement and sustain a new curriculum component would do well to consider what is already in use in the classroom and evaluate the needs of the classroom, if the new program is to be successfully maintained over time.

Another explanation for the differential rates of sustainability is the existence of program mandates for sustaining the REDI curriculum components. By Year 2, PATHS was required by all of the sites, and the teachers followed suit – though the interview data indicated that many teachers would have continued to use PATHS even without an administrative requirement. Use of administrative mandates to ensure continued implementation may go against those who argue for teacher buy-in as critical for sustainability (Hall & Hord, 2001; Johnson et al., 2004), but the experience of REDI suggests that mandates can produce results. Mandates may not ensure that high implementation quality will be maintained; however, in those classrooms with a program mandate, teachers were more apt to report that they were continuing to use it. When REDI was not required, it was a much more uncertain whether or not REDI would be maintained.

The best example of the power of mandates is the difference in sustainability of DR in one site from one cohort to the other. When the DR was not required (for Cohort 1, Year 1), none of the teachers chose to sustain it; when DR was required, for Cohort 2 Year 1, every teacher sustained DR at a medium or high level. Preschool programs looking to sustain a curriculum may want to follow the REDI model and require the curriculum to be used in order to facilitate sustainability.

Besides administrative mandates, another way to help ensure sustainability is to have the program work to incorporate the new program into the day-to-day operations of the classroom

(Pluye et al, 2004). By Year 2, at least one of the sites had committed to sustaining all of REDI. As part of the investment in REDI, aspects of REDI curriculum components were included in the lesson plan worksheets and teachers received regular REDI-related support from their educational supervisors. Teachers at this site knew REDI was required and were working at sustaining the REDI curriculum, even as they worked to accomplish the other Head Start programming requirements. This provides a real-world example of the need to institutionalize an intervention's activities to facilitate sustainability (Pluye et al, 2004; Johnson et al, 2004). Future efforts to implement and sustain a new curriculum would benefit from identifying ways to incorporate the new curriculum into the daily routine.

One barrier to sustainability that was not necessarily captured in the data is the issue of teacher turnover. Sustainability among the teachers that were included in the study was about 70% for the whole REDI curriculum. However, there were other teachers who were included in the original implementation year who were not part of the sustainability sample. Out of 22 head teachers who started in the intervention group, only 17 of them were included in the final sample of the sustainability study. This potentially lowers sustainability rates by adding five teachers to the “did *not* sustain” group, since there is no guarantee that the teacher who replaced them continued REDI. Planning ways of dealing with teacher turnover, whether providing incentives for teachers to stay or arranging training for new teachers, is an important part of preparation for sustainability. This is particularly important in preschool settings where turnover rates are typically high. Head Start teacher turnover typically exceeds 15% annually (NIEER, 2003); for preschool teachers in general, turnover rates can be as high as 25-50% (Barnett, 2003; Blau, 2001).

Another important consideration along with teacher turnover is the quality of the classroom before the intervention is implemented. In this study, better quality teaching before implementation was positively correlated with the extent to which the curriculum was sustained. Future interventions may want to assess classroom quality *before* beginning implementation; if

teachers are found to be less than competent, it may be necessary to find ways to improve teaching quality more generally before launching a full-scale implementation of a new curriculum. This need to improve teaching quality prior to implementation falls under the concept of building local capacity before implementing a program (Elliott & Mihalic, 2004). If teaching quality is seen as a reflection of general teacher competence and capacity to learn new skills, it may also be beneficial to provide different amounts of coaching during implementation based on these general competencies. Less competent teachers may benefit from more intensive coaching and such differential coaching could help the program be implemented with high quality across the board. Additionally, future research may want to identify whether there is a threshold of teaching quality above which interventions have a much better chance of sustainability.

Getting a program ready for an intervention by improving teaching quality is particularly important given the finding that implementation quality builds on previous implementation quality. Starting off strong is critical to successfully sustaining an intervention; thus, it is especially important to do the necessary groundwork to allow for high quality implementation at the very beginning of the process. There is no point in trying to sustain a poorly implemented program so the intervention needs to be properly implemented from the start. Programs that are mindful of sustainability should invest ample resources and planning time to ensure high quality implementation from the inception of the intervention as well as allocate sufficient funds to help maintain implementation quality over time.

Conclusion

This study provides evidence that the sustaining an evidence-based preschool curriculum that targets both pre-literacy and social-emotional skills is possible. That REDI was sustained at all for the two years following the intervention year is especially encouraging given that sustained

use of the curriculum was not one of the original goals of the Head Start REDI project. It is also encouraging that teacher experiences and characteristics were not related to sustainability as this suggests that teachers are not predisposed to succeed or fail at sustainability before they even begin to implement a curriculum.

Those programs interesting in sustaining a curriculum like REDI would benefit from planning ahead and making an effort to establish high quality teaching in their classrooms before beginning the implementation process. Selecting a curriculum that fills a void in the pre-existing curriculum and taking formal steps (such as requiring it) to incorporate the new curriculum into the regular routine of the classroom will help ensure a good chance for sustained use over time. Administrators would do well to try to limit the amount of competition that a new curriculum may face, whether by decreasing demands on teachers' time or preventing the introduction of similar approaches while the new curriculum is being learned. Sustainability is never guaranteed (Scheirer, 2005) but it is possible. It may take a concerted effort to successfully maintain high quality implementation of an evidence-based preschool curriculum, but the potential benefits to children should be worth such effort.

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Appendix A

Additional Results

Table 1: Coach Sustainability in Year 1 Correlated with Predictor Factors

		DR	SG	AC	PATHS
Teacher Experiences	Education in Years	.10	.70**	.36	.35
	Teaching Experience	-.09	-.47+	-.52*	-.23
Teacher Characteristics	Job Satisfaction	-.21	-.07	.08	-.15
	Trust and Motivation	.00	.03	.33	-.10
	Satisfaction with Support	.27	.38	.44+	.29
	Depression	.09	.06	.31	-.01
	Teacher Efficacy	-.07	.09	-.10	-.20
Teaching Quality/Classroom Environment	TSRS Management	.56**	.28	.47+	.60**
	TSRS Discipline	.61**	.37	.66*	.60**
	TSRS Positive Emotion	.33	-.02	.17	.30
	TSRS Total	.58**	.24	.50*	.57**
	CLASS - Emotional Support	.51*	-.13	.54*	.48*
	CLASS - Instructional Support	.51*	-.08	.38	.50*
Teacher Perceptions End of Implementation Year (Y0)	Curriculum Acceptability	.01	-.07	.13	-.20
	Perceived Effectiveness	.29	.04	-.05	.31
	Fit Teaching Style - LL	.24	.35	.02	.31
	Fit Teaching Style - SE	.14	.33	.03	.03
	Administrative Support	.19	.04	.08	.09
	Enthusiasm for Continued Use	.03	-.18	-.12	.07
Implementation Quality (Coach's Rating)	Global Implementation Quality	.51*	.22	.15	.42+
	DR Implementation Quality	.43+			
	SG Implementation Quality		.39		
	AC Implementation Quality			.39	
	PATHS Implementation Quality				.46*

Table 2: Teacher-Report Sustainability in Year 1 Correlated with Predictor Factors

		DR	SG	AC	PATHS
Teacher Experiences	Education in Years	-.03	-.19	.10	-.18
	Teaching Experience	-.25	.05	-.12	.07
Teacher Characteristics	Job Satisfaction	-.14	-.03	.14	-.34
	Trust and Motivation	.24	.07	.19	-.23
	Satisfaction with Support	.23	-.09	-.21	-.18
	Depression	-.14	-.38	.19	.09
	Teacher Efficacy	.31	.20	.22	.17
Teaching Quality/Classroom Environment	TSRS Management	.19	-.25	-.36	-.13
	TSRS Discipline	.18	-.38	-.21	-.16
	TSRS Positive Emotion	.23	-.06	-.11	.16
	TSRS Total	.24	-.26	-.26	-.04
	CLASS - Emotional Support	.23	-.13	-.18	-.01
	CLASS - Instructional Support	.21	-.08	-.33	-.02
Teacher Perceptions End of Implementation Year (Y0)	Curriculum Acceptability	-.04	.24	.31	-.01
	Perceived Effectiveness	.02	.51	.35	-.26
	Fit Teaching Style - LL	.03	-.02	-.05	.21
	Fit Teaching Style - SE	.01	-.05	-.08	.18
	Administrative Support	.43+	-.03	-.10	-.21
Implementation Quality (Coach's Rating)	Enthusiasm for Continued Use	.14	.00	-.03	.21
	Global Implementation Quality	.26	.05	-.24	.24
	DR Implementation Quality	.22			
	SG Implementation Quality		.13		
	AC Implementation Quality			-.33	
	PATHS Implementation Quality				.27

Appendix B

Selected Measures

REDI Coach Sustainability Ratings

REDI Trainer ID _____ Class ID _____ Date _____

During your observation visit, which of these activities in the REDI curriculum areas did you see?

PATHS _____
 PATHS extension activities _____
 Dialogic reading lessons _____
 Dialogic reading extension activities _____
 Sound games _____
 Alphabet Center activities _____

Global Ratings of Implementation Quality

1	Poor	Very little of the intended curriculum is being delivered effectively. There have been major gaps in presenting lessons or presentation quality has been consistently (consistent and significant misunderstandings of lessons that lead to major errors in implementation).
2	Very Weak	Less than half the intended curriculum is being delivered effectively. Presentation is not happening consistently or is presented poorly in many instances.
3	Weak	About half of the intended curriculum is being delivered effectively. Presentation is happening consistently.
4	Adequate	Most of the intended curriculum is being delivered effectively. Presentations occur consistently and generally cover the main elements adequately, but there are occasional gaps in coverage and some of the finer points do not receive much attention. Effectiveness may be undermined by issues such as a lack of careful planning or lack of enthusiasm.
5	Strong	Most of the intended curriculum is being delivered effectively. Presentations occur consistently, main points are almost always covered adequately, and there is generally good attention to some of the finer points.
6	Very Strong	Nearly all of the curriculum is being delivered effectively. Presentations occur consistently, with main points and many finer points attended to consistently. Effectiveness may be enhanced by issues such as careful planning, enthusiasm and attention to detail.
7	Exemplary	The curriculum is being delivered in an exemplary manner. Presentations occur consistently and with high quality coverage of main points and finer points. Clear evidence of careful planning, enthusiasm and attention to detail. Teacher seems to have “internalized” this curriculum and gets about as much out of it as possible.

PATHS							
Did you observe a PATHS lesson?	0 NO	1 YES					
To what extent did the teacher cover the core components of the written curriculum?	1 A little	2 Somewhat	3 Mostly	4 Completely & consistently			
How many of the children seemed positively engaged and interested?	1 Very few	2 Some	3 Most	4 Nearly all			
How appropriately was the lesson interpreted? (How well did the major points come across to the students?)	1 Poorly	2 OK	3 Well	4 Very well			
Did you observe generalization of PATHS concepts throughout the day?	1 Very little or rarely	2 Some of the time	3 Most of the time	4 Nearly all of the time			
Based on your classroom observations and consultation meetings, what is your evaluation of the overall quality of use of PATHS this semester?	1 Poor	2 Very Weak	3 Weak	4 Adequate	5 Strong	6 Very Strong	7 Exemplary

Dialogic Reading							
Which DR activities did you observe? (circle all that apply)	Prop Presentation	Book 1: 1 st reading	Book 1: 2 nd reading	Book 2	Prop Book	Extension Activity	
Did the teacher teach the lesson as written?	1 A little	2 Somewh at	3 Mostly	4 Completely & consistently			
How many of the children were positively engaged and interested?	1 Very few	2 Some	3 Most	4 Nearly all			
When responding to children's utterances, did the teacher use recasts and examples of target grammatical structures?	1 Very little or rarely	2 Some of the time	3 Most of the time	4 Nearly all of the time			
Did the teacher initiate and reinforce use of targeted vocabulary?	1 Very little or rarely	2 Some of the time	3 Most of the time	4 Nearly all of the time			
Based on your classroom observations and consultation meetings, what is your evaluation of the overall quality of DR implementation this semester?	1 Poor	2 Very Weak	3 Weak	4 Adequate	5 Strong	6 Very Strong	7 Exemplary

Alphabet Center							
Were the alphabet center activities in use?	0 NO	1 YES					
Were the alphabet center activities delivered as written?	1 A little	2 Somewhat	3 Mostly	4 Completely & consistently			
How many of the 4 year old children were positively engaged and interested?	1 Very few	2 Some	3 Most	4 Nearly all			
Did the teacher utilize generalization activities, pocket letters and letter stickers?	1 A little	2 Somewhat	3 Mostly	4 Completely & consistently			
Based on your classroom observations and consultation meetings, what is your evaluation of the overall quality of Alphabet Center implementation this semester?	1 Poor	2 Very Weak	3 Weak	4 Adequate	5 Strong	6 Very Strong	7 Exemplary

Sound Games							
Did you observe a sound game?	0 NO	1 YES					
Did the teacher cover the core elements of the written lessons	1 A little	2 Somewhat	3 Mostly	4 Completely & consistently			
How many of the children were positively engaged and interested?	1 Very few	2 Some	3 Most	4 Nearly all			
How effective was the teacher in delivering the sound games/sound concepts?	1 A little	2 Somewhat	3 Mostly	4 Completely & consistently			
Based on your classroom observations and consultation meetings, what is your evaluation of the overall quality of sound games implementation this semester?	1 Poor	2 Very Weak	3 Weak	4 Adequate	5 Strong	6 Very Strong	7 Exemplary

Head Start REDI Qualitative Sustainability Interview Year 2

GENERAL SUSTAINABILITY

1) Given that you are now in your third year of using Head Start REDI, I am interested to hear what your thoughts are about REDI these days. The researchers who put together REDI have one perspective about what REDI is supposed to be, but what does the REDI program mean to you? What does it consist of? Has your definition of REDI changed since you were first taught to implement REDI?

2) Are you continuing to use the REDI program? Which parts of the REDI program do you use on a regular basis? [PATHS (Kid of the Day/Compliments, Feeling and Friendship Lessons, and PATHS Turtle and Social Problem Solving Units), dialogic reading, extension activities, alphabet center, sound games etc.] probe on each part. Do you use them the same way you were asked to the first year or have you modified them? How? Describe any changes made.

3) Please describe specific things that have affected the extent to which you have continued to use the REDI curriculum and coaching strategies (can probe on main aspects like dialogical reading, alphabet center, PATHS, coaching strategies etc). (Will have schedule and can ask about whether they are following schedule, and if not, why not?) What has made REDI easy to continue to use? What has made it difficult (or impossible) to use the REDI curriculum?

ADMINISTRATIVE SUPPORT

4) Do you feel supported by the people you come in contact with in your work environment (co-workers, supervisors, parents, visitors, etc?) in terms of your use of the REDI curriculum and coaching strategies? How do these individuals show their support/dislike of what you are doing? How does this influence your own actions in the classroom in terms of REDI? Probe EACH group: co-teachers, administrators, parents.

5) Have you received any additional trainings about REDI since you were first trained? What kind of training? Who offered the trainings? Were they helpful? If no trainings, would you want additional trainings?

MASTERY/COMMITMENT

6) Is your program taking any steps towards trying to sustain REDI for years to come? What steps? Why or why not? Do you support this decision? (probe if long term planning is possible, ask who's in charge of such decisions to get names for administrator interviews)

7) In future years, if you were to move to another program, would you want to continue REDI? Why or why not? Would you recommend REDI to a colleague? Why or why not?

LEARNING OUTCOMES (Perception of Student Benefits):

8) Thinking about your own teaching experience and beliefs, particularly across the last year, what do YOU think are the most important things for the children in your class to achieve over the course of the year? Why do you think these are so important? Have your expectations/hopes for your students changed over time? How?

9) As you think about your experiences using the REDI curriculum, particularly across the last year, how has REDI changed/impacted a child's Head Start experience? Has your use of REDI affected the development of children in your class? How/why? Have you seen differences in the children in your class this year as compared to years when you were not using REDI?

Can you give an example of a child that has changed due to something in REDI? What lead up to that? How do you think it happened? Do you think this change would have happened without REDI?

10) Have the REDI curriculum and coaching strategies supported or hindered YOUR ability to focus on the things that YOU think are really important to children's learning/development? How have they done so? (if hesitant, probe on specific components of REDI: PATHS, dialogic reading, extension activities, alphabet center, sound games, coaching strategies etc.?)

TEACHER DEEP KNOWLEDGE:

11) Thinking about the REDI program and the various components and coaching strategies, why do you think REDI is supposed to be such a good curriculum? What makes it special compared to other curriculums or practices you have been asked to use?

12) REDI had two approaches: lessons and coaching strategies. Lessons are a common thing in preschool classrooms and are relatively easy to implement. Why do you think the REDI developers wanted to include the coaching strategies in addition to the lessons?

12A) In particular, for PATHS, the coaching strategies included emotion coaching and social problem solving. How did your use of those strategies contribute (or not) to your classroom's experience? (i.e. were they useful? Did you even use them?)

12B) For the literacy component, the coaching strategies included language extensions and recasting. How did your use of those strategies contribute (or not) to your classroom's experience? (i.e. were they useful? Did you even use them?)

13) What would it take to ensure that you continue using REDI as written over the next few years? What would have to change, if anything? Why?

SCHOOL REQUIREMENTS

14) How do you think REDI matches up with the philosophy/purpose of Head Start? What about Head Start learning goals? Is REDI a good match? Why or why not? How do you think this affects the feasibility of Head Start permanently adopting the REDI curriculum?

Final Question

15) Now that you have been using REDI for three years, do you have any "lessons learned" that you would want to share with the program developers or other teachers that could learn to use REDI? Any other suggestions to make REDI more likely to be adopted and implemented in Head Starts across the nation?

Head Start REDI Project

Teacher Sustainability Perceptions Survey Year 2

Intervention Teacher Program Rating

Now that you have completed the implementation year, there may be some changes in how REDI is currently used in your classroom. Please answer the following questions regarding how you think about the REDI program right now. We have provided space under each question for any additional comments you might wish to make.

Part 1: REDI Curriculum (This refers to specific lessons and activities)

1. How "user-friendly" is the REDI program? Given the manner in which it was packaged and explained at the training you experienced two years ago, how well do you understand it right now? Please rate each curriculum piece individually:

	Not at all	Just a little	Somewhat	Pretty much	Very much
Dialogic Reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sound Games	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alphabet Center	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Kid of the Day and Compliment lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Feeling and Friendship lesson	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Turtle and Social Problem Solving units	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

2. To what extent do you continue to implement the REDI program, **as written**, in your classroom? Please rate each curriculum piece individually:

	Not at all	Just a little	Somewhat	Pretty much	Very much
Dialogic Reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sound Games	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alphabet Center	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Kid of the Day and Compliment lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Feeling and Friendship lesson	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Turtle and Social Problem Solving units	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

3. To what extent, have you made changes to the REDI components by shortening or reducing the lessons? Please rate each curriculum piece individually:

	Not at all	Just a little	Somewhat	Pretty much	Very much
Dialogic Reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sound Games	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alphabet Center	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Kid of the Day and Compliment lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Feeling and Friendship lesson	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Turtle and Social Problem Solving units	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

4. To what extent, have you made changes to the REDI components by incorporating new materials or activities? Please rate each curriculum piece individually:

	Not at all	Just a little	Somewhat	Pretty much	Very much
Dialogic Reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sound Games	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alphabet Center	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Kid of the Day and Compliment lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Feeling and Friendship lesson	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Turtle and Social Problem Solving units	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

5. How easy is it to fit the REDI lessons into your day given the requirements of your local program?

	Not at all	Just a little	Somewhat	Pretty much	Very much
Dialogic Reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sound Games	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alphabet Center	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Kid of the Day and Compliment lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Feeling and Friendship lesson	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Turtle and Social Problem Solving units	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

6. How interested are children in the REDI lessons?

	Not at all	Just a little	Somewhat	Pretty much	Very much
Dialogic Reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sound Games	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alphabet Center	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Kid of the Day and Compliment lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Feeling and Friendship lesson	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Turtle and Social Problem Solving units	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

7. How much of an impact do the REDI lessons have on children's skill development?

	Virtually none	A little	Some	A lot	A great deal
Dialogic Reading (Target skills: vocabulary, language, story understanding)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sound Games (Target skills: listening, rhyming, words & sentences, syllables, phonemes)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alphabet Center (Target skills: recognizing & identifying letters)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Kid of the Day & Compliment Lessons (Target skills: self-confidence, supporting others)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Feeling & Friendship Lessons (Target skills: recognizing emotions, empathy, friendliness)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Turtle & Social Problem Solving units (Target skills: ability to stop & calm down, participation in problem solving)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

8. To what extent do you think the REDI curriculum matches with the philosophy and mission of Head Start?

	Not at all	Just a little	Somewhat	Pretty much	Very much
Dialogic Reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sound Games	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alphabet Center	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Kid of the Day and Compliment lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Feeling and Friendship lesson	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PATHS Turtle and Social Problem Solving units	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

9. Is use of the REDI curriculum required by your program?

- Yes, the full REDI program (both Preschool PATHS and the literacy component) is required.
- Yes, partially: Preschool PATHS is required but not the literacy component.
- Yes, partially: The literacy component is required but not Preschool PATHS.
- No, the REDI program is not required.

Part 2: REDI Coaching Strategies (This refers to the teaching strategies described in the beginning section of each manual).

10. Remembering how the coaching strategies were explained at the trainings and by the REDI trainer, to what extent do you feel you understand the concepts?

	Not at all	Just a little	Somewhat	Pretty much	Very much
Language and Literacy					
Extending conversations and promoting narrative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using open-ended questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recasting and expanding comments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social-Emotional					
Structuring the classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emotion coaching and dialoguing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using induction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

11. How well do the coaching strategies fit with your personal teaching style?

	Not at all	Just a little	Somewhat	Pretty much	Very much
Language and Literacy					
Extending conversations and promoting narrative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using open-ended questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recasting and expanding comments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social-Emotional					
Structuring the classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emotion coaching and dialoguing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using induction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

	Not at all	Just a little	Somewhat	Pretty much	Very much
12. To what extent has your teaching style changed as a result of your experience and training with REDI?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

13. How much do you implement the coaching strategies throughout the day?

	Not at all	Just a little	Somewhat	Pretty much	Very much
Language and Literacy					
Extending conversations and promoting narrative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using open-ended questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recasting and expanding comments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social-Emotional					
Structuring the classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emotion coaching and dialoguing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using induction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

14. How much do REDI coaching strategies add to the impact of REDI lessons on children's skill development?

	Virtually none	A little	Some	A lot	A great deal
Language and Literacy					
Extending conversations and promoting narrative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using open-ended questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recasting and expanding comments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social-Emotional					
Structuring the classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emotion coaching and dialoguing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using induction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

	Not at all	Just a little	Some	A lot	A great deal
15. To what extent has your Head Start program provided any consultation support over the year to help you with the implementation of REDI?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If yes, what did the consultation look like and do you have any suggestions for improvement?

	Virtually none	A little	Some	A lot	A great deal
16. Overall, how much enthusiasm do you feel for your continued use of the REDI curriculum?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

In addition to your own experiences with REDI, we are interested in how other people in your program are responding to this initiative during the current school year. Please read the following questions and provide a rating for each person.

17. How much do the following people value the goals of the REDI program:

	Virtually none	A little	Some	A lot	A great deal
Head Start Director	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Head Start Educational Manager	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Head Start Supervisor or Mentor/Coach (Non-REDI)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Co-Teacher	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

18. How much do the following people support you in integrating the REDI program into your daily activities?

	Virtually none	A little	Some	A lot	A great deal
Head Start Director	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Head Start Educational Manager	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Head Start Supervisor or Mentor/Coach (Non-REDI)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Co-Teacher					

Additional Comments: _____

19. How much do the following people encourage the continued use of the REDI curriculum?

	Virtually none	A little	Some	A lot	A great deal
Head Start Director	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Head Start Educational Manager	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Head Start Supervisor or Mentor/Coach (Non-REDI)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Additional Comments: _____

Finally, we would like to ask you about the REDI training that you received and the training that your assistant last year and this year received.

20. Please indicate the type of training you received in the REDI curriculum. Select all that apply.

	Formal Summer Training	Formal Supplemental Training by REDI Trainer	Formal Booster Training
Your Training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. Have you received any additional training in the REDI curriculum during this year (i.e. beyond the initial summer training and weekly/monthly consultation with the REDI trainer during the two years prior to this one)?

Yes

No

If yes, please tell us who provided the training, how long it was, and what form the training took (i.e. one-on-one mentoring, group, conference, etc)?

22. Please indicate the type of training your assistants have had in the REDI curriculum. Select all that apply.

	No Training	Informal Training by You	Formal Supplemental Training by REDI Trainer	Formal Summer Training	Formal Booster Training
Your Assistant Last Year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your Assistant This Year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Description of Training (if needed): _____

23. Do you have the same assistant this year as you had last year?

Yes

No

Curriculum Vita

Rebecca M. Sanford DeRousie

Education

- August 2008 Ph.D., Human Development and Family Studies
The Pennsylvania State University, University Park, PA
- May 2001 M.A., Culture, Curriculum and Change
University of North Carolina, School of Education, Chapel Hill, NC
- May 1999 B.A., Evolutionary Psychology, *Magna Cum Laude*
Kenyon College, Gambier, OH

Selected Honors and Awards

- 2006-2008 Head Start Graduate Student Research Grant
2006 NIMH NRSA: priority score 134, percentile 11.5
(turned down funding due to Head Start grant)
- 2006-2007 HDFS Fisher Fellowship, Pennsylvania State University
- 2004-2006 NIMH Early Childhood Mental Health Training Grant Fellowship
- 2003-2004 Hintz Graduate Educational Enhancement Fellowship
- 1999 NCAA Postgraduate Scholarship
- 1999 Phi Beta Kappa, Kenyon College

Research Experience

- 2004 – present Graduate Research Assistant with Karen Bierman and Mark Greenberg
Head Start REDI, State College, PA
- Summer 2004 Graduate Research Internship with Rick Fiene
Capital Area Early Childhood Training Institute, Harrisburg, PA
- 2003-2004 Graduate Research Assistant with Nan Crouter
Family Life Project, State College, PA

Selected Publications and Presentations

- Sanford DeRousie, R.M. *Making Changes Last in the Classroom: Factors Contributing to the Sustainability of an Evidence-based Preschool Curriculum*. Poster presented at the Society for Prevention Research Annual Meeting in San Francisco, CA. May, 2008.
- Sanford DeRousie, R.M. *Linking Words and Numbers: A Comparison of Qualitative and Quantitative Results Evaluating the Sustainability of a Preschool Curriculum*. Poster presented at Society for Study of Human Development in State College, PA. October, 2007.
- Sanford DeRousie, R.M. & Durham, R. (2008). Processes and Factors Influencing Family Contributions to School Readiness. In A. Booth and A. Crouter (Eds), *Early Disparities in School Readiness: How do Families Contribute to Successful and Unsuccessful Transitions into School*. Mahwah, NJ: Lawrence Erlbaum Associates: 299-318.
- Domitrovich, C., Gest, S., Jones, D., Gill, S., & Sanford DeRousie, R.M. *Individual Correlates of Quality in Head Start Classrooms* (resubmit to Early Childhood Research Quarterly, Jan 2008)
- Domitrovich, C., Gill, S., Gest, S., Jones, D. & Sanford DeRousie, R.M. *Teacher Factors Associated with Implementation Quality of the Head Start REDI Teaching Strategies*. (submitted to Early Education and Development April 2008).