

An Analysis of the Relationship Between Instructional Time and  
Academic Achievement of Adults and Children  
in a Family Literacy Program

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**ABSTRACT**

The Eau Claire Family Literacy program serves families with the goal of breaking the cycle of intergenerational illiteracy. In line with federal Even Start guidelines, Eau Claire Family Literacy incorporates four areas of instruction: adult education, parenting education, parent and child interaction time, and early childhood education. This study sought to determine whether a relationship existed between hours of instruction in each of the four areas and academic achievement for adults and children.

Routinely collected data from 2008-09 regarding number of hours of instruction in each area and academic achievement as defined by standardized assessments were analyzed using statistical methods. Due to small sample sizes, no statistically significant

relationships between hours of instruction and student achievement on standardized assessments were determined. In fact, rates of achievement were relatively similar across all areas of instruction regardless of whether or not adults or children received more or less than the median hours of instruction.

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## Chapter I: Introduction

In America's increasingly information-driven society, literacy has become a complex and vital attribute for personal and financial success (Walter, 1999). Literacy, once defined simply as the ability to read and write, now encompasses "the ability to use printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential" (National Assessment of Adult Literacy, 2009). Despite universal compulsory education, startling numbers of adults are functionally illiterate in the United States today; 14% of American adults possess below basic prose literacy skills (Kutner, Greenberg, Jin, Boyle, Hsu, & Dunleavy, 2007). Many of these low-skilled adults were high school dropouts. According to the U.S. Census Bureau in 2000, 7.3% of Americans over the age of 25 had less than a ninth grade education and another 12.1% had attended some high school but never earned a diploma. Very often, these low-skilled adults live on the lowest rung of the social-economic ladder (Survey of Adult Literacy, 1994).

In order to improve their literacy skills and continue onto higher education, these adult students must often begin by taking remediation courses, frequently referred to as adult basic education (ABE) courses. These courses can include basic reading, mathematics, and writing courses, as well as study skills instruction. ABE programs also include courses that prepare adults without a high school diploma to earn a General Education Diploma (GED). ABE and GED courses are typically offered through community or technical colleges and through local non-profit agencies, but they are often plagued with low attendance and completion rates (Mazzeo, Rab, & Alssid, 2003).

Another group of adults who struggle with literacy is the ever-growing number of immigrants for whom English is not their primary language. Students with limited English

proficiency often enroll in English as a Second Language (ESL) programs that function as offshoots of traditional ABE programs. These adult students are varied in their needs; some may be highly literate and educated in another language, while others may have little or no literacy skills in any language (Sticht, 1990). For ESL students, improving their written and spoken English skills is necessary to open career and educational opportunities because, like their ABE counterparts, recent immigrants face poverty and economic hardship in their adopted country.

While having low basic literacy skills creates a significant barrier to adults in many areas of life and work, children are often impacted by the literacy of their parents. Children's language development is strongly influenced by the language interactions with the parents (Hart, 2000). Their ability to learn to read and write is related to the amount and type of reading and print exposure they see in their homes (Frijters, Barron, & Brunello, 2000). Additionally, children from families with little education have more difficulty learning basic literacy skills than children from middle class families (Vernon-Feagans, Hammer, Miccio, & Manlove, 2001).

The connection between parent literacy and children's academic achievement led the U.S. Congress to establish the William F. Goodling Even Start Family Literacy Program in 1988. This legislation, which was renewed through 2009-2010, authorized funding through competitive grants to family literacy programs that meet the specified criteria. These programs have three interrelated goals: "(a) to help parents improve their literacy and basic educational skills; (b) to help parents become full partners in educating their children; (c) to assist children in reaching their full potential as learners" (Laanan & Cox, 2006). Each family literacy program strives to meet these goals by offering four components: adult basic education, early childhood education, parenting education, and parent and child interaction time. By improving the literacy of the

parents and teaching them how to be effective teachers of their own children, Even Start family literacy programs intend to improve the educational outcomes of adults and children alike.

In Eau Claire, Wisconsin, an Even Start family literacy program, Eau Claire Family Literacy (ECFL), is administered through a partnership between Literacy Volunteers-Chippewa Valley (LVCV), Western Dairyland Human Services, the Eau Claire Area School District, and the YMCA. The Eau Claire Family Literacy program has served families in the Eau Claire area for 20 years with the stated mission of “breaking the cycle of intergenerational illiteracy” (Literacy Volunteers-Chippewa Valley, 2009).

Adult students and children in family literacy programs see varying degrees of success. Typically, adult improvements in literacy are measured through pre- and post-testing using standardized assessments such as the Tests of Adult Basic Education (TABE) for adult basic education students or the BEST*plus* or BEST Literacy tests for ESL students. The impacts of a family literacy program on children are harder to quantify. Data was collected regarding a child’s developmental markers, reading levels, and/or perceptions of his or her teacher.

### *Statement of Problem*

Factors such as number of hours of literacy program instruction received by parents and children have not been compared with individual achievement data. ECFL needs to determine if there is a relationship between participation in instruction and individual achievement as measured by the TABE, BEST*plus*, or BEST Literacy tests for adults or by the PALS, PPVT, COR, Classroom Teacher Rating Scale, and/or the Behavior Scale subset for children.

### *Purpose of the Study*

The purpose of this study was to determine if any relationship existed between the number of hours of instruction in each of the four Even Start areas and parent and child academic



achievement in the Eau Claire Family Literacy program. Data collected by LVCV for academic year 2008-09 was analyzed using various statistical and thematic methods. This data was collected to inform ECFL staff about academic achievement of adults and children for the purpose of making program improvements.

### *Research Questions*

The following research questions were posed:

1. What is the relationship between the number of hours of instruction in adult education and student improvement on the TABE, BEST*plus*, or BEST Literacy tests?
2. What is the relationship between the number of hours of parenting education and parent and child interaction time combined and child achievement as measured by the Phonological Awareness Literacy Screening (PALS) assessment, the Peabody Picture Vocabulary Test – Receptive Language III (PPVT), and the Child Observation Report (COR)?
3. What is the relationship between the number of hours of parenting education and parent and child interaction time combined and achievement for school aged children as measured by the Classroom Teacher Rating Scale assessment of children reading at or above grade level and the Behavior Scale subset?
4. What is the relationship between the number of hours of instruction in early childhood education and improved outcomes for the child as measured by the Phonological Awareness Literacy Screening (PALS) assessment, the Peabody Picture Vocabulary Test – Receptive Language III (PPVT), and the Child Observation Report (COR)?

### *Importance of the Topic*

An analysis of the connection between time in program and outcomes for parents and children in LVCV's Family Literacy program is of importance for three reasons:

1. The William F. Goodling Even Start Family Literacy program is a significant financial investment by the federal government. In fiscal year 2008, over \$66,000,000 was appropriated for Even Start grants, down from a high of \$250,000,000 in 2002 (U.S. Department of Education, n.d.). As budgets tighten and various educational initiatives vie for funding, it is especially critical that family literacy programs are pursuing measurable and achievable goals. Research that identifies factors that affect outcomes must be used to ensure the nation's investment into family literacy education is being maximized.
2. Literacy Volunteers-Chippewa Valley competes annually for federal funding under the William F. Goodling Even Start Family Literacy program. For fiscal year 2010, the Obama administration proposed eliminating Even Start funding altogether (Klein, 2009), making securing funding extremely competitive. In this climate, it is imperative that LVCV identify factors that improve measurable outcomes and make programmatic improvements to facilitate these factors.
3. Demographic changes in the population of Wisconsin are altering the student populations that educators are serving. According to the U.S. Census, Latinos made up about 4% of Wisconsin's population in 2000, and that proportion is steadily increasing (Dresser & Rogers, 2006). While many Latinos in Wisconsin are native-born Americans, many also are immigrants whose native language is not English. Without proficiency in English, these workers are relegated to the lowest paying jobs,

with little room for advancement. Programs designed to meet the needs of ESL students, whether they are adults or children, are increasingly necessary to ensure equal access to opportunities for these new arrivals.

### *Assumptions*

This study utilized the following assumptions.

1. It is assumed that standardized assessments such as the BEST *plus*, BEST Literacy, TABE, PPVT, PALS, and COR provide accurate measurements of student academic achievement. It is further assumed that the standardized assessments were administered by trained professionals in appropriate testing environments.
2. It is assumed that the Classroom Teacher Rating Scale, an instrument that gauges classroom teachers' perceptions of their students' reading levels and behaviors, is an appropriate measurement of school age children's achievement. Classroom teachers are assumed to be reliable experts regarding the reading levels and behavior of their students.

### *Limitations of the Study*

This study was constrained by the following limitations.

1. Adult students have many factors in their lives (work, family, financial concerns, etc.) that can affect success in educational settings. Variables outside the control of the family literacy program such as changes in employment, family responsibilities, health, etc. may have affected the observed outcomes.
2. This study compared data regarding number of hours spent in various instructional activities to educational achievement. It did not, however, address the quality of

instruction provided. As such, the conclusions are limited to the quantity of instruction with little regard for quality of delivery or breadth and depth of content.

3. This study was an ex post facto evaluation that provides ongoing evaluation after the Eau Claire Family Literacy program has already been implemented. The evaluator is thus unable to control variables, but rather must rely on existing data and information sources collected through regular daily record keeping processes.

### *Definition of Terms*

The following terms are used in this study.

1. *Adult basic education (ABE)*: Educational programs that serve students who are low-literate adults aged 16 and older who are no longer being served in a secondary education program (Kruidenier, 2002).

2. *BEST Plus*: An individually administered face-to-face adaptive oral interview designed to assess the English language proficiency of adult English language learners (Center for Applied Linguistics, 2009).

3. *BEST Literacy*: An assessment that tests reading and writing skills in authentic situations specifically geared for adult English language learners in the United States (Center for Applied Linguistics, 2009).

4. *Child Observation Record (COR)*: An observation-based instrument providing systematic assessment of young children's knowledge and abilities in all areas of development (HighScope Educational Research Foundation, 2009).

5. *Classroom Teacher Rating Scale*: An assessment in which classroom teachers rate their students' reading levels and behaviors.

6. *Early childhood education*: Educational programming designed to promote the growth and development of young children which focuses on the whole child, emphasizes language and literacy development and fosters cognitive, social, and emotional skills (Darling, 2004).

7. *English as a Second Language (ESL)*: Educational programs that teach English to speakers of other languages, typically referred to as a subset of adult basic education programs (Kruidenier, 2002).

8. *Ex post facto evaluation*: An evaluation that is conducted after a program has been implemented (McDavid & Hawthorn, 2006).

9. *Even Start family literacy programs*: Federally-funded literacy programs that strive to help parents improve their literacy skills, help parents become partners in educating their children, and assist children in reaching their full potential as learners (Laanan & Cox, 2006).

10. *General Education Diploma (GED)*: A diploma awarded for passing a series of examinations on high school level content knowledge (Sessions & Taylor, 1997).

11. *Intergenerational illiteracy*: Sociocultural phenomenon whereby illiterate parents inadvertently sponsor home conditions that may seriously hinder their children's reading and writing development, thus perpetuating a cycle of illiteracy (Cooter, 2006).

12. *Literacy*: The ability to use printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential (National Assessment of Adult Literacy, 2009).

13. *National Reporting System (NRS) Level*: A system designed by the U.S. Department of Education to uniformly describe adult student progress that incorporates 12 functioning level descriptors, 6 for Adult Basic Education and 6 for English as a Second Language students (Van Duzer, 2000).

14. *Parenting education*: Instruction that provides opportunities for parents to learn more about their children's social, emotional, and cognitive growth, develop parenting skills and life competencies, and bond with other parents for support and friendship (Darling, 2004).

15. *Parent and child interaction time*: Regularly scheduled time for parents and their children to come together to read, work, learn, and play (Darling, 2004).

16. *Peabody Picture Vocabulary Test – Receptive Language III (PPVT)*: An individually administered, norm-referenced instrument that is the leading measure of receptive vocabulary for standard English and a screening test of verbal ability (Pearson Education, 2009).

17. *Phonological Awareness Literacy Screening (PALS)*: An individually administered assessment used to assess a child's recognition of upper case letters and has been tested for validity and reliability (Invernizzi, Sullivan, Meier, & Swank, 2004).

18. *School age children*: Children ranging from approximately six years old to adolescence (U.S. Department of Education, 2007).

19. *Tests of Adult Basic Education (TABE)*: Norm-referenced tests designed to measure achievement of basic skills commonly found in adult basic education curricula and taught in instructional programs (McGraw-Hill, 2009).

## Chapter II: Literature Review

Each Even Start Family Literacy program incorporates four components in an effort to improve the literacy skills of parents and children (Darling, 2004). The adult education component seeks to meet the literacy goals of adults through reading instruction, basic academic skills instruction, GED preparation, employability training, and/or English as a Second Language instruction. Parenting education allows parents to learn about their children's social, emotional, and cognitive growth and ways they as parents can foster healthy development in each area. Early childhood education promotes the growth and development of children and can incorporate other familiar programs such as Head Start or Title I programs. The fourth component, parent and child interaction time, involves regularly scheduled time where parents and children interact in literacy activities such as reading, drawing, working, and playing.

Table 1 depicts average hours of instruction received by all enrolled adults in each component of the Eau Claire Family Literacy program for three academic years. No data was available regarding average number of hours children participated in early childhood education.

Table 1

Average Hours of Instruction Received by All Enrolled Adults

Academic Year	Adult Education	Parenting Education and Parent and Child Interaction Time
2006-07	98	37
2007-08	90	44
2008-09	88	36

A review of the literature revealed that both parents and children involved in family literacy programs can benefit from their participation in these programs (Padak & Rasinski, 2003), and that best practices can improve student retention in literacy programs.

### *Effects of Family Literacy Programs on Parents*

One of the most consistent themes in the literature regarding parents who participate in family literacy programs is that these adults increased their reading achievement (Leitner, 1999; St. Pierre & Ricciuti, 2005; Van Horn, Kassab, & Grinder, 2002). Studies also indicated parents' writing skills increased (Tao, Gamse, & Tarr, 1998; Van Horn, Kassab, & Grinder, 2002). Additionally, national evaluations showed substantial numbers or percentages of adults obtained a GED while involved in Even Start programming (St. Pierre, Ricciuti, & Creps, 2000; Tao, Gamse, & Tarr, 1998). These academic gains can help parents gain or improve employment, function more effectively personally and in society, and be more capable to work with their children on schoolwork.

Beyond academic achievement, parents often experienced attitudinal changes. Many adults who participate in family literacy programs reported increased self-confidence (Brooks, Gorman, Harman, Hutchinson, Kinder, Moor, & Wilkin, 1997; Cassidy, Garcia, Tejeda-Delgado, Garrett, Martinez-Garcia, & Hinojosa, 2004; Seaman & Yoo, 2001). Many adults with low-skills also had negative views of school and education (Tice, 2000), but family literacy programs consistently reported parents improved their attitudes toward education (Glover & Mitchell, 1991; Tice, 2000). These positive attitude shifts, while difficult to quantify, are important outcomes of family literacy programs.

The parent education and parent and child interaction time components of family literacy programs also have positive effects on parents. Swick et al. (1993) noted one such effect is an



improved parenting self image. Positive changes in the areas of parent-child relations, use of literacy material with children, and involvement in school have also been noted (Tice, 2000). As children progress through school, more confident and involved parents had higher expectations of their children succeeding in school and eventually graduating (Seaman & Yoo, 2001). These outcomes, again difficult to quantify, are especially important since they directly affect both adults and children in family literacy programs.

### *Effects of Family Literacy Programs on Children*

As with their parents, children who participate in family literacy programs achieve positive academic and developmental outcomes. The early childhood education component of family literacy is based upon an enormous body of research that early childhood education improves children's language and cognitive development (Leitner, 1999; "The Power of Family Literacy", 1996) and their readiness for school (St. Pierre et al., 2000; Van Horn et al., 2002). In fact, it has been noted that the observed gains of children are greater than the observed gains of parents in Even Start Family Literacy programs (Tao et al., 1998).

The theoretical framework of two components of family literacy, parent education and parent and child interaction time, and their positive effects on children are also supported by research. Brain development research suggests that teaching parents about positive interactions with their children, language development, and reading their child's signals will aid them in fostering healthy brain development (Logue, 2000). Children are also positively impacted by engaging in literate behaviors with their parents (Neuman, 1996; Fox & Wright, 1997; Cooter, 2006). Parents are often described as their children's first teachers and family literacy programs help children by preparing their parents to be effective teachers.

### *Factors that Contribute to Parent Retention in Programs*

Adult basic education programs are often plagued by poor retention rates of students (McGivney, 2004). Not surprisingly, the length of time a learner persists in a given program, the more likely he or she will be to reach goals and set new ones (Kassab, Askov, Weirauch, Grinder, & Van Horn, 2004). With the demands of parenting, work, and relationships, many adult students do not stay in adult basic education programs long enough to reap maximum potential benefits. While all ABE and ESL programs face the dilemma of student retention (Brod, 1995; Quigley, 2000), family literacy programs have some unique attributes and best practices that can assist in retaining parents in programs.

St. Clair (2008) described the problem of parent retention in terms of social capital. He described social capital as the beneficial social relationships that are the outcomes of the family literacy programs and are the foundations of future educational success. Programs that have strong social capital have increased retention. This social capital stems from such personal attributes as friendliness, approachability, and caring of the staff as well as the relationships between students. He recommended creating an interconnected community environment where parents feel valued, comfortable, and supported is the key to this social capital view of student retention.

Developing this sense of community can be accomplished using many techniques. Building mutual trust between parents and program staff is critical, especially because so many of the parents come with negative prior educational experiences (Tice, 2000). Shared activities, particularly ones involving shared meals, are also extremely beneficial to building social capital (St. Clair, 2008; Cassidy et al., 2004). Creating an environment that values and respects participants' cultures by allowing them to speak in their native language at times and to share

their native culture also strengthens the parents' ties to the classroom community (Cassidy et al., 2004).

Collaboration between family literacy programs and other human services agencies can also improve parent retention (St. Clair, 2008; Tice, 2000). In St. Clair's social capital framework, this collaboration between family literacy, housing services, health agencies, employment centers, and other community resources leads to direct benefits for parents and families. These helping relationships further connect the parent to the family literacy program, making it easier and more beneficial for the parent to persist. Tice (2000) also noted that community collaborations are common factors shared by successful family literacy programs because they help to show caring and build trust between parents and family literacy staff.

Beyond social capital, other factors have also been identified as contributing to parent retention. The connection between adult education and children's education is an important element. For some parents, family literacy's appeal is that it provides free child care so the parent can attend to his or her own academic goals, an activity which would not be possible without childcare (Yaffe & Williams, 1998; Cassidy et al., 2004). For others, the opportunity to become more involved in their child's education is a motivating factor (Tice, 2000). Other parent support services such as transportation services and flexible scheduling can also help retention (Swick et al., 1993).

The positive benefits of family literacy programs on both adults and children are well supported in the literature. Of course, families must consistently attend these programs in order to reap the benefits, and family literacy programs use many strategies in order to encourage family retention.

### Chapter III: Methodology

The purpose of this study was to determine if any relationship existed between the number of hours of instruction in each of the four Even Start areas—adult education, early childhood education, parenting education, and parent and child interaction time—and parent and child academic achievement in the Eau Claire Family Literacy program. This chapter describes the selection of subjects for this research, the instrumentation used, the data analysis process, and the limitations of the data analysis.

#### *Subject Selection and Description*

Literacy Volunteers-Chippewa Valley, the community-based organization that administers Eau Claire Family Literacy, compiles detailed data regarding parent and child participants each year for federal grant reporting purposes. For the purposes of this study, data from academic year 2008-09 were selected. The data were limited to parents for whom pre- and post-test data had been collected and to children who had at least one measurement of achievement recorded.

Of the 57 adults enrolled in Eau Claire Family Literacy in 2008-09, 31 adult students were pre- and post-tested and were included in this study. Twenty-nine school age children (grades Kindergarten through fifth) whose parents participated in parenting education and/or parent and child interaction time and who had at least one outcome measure were included, and 13 children in early childhood education were included in this study.

Descriptive statistics were used to provide a picture of the adults and children whose data were included in this study. Fifty-seven adults were enrolled in Eau Claire Family Literacy during academic year 2008-09, though only 31 were both pre- and post-tested. Of these 31 adult students, 77% were female and 23% were male as depicted in Table 2.

Table 2

## Gender of Pre- and Post-Tested Adults

Gender	Number	Percent
Female	24	77%
Male	7	23%
Total	31	100%

The racial/ethnic makeup of these 31 adults was as follows: 65% Asian or Pacific Islander; 3% Black (non-Hispanic); 26% Hispanic; and 6% White (non-Hispanic). This data regarding race and ethnicity is depicted in Table 3. The average age of the adult participants as of March 1, 2009 was 30 years, and each family had an average of 3.1 children.

Table 3

## Race/Ethnicity of Pre- and Post-Tested Adults

Race/Ethnicity	Number	Percent
Asian/Pacific Islander	20	65%
Hispanic	8	26%
White (non-Hispanic)	2	6%
Black (non-Hispanic)	1	3%
Total	31	100%

Data were collected and analyzed for only a portion of the adults and children served by ECFL in the 2008-09 school year. For example, while 57 adults were enrolled in ECFL at some

point in the year, pre- and post-test data were available for only 31 adults (or 54%). The 31 adults included in this study represent those who attended the program long enough to take the pre-test upon enrollment and to take the post-test at the end of the year. The 26 adults (or 46%) for whom data were not available represent enrollees who did not persist long enough to take both assessments and therefore were not included in this study. Similarly, data regarding their children's outcomes were not included in this study.

### *Instrumentation*

The data analyzed in this study was collected as part of the routine data collection procedures utilized by Eau Claire Family Literacy in compliance with federal requirements. This ex post facto study relied on tests and surveys administered by the ECFL staff (McDavid & Hawthorn, 2006). The researcher was not involved in the selection, development, or implementation of the instruments, but was provided access to the data in July 2009.

Adult participants who were pursuing their GEDs or other basic literacy objectives were given the Tests of Adult Basic Education (TABE) at the beginning and end of each academic year. This instrument was also administered to English language learners who have intermediate to advanced English language skills. The TABE is a series of "norm-referenced tests designed to measure achievement of basic skills commonly found in adult basic education curricula and taught in instructional programs" (McGraw-Hill, 2009). A total of 11 participants (or 35%) took the TABE test, as depicted in Table 4.

Adult participants who were English language learners, on the other hand, were given one of two tests at the beginning and end of each academic year: the BEST *Plus* test or the BEST Literacy test. The BEST *Plus* test is "an individually administered face-to-face adaptive oral interview designed to assess the English language proficiency of adult English language

learners” (Center for Applied Linguistics, 2009). This assessment was administered to adults with minimal English skills. BEST Literacy “tests reading and writing skills in authentic situations specifically geared for adult English language learners in the United States” (Center for Applied Linguistics, 2009) and was administered to beginning and intermediate English students. A total of 10 participants (32%) took the BEST *Plus*, while 10 participants (32%) took the BEST Literacy test. Table 4 depicts the number of adult students who were pre- and post-tested using TABE, BEST *Plus*, and BEST Literacy.

Table 4

Pre- and Post-Tests Administered to Adult Students

Test	Number (N=31)	Percentage of Total Population
BEST <i>Plus</i>	10	32%
BEST Literacy	10	32%
TABE	11	35%

Data regarding the achievement of children were gathered using various means. Children in the Birth to Three Early Childhood Education program were not formally assessed in any way, thus no data existed to measure the achievement of these children.

Early childhood education for children ages 4-5 was provided by Head Start programming. These children were assessed using three instruments. The Peabody Picture Vocabulary Test – Receptive Language III (PPVT) was given to Head Start children at the beginning and end of the academic year. The PPVT is an individually administered, norm-referenced instrument that “is the leading measure of receptive vocabulary for standard English

and a screening test of verbal ability” (Pearson Education, 2009). While all Head Start children regardless of age were given this assessment, only data from children who were age eligible as determined by federal Even Start guidelines (those expected to enter Kindergarten in the fall) are included in this study. The total population of children was 15.

The Phonological Awareness Literacy Screening (PALS) assessment was administered to Head Start children in May 2009. PALS is an individually-administered assessment used to assess a child’s recognition of upper case letters and has been tested for validity and reliability (Invernizzi, Sullivan, Meier, & Swank, 2004). The Child Observation Record (COR) is an assessment in which Head Start staff use observations of the child’s behaviors, knowledge, and abilities to assess the children’s development (HighScope Educational Research Foundation, 2009). Table 5 depicts the number of children included in this study who were pre- and post-tested using the various assessments. It should be noted that some children completed only one of the assessments, while others completed two or three assessments. Thirteen children who received early childhood education instruction and whose parent(s) participated in parenting education and/or parent and child interaction time were pre- and post-tested using at least one of three assessments: the PALS, the PPVT, and the COR.

Table 5

Pre- and Post-Tests Administered to Children in Early Childhood Education

Test	Number (N=13)	Percentage of Total Population
PPVT	7	54%
PALS	7	54%
COR	9	69%



School age children include those children of enrolled families who are in Kindergarten through fifth grade. These children are served through the Families in Schools program, which is a partnership between the Eau Claire Area School District and Eau Claire Family Literacy. Outreach educators facilitate connections between ECFL parents and their children's elementary schools. Further, the parents of school age children participate in parenting education and parent and child interaction time with the goal of improving their abilities to help their older children succeed in school. Achievement for school age children whose families are enrolled in Eau Claire Family Literacy are measured using the Classroom Teacher Rating Scale. This assessment asks classroom teachers (grades Kindergarten through 5) to rate their students from ECFL families in eight behavior subset areas as at, above, or below average for their grade level. It also asks classroom teachers to rate the child's reading level as being at, above, or below grade level based upon their observations of the student. All 29 participating school age children (or 100%) were assessed using the reading level and behavior subsets of the Classroom Teacher Rating Scale. The Classroom Teacher Rating Scale was created in 2000 by Gwen Coe, an experienced family literacy program evaluator, for Wisconsin Even Start and is a required assessment for all Even Start programs in the state (T. Brainard, personal communication, October 27, 2009).

### *Data Analysis*

For each of the research questions, data were analyzed using cross tabulations to show the frequency of responses based on specific combinations between the variables. Research Questions 1, 2, and 4 regarding achievement of adult students and early childhood education children had insufficient numbers of data to utilize Chi-Square analyses to determine statistical significance. Research Question 3 regarding achievement of school age children, on the other hand, had sufficient data, and a Chi-Square analysis was run.

In order to use cross tabulations, data for each question had to be formatted to accommodate a 2 x 2 grid. For Research Question 1 regarding adult achievement, data related to number of hours of instruction in adult education was classified into two groups: less than 80 hours of instruction and 80 or more hours of instruction. This 80-hour point was chosen due to its relevance in federal grant reporting: students' data are considered "qualified" for grant reporting purposes when they reach 80 hours of participation in adult education. Similarly, data regarding change in pre- and post-test results were coded as No Progress if the student improved by no function levels and as Progress if the student improved by one or more function levels, again based on federal grant reporting guidelines.

Research Questions 2 and 3 regarding achievement of early childhood education children and school age children respectively both combine instructional hours in parent and child interaction time and in parenting education into one variable. Again, this decision was based on federal grant reporting guidelines that are followed by ECFL. While parent and child interaction time and parenting education are separate components of family literacy programs, the outcomes of both are measured by children's achievement as measured by the PPVT, PALS, COR, and/or the Classroom Teacher Rating Scale. Since instructional hours in these two areas are reported together for grant reporting purposes, it was logical to analyze them together in this study.

For Research Questions 2 and 4 relating to achievement of early childhood education children and for Research Question 3 relating to achievement of school age children, data related to number of hours of instruction are classified into two groups according to the median of each group of data. Thus, half the data for each question is classified as below the median and half above.

Additionally for Research Questions 2, 3, and 4, all outcome measures that represented pre- and post-test data were classified as Progress or No Progress in accordance with federal grant reporting guidelines. Similarly, outcome measures that represented a comparison of the student to a grade level average were classified as Not At Grade Level or At Grade Level.

### *Limitations*

This analysis of the relationship between the number of hours of instruction in the Eau Claire Family Literacy program and adult and child achievement encountered numerous limitations due to the constraints of using existing data. Of the 57 adult participants in the program in 2008-09, sufficient pre- and post-test data had been collected for only 54% of them. Similarly, no data was collected to measure outcomes of children ages birth to three who participated in early childhood education. Therefore, an analysis of the data yielded only a partial view of the outcomes of the program.

The instruments used also presented a limitation. Since all assessments were administered between September 2008 and May 2009 by ECFL staff in the course of routine programming, the researcher had no control over testing conditions or consistency. While it is assumed the ECFL staff followed accepted testing practices, this could not be independently verified by the researcher.

Lastly, the Classroom Teacher Rating Scale, used to evaluate school age children whose parents are participants in ECFL, is a very subjective assessment. This tool utilizes classroom teacher perceptions of the children, which cannot be independently verified. While this tool provides subjective data regarding school age children, this was the only data available for this group of children.

## Chapter IV: Results

This study addressed the number of hours of instruction in different areas of the Eau Claire Family Literacy program and academic achievement of adults and children. Existing data collected in the 2008-09 school year were analyzed using cross tabulations and, when data was sufficient, using Chi-Square. The results of this analysis for each of the four research questions follow.

*1. What is the relationship between the number of hours of instruction in adult education and student improvement on the TABE, BESTplus, or BEST Literacy tests?*

Thirty-one adult students (N=31) were pre- and post-tested using one of the three assessments in the 2008-09 school year. Progress was determined based upon whether or not students improved one or more National Reporting System (NRS) Level; students were coded as No Progress if he or she did not improve by one or more NRS level. The adult students were divided into two categories based upon the number of hours of instruction they had received: less than 80 hours of instruction or 80 or more hours of instruction. Table 6 shows the resulting cross tabulation. The data indicated that progress was achieved for at least 70% of the students, regardless of whether they received more or less than 80 hours of instruction.

Table 6

## Hours of Adult Education Instruction and Progress Cross Tabulation

	Less Than 80 Hours		80 Hours or More		Total	
	N	%	N	%	N	%
No Progress	3	23.1	5	27.8	8	25.8
Progress	10	76.9	13	72.2	23	74.2
Total	13	100	18	100	31	100

Because two cells had an expected count less than five, Chi-Square could not be calculated for this data set and statistical significance of relationships could not be determined.

*2. What is the relationship between the number of hours of parenting education and parent and child interaction time combined and child outcomes as measured by the PALS, the PPVT, and the COR?*

Thirteen children who received early childhood education instruction and whose parent(s) participated in parenting education and/or parent and child interaction time were pre- and post-tested using at least one of three assessments: the PALS, the PPVT, and the COR. Progress was determined based upon whether or not a child improved on one or more assessment; children who did not improve on any assessment were coded No Progress. The children were divided into two categories based upon their relation to the median number of hours of instruction their parents received in parenting education and parent and child interaction time: less than the median 80 hours of instruction or 80 or more hours of instruction. Table 7 shows the resulting cross tabulation. The data indicate that progress was achieved for between 80% and 90% of the

children, regardless of whether they received more or less than 80 hours of instruction. Overall, the majority of learners (11 or 84.6%) achieved progress.

Table 7

Parent Hours in Parenting Education/Parent and Child Interaction Time and Child Progress Cross Tabulation

	Less Than 80 Hours		80 Hours or More		Total	
	N	%	N	%	N	%
No Progress	1	16.7	1	14.3	2	15.4
Progress	5	83.3	6	85.7	11	84.6
Total	6	100	7	100	13	100

Because two cells had an expected count less than five, Chi-Square could not be calculated for this data set and no statistically significant relationships could be determined.

*3. What is the relationship between the number of hours of parenting education and parent and child interaction time combined and outcomes for school aged children as measured by the Classroom Teacher Rating Scale assessment of children reading at or above grade level and the Behavior Scale subset?*

All 29 school age children whose parent(s) participated in parenting education and/or parent and child interaction time were assessed using the Classroom Teacher Rating Scale assessment of children reading at or above grade level. Table 8 shows the resulting cross tabulation. The data indicated children whose parents received more than the median hours of instruction in parenting education/parent and child interaction time had slightly higher rates of

reading at or above grade level (9 or 60%) than their peers whose parents received less than the median hours of instruction (7 or 50%). Overall, more learners (16 or 55.2%) were reading at grade level than not reading at grade level.

Table 8

Parent Hours in Parenting Education/Parent and Child Interaction Time and Child Reading Level  
Cross Tabulation

	Less Than 90.25 Hours		90.25 Hours or More		Total	
	N	%	N	%	N	%
Not Reading at Grade Level	7	50.0	6	40.0	13	44.8
Reading at Grade Level	7	50.0	9	60.0	16	55.2
Total	14	100	15	100	29	100

The Chi-Square analysis for this data yielded a Pearson Chi-Square value of .293 with one degree of freedom. The significance value was .588, which indicated this relationship is not statistically significant (.588>.05).

Similarly, all 29 school age children whose parent(s) participated in parenting education and/or parent and child interaction time were assessed using the Behavior Scale subset of the Classroom Teacher Rating Scale. Table 9 shows the resulting cross tabulation. The data indicated that children whose parents received more than the median hours of instruction in parenting education/parent and child interaction time had slightly higher rates of behavior appropriate for their grade level (9 or 60%) than their peers whose parents received less than the

median hours of instruction (7 or 50%). Overall, more learners (16 or 55.2%) had behavior ratings at grade level than not.

Table 9

Parent Hours in Parenting Education/Parent and Child Interaction Time and Child Behaviors  
Cross Tabulation

	Less Than 90.25 Hours		90.25 Hours or More		Total	
	N	%	N	%	N	%
Behavior Not at Grade Level	7	50.0	6	40.0	13	44.8
Behavior at Grade Level	7	50.0	9	60.0	16	55.2
Total	14	100	15	100	29	100

The Chi-Square analysis for this data yielded a Pearson Chi-Square value of .293 with one degree of freedom. The significance value is .588, which indicated this relationship is not statistically significant (.588>.05).

For both assessments of school age children, no statistically significant relationship was demonstrated between instructional time for parents and the child's outcomes.

*4. What is the relationship between the number of hours of instruction in early childhood education and improved outcomes for the child as measured by the PALS, the PPVT, and the COR?*

Thirteen children who received early childhood education instruction were pre- and post-tested using at least one of three assessments: the PALS, the PPVT, and the COR. Progress was



determined based upon whether or not a child improved on one or more assessment; children who did not improve on any assessment were coded No Progress. The children were divided into two categories based upon their relation to the median number of hours of instruction received: less than the median 562 hours of instruction or 562 or more hours of instruction. Table 10 shows the resulting cross tabulation. The data indicated progress was achieved by at least 80% of the early childhood education children, regardless of whether they received more or less than the median hours of instruction.

Table 10

Hours of Early Childhood Education Instruction and Progress Cross Tabulation

	Less Than 562 Hours		562 Hours or More		Total	
	N	%	N	%	N	%
No Progress	1	16.7	1	14.3	2	15.4
Progress	5	83.3	6	85.7	11	84.6
Total	6	100	7	100	13	100

Because two cells had an expected count less than five, Chi-Square could not be calculated for this data set and no statistically significant relationships could be determined.

Available data regarding both adults and children yielded small sample sizes. The largest sample size was for Research Question 1 (N=31) and the smallest was for Research Questions 2 and 4 (N=13). Due to the small sample sizes, more complex statistical analyses such as Chi-Square were not available for Research Questions 1, 2, and 4. The small sample sizes also made

the likelihood of finding a statistically significant relationship less likely, even when Chi-Square was utilized.

Due to the small sample sizes for all research questions, data was divided into two groups: those above and below median. A more precise coding system for hours of instruction might have yielded different results and a possible statistically significant relationship.

## Chapter V: Summary, Conclusions, and Recommendations

This study analyzed adult and child achievement and instructional hours in the Eau Claire Family Literacy program to determine if any relationship existed. This chapter includes a summary of the methods and findings of the study as well as conclusions that can be drawn from them. Finally, the researcher provides recommendations.

### *Summary*

The summary of this study includes the restatement of the problem, an overview of the methods and procedures used, and a review of the major findings.

*Restatement of the problem.* The Eau Claire Family Literacy program provides instruction in four areas—adult education, parenting education, parent and child interaction time, and early childhood education—to families who participate in the program. Adult improvements in literacy are measured through pre- and post-testing using standardized assessments. Data was collected regarding a child’s developmental markers, reading levels, and perceptions of his or her teacher. Factors such as number of hours of instruction received by parents and children have not been compared with achievement to determine if a relationship exists.

*Methods and procedures.* The researcher was provided existing data regarding hours of instruction and adult and child achievement from the 2008-09 school year. This data was collected over the 2008-09 school year by ECFL staff in the course of routine programming. For each research question, the hours of instruction were divided into two groups with the median number of hours as the dividing point. The adult and child outcomes were likewise divided into two groups for each question indicating whether or not an adult or child achieved progress or no progress or were at or below grade level in that measure. These variables were analyzed using 2 x 2 cross tabulations and, when data was sufficient, Chi-Square.

*Major findings.* This study analyzed four specific research questions in order to determine if a relationship existed between instructional time and achievement of adults and children.

Research Question 1 asked whether there was a relationship between the number of hours of instruction in adult education and student improvement on the TABE, BEST*plus*, or BEST Literacy tests. There was insufficient data to utilize a Chi-Square analysis; therefore, no statistically significant relationship was determined between the hours of instruction in adult education and student improvement on the standardized assessments. However, it is interesting to note the percent of students who did achieve progress was at least 70% regardless of the student receiving more or less than the median hours of adult instruction.

Research Question 2 asked whether there was a relationship between the number of hours of parenting education and parent and child interaction time combined and child outcomes as measured by the PALS, the PPVT, and the COR. Again, there was insufficient data to utilize a Chi-Square analysis and no statistically significant relationship could be determined. However, a close appraisal of the cross-tabulation revealed at least 80% of children achieved progress regardless of whether their parent received more or less than the median hours of instruction in parenting education and parent and child interaction time combined.

Research Question 3 asked whether there was a relationship between the number of hours of parenting education and parent and child interaction time combined and outcomes for school aged children as measured by the Classroom Teacher Rating Scale assessment of children reading at or above grade level and the Behavior Scale subset. No statistical significance was determined despite having sufficient data to use a Chi-Square analysis. However, the descriptive data indicated children whose parents received more than the median hours of instruction in

parenting education/parent and child interaction time had slightly higher rates of behavior appropriate for their grade level and read at or above grade level (60%) than their peers whose parents received less than the median hours of instruction (50%). The descriptive data indicated the same number of school age children rated at grade level for both the reading level and behavior subsets.

Research Question 4 asked whether there is a relationship between the number of hours of instruction in early childhood education and improved outcomes for the child as measured by the PALS, the PPVT, and the COR. There was insufficient data to utilize a Chi-Square analysis and no statistically significant relationship could be determined. However, an appraisal of the cross-tabulation revealed that at least 80% of children achieved progress regardless of whether they received more or less than the median hours of early childhood education instruction.

### *Conclusions*

For all four research questions, the data indicated no statistical significance between hours of instruction in any of the four ECFL instructional areas and the measured outcomes of adults and children. Further, for all four research questions, an analysis of the cross tabulations revealed the percent of students who achieved progress is relatively consistent regardless of hours of instruction. Adult students achieved progress at a rate of at least 70% regardless of receiving more or less than 80 hours of instruction. While this analysis suggested that number of hours of instruction is not related to adult academic achievement, this is counterintuitive and contrary to the overall findings of the literature review presented in Chapter 2.

Similarly, early childhood education children achieved progress at a rate of at least 80% on the PPVT, the PALS, and the COR regardless of whether or not they or their parents received more or less than the median hours of instruction in early childhood education and parenting

education/parent and child interaction time, respectively. School age children whose parents received above median hours of instruction in parenting education and parent and child interaction time combined were rated at or above grade level for both reading and behavior at a slightly higher rate (60%) than their below-median peers (50%). It could be concluded, therefore, that hours of instruction, and similarly length of time in the program, is not an important factor in achievement of children in the ECFL. However, this conclusion is counterintuitive and not in line with the overall finding of the literature review presented in Chapter 2.

### *Recommendations*

The conclusions drawn by this study suggest recommendations related specifically to this study and to future research in general.

#### *Recommendations Relating to this Study*

1. Because the small sample size greatly inhibited the analysis of the data and thus the strength of the conclusions, it is recommended that additional research analyzing the relationship between instructional time and outcomes incorporate more data. This could be accomplished through aggregating data from multiple years at ECFL or by aggregating data from multiple family literacy sites.
2. This study could further be strengthened by increasing the number of enrolled participants for whom pre- and post-tests are given. While this is a recurrent and significant challenge in data collection for ECFL, some steps could be taken to increase testing rates. Future investigators should consider following up on adults and children who ceased attending the program before a post-test could be administered to be able to make comparisons among completers and non-completers and to determine impact of programming.

*Recommendations for Future Study*

1. At the national level, funding for Even Start family literacy programs is in danger of elimination (Klein, 2009). As lawmakers determine whether to continue funding, researchers must supply sound recommendations based upon large scale research. This study suggests larger scale research on the number instructional hours needed for adult and child achievement is needed to be able to make programming decisions and inform policymakers as to how much programming should be offered and funded to achieve intended results.
2. This study analyzed only one factor, instructional time, on adult and child outcomes. Research on additional factors such as quality and types of instruction and their relation to outcomes would provide additional insights into creating successful family literacy programs. In addition, other influential factors such as poverty rates and demographic data could be analyzed to determine impact on individual outcomes.

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